# Study on support to scaling-up of innovations in Active and Healthy Ageing

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**FINAL REPORT**

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euregha
European Regional and Local Health Authorities

*Digital Agenda for Europe*

# This study was carried out for the European Commission by

**empirica Gesellschaft für Kommunikations- und Technologieforschung mbH**

**Authors**

Veli Stroetmann and Strahil Birov

with

Rainer Thiel, Reinhard Hammerschmidt, Sonja Müller, Klaus Piesche, Meropi Papagheorghe, Christianne Lavin, *empirica*

Dipak Kalra, *EuroRec*

Mikaela Nordenfelt, Lina Papartyte, Freja Hagsund, *EUREGHA*

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# Abstract

The ScaleAHA study supported the European Commission in fostering scaling-up of innovations in active and healthy ageing by engaging stakeholders of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA).

The study facilitated the "2016 Call for Reference Sites" for European regions with a high scaling-up potential in active and healthy ageing. The 74 Reference Sites (RSs) from 24 European countries represent highly inspirational ecosystems, delivering creative and workable solutions that improve the lives and health of older people through the involvement of different players, including regional and/or local authorities, cities, integrated hospitals/care organisations, industry, SMEs and start-ups, research and innovation organisations.

ScaleAHA conducted also the "2016 Transfer of Innovation Scheme" supporting European regions to learn from one another and scale up digitally-enabled innovative ICT solutions in active and healthy ageing. Twenty pairs of regions (26 RSs from 13 European countries) have been provided financial support for twinning activities. The scheme is a new concept aiming to de-risk investment in digital innovative ICT solutions by financing small but concrete ideas with high potential for replicability and scaling up.

The ScaleAHA report provides an overview of all the different study activities and results. Ongoing activities beyond the duration of ScaleAHA, such as a follow up of the twinning activities outcomes, will be pursued further by the European Commission.

# Résumé d'étude

L'étude ScaleAHA a supporté la Commission européenne dans la promotion de l'intensification des innovations dans le domaine du vieillissement actif et en bonne santé en engageant des parties prenantes du Partenariat européen d'innovation pour un vieillissement actif et en bonne santé (EIP on AHA).

L'étude a rendu possible «L'appel pour les sites de référence 2016» pour des régions européennes qui ont un grand potentiel d'intensification dans le domaine du vieillissement actif et en bonne santé. Les 74 sites de référence (RSs) de 24 pays européens représentent des écosystèmes hautement inspirants qui livrent des solutions créatives et réalisables, améliorant les vies et la santé des personnes âgées par l'implication des acteurs différents, incluant des autorités régionales et/ou locales, des villes, des hôpitaux / organisations des soins intégrés, l'industrie, des PME et des start-ups, des organisations de recherche et d'innovation.

ScaleAHA a aussi réalisé le «programme de transfert d'innovation 2016» qui supporte des régions européennes afin qu'elles apprennent les unes des autres et qu'elles augmentent des solutions TIC novatrices, rendues possibles numériquement, dans le domaine du vieillissement actif et en bonne santé. Vingt paires de régions (26 RSs de 13 pays européens) ont assuré leur soutien financier pour des activités de jumelage. Le programme est un nouveau concept qui vise à réduire le risque de l'investissement dans des solutions TIC numériques novatrices en finançant des idées petites mais concrètes avec un potentiel élevé pour la reproductibilité et l'intensification.

Le rapport ScaleAHA fournit une vue d'ensemble de toutes les différentes activités d'étude et des résultats. Des activités en cours au-delà de la durée de ScaleAHA, tel que les rapports finaux concernant les activités de jumelage, seront poursuivies par la Commission européenne.

# Executive Summary

Scaling up digital innovations in health and care services in Europe enables more EU citizens to lead healthy, active and independent lives while ageing, whilst improving the sustainability and efficiency of social and health care systems and boosting and improving the competitiveness of the markets for innovative products and services. By scaling up digital innovations, the EU Member States are responding to the ageing challenge at both EU and global level, while creating new opportunities for businesses.

In order to successfully scale up digitally-enabled innovative ICT solutions, a comprehensive scaling-up strategy at European level is needed. The European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) fosters innovation in the field of active and healthy ageing (AHA), as today the EU population is ageing rapidly, but living longer does not necessarily mean living healthier, more active and independent lives. The number of Europeans over 65 will double in the next 50 years, and the number of over 80's will almost triple. Life expectancy will continue to increase, yet unhealthy life years make up around 20% of a person's life. Other relevant initiatives and programmes supported by the EC in this domain include the Active and Assisted Living Programme, EIT KIC on Healthy Living and Active Ageing, Silver Economy projects in Horizon 2020, and the eHealth Action Plan 2012-2020.

> *The European Innovation Partnership on Active and Healthy Ageing is seen as a catalyst to fostering scaling-up across regions and countries.*

The scaling-up strategy in AHA by the European Commission defines five steps for setting up an effective European scaling-up strategy: building a database of innovative practices, their viability assessment regarding scaling-up potential, their classification for replication purposes, the facilitation of appropriate partnerships, and implementation of the innovative practices in other regions and countries.

Since its inception in 2010, the EIP on AHA has shown considerable progress and has managed to bring together various stakeholders from government, industry, research and the civil society who are committed to collaborate by innovating and adapting to the demanding healthcare systems and needs of the ageing population in Europe in various challenging areas – adherence to prescription, prevention of falls, management of functional decline and frailty, provision of integrated care, development of independent living solutions and age-friendly environments.

An online repository of innovative practices is available to the EIP on AHA community. Stakeholders can find those innovative practices that are best for their local, regional and national needs, and collaborate with the originators of the practices to scale up the solutions, which can be of administrative and organisational, technological, or strategic nature. Each practice is detailed and assessed (time for deployment, investment, maturity, available evidence of outcomes, impact, transferability) in order to help stakeholders identify good candidates for replication.

ScaleAHA has taken stock of and analysed key barriers and success factors for scaling-up of healthcare solutions in Europe. Among the key success factors are:

- ✓ strong political commitment
- ✓ utilising existing networks, partnerships and collaborations,
- ✓ putting the user in the centre of the development and the overall process to ensure acceptance,
- ✓ leveraging public and private partnerships and funding mechanisms,
- ✓ disseminating the benefits of the innovations, and
- ✓ providing appropriate training and education to staff

> *Overcoming implementation barriers and leveraging success factors for scaling up drives innovativeness in active and healthy ageing.*

With this foundation is place, the EIP on AHA is in the process of implementing the good practices through collaboration and partnership search. Working together, stakeholders exchange knowledge and share the experience of successful innovations to facilitate their scaling up across Europe. There are a number of challenges and barriers to be overcome, and a number of success factors and drivers for digital innovation to take into account in the process. The ScaleAHA study is one of many that support the European Commission in identifying these elements and in helping stakeholders to effectively leverage them when scaling up.

## 74 EIP on AHA Reference Sites

European cities and regions should lead the scaling-up of digital innovation by example. The ScaleAHA study has supported the European Commission in evaluating and awarding 74 such regional and local organisations from 24 European countries called the 2016 Reference Sites of the EIP on AHA. They are highly inspirational ecosystems, delivering creative and workable solutions that improve the lives and health of older people through the involvement of different players, including regional and/or local authorities, cities, integrated hospitals/care organisations, industry organisations, SMEs and/or start-ups, research and innovation organisations, that jointly implement a comprehensive, innovation-based approach to active and healthy ageing, and can give evidence and concrete illustrations of the impact of such approaches on the ground.

*The number of Reference Sites in 2016 has almost tripled compared to the previously recognised 32 Reference Sites in 2012. Together they represent a **commitment of over four billion €** (2016-2019 period) to invest in innovative solutions that will lead to improvements in the quality of life of their ageing population (approx. 66 million people), support efficiencies and sustainability of health and social care delivery and finally, stimulate economic growth and competitiveness. **These investments will benefit an expected five million people** in the next three years.*

The 2016 Reference Sites awards were given at the European Summit on Innovation for Active and Healthy Ageing (5-8 December 2016). The following graph provides an overview of all Reference Sites with their awarded stars.

The Reference Sites are willing to learn from each other. For example, Asturias is drawing on cooperation and exchange of experience activities with other European regions to design its Strategy on Active Ageing, and Kraljevo is adopting elements of the Andalusian Telecare Service.

| | | |
|---|---|---|
| European Innovation Partnership on Active and Healthy Ageing **REFERENCE SITE** ★★★★ | Southern Denmark, Andalusia, Catalonia, Basque Country, Healthy Ageing Network Northern Netherlands, Northern Ireland, Scotland, Wales | 8 |
| European Innovation Partnership on Active and Healthy Ageing **REFERENCE SITE** ★★★☆ | City of Oulu, MACVIA France Network, Saxony, Lazio, Campania, Lombardy, Friuli Venezia Giulia, Arsenàl.IT - Veneto's Research Centre for eHealth Innovation, Aust-Agder County and Vest-Agder County, Centro, Valencian Community, Galicia, Madrid, Scania, Norrbotten, Twente, Amsterdam Metropolitan Area, Medical Delta, North Brabant Province, North East England, Greater Manchester, Yorkshire and the Humber, North West Coast of England, City of Liverpool | 24 |
| European Innovation Partnership on Active and Healthy Ageing **REFERENCE SITE** ★★☆☆ | Styria, Flanders, Limburg, Zealand, City of Helsinki, Pays De La Loire, Nouvelle-Aquitaine, East of France, Kinzigtal, Oberbergischer Kreis, Republic of Ireland Regional Network, Provincia Autonoma di Trento, Puglia, Liguria, Tuscany, Emilia-Romagna, Piedmont, Lodz Province, Metropolitan Area of Porto (Porto4Ageing) , Murcia, City of Badalona, Asturias, Balearic Islands, Aragon, Global Alliance Chronic Respiratory Diseases Regional Network | 25 |
| European Innovation Partnership on Active and Healthy Ageing **REFERENCE SITE** ★☆☆☆ | West Flanders Province, City of Zagreb, Olomouc, City of Kuopio, Pirkanmaa, Baden-Württemberg, Milan Metropolitan - Bergamo Province, Stavanger, City of Terrassa, Barcelona Province | 10 |
| European Innovation Partnership on Active and Healthy Ageing **CANDIDATE REFERENCE SITE** | City of Sofia, Île-de-France, City of Augsburg, Heraklion-Crete, Regional Network Long Lasting Memories, City of Kraljevo, Kiev-Zhitomir | 7 |
| European Innovation Partnership on Active and Healthy Ageing **REFERENCE SITE** | Federal Ministry for Family Affairs, Senior Citizens, Women and Youth *"National Reference for Excellence in promoting Innovation for Active and Healthy Ageing"* | |

Advancing innovations in the field is also linked with investment. European Structural and Investment Funds (ESIF) offer possibilities to secure the necessary funding to scale up. ScaleAHA has captured the current investment plans of most Reference Sites. Olomouc region, for example, has presented plans to invest about €40 million in the following years, because the topic of active and healthy ageing is very important in the Czech Republic and supported by both policy makers and industry. Zagreb plans to commit to providing €1.2 million in digitisation and networking in the period of 2017-2018 to address challenges in the Croatian health care system.

Other well established regions like Campania and Scotland are already benefiting from ESIF to drive their active and healthy ageing agendas (55.5 million € for Campania and 8.7 million € for Scotland). However, more effort should be put into promoting different funding opportunities the EIP on AHA stakeholders can utilise to achieve the Partnership's goals. A ScaleAHA survey identified that many of the regions are not aware of the different types of funds and mechanisms, such as ESFI, one of the three pillars of the Investment Plan for Europe.

Apart from EU funding, each Reference Site has own budget dedicated to active and healthy ageing. ScaleAHA analysis of the indicated budgets of the RSs shows that the countries with the highest planned budget are the UK, (approximately 7.5 billion € in total among 8 regions), Spain (approximately 5.3 billion € planned in total among 8 regions), and the Netherlands (around 3.9 billion € for 5 regions).

> *European regions are dedicated to investing in solutions in active and healthy ageing via own finances and by leveraging EU funding.*

The impressive work of the EIP on AHA and its Reference Sites is shared and facilitated through the **Reference Site Collaborative Network (RSCN)**. Knowledge sharing to scale up successful digital innovations is at the heart of the RSCN, therefore it welcomes new opportunities to share the knowledge of the Reference Sites with other organisations in the EIP on AHA and beyond.

For the first time and given the "national and cross-regional dimension" of the applicant's activities, the German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth has been awarded the status of "National Reference for Excellence in promoting Innovation for Active and Healthy Ageing". Future calls will further explore the potential

to have government-led national initiatives interested in participating in the EIP on AHA, proving an opportunity to showcase their innovative practices and contribution to scaling up innovation for the ageing population.

The European Commission has facilitated the EIP on AHA and its stakeholders and is continuing this support until 2020. To mobilise stakeholders, it has developed together with key EIP on AHA representatives a "Blueprint for digital transformation of health and care for the ageing society" as a shared strategic vision of how Europe should move forward. It identifies priority areas of intervention, transformation enablers, and captures stakeholders' commitment to create a European environment that stimulates innovative healthcare and social entrepreneurs, leverages demand side investments in innovative technology, solutions and services for active and healthy ageing, and rewards competitiveness.

> *The Blueprint was initiated by Commissioner Oettinger who invited stakeholders to work together to define a shared vision on how innovation enabled by a Digital Single Market can transform Europe's ageing society in the 21st Century and contribute to the European Silver Economy.*

**Transfer of Innovation Twinning Support Scheme**

Through ScaleAHA, the European Commission is supporting those EIP on AHA Reference Sites which are willing to learn from digitally-enabled innovative ICT solutions in AHA of others (assuming the role of adopters of innovation), or are willing to share their expert knowledge and help other Reference Sites to scale up (assuming the role of originators of innovation). The 2016 Transfer of Innovation Twinning Support Scheme was initiated through a call in 2016 to contribute to the European scaling-up strategy of the EIP on AHA. Twenty pairs of originators and adopters were selected by the European Commission and representatives of ScaleAHA and the PROEIPAHA project to exchange knowledge and expertise with financial support to cover the travel and accommodation costs of the twinning activities. The twenty pairs represent a variety of solutions being adopted by Reference Site organisations from **13 different European countries**. In total, **43 organisations** were involved in the twinning actions.

**European Innovation Partnership on Active and Healthy Ageing Reference Sites and Twinning Partners**

**74** Reference Sites from **24** countries

**43** twinning organisations from **13** countries

★ Reference Site    Twinning partner
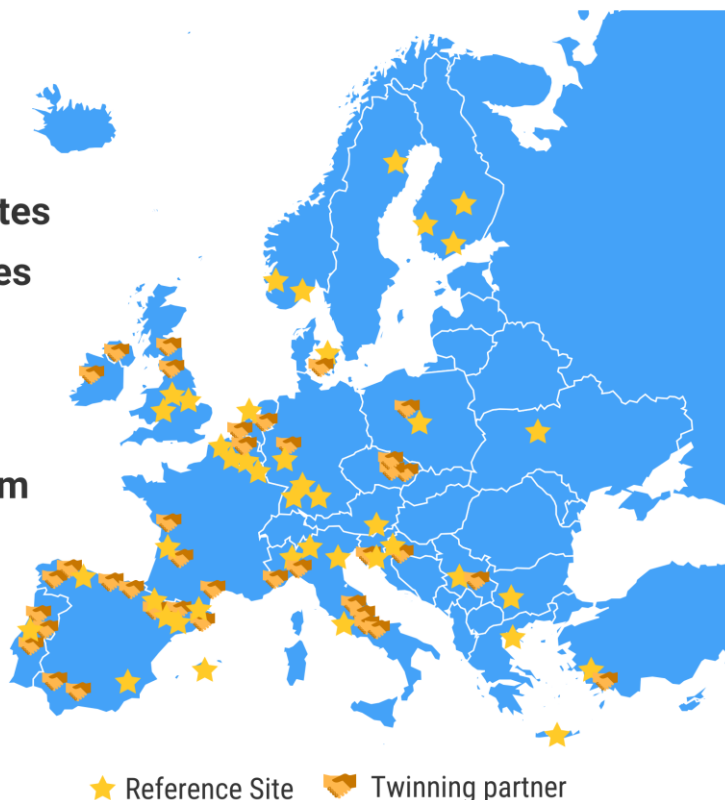
**Over 4 billion €** to be invested in **deployment and implementation** of innovative solutions for **health and active and healthy ageing** by the Reference Sites in the period **2016-2019**.

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*The twinning scheme is **a new concept that aims to de-risk investment in digital innovative ICT solutions** by financing small but concrete ideas with high potential for replicability and scaling up. The scheme is an excellent instrument for targeting barriers in line with current Digital Single Market priorities and providing digital solutions that can be applied across Europe.*

There were two types of organisations involved:

- The "Organisation adopting the innovative practice (receiving/adopter organisation)" (the organisation that received the innovative practice and deployed / implemented it in its territory).
- The "Organisation transferring the innovative practice" (the originator organisation) with the experience and know-how developed in a particular field of intervention that

is awarded Reference Site status in the 2016 call and is included in the innovative practices repository of the EIP on AHA.

Most twinning organisations have conducted physical meetings and are in the process of exploring the best approach to scaling up the solutions of the originators. The results have been promising and the process should be further refined taking into consideration lessons learnt and recommendations by the pilot twinning organisations. This report presents results of the twinning activities, which include discussions about barriers and challenges faced, success factors leveraged, plans and strategies on moving forward, and recommendations for the future. Below is an overview of the organizations, innovative practices, and corresponding Action Groups involved in the twinning scheme.
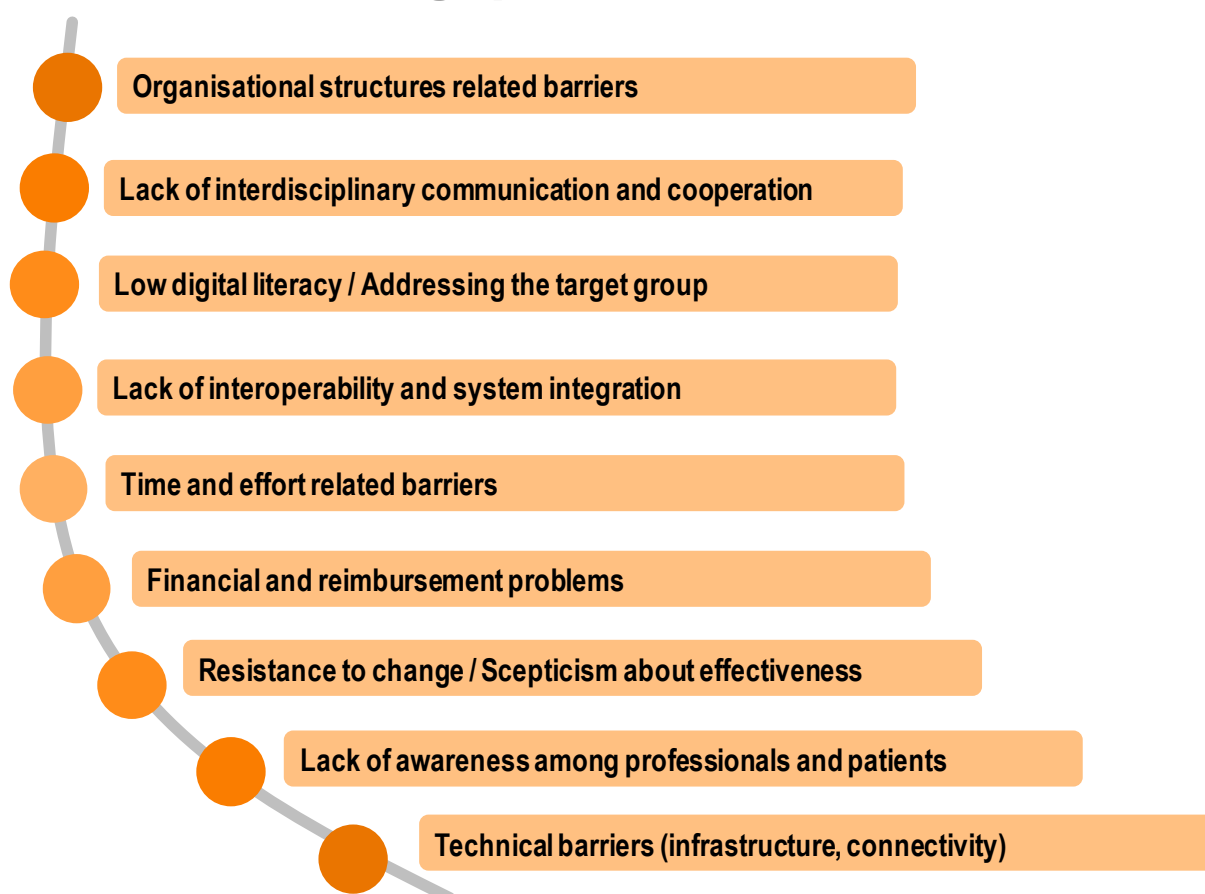
| Originator RS | Adopter(s) RS | Innovative practice | Action Group(s) |
|---|---|---|---|
| MACVIA-France Network | Campania, Catalonia, Porto, Olomouc, Lodz 4 Generations, Medical Delta, Northern Ireland, Piemonte, Southern Denmark, GARD Regional Network Turkey | MASK (MACVIA-ARIA Sentinel network) Allergy Diary | B3 |
| Northern Ireland | Catalonia | "STEPSelect" system for selection and procurement of medicines for the elderly | A1 |
| Campania | Asturias | "ADD protection" home-monitoring system | A1, B3 |
| Basque country | Nouvelle-Aquitaine | Predictive modelling system for risk stratification | B3 |
| Pays de la Loire | Porto4Ageing | ALOHA system for prevention of infectious diseases for the elderly | A1 |
| Andalusia | City of Zagreb | Adopting elements of the Andalusian eHealth Strategy "Diraya" | A1, B3 |
| Northern Ireland | Olomouc | "STEPSelect" system for selection and procurement of medicines for the elderly | A1 |
| Republic of Ireland Regional Network COLLAGE | Campania, Catalonia, Porto4Ageing | "Quick Mild Cognitive Impairment" screening application (Qmci) within the RAPid Community COGnitive screening Programme – RAPCOG | A3 |
| Basque country | Liguria | Predictive modelling system for risk stratification | B3 |
| Lazio | Porto4Ageing | Baseline assessment of frailty (BAF) application "Frail Survey" | A3 |
| North West Coast of England | Oberbergischer Kreis | "Teleswallowing" service delivery model to improve the assessment of swallowing | B3 |
| Campania | Olomouc | "ADD protection" home-monitoring system for early and protected hospital discharge | B3 |
| Twente | Campania | "Telerevalidatie" self-management platform for patients with chronic diseases and older adults | A3 |
| Scotland | Andalusia | "Living it Up" online hub for self-management of health and wellbeing and digitally enabled community (LiU) | B3 |
| Northern Ireland | North West Coast of England | "STEPSelect" system for selection and procurement of medicines for the elderly | A1 |
| Andalusia | Kraljevo | Adopting elements of the Andalusian Telecare Service (SAT) | A1, A2, A3, C2, D4 |

| Scotland | Basque country | "Living it Up" online hub for self-management of health and wellbeing and digitally enabled community (LiU) | B3 |
| Basque country | Scotland | Predictive modelling system for risk stratification | B3 |
| Galicia | City of Zagreb | Adopting elements of the "IANUS" regional EHR system and ePrescription solution | A1, B3 |
| Medical Delta Rotterdam | Campania | Digital modular gastrological platform to prevent and treat malnutrition | A3 |

The twinning activities covered a **wide range of eHealth topics**, including online health portals, ICT-supported integration of health and social care services or adherence to care plans, health and care needs assessment tools, telemonitoring systems, EHR systems, and falls prevention, among many others.

Some barriers faced during the twinning scheme were technical barriers (differences in infrastructure e.g. internet access), lack of interoperability and system integration, low digital literacy of the target group, financial and reimbursement problems, and lack of awareness among professionals and patients. Nevertheless, apart from the mentioned success factors, the adopters of digital innovations through twinnings have also identified a number of benefits and new opportunities resulting from the adoption, such as cost savings, better quality in healthcare service, reducing healthcare visits, easier access to reliable health information, creating new businesses or business models, creating new job opportunities or roles for healthcare professionals, and patient empowerment, among others.

## Barriers to scaling up innovation in AHA

- Organisational structures related barriers
- Lack of interdisciplinary communication and cooperation
- Low digital literacy / Addressing the target group
- Lack of interoperability and system integration
- Time and effort related barriers
- Financial and reimbursement problems
- Resistance to change / Scepticism about effectiveness
- Lack of awareness among professionals and patients
- Technical barriers (infrastructure, connectivity)

## Success factors to scaling up innovation in AHA

- Clear vision and strong political commitment
- Previous research and piloting
- Networking and collaboration
- Addressing current healthcare needs and embedding the new system into present healthcare policies
- Public and private partnerships
- New business models and innovations
- Training and education of staff
- Product development in close collaboration with the end-users
- User experience design, user acceptance
- Local services, integration of the new solution into the existing environment
- Faster benefit realisation of the innovative practices
- Marketing and business communication
- Funding, financial incentives and investments

Moreover, the twinning actions have brought about different lessons learnt as well as further steps that had not been initially planned for the twinning. Examples of these are:

1. Establishing a clear twinning plan and identifying adopter prerequisites that would facilitate the twinning process, such as those done by the Scotland – Basque Country twinning as shown below:
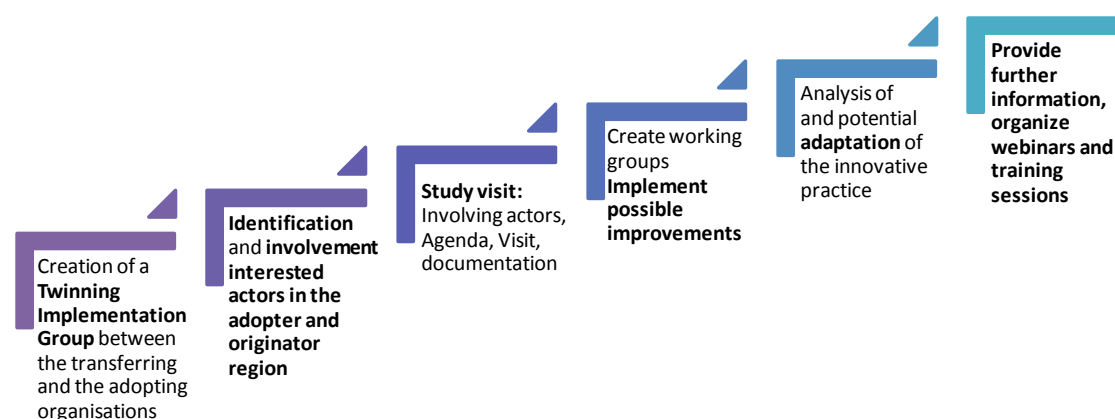
2. Identifying areas of improvement for the adopter site and creating pilot projects to address these areas (Andalusia- Zagreb and Galicia – Zagreb)

3. Joint activities and training sessions leading to adopting elements of the innovative practice not only from the originator site to the adopter site but also vice versa (Campania – Asturias twinning).

The twinnings were also grouped according to scaling-up scope resulting into 5 archetypes, as described below.

| Type | Description | Number | Example twinnings | |
|---|---|---|---|---|
| Knowledge exchange & training, digital skills | Focus on knowledge (know-how) exchange and training, a central aspect of the innovation are the required staff skills | 4 | ✓ Gastrological approach to malnutrition: Rotterdam - Campania<br>✓ SAT Andalusian Telecare Service: Andalusia – Kraljevo | ✓ Risk Stratification: Basque Country– Scotland<br>✓ Teleswallowing: NWCE - OBK |
| Adaptation | A mature innovation is being adopted by adjusting it to local conditions (e.g. translation into local language) | 6 | ✓ ADD protection: Campania – Asturias<br>✓ ADD protection: Campania - Olomouc<br>✓ STEPSelect: Northern Ireland – Catalonia | ✓ STEPSelect: Northern Ireland – NWCE<br>✓ STEPSelect: Northern Ireland – Olomouc<br>✓ Risk Stratification: Basque Country – Nouvelle-Aquitaine |
| Partial adoption | Elements or aspects of the innovation (product, service, methodology, strategy) are being implemented using locally available infrastructure | 8 | ✓ IANUS: Galicia – Zagreb<br>✓ Diraya: Andalusia – Zagreb<br>✓ Telerevalidatie: Twente – Campania<br>✓ Living It Up: Scotland – Basque Country<br>✓ Living It Up: Scotland – Andalusia | ✓ FrailSurvey app: Lazio – Porto<br>✓ Qmci under RAPCOG: Ireland – Porto4Aging, Campania, Catalonia<br>✓ Risk Stratification: Basque Country – Liguria |
| Full adoption | The innovation (product, service, methodology, strategy) is being implemented in its full scope by using local infrastructure *i.e.* the innovation is transferred and managed fully by the adopter | 1 | ✓ ALOHA: Pays de la Loire - Porto | |
| Acquisition | The innovation is being implemented in its full scope by using the originator's infrastructure (paid for or free of charge), *i.e.* the originator still has primary ownership, but a license for use is granted to and acquired by the adopter | 1 | ✓ MASK Allergy Diary: MACVIA-France – 10 adopters: Campania, Catalonia, Ageing@Coimbra, Lodz4Generations, Medical Delta, | Northern Ireland, Regione Piemonte, Region of Southern Denmark, GARD Turkey (National Program on Chronic Airway Diseases) |

Each twinning has accomplished different implementation steps regardless of their archetype within the project timeframe. For many cases, a partial adoption has been achieved after 6 months (also, reflected by the biggest number of twinnings grouped into this archetype. These 6 months generally involved organising various meetings for knowledge transfer, creating relevant working groups and multidisciplinary teams, translation of ICT tools into the language of the adopter site, and finding sponsors or even beginning the necessary pilot phase. The different twinning archetypes required different budget and financing but overall there was an **own budget of 1 million EUR** invested by the adopters.

The study has also collected recommendations from the twinning organisations in order to further refine possible future twinning activities, some of which are listed below:

✓ To extend the scheme timeframe to improve the outcomes, also considering the schedules of the different staff involved in the twinning
✓ To make all necessary templates for reporting available well in advance / at the start of the twinning
✓ To simplify the overall process: streamline the steps, remove unnecessary steps (application, kick-off, kick-off minutes and updated application with budget clarifications (ex-ante), reimbursement (ex post), interim report, final report)
✓ To increase the twinning scheme budget in order to extend the scope of activities
✓ To cover also staff participation, development and implementation costs, evening meals

Furthermore, based on experience during the ScaleAHA study and twinning activities, the following lessons learnt and observations have been noted and should be considered:
✓ The twinning scheme should have a dedicated online presence
✓ Regular follow-ups to keep initiatives such as the twinning scheme relevant and to provide evidence of impact should be carried out
✓ The mutual benefits from twinning activities should be communicated and expressed
✓ Calls for twinnings should be based on current and upcoming EC priorities
✓ Twinnings should be placed in the H2020 work programme
✓ The impact of the twinnings should be captured in a uniform way, including the spill-over and other effects

The EIP on AHA stakeholders are in a unique position to benefit from a number of tools and methodologies both developed within the community and adapted from other disciplines to help the EIP on AHA with planning products and services, assessing health outcomes, and making decisions to invest or buy digital healthcare solutions. ScaleAHA has taken stock and analysed them in order to help stakeholders identify what methodology and tool they can use for different scenarios. Of particular interest is the MAFEIP tool, as it can be used across EIP on AHA Action Groups both for early assessments as well as assessments of more mature innovations

*Monitoring and Assessment Framework for the EIP on Active and Healthy Ageing (MAFEIP, mafeip.eu) is a generic analytic model specifically developed in response to the need to monitor the outcomes of the EIP on AHA.*

Organisations use MAFEIP to assess the impact of innovations in terms of health outcomes and resource use. The tool can be of interest to different stakeholders. It can be applied to interventions which are at an early stage of development using the best available data at this point in time. Such assessments are of particular importance for investors, who need to understand the estimated potential of the intervention before investing in the innovation. When better data is available with time, MAFEIP's assessment becomes of great interest to the buyers of innovations – healthcare providers, industry, and governments. MAFEIP's take-up is currently being promoted by the European Commission through a service contract that offers training and support for any organisation within the EIP on AHA and beyond which is interested in using the model. Already a number of use cases documenting the application of the tool by European stakeholders are available for download on the MAFEIP website.

An important aspect of the European Partnership on Active and Healthy Ageing is its goal of continuous self-improvement towards sustainability beyond 2020. Regular feedback to support the improvement is therefore needed.

*ScaleAHA provides a number of recommendations coming from the Reference Sites and the twinning activities for policy makers, and for better organisation of future*

> *initiatives such as a second call for transfer of innovation. Further recommendations concern future calls for Reference Sites, funding utilisation support and the assessment of impact of digitally enabled innovations in a uniform way.*

Key conclusions and recommendations include:
- ✓ Further promotion of the Reference Sites and their work will facilitate the achievement of the EIP on AHA objectives and the Digital Single Market priorities
- ✓ Facilitate efforts of EIP on AHA stakeholders to collaborate at different levels and tap into regional, national, international and EU support
- ✓ The Twinning Support Scheme is aligned with the priorities of the Digital Single Market Strategy and should be used to support its agenda
- ✓ More effort should be put into promoting different funding opportunities the EIP on AHA stakeholders can utilise to achieve the Partnership's goals
- ✓ Facilitate the assessment of impact of digitally enabled innovations in a uniform way

Recommendations regarding policy areas that the European Commission and the EIP on AHA should work on include raising digital skills and literacy, promoting more and new jobs with ICT qualification for healthcare professionals (e.g. related to telemonitoring), and measures for implementing data privacy and security legislation, especially tackling issues with ownership of medical data. Furthermore, measures for promoting interoperability of electronic devices and access to systems are required.

Apart from supporting the calls for Reference Sites and Transfer of Innovation scheme, ScaleAHA has performed a number of other activities such as collecting and analysing relevant information to help EIP on AHA stakeholders and serve as information of importance for the Partnership's evolvement in the short-term and sustainability in the long-term. The report provides an overview of all ScaleAHA activities, with details and results in separate sections and annexes. Ongoing activities beyond ScaleAHA, such as the final reports of the twinning actions, will be pursued further by the European Commission.

# Synthèse

L'élargissement des innovations numériques dans les services de santé et de soins en Europe permet d'avantage aux citoyens de l'Union européenne de mener une vie saine, active et indépendante dans la vieillesse, tout en améliorant la durabilité et l'efficacité des systèmes de soins sociaux et des systèmes de santé, et en stimulant et améliorant la compétitivité des marchés des produits et services innovants. En élargissant les innovations numériques, les États membres de l'UE répondent au défi du vieillissement tant au niveau de l'UE qu'à l'échelle mondiale, tout en créant de nouvelles opportunités pour les entreprises.

Pour mener à bien l'élargissement des solutions TIC novatrices, une stratégie complète d'élargissement au niveau européen est nécessaire. Le Partenariat européen d'innovation pour un vieillissement actif et en bonne santé (EIP on AHA) favorise l'innovation dans le domaine du vieillissement actif et en bonne santé, car aujourd'hui la population de l'UE vieillit rapidement. Mais vivre plus longtemps ne signifie pas nécessairement une vie plus saine, plus active ou indépendante. Le nombre d'Européens de plus de 65 ans doublera au cours des 50 années prochaines et le nombre de plus de 80 sera presque triplé. L'espérance de vie continue à augmenter, mais les années de vie malsaines représentent environ 20% de la vie d'une personne. Parmi les autres initiatives et programmes pertinents soutenus par la CE dans ce domaine figurent le Programme de vie indépendante et assistée, le EIT KIC on Healthy Living and Active Ageing, les projets d'économie argentée dans le programme Horizon 2020 et le plan d'action télésanté 2012-2020.

> *Le Partenariat européen d'innovation pour un vieillissement actif et en bonne santé est regardé comme catalyseur pour favoriser l'élargissement à travers des régions et des pays.*

La stratégie d'élargissement pour le vieillissement actif et en bonne santé, élaborée par la Commissionne européenne, définit cinq étapes pour la mise en place d'une stratégie européenne efficace: la création d'une base de données des pratiques novatrices, l'évaluation de la viabilité de ces pratiques concernant leur potentiel d'élargissement, la classification en vue de leur reproduction éventuelle, la facilitation des partenariats appropriés, et la mise en œuvre des pratiques novatrices dans d'autres régions et pays.

Depuis son début en 2010, le Partenariat européen d'innovation pour un vieillissement actif et en bonne santé (EIP on AHA) a fait des progrès considérables et a réussi à rassembler de différents acteurs du gouvernement, de l'industrie, de la recherche scientifique et de la société civile. Ils se sont engagés à collaborer en innovant et en s'adaptant aux systèmes de santé et aux besoins exigeants de la population vieillissante de l'Europe, dans divers domaines difficiles - l'adhérence aux prescriptions de médicaments, la prévention des chutes, la gestion du déclin et de la fragilité fonctionnelle, la fourniture de soins intégrés, le développement des solutions pour la vie autonome, et des environnements favorables aux personnes âgées.

Un répertoire en ligne des pratiques novatrices est disponible à la communauté EIP on AHA. Les parties prenantes peuvent trouver ces pratiques novatrices qui conviennent le mieux à leurs besoins locaux, régionaux et nationaux. Ils peuvent collaborer avec les initiateurs des pratiques en question pour mettre à plus grande échelle les solutions qui peuvent être de nature administrative et organisationnelle, technologique ou stratégique. Chaque pratique est rendue claire et évaluée (le temps de déploiement, l'investissement, la maturité, les résultats disponibles, l'impact, la transférabilité), afin d'aider les parties prenantes à identifier de bons candidats pour la reproduction.

ScaleAHA a tiré le bilan et a analysé les barrières principales et les facteurs de succès pour l'élargissement des solutions de soins de santé en Europe. Parmi les principaux facteurs de réussite figurent un fort engagement politique, l'exploitation des réseaux

existants, des partenariats et des collaborations, la mise de l'utilisateur au centre du développement et de l'ensemble du processus pour assurer l'acceptation, l'optimisation des partenariats publics et privés et des mécanismes de financement, et la fourniture d'une formation approprié au personnel.

> *Le surpassement des obstacles posés par la mise en œuvre, et l'exploitation des facteurs de réussite pour l'élargissement de la capacité d'innovation dans le vieillissement actif et en bonne santé.*

Avec ce fondement solide, le EIP on AHA est en train de mettre en œuvre les bonnes pratiques dans un cadre de collaboration et de recherche de partenaires. En travaillant ensemble, les partis prenantes échangent leurs connaissances et partagent leurs expériences avec des innovations fructueuses afin de faciliter leur élargissement à travers de l'Europe. Il y a des difficultés et des barrières à surmonter, de même que des facteurs de réussite et des vecteurs de l'innovation numérique à prendre en considération dans le cadre de ce processus. L'étude ScaleAHA est une de plusieurs initiatives qui soutiennent la Commission Européenne visant l'identification de ces éléments. En outre, elle aide la Commission en soutenant les partis prenantes mettre ces éléments à profit par la voie d'élargissement.

## 74 Sites de Référence du Partenariat Européen d'Innovation pour un Vieillissement Actif et en Bonne Santé

Les villes et régions européennes devraient conduire l'élargissement de l'innovation numérique en faisant figure d'exemple. L'étude ScaleAHA a soutenu la Commission Européenne en évaluant 74 organisations régionales et locales de 24 pays différents et en leur accordant le titre de 'Sites de Référence de l'EIP on AHA'. Les Sites de Référence sont des écosystèmes hautement inspirants qui offrent des solutions créatives et réalisables pour améliorer la vie et la santé des personnes âgées grâce à la participation de différents acteurs, notamment des autorités régionales et / ou locales, les villes, des hôpitaux / organisations de soins intégrés, des organisations industrielles, des PME et / ou des start-ups, des organisations de recherche et d'innovation. Conjointement, ils mettent en œuvre une approche globale et novatrice du vieillissement actif et en bonne santé et peuvent apporter des preuves et des illustrations concrètes de l'impact de telles approches sur le terrain.

> *Le nombre de Sites de Référence en 2016 a presque triplé par rapport aux 32 sites de référence précédemment identifiés en 2012. Ensemble, ils représentent un* **engagement de plus de 4 milliards €** *(pour la période 2016-2019) à investir dans des solutions innovantes qui permettront d'améliorer la qualité de vie de la population vieillissante (environ 66 millions de personnes), de soutenir l'efficacité et la durabilité de la prestation des soins de santé et sociaux et, enfin, de stimuler la croissance économique et la compétitivité.* **Ces investissements profiteront à cinq millions de personnes** *au cours des trois prochaines années.*

Les distinctions des Sites de Référence 2016 on été accordés au Sommet européen sur l'innovation pour un vieillissement actif et en bonne santé (5-8 Décembre 2016). Le graphique suivant donne un aperçu de tous les sites de référence avec leurs étoiles attribuées.

Les Sites de Référence sont prêts à apprendre les uns des autres. Par exemple, l'Asturie s'appuie sur des activités de coopération et d'échange d'expériences avec d'autres régions européennes pour concevoir sa stratégie sur le vieillissement actif, et Kraljevo adopte des éléments du service télémédico-social andalou.

| | | |
|---|---|---|
| European Innovation Partnership on Active and Healthy Ageing REFERENCE SITE ★★★★ | Southern Denmark, Andalusia, Catalonia, Basque Country, Healthy Ageing Network Northern Netherlands, Northern Ireland, Scotland, Wales | 8 |
| European Innovation Partnership on Active and Healthy Ageing REFERENCE SITE ★★★☆ | City of Oulu, MACVIA France Network, Saxony, Lazio, Campania, Lombardy, Friuli Venezia Giulia, Arsenàl.IT - Veneto's Research Centre for eHealth Innovation, Aust-Agder County and Vest-Agder County, Centro, Valencian Community, Galicia, Madrid, Scania, Norrbotten, Twente, Amsterdam Metropolitan Area, Medical Delta, North Brabant Province, North East England, Greater Manchester, Yorkshire and the Humber, North West Coast of England, City of Liverpool | 24 |
| European Innovation Partnership on Active and Healthy Ageing REFERENCE SITE ★★☆☆ | Styria, Flanders, Limburg, Zealand, City of Helsinki, Pays De La Loire, Nouvelle-Aquitaine, East of France, Kinzigtal, Oberbergischer Kreis, Republic of Ireland Regional Network, Provincia Autonoma di Trento, Puglia, Liguria, Tuscany, Emilia-Romagna, Piedmont, Lodz Province, Metropolitan Area of Porto (Porto4Ageing) , Murcia, City of Badalona, Asturias, Balearic Islands, Aragon, Global Alliance Chronic Respiratory Diseases Regional Network | 25 |
| European Innovation Partnership on Active and Healthy Ageing REFERENCE SITE ★☆☆☆ | West Flanders Province, City of Zagreb, Olomouc, City of Kuopio, Pirkanmaa, Baden-Württemberg, Milan Metropolitan - Bergamo Province, Stavanger, City of Terrassa, Barcelona Province | 10 |
| European Innovation Partnership on Active and Healthy Ageing CANDIDATE REFERENCE SITE | City of Sofia, Île-de-France, City of Augsburg, Heraklion-Crete, Regional Network Long Lasting Memories, City of Kraljevo, Kiev-Zhitomir | 7 |
| European Innovation Partnership on Active and Healthy Ageing REFERENCE SITE | Federal Ministry for Family Affairs, Senior Citizens, Women and Youth *"National Reference for Excellence in promoting Innovation for Active and Healthy Ageing"* | |

L'avancement des innovations dans le domaine est également lié à l'investissement. Les Fonds structurels et d'investissement européens (ESIF) offrent des possibilités pour obtenir les financements nécessaires pour l'élargissement.

ScaleAHA a pris connaissance des plans d'investissement actuels de la plupart des sites de référence. La région d'Olomouc, par exemple, a présenté des plans pour investir environ 40 millions d'euros dans les années à venir, car le thème du vieillissement actif et sain est très important dans la République Tchèque et soutenu par les décideurs politiques et l'industrie. Zagreb a l'intention de s'engager à fournir 1,2 million d'euros à la numérisation et à la mise en place de réseaux pour la période 2017-2018 afin de relever les défis du système de santé croate.

D'autres régions bien établies comme la Campanie et l'Ecosse bénéficient déjà de l'ESIF pour avancer leur agendas en ce qui concerne le vieillissement actif et sain (55,5 millions € pour la Campanie et 8,7 millions € pour l'Ecosse). Cependent, davantage d'efforts devraient être consentis pour la promotion des possibilites de finacement differentes, qui les parties prenantes de l'EIP on AHA pourraient utiliser pour réaliser les objectifs du partenariat. Un sondaje ScaleAHA a identifié que nombreuses régions ne sont pas conscientes des divers types de financement et mécanismes, comme l'ESFI, un des trois piliers du Plan d'Investissement pour l'Europe.

À part du financement de l'UE, chaque Site de Référence dispose d'un budget propre consacré au vieillissement actif et en bonne santé. L'analyse ScaleAHA des budgets indiqués par les Sites de Référence montre que les pays ayant le budget planifié le plus élevé sont le Royaume-Uni (environ 7,5 milliards d'euros au total pour 8 régions), l'Espagne (environ 5,3 milliards d'euros prévus au total pour 8 régions) et les Pays-Bas (environ 3,9 milliards d'euros pour 5 régions).

> *Les régions européennes se consacrent à investir dans des solutions en matière de vieillissement actif et sain au moyen de leurs propres finances et en tirant parti du financement de l'UE.*

Le travail impressionnant de l'EIP on l'AHA et ses Sites de Référence est partagé et facilité par le **Réseau de collaboration de sites de référence (RSCN)**. Le partage des connaissances afin d'élargir les innovations numériques efficaces est au cœur du RSCN. Le RSCN approuve donc de nouvelles occasions de partager la connaissance des Sites de Référence avec d'autres organisations de l'EIP on AHA et au-delà.

Pour la première fois, compte tenu de la «dimension nationale et transrégionale» des activités du candidat, le Ministère fédéral de la Famille, des Personnes Âgées, des Femmes et de Jeunesse en Allemagne a obtenu le statut de «Référence nationale pour l'excellence en promouvant l'innovation dans le domaine du vieillissement actif et en bonne santé». Les appels prochains exploreront davantage la possibilité d'attirer des initiatives nationales, dirigées par les gouvernements, intéressées à participer à l'EIP on AHA. Ce serait une occasion de présenter leurs pratiques novatrices et leur contribution à l'élargissement de l'innovation pour la population vieillissante.

La Commission européenne a rendu possible l'EIP on AHA ainsi que la participation des parties prenantes et continuera son appui jusqu'en 2020. Pour mobiliser les parties prenantes, un "Blueprint pour la transformation numérique des services de santé et des soins pour la société vieillissante" a été élaboré par la Commission en collaboration avec de principaux représentants de l'EIP on AHA. Cela fonctionne comme une vision stratégique commune de la manière dont l'Europe doit avancer. Il identifie les domaines prioritaires d'intervention et les facilitateurs de la transformation, il prend en compte l'engagement des parties prenantes à créer un environnement européen qui stimule des soins de santé innovants et des entrepreneurs sociaux, qui démultiplie des investissements en technologies innovantes, solutions et services pour un vieillissement actif et sain, et récompense la compétitivité.

> *Le Blueprint a été lancé par le Commissaire Oettinger qui a invité les parties prenantes à travailler ensemble pour définir une vision commune sur la manière dont l'innovation facilitée par un Marché Numérique Unique peut transformer le vieillissement de la société européenne au XXIe siècle et contribuer à l'économie argentée européenne.*

### Transfert de l'innovation – Programme de Jumelage

Par l'entremise de ScaleAHA, la Commission européenne soutient les Sites de Référence de l'EIP on AHA qui sont prêts à tirer parti des solutions TIC novatrices pour le vieillissement actif et en bonne santé (en assumant le rôle d'adoptant de l'innovation); et ceux qui sont prêts à partager leurs connaissances d'experts et à aider d'autres Sites de Référence (en assumant le rôle de créateurs de l'innovation). Le Programme de Jumelage 2016 pour le transfert de l'innovation a été lancé par un appel à candidatures en 2016 pour contribuer à la stratégie européenne d'élargissement de l'EIP on AHA. Vingt paires d'initiateurs et d'adoptants ont été sélectionnées par la Commission Européenne et par les représentants de ScaleAHA et du projet PROEIPAHA afin d'échanger des connaissances et des compétences avec un soutien financier pour couvrir les frais de voyage et d'hébergement lies aux activités de jumelage.

Les vingt paires représentent de différentes solutions adoptées par les Sites de Référence de 13 pays européens. Au total, 43 organisations sont engagées dans les actions de jumelage.

> *Le programme de jumelage est **un nouveau concept qui vise à réduire les risques d'investissement dans les solutions numériques innovantes**, en finançant des idées petites mais concrètes avec un potentiel élevé de reproductibilité à plus grande échelle. Le programme est un excellent instrument pour cibler les obstacles, en même temps en concordance avec les priorités du Digital Single Market et engagé dans la recherche de solutions numériques qui pourraient être appliquées dans toute l'Europe.*

La plupart des organisations impliquées dans le programme ont organisé des réunions face-à-face et sont en train d'explorer la meilleure approche pour élargir les solutions des initiateurs. Les premiers resultats sont prometteurs et le procédé devrait être raffiné davantage, compte tenu des recommandations des organisations impliquées dans les jumelages pilotes. Ce rapport présente les résultats provisoires des activités de transfert, notamment des discussions sur les obstacles et les défis rencontrés, les facteurs de
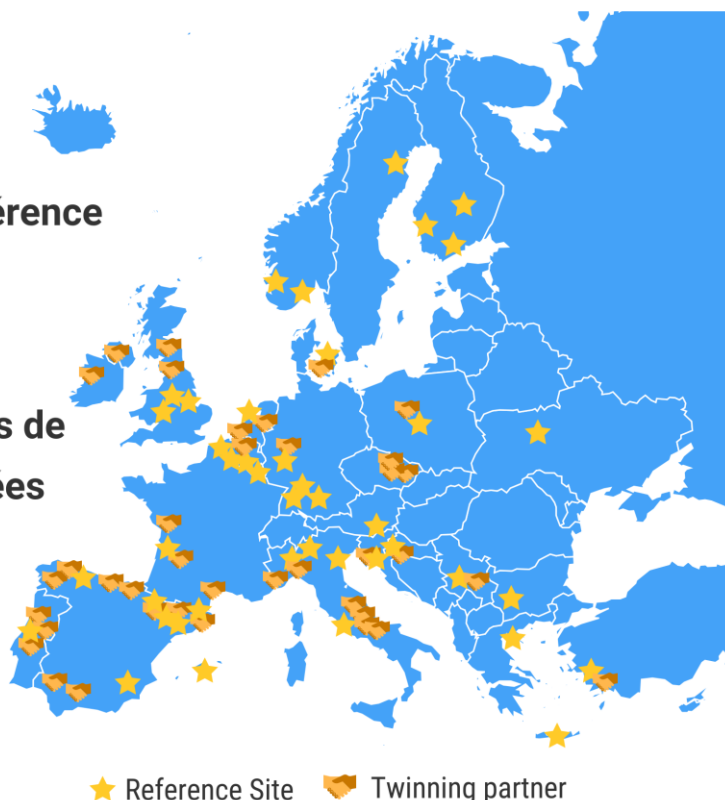
réussite exploités, les plans et stratégies pour avancer et les recommandations pour l'avenir. Un rapport final pour chaque jumelage est prévu pour juillet 2017.



Appel de Canditures à "Site de Référence de l'EIP on AHA" 2016
Le Programme de Jumelage pour le Transfert d'Innovation

74 Sites de Référence de 24 pays

43 organisations de 13 pays, engagées dans des jumelages

★ Reference Site   Twinning partner

Scale AHA
www.scale-AHA.eu

| Originator RS | Adopter(s) RS | Innovative practice | Action Group(s) |
|---|---|---|---|
| MACVIA-France Network | Campania, Catalonia, Porto, Olomouc, Lodz 4 Generations, Medical Delta, Northern Ireland, Piemonte, Southern Denmark, GARD Regional Network Turkey | Agenda d'allergie MASK (MACVIA-ARIA) | B3 |
| Northern Ireland | Catalonia | « STEPSelect » système et plate-forme web pour la sélection et l'achat de médicaments pour les personnes âgées | A1 |
| Campania | Asturias | « ADD Protection » télésurveillance médicale et plate-forme web | A1, B3 |
| Basque country | Nouvelle-Aquitaine | « Risk Stratification Tool » système de modélisation prédictive pour la stratification du risque | B3 |
| Pays de la Loire | Porto4Ageing | ALOHA système de prévention des maladies infectieuses pour les personnes âgées | A1 |
| Andalusia | City of Zagreb | Adoption des éléments de la stratégie andalouse de télésanté « Diraya » | A1, B3 |
| Northern Ireland | Olomouc | « STEPSelect » système et plate-forme web pour la sélection et l'achat de médicaments pour les personnes âgées | A1 |
| Republic of Ireland Regional Network COLLAGE | Campania, Catalonia, Porto4Ageing | « Quick Mild Cognitive Impairment » (Qmci) système de dépistage de déficiences cognitives (par RAPCOG) | A3 |
| Basque country | Liguria | « Risk Stratification Tool » système de modélisation prédictive pour la stratification du risque | B3 |
| Lazio | Porto4Ageing | « FrailSurvey » application mobile et évaluation de base de la fragilité (BAF) | A3 |
| North West Coast of England | Oberbergischer Kreis | « Teleswallowing » (Télédéglutition) - services à distance d'évaluation de la déglutition | B3 |
| Campania | Olomouc | « ADD Protection » télésurveillance médicale et plate-forme web | B3 |
| Twente | Campania | "Telerevalidatie.nl" portail en ligne et système de rééducation à domicile | A3 |
| Scotland | Andalusia | « Living it Up » centre en ligne d'autogestion (LiU) | B3 |

| Northern Ireland | North West Coast of England | « STEPSelect » système et plate-forme web pour la sélection et l'achat de médicaments pour les personnes âgées | A1 |
|---|---|---|---|
| Andalusia | Kraljevo | Adoption des éléments du Service Andalou de Téléassistance (SAT) | A1, A2, A3, C2, D4 |
| Scotland | Basque country | « Living it Up » centre en ligne d'autogestion (LiU) | B3 |
| Basque country | Scotland | « Risk Stratification Tool » système de modélisation prédictive pour la stratification du risque | B3 |
| Galicia | City of Zagreb | « IANUS » système régional de dossiers médicaux électroniques et du service de prescription en ligne | A1, B3 |
| Medical Delta Rotterdam | Campania | « Gastrological Approach to Malnutrition » plate-forme gastrologique numérique modulaire pour prévenir et traiter la malnutrition | A3 |

Les parties prenantes de l'EIP on AHA, sont dans une position unique de bénéficier d'un certain nombre d'outils et de méthodologies développés au sein de la communauté et adaptés d'autres disciplines, pour aider le Partenariat à planifier des produits et services, à évaluer les effets sur la santé et à prendre des décisions d'investir ou d'acheter des solutions numériques pour les soins de santé. ScaleAHA a tiré le bilan et les a analysés afin d'aider les parties prenantes à identifier la méthodologie et l'outil qu'ils peuvent utiliser pour de différents scénarios. L'outil MAFEIP est particulièrement intéressant car il peut être utilisé dans toutes les Groupes d'Action de l'EIP on AHA pour des évaluations précoces ainsi que des evaluations des innovations plus matures..

> *Monitoring and Assessment Framework for the EIP on Active and Healthy Ageing (MAFEIP) est un modèle analytique générique développé spécifiquement pour réagir à la nécessité de surveiller les résultats de l'EIP on AHA.*

Les organisations utilisent le MAFEIP pour évaluer l'impact des innovations en termes d'effets sur la santé et d'utilisation des ressources. Cet outil peut intéresser de différentes parties prenantes. Il peut être appliqué à des interventions qui sont à un stade précoce de développement en utilisant les meilleures données disponibles à ce stade. Ces évaluations ont une importance particulière pour les investisseurs qui doivent comprendre le potentiel estimé de l'intervention avant d'investir dans l'innovation. Quand de meilleures données deviennent disponibles avec le temps, l'évaluation MAFEIP présentera un grand intérêt pour les acheteurs d'innovations - les fournisseurs de soins de santé, l'industrie et les gouvernements. L'adhésion à MAFEIP est actuellement promue par la Commission Européenne par le biais d'un contrat de service qui offre de la formation et du soutien à toute organisation au sein de l'EIP on AHA et au-delà intéressé à utiliser le modèle. Plusieurs cas d'application d'outil MAFEIP consignés par des acteurs européns sont déjà disponible sur le site officiel MAFEIP.

Un aspect important du Partenariat européen pour un vieillissement actif et en bonne santé est son objectif d'auto-amélioration continue, afin d'atteindre la durabilité au-delà de 2020. Il est donc nécessaire de faire des commentaires régulièrement pour appuyer l'amélioration.

> *À partir de l'expérience des Sites de Référence et des activités de jumelage, ScaleAHA propose un certain nombre de recommandations pour les décideurs politiques et pour une meilleure organisation des initiatives à venir, tel qu'un second appel au transfert d'innovation. Recommandations supplimentaires concernent appels futures pour Sites*

> *de Reference, ainsi que le financement du soutien pour l'utilisation et l'evaluation uniforme de l'impact des innovations numériques.*

Les conclusions clef et les recommandations comprennent:
- ✓ Promouvoir davantage les Sites de Reference et leur travail pour faciliter la réalisation des objectifs de l'EIP on AHA et des priorités du Marché Unique Numérique.
- ✓ Facilitate efforts of EIP on AHA stakeholders to collaborate at different levels and tap into regional, national, international and EU support
- ✓ Faciliter les efforts des parties prenantes de l'EIP on AHA pour collaborer à différents niveaux et exploiter fonds regionals, nationals, inernationals ainsi que assurer l'appui de l'UE.
- ✓ Le Programme du Jumelage est aligné sur les priorités du Marché Unique Numérique et devrait utilisé pour appuyer l'agenda de celui-ci.
- ✓ De plus en plus d'efforts devraient être consentis à promouvoir différentes possibilités de financement qui les parties prenantes de l'EIP on AHA pourraient utiliser en poursuivant les objectifs du partenariat
- ✓ Faciliter l'evaluation uniforme de l'impact des innovations numériques

Les recommandations clés concernant les domaines politiques sur lesquels la Commission Européenne et l'EIP on AHA devraient travailler comprennent le développement de la culture et des compétences numériques, la promotion d'un plus grand nombre et de nouveaux emplois nécessitant des qualifications TIC pour les professionnels de la santé (par exemple en matière de télésurveillance), ainsi que des mesures pour la mise en œuvre de la législation sur la protection de la vie privée et de la sécurité des données, en particulier en ce qui concerne la propriété des données médicales. De plus, des mesures visant à promouvoir l'interopérabilité des dispositifs électroniques et l'accès aux systèmes sont nécessaires.

Hormis le soutien apporté aux appels aux Sites de Référence et au programme de transfert d'innovation, ScaleAHA a réalisé un certain nombre d'activités différentes, telles que la collecte et l'analyse d'informations pertinentes pour aider le parties prenantes de l'EIP on AHA et qui servent d'information importante pour l'évolution du partenariat à court terme et pour sa durabilité à long terme. Le rapport fournit un aperçu de toutes les activités de ScaleAHA, avec des détails et des résultats dans des sections et des annexes distinctes. Les activités en cours au-delà de ScaleAHA, telles que les rapports finaux des activités de jumelage, seront poursuivies par la Commission européenne.

**Table of Contents**

## Table of Figures

# 1    Overview of ScaleAHA activities and results

The ScaleAHA study team has supported the European Commission in accelerating the scaling up of digitally-enabled innovative approaches and practices in Active and Healthy Ageing (AHA) in Europe. The study has taken stock of scaling-up needs, potential and actual opportunities based on existing experience of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) Reference Sites and other AHA stakeholders. Analyses of drivers for scaling up and relevant analytical tools and methodologies used in practice have complemented the analytical part of the study (chapter 2).

The **2016 Call for Reference Sites of the EIP on AHA** produced 74 Reference Sites (RS) that are engaged and motivated to exchange knowledge and scale up digital innovations in healthcare (chapter 3). These organisations have demonstrated the existence of comprehensive strategies to advance innovation for active and healthy ageing, based on a "Quadruple Helix" model that includes stakeholders from industry, civil society, academia and government authorities at a regional and local level. For the first time, as a result of the peer-review and expert review process in the 2016 Call, and given the "national and cross-regional dimension" of the applicant's activities, the panel of experts has decided to award the German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, the status of "National Reference for Excellence in promoting Innovation for Active and Healthy Ageing". Together the Reference Sites represent a commitment of over four billion € (2016-2019 period) to invest in innovative solutions that will lead to improvements in the quality of life of the ageing population, support efficiencies and sustainability of health and social care delivery and finally, stimulate economic growth and competitiveness. These investments will benefit an expected five million people in the next three years.

The Reference Sites are also the targeted beneficiaries of the 2016 **Transfer of Innovation Twinning Support Pilot Scheme**, a new concept in the AHA domain that aims to de-risk investment in digital innovative ICT solutions by financing the exchange of knowledge and good practice in digital health solutions with high potential for replicability and scaling up (chapters 4 and 10). Twenty pairs of originators and adopters of innovations were selected to exchange knowledge and expertise. In total, 43 organisations were involved in the 2016 twinning scheme. Twinning subjects include EHRs, ePrescription solutions, integrated health and social care ICT service platforms, homecare and telemonitoring, etc. The level of twinning varies from pure knowledge exchange and training, over to adaptation, partial or full adoption depending on the twinning topic. First results of the twinnings show successful implementations. The scheme is in line with the objectives of the Digital Single Market's mid-term review report, in particular, the priority related to large-scale deployment of innovations in Europe.

Apart from the Call for RS and the support of the twinning activities, the study analysed effective ways to facilitate knowledge exchange using appropriate platforms also for seeking partnerships based on concrete recommendations of the RS and twinning partners (chapter 5). Management and dissemination of the study has been a continuous effort, key activities for which are highlighted in this report (chapter 9). Further support to the EIP on AHA stakeholders is provided by analysing possible investments and funds to be used in the future (chapter 6), aligning investments to the Digital Single Market priorities (chapter 7), as well as strengthening the scaling up strategies pursued by the Reference Sites and other EIP on AHA stakeholders (chapter 8).

The valuable experience of the RS and the twinnings are analysed and presented as recommendations to the European Commission to be considered in future EC support activities in AHA (chapters 11 and 12).

# 2 Analysis of scaling-up potential and use of tools and methodologies

## 2.1 Stock-taking of scaling-up potential, needs and innovative practices

### 2.1.1 Scaling-up needs and potential

The aim of this task was to take stock of scaling-up potential, needs and practices across different sites in Europe. Two sources proved very valuable in this regard:

- The documentation of the 32 Reference Sites from 2013[1]
- The applications of the 2016 Reference Sites
- A compilation of good practices by EIP-AHA Action Group B3[2]

Other important sources include materials on topics from a DG SANCO (now DG SANTE) twinning exercise and a report on the state-of-play of the Action Groups by PROEIPAHA[3].

Combined, these sources record more than 100 relevant practices that the ScaleAHA study team has examined.

The analysis of the sources concentrated on examining reported:

- tools and methodologies and their successful application
- success factors in applying and scaling-up digital innovations and practices
- hindering factors (barriers) to scaling-up strategies and practices
- lessons learnt from successful and unsuccessful scaling-up strategies and practices

The analysis was used to derive common elements to be used in self-assessments (as part of the call for RS and the call for transfer of innovation scheme). The elements are categorised and the occurrences counted. A snapshot of this exercise is presented in the following figure:

| Self care/self-management/ Independent living | Staff training | Patient education/ empowerment | Risk stratification/screening tool (control, severity, risk) | Cooperation between different professionals - GPs, authorities, hospitals | Cooperation professionals & patients, relatives, (informal care givers) | Electronic personal medical file (prescription) |
|---|---|---|---|---|---|---|
| FI: Wellness profile Oulu and Oulu Self –Care system (GP 1) | Project 'Alter leben – Getting old with a good Mode of Life- Self-determined Living with a combined Solution of Technical Improvement and Services' (GP3) | FR: T4H: Technology and Human Help at home after Hospitalisation (GP2) | FI: Wellness profile Oulu and Oulu Self –Care system (GP 1) | CZ: Tele-monitoring of patients with Acute Myocardial Infarction (AMI) and newly diagnosed diabetes (GP2) | | IT: Regione Emilia-Romagna: Agenzia Sanitaria e Sociale Regionale dell'Emilia-Romagna (ASSR) |
| FI: Supporting independent living and home care using technological products and services (G P 2) | IE: The "Let Me Decide" Advance Care Planning and Palliative Care Programme in Long-term Care (GP3) | FR: Regional House for Autonomy and Longevity and the Living Laboratory (Lena) (GP1) | DE: Saxon State Ministry for Social Affairs and Consumer Protection: Geriatric Concept (GP 1) | DE: Saxon State Ministry for Social Affairs and Consumer Protection: Geriatric Concept (GP 1) | DE: Saxon Housing Cooperatives (VSWG): Project 'Alter leben – Getting old with a good Mode of Life- Self-determined Living with a combined Solution of Technical Improvement and Services' (GP3) | PT: Innovation model for ICT technological transfer in health and wellbeing (GP3) |
| FR: Regional House for Autonomy and Longevity and the Living Laboratory (Lena) (GP1) | IT: PROFITER - Prevention of falls initiative in Emilia-Romagna (GP2) | IE: Louth Age-Friendly County Initiative (LAFCI) (GP2) | IE: Community Assessment of Risk and Treatment Strategies (CARTS) Programme (GP1) | IT:Quality of life of blind and visually impai | IT: ARIA project (GP3 | ES: Andalusian e-Health Strategy (AeHS) (GP2) |
| FR: Hearing Impairments and Low Vision Regional Centre (GP2) | IT:Quality of life of blind and visually impaired (GP1) | IE: The "Let Me Decide" Advance Care Planning and Palliative Care Programme in Long-term Care (GP3) | IT: Implementing innovative prevention and health promotion strategies to tackle frailty: Health Campus as an innovative experience to connect health care services and the citizen (GP P1). | PT: Cluster for human kinetics and mobility in senior people (GP2) | IT: Family and community nursing - University Master: Workforce Development, Staff and Community empowerment, through the training for Management change in New Organisational Models for Integrated Care | ES: Basque Strategy for tackling the challenge of chronicity (GP1) |
| FR: Innovative policy for active and independent ageing public policy (GP1) | IT: Family and community nursing - University Master: Workforce Development, Staff and Community empowerment, through the training for Management change in New Organisational Models for Integrated Care | IT: Adapted Physical Activity (APA) (GP1) | IT: PROFITER - Prevention of falls initiative in Emilia-Romagna (GP2) | | ES: ETXEAN ONDO (GP2) | ES: IANUS: electronic medical records (GP1) |
| DE: Saxon State Ministry for Social Affairs and Consumer Protection: Geriatric Concept (GP 1) | | IT: Memory Training (MT) (GP2) | PT: Cluster for human kinetics and mobility in senior people (GP2) | | | |
| DE: Saxon Housing Cooperatives (VSWG): Project 'Alter leben – Getting old with a good Mode of Life- Self-determined Living with a combined Solution of Technical Improvement and Services' (GP3) | | IT: ARIA project (GP3 | | | | |

**Figure 1: Categorising elements found in innovative practices**

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1  European Innovation Partnership on Active and Healthy Ageing: Reference Sites How To Guide

2  A compilation of good practices – Second Edition. Replicating and Tutoring Integrated Care for Chronic Diseases, Including Remote Monitoring at Regional Level. Action Group B3. November 2013

3  Baptista, A., Leal, A.: D2.3 "Matrix of Deliverables from the Action Groups", January 2016, PROEIPAHA

This categorisation allows for a generic list of AHA-related topics for self-assessment. The list has been used as part of the application for twinning (see chapter 4).

**Scaling up potential of the Reference Sites**

A number of Reference Sites have displayed scaling up potential through actual prior experiences of transferring regional and local innovations to other locations. These experiences were also supported by EU-funded projects, joint efforts or partnerships, and networks.

**Cross-border and international projects**

European projects that have an aim related to deploying ICT health services at a large scale have contributed to the success of the scaling up of practices by some Reference Sites.

For AQuAS/TicSalut/HUBc Catalunya, projects established with an aim of scaling-up and transferring good practices in integrated care provide an opportunity for different stakeholders (universities, hospitals, healthcare sectors, leading companies) to collaborate and identify and address key drivers and challenges faced by the healthcare system in the region. In Northern Ireland, an investment by the EU Structural Funds towards the cooperation between the health and social care sector in Northern Ireland and border countries of the Republic of Ireland led to a programme that successfully delivered cross-border projects across a wide range of health and social care areas. In the MasterMind project[4] in which Southern Denmark, Scotland, and Wales (among others) have participated, a model has been developed that encouraged discussions and relationship-building for detailed learning and knowledge transfer. This project has allowed Southern Denmark to transfer learnings of their good practice cCBT to other EU regions that were able to tailor the service to their own environments. Similarly, the Veneto region has successfully transferred two good practices (Life-long monitoring in diabetes mellitus and remote monitoring of chronic heart failure) to 8 European countries and 2 other Italian regions through the RENEWING HEALTH[5] and the UNITED4HEALTH[6] projects. Offering living lab services, support and financial funds as done by the Brabant region and Flanders region under the CrossCare[7] project also stimulate SMEs to develop innovations and guide them towards successful market implementation.

**Partnerships**

Forming partnerships create valuable opportunities that serve as a basis for applying funding towards shared and concrete activities and meeting EIP on AHA goals. The Region of Southern Denmark was able to transfer knowledge of the establishment and roll-out of Living labs in health and social innovation to one other country through a signed contract with a regional Danish company Public Intelligence. Northern Netherlands takes part in a teaming partnership (MIA Teaming Project) where they were invited to share experiences in setting up their good practice ERIBA[8], and assisting their partner in coming up with an approach that is tailored for their region. Partnerships also allow for opportunities for study visits.

**Networks**

Active involvement in European networks also allowed for support in the transfer and adoption of innovation, assessment and evaluation of services, and knowledge dissemination. Southern Denmark takes part in active networks where they organise learning

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[4]   https://mastermind-project.eu/

[5]   http://www.renewinghealth.eu/en/

[6]   http://united4health.eu/

[7]   https://www.iminds.be/en/gain-insights/digital-health/innovation/validation-lab/crosscare

[8]   http://eriba.umcg.nl/

workshops and participate in project development and policy formulation. Some sites are founding members and leaders of the Reference Sites Collaborative Network, and others such as the Basque Country, Finland, Catalonia, Scotland and Northern Ireland, have also signed Memorandums of Understanding with 3 other reference sites to increase tech-transfer and professional exchange visits. For MACVIA France, scaling-up plans for their practice AIRWAYS integrated care pathways (ICPs) includes the AIRWAYS ICPs network and collaboration with the WHO Global Alliance against Chronic Respiratory Diseases (GARD), which include 450 members in 69 countries. AIRWAYS ICPs have already been scaled up in 26 countries in Europe where a focus group has been established and is sometimes linked with the corresponding Ministry of Health.

**Visits**

Actual study visits foster the learning process among stakeholders with similar interests yet coming from different backgrounds. Experience from the Oulu Reference Site showed that activities such as visiting other Living Labs, Test Beds and Innovation Environments around Europe prior to establishing their OuluHealth Labs as well as benchmarking helped in making the Oulu Test Lab environment be able to simulate 90% of all hospital operations. Region Skåne has organized an integrated care seminar and study visits under a commitment to scale-up and exchange best practices by discussing challenges and experiences of integrated care models.

**National scaling up**

Alongside experiences on scaling up at an international level, scaling up to other regions within the country has also occurred. The Department of Epidemiology in Lazio has succeeded in transferring heat prevention strategies (in terms of identifying susceptible population subgroups) and heat prevention guidelines to other Italian areas. Projects supported by the North East and North Cumbria AHSN such as the transfer of Care Using E-Referral project has been adopted in a number of areas across the country and has contributed to a nationally circulated toolkit.

**Educational Activities and Resources**

Although peer review journals and conference presentations are traditional methods still being used for knowledge transfer, other educational activities are also being developed. Ageing@Coimbra, along with other international partners, is developing the Multidisciplinary Institute of Ageing, in which educational activities such as a summer school and PhD courses have been implemented. MACVIA-France is involved with teaching/coaching e-learning programmes on geriatric and gerontology. The City of Oulu is taking part in creating a complete toolkit equipped with best practice tools for each necessary step in the process of working with welfare technology. Similarly, the Greater Manchester site has contributed to a website with 300+ best practice resources available in 15 languages, a falls prevention application and intervention fact sheets, and cascade training in 10 EU countries. Regional strategies on active ageing and e-health have been disseminated by Andalusia, including a model of White Book of Active Ageing that was adopted by a region in Poland, and a plan for caregivers that served as a model in its adoption in 4 other sites.

**Assessment and standardisation**

Assessment tools may serve as an underlying support in the process of scaling up, for example, in choosing or proposing the best possible pathway or guideline that would be implemented in another country. The Madrid region coordinated projects FRAILCLINIC[9] and FRAILTOOLS[10] whereas the usefulness of seven instruments to diagnostic frailty in four

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[9]    http://www.frailclinic.eu/index.htm

[10]    http://www.frailtools.eu/index.htm

clinical settings would be assessed. The goals of the projects include being able to check how diagnostic and screening instruments of frailty would work in non-geriatric clinical settings (cardiology, oncology, surgery and ER) in order to establish the most appropriate instrument for 3 different countries.

**Events and Location**

The Greater Manchester Health Ecosystem[11], supported by the European Connected Health Alliance, brought forth an opportunity to gather among 320 member organisations across 25 countries to facilitate knowledge exchange in faster delivery of health and social care. Such events are also an advantageous support to drive reputation for innovation and excellence whilst delivering positive health outcomes for citizens. Moreover, their establishment of an office in Brussels has enabled networking, and cross-border collaborations, and served as a base point when meeting partners.

## 2.1.2    Scaling-up innovative practices inventory

A list of innovative practices, which have the potential to be scaled up, is provided as an annex due to its length. The practices have been collected by the ScaleAHA team via analysis of the 2016 Call for Reference Sites. Additional practices are available in the repository of innovative practices of the EIP on AHA.[12]

## 2.2    Barriers and success factors for innovation and upscaling

Overall, partnerships or collaborative networks have played a substantial role in the adoption of digital innovative solutions. A good cooperation between public and private stakeholders, as well as among hospitals, pharmacies, and primary health care has helped in generating a means of financial support and a framework that led to better interoperability and standardisation of procedures. Political support has also been identified as a key factor to overcome difficulties in implementation, while the training and education of staff has been shown to improve risk assessment and design for interventions.

Alongside the drivers, barriers hampering innovation should also be addressed. In general, the analysis showed that a lack of the previously mentioned drivers has caused delays in the innovation adoption merely emphasising the innovation drivers' impact. Financial problems are a recurrent barrier for scaling up; furthermore, a lack of cooperative exchange between professionals which has resulted in a delay in adoption of new practices (being also a consequence of differences in best practices between specialists). The integration and communication of the health information system itself has also caused delays and additionally, has increased costs related to its implementation. Moreover, there were difficulties in convincing stakeholders of the effectiveness of the new care pathways, which thereby slowed down the organisational change process.

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[11]   http://www.manchesterecosystem.org.uk/

[12]   https://ec.europa.eu/eip/ageing/repository_en

## Barriers to scaling up innovation in AHA

**10** Organisational structures related barriers

**9** Lack of interdisciplinary communication and cooperation

**9** Lack of interoperability and system integration

**9** Lack of awareness among professionals and patients

**8** Time and effort related barriers

**8** Financial and reimbursement problems

**8** Technical barriers (infrastructure, connectivity)

**5** Low digital literacy / Addressing the target group

**4** Resistance to change / Scepticism about effectiveness

**Figure 2: Overview of barriers to scaling up innovation in AHA**

### 2.2.1 Barriers identified

**Organisational structures related barriers**

In Ireland, a lack of organisational structures to support wide spread community based case-finding has been reported as a main problem to implement the RAPCOG programme[13]. In particular, a lack of memory clinics or physicians specialised in diagnosing cognitive impairment has been identified. The development of an IT solution in the form of a computerised application itself made the implementation of RAPCOG locally more practical.

In Campania, organisational limitations were related to the lack of impact of hospital doctors in the community care as well as to the rigidity of security protocols in hospital servers, which do not facilitate receiving data from home devices, thus stating a barrier to telemedicine solutions such as ADD protection.

**Lack of interdisciplinary communication and cooperation**

A key challenge to scaling up of any innovation is the lack of cooperation between disciplines.

This lack of cooperation and adaptability in the exchange of experience between professionals was responsible for the delayed adoption of new practices, for instance, in Northern Ireland. While clinicians first feared about their clinical freedom, they later saw the profit it would provide.

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[13]   For more information, read about the related twinning in section 8.9

In Scotland, the management of the multitude of partners involved from the beginning has been reported as difficult. The collaboration of partners from the healthcare sector, the social care system, and the industry is challenging, since "different languages" and work habits may come into conflict.

In Pays de la Loire, which aims to promote independency of elderly with impaired hearing and vision, bridging the gap between medico-social and sanitary actors was regarded as the largest barrier.

In Saxony, missing inter-sectoral collaboration is reflected in the lack of integration of technical processes and informational technology in the care pathways.

In the implementation process of the falls preventions program in the region Emilia Romagna, it was identified that differences in clinical tests, knowledge of the phenomenon and best practices between specialists hamper the risk classification.

## Time and effort related barriers

In the Basque Country, clinicians had to be trained in the use of risk stratification information in patients by means of the Electronic Health Record (EHR) participating in an educational program.

## Financial and reimbursement problems

The initial investments for the implementation and resources needed for the maintenance of eHealth innovations are often regarded as a barrier for scaling up. Since the ALOHA eHealth platform[14] is based on partnerships and sponsoring, and because no advertisement is allowed, financing the platform has been identified as one of the most significant barriers in the area of Pays de la Loire.

In Twente, when developing and implementing telerevalidatie.nl, the management of healthcare organisations found it difficult to make a definite decision on implementing a telemedicine portal, since the involved costs could not be linked directly to a specific treatment, thus presumably not being reimbursed by healthcare insurance.

Likewise, the lack of financial resources has been a barrier in the implementation of an innovative practice in Rotterdam.

## Low digital literacy / Addressing the target group

Trying to address the elderly with innovative eHealth systems has been identified as challenging, especially in the age group of 80 years and above. This has also been identified as one of the major barriers in the region of Pay de la Loire with regard to the adoption of the ALOHA platform. Nevertheless, this problem may be overcome also addressing the potential caregivers, who eventually transfer the information to the targets older than 80 years.

Likewise, with regard to the adoption of both RISC and SFGE in the region of Lazio, the lack of digital literacy among the senior population as well as among care professionals and caregivers have been identified as a major barrier. Yet, to mitigate this barrier, a training on digitals skills has been developed.

## Lack of interoperability and system integration

In order to facilitate integrated care, all stakeholders as well as patients need to have access to the systems. This is frequently mentioned as a barrier because often not even the communication between systems of different healthcare providers is working.

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[14]   For more information. reading about the related twinning in section 8.17

For example, the electronic pharmaceutical record Dossier Pharmaceutique that was developed in the region Languedoc Roussillon cannot be connected to medical files.

The fragmentation of software applications caused delays and increased the costs of the implementation of an integrated network in Emilia Romagna. In another good practice in the same region, different databases of clinical data of hospitals created problems in the storage, comparability and standardisation in a falls prevention initiative.

Poor interoperability among providers' health information systems constituted a clear barrier for the deployment of integrated care services in Catalonia.

In Valencia it was identified that legacy systems slow down the implementation of innovative IT solutions due to connectivity issues.

## Resistance to change / Scepticism about effectiveness

The main barriers identified in the region Ile-de-France were reluctance to change of professionals and missing change management of home care providers.

In the region Languedoc Roussillon time was lost to convince all relevant stakeholders that the new integrated care pathways will be effective and time saving.

Similar reports come from Saxony where scepticism of the health fund about the cost-effectiveness hinders the implementation in the standard healthcare.

The initial resistance towards an integrated network in the Emilia-Romagna region slowed down the acceptance of the organisational change.

In the transformation of the Basque health system organisational change and staff behaviour changes were described as difficult and time consuming.

The healthcare professionals' lack of time has been reported as a barrier to the successful implementation of digital solutions, which has been, for instance, identified in Twente and Scotland. Learning to use a new tool and new working procedures comes additional to their usual workload. Furthermore, healthcare professionals seemed to be hesitant to change their way of working.

Similar challenges are reported by the North West Coast of England, where some resistance on the management level has been experienced. In particular, this referred to generally doing things differently, and to allowing staff to have the time away from the clinical coalface to develop new systems.

In Campania, the implementation of an ICT based home monitoring system for elderly care has been reported to be challenging, because doctors working in hospitals are not used to rely on clinical data being collected outside of the hospital – an aspect, which has to be related to the liability of hospital doctors as well as for their patients.

## Lack of awareness among professionals and patients

The main barrier to innovation in the Lower Rhine region was lacking awareness among older people and enterprises that could market the new applied technologies.

Likewise, in Scotland, the target group's engagement has been identified as difficult at initial stages – to establish a well functioning self-management hub, there is a need to ensure accurate content, categorising it appropriately as well as encouraging citizens to take ownership of entries.

## Technical barriers

In Twente, unstable internet access due to poor infrastructure in the University Hospital was the largest barrier to implementation of a good practice targeting hypertension. Besides,

connecting the portal to other technologies (such as the electronic medical record) posed challenges.

Likewise, in the North West of England, internet connectivity had to be improved to overcome technological barriers. Network failures or slow systems led professionals to not embrace the electronic medical record IANUS in Galicia.

In Andalusia, initially, a major problem has been the limitation of the communication infrastructure being necessary to connect all primary healthcare centres in the region. The lack of the appropriate broadband caused multiple system crashes that caused discomfort in professionals and patients. However, meanwhile, this issue has been solved thanks to a wider dedication of the IT corporate infrastructure. Furthermore, initial difficulties regarding services included in Diraya such as the use of a centralised appointment system were needed, in order to facilitate the implementation of regional regulations on waiting times for referrals and diagnostic procedures.

## 2.2.2    Examples from Reference Site applications

This section provides selected examples related to barriers given by the Reference Sites in their applications to the 2016 Call.

**Organisational structures related barriers**

"There is currently no other realistic solution to reduce the problem of shortage of GPs in rural areas, as only few physicians are willing to work in the countryside." - Health Region Cologne-Bonn, Germany

"Country's needs: new approaches to common illnesses, comprehensive healthcare for chronically ill patients through change of the healthcare model, and an organized modernization of a stronger and sustainable healthcare system." - Health Care Innovation Lab Orbital 40, Spain

"The current organisation of health services, which focuses on the resolution of acute pathologies, stimulates episodic care of health problems with a curative approach, while giving little value to preventive aspects of care, the perspective of care, or the responsibility of persons to care for themselves." - General Directorate of Public Health, Regional Ministry of Health - Balearic Islands, Spain

"Italian Regions also face a number of entrenched social and health system challenges. These include the risk that the highly decentralized regional health systems will continue to perform differently in terms of service delivery, and that the gap between the southern and the northern parts of the country will continue to broaden, posing an issue of health equity." - Federico II University Hospital (FOUND) Italy

**Lack of interdisciplinary communication and cooperation**

"There are existing gaps and missing coordination between primary, secondary, home and self-care." - Saxon State Ministry for Social Affairs and Consumer Protection, Germany

"Patient pathways in the Danish health system have often been criticized for not being coherent, particularly across primary and secondary care. The lack of continuity in the patient pathways is often attributed to lack of mutual understanding between health providers, lack of information exchange on patients' health conditions and inadequate communication systems." - Region Zealand, Denmark

"There is a general lack of a systematic and structural knowledge sharing between municipalities which currently sets limitations for scaling up opportunities." - Region Zealand, Denmark

"It thus comprises truly different cultural settings that must understand each other to work efficiently. On the top of that, we may add the dispersion of the different centres among the city which makes the communication among professionals even more complex." - Badalona Serveis Assistencials (BSA), Spain

"Gather the unmet needs from the end-users and facilitate access to public contracts for private innovative SMEs are one of the main actions led by Resah in order to accelerate the development and dissemination of innovative solutions." - GIP Resah, Region Ile-De-France, France

"Challenges in interoperability of systems, incompatibility of data and information protection systems often limit the extent to which data can be shared for combined decision making." - North East England, UK

"The sharing of information between health and social care is however even more limited. The lack of shared information has become a more pressing issue as the move towards integrated care has gained pace." - Yorkshire and the Humber Academic Health Science Network, UK

**Lack of interoperability and system integration**

"Many innovative products and services are already on the market, but are not integrated in the health care organizations or used by the client due to lack of information." - POM West-Flanders, Belgium

"In everyday life interaction between the individual healthcare segments and their stakeholders proves in many instances to be less than optimal: each individual segment specialises only in its particular task within the system, so the system as a whole must be improved to meet the needs of society and those affected." - Health Region Cologne-Bonn, Germany

"The need to share social and health data emerged during the assessments in all domains of active and healthy ageing, and the silos between data sets and data repositories are currently one of the biggest challenges that Campania faces. Campania Reference Site is still approaching interoperability in the different segments of activity, with the biggest gap being the social service provision shared between municipalities and regional social services." - Federico II University Hospital (FOUND), Italy

"The health delivery system needs a unified approach to prevent and integrate healthcare delivery to patients with chronic and complex conditions." - Region Lombardia - D.G. Welfare, Italy

"The complexity and width of the system makes some barriers particularly difficult to overcome and tackle." - Region Piemonte, Italy

"These teams will be key to breaking down barriers to co-ordinated care, delivering a 'no wrong door' approach with clear points of access into the care system, ensuring access to the right care professional without being passed around the system." - Liverpool Clinical Commissioning Group, UK

**Lack of awareness among professionals and patients**

"Patients are facing problems with finding appropriate information and management for their complex social situation." - Gesundes Kinzigtal GmbH, Germany

"Lack of full knowledge about a patient's medication often leads to medication errors and hospital admissions. The most common reason for that is the fact that the main source of information on the patient's medication typically is the patient himself, and the information about all currently prescribed medication as well as the correct name of the medicine is not always accurate. As a consequence, the clinician often receives incorrect or incomplete

information. This can potentially be harmful to the patient." - The Region of Southern Denmark

"The region finances a specialised care programme in remote rural areas, an information programme on health for the elderly and an evaluation of interoperable independent living solutions."- MACVIA-France

"Health institutions should also promote local awareness actions and information to citizens, particularly in prevention areas and control of infection, antibiotic resistance, safe use of medication and informed consent." -Porto4Ageing, Portugal

**Time and effort related barriers**

"A key measure toward accelerating care coordination was the offer of financial incentives for providers, introduced by law but for a limited period of time: from 2004 to 2008, one percent of the total statutory health Insurance budget available for ambulatory and hospital care has been earmarked to initially fund integrated care contracts." - Saxon State Ministry for Social Affairs and Consumer Protection, Germany

"A significant number of patients have problems of accessibility to face-to-face consultation in primary care, this coupled with inconsistent schedules to face-to-face consultation and economic reasons for moving, took us thinking about the need for new ways of conducting care delivery." - Galician Health Ministry, Spain

"Arsenàl.IT applies the Health Technology Assessment model on all designed services, thereby focusing attention on the application of Information Technology and Telematics to socio-health care delivery processes, and centring on the issue of the systematic evaluation of different forms of clinical, economic, organizational and social impact as a result of the introduction of ICTs in the Regional Socio-health System." - Arsenàl.IT, Italy

"Cooperation between the 4 stakeholders groups have always been taking place but a further step towards seeing them 'sitting at the same table' will require some more planning and effort. One of the main issues of the RHAP in the field of AHA is now related to the effort of transition of the innovative projects and practices to integrated regional and interregional policies." - Region Piemonte, Italy

"Also part of devolution this builds on existing expertise and assets to address a nationwide issue of delays between research innovation and health and economic benefits being realised on the ground." -Greater Manchester Active and Healthy Ageing Coalition, UK

"Barriers of cost of transition, and double running costs often incurred before benefits of projects can be realised." - Greater Manchester Active and Healthy Ageing Coalition, UK

**Financial and reimbursement problems**

"By following protocols and enabling the introduction of guidelines and in parallel fostering education and training activities not much has been done in terms of insurance based and reimbursement financing." - LLM Care Ecosystem, Greece

"At the local levels, the social policies often correspond to social welfare policies, and support measures frequently translate into modest subsidies, that do not solve the unemployment problem." - Federico II University Hospital (FOUND), Italy

"These barriers include difficulties with data-integration and regulation, the need to have financial redistribution so parties have right incentive to continue, addressing regulations which (unintentionally) hinder such innovation." - Brabant Region of Smart Health, Netherlands

"With the coordination reform, municipalities got more responsibilities for the welfare of the citizens. Because of limited budgets, municipalities will not be able to fulfil these responsibilities without improving efficiency." - Greater Stavanger, Norway

**Technical barriers (infrastructure, connectivity)**

"Region Zealand is a rural region with relatively long distances for elderly to reach health care services or for home care providers to reach citizens." -Region Zealand, Denmark

"The promotion of walking is a win-win approach. This requires building effective partnerships for example with the transport and urban planning sectors, whose policies are highly influential in providing appropriate conditions for such behavioural changes to take place and be maintained." - General Directorate of Public Health, Regional Ministry of Health - Balearic Islands, Spain

"Basque Strategy on Ageing 2015-2020 has set as a priority the need to develop urban policies that enable aging people to live at home and friendly neighbourhoods with their preferences and needs." - Ministry for Health of Basque Country, Spain

"The public housing programs have produced neighbourhoods with high levels of social segregation, widespread criminality and inadequate housing for recently settled immigrants, or for the elderly and young families with low income. The lack of public spaces dedicated to sport and cultural activities worsen this condition." - Federico II University Hospital (FOUND), Italy

**Low digital health literacy/appropriately addressing the target group**

"We need to improve health literacy of the general public, but special effort should be devoted to older citizens with more health problems and more vulnerable when it comes to understanding the health information."- Regional Health Ministry of Murcia, Spain

"Overcoming cultural barriers, in terms of embedding technologies in existing pathways or designing new pathways is vital for both the citizen and practitioners."- Liverpool Clinical Commissioning Group, UK

**Resistance to change / Scepticism about effectiveness**

"Addressing issues among the elderly population relating to healthcare: (1) Digital competence among the elderly, (2) Services of general interest and rural areas, (3) Difficulty in accessing education opportunities in old age." - Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, Germany

### 2.2.3   Success factors identified

In the following section key success factors for the adoption of digital innovative solutions being identified during the twinning actions are discussed. Two case studies are outlined to demonstrate good examples of the key drivers collaboration and networking for knowledge exchange, upscaling and, finally, a successful implementation.

## Success factors to scaling up innovation in AHA

| | |
|---|---|
| 28 | **Addressing current healthcare needs and embedding the new system into present healthcare policies** |
| 22 | **Public and private partnerships** |
| 21 | **Clear vision and strong political commitment** |
| 21 | **Previous research and piloting** |
| 21 | **Networking and collaboration** |
| 20 | **Local services, integration of the new solution into the existing environment** |
| 20 | **Funding, financial incentives and investments** |
| 19 | **New business models and innovations** |
| 19 | **Faster benefit realisation of the innovative practices** |
| 18 | **User experience design, user acceptance** |
| 17 | **Marketing and business communication** |
| 16 | **Training and education of staff** |
| 16 | **Product development in close collaboration with the end-users** |

**Figure 3: Overview of success factors to scaling up innovation in AHA**

**Clear visions and strong ideas**

A clear vision of the use, benefit or innovation of a new product is the very first step in developing and implementing a successful idea.

In Andalusia, a clear vision of the leadership has also been identified as one main factor facilitating the realisation of the digital solution.

**Previous research**

Next to the clear vision and a first idea, identifying and analysing the current state of research has proven to be a precondition for successful innovations.

This has also been shown in the Basque Country, where research prior to the development process has been reported as a key to success.

Likewise, the digital Modular Gastrological Platform (MGP), developed in Rotterdam, has been based on results of two studies being carried out in Bruges and the Netherlands.

**Addressing current healthcare needs and embedding the new system into current healthcare policies and approaches**

In the Basque Country, the most important success factor has been the fact that the Risk Stratification tool is fully aligned with the global approach deployed in the Basque Country

involving all key stakeholders who play a significant role in challenging chronic diseases and ageing-related issues. The Strategy on Chronic Disease Management from 2010, the Strategic Guidelines 2013-2016 of the Healthcare service, Osakidetza, and the Health Plan 2020, among others, have reinforced and extended this integrated approach.

**Strong political commitment**

Political consensus was necessary for scaling up in Southern Denmark.

Likewise, in Andalusia or Scotland, continuous political support helped to overcome difficulties in the implementation of innovative electronic health practices.

**Public and private partnerships**

A good cooperation between the public and private stakeholder was regarded as a success factor in the City of Oulu.

In the region Pays de la Loire and Basque Country this type of partnership is regarded as a mean to overcome the lack of financial resources.

**New Business models and innovations**

In the region Ile-de-France for example it was identified that a business model based on a rental of the technology rather than selling it, was supportive for scaling up the innovative digital solution.

Likewise, in Northern Ireland, the transparency of the medicine selection being one of the innovative aspects promoted the implementation of STEPSelect.

**User experience design**

The combination of multiple information channels such as written text, audio and video have proven to be successful in reaching many users.

In Scotland, the use of video-clips has shown to be a success factor in sharing knowledge on healthy and active lifestyles and wellbeing. Moreover, local teams were involved in the production of such video clips being able to teach citizens to produce these themselves. Keeping the platform generally simple including a good visual arrangement has resulted in a high acceptance in the target group.

**Local services**

In Scotland, in the framework of the self-management "Living it Up" (LiU) platform, a hyperlink to local services and information through ALISS (corporate service for local authorities in Scotland) served as a key factor to "local success".

**Product development in close collaboration with the end-users**

Collaborating close with the end-users of a future product represents a form of a target group analysis, a key factor for a successful product implementation.

In Twente, the developers of Telerevalidatie.nl, an online portal supporting rehabilitation at home, have been closely collaborating with the target group, thus being able to adopt a user-friendly and highly accepted digital solution.

Similarly, while developing the Andalusian Electronic Health Record Diraya, the health workforce and technicians have been involved in the design and successful implementation of the system.

The successful adoption of the Basque Country Risk Stratification has also shown to be based on the participation and support of managers and clinicians in the development and implementation processes.

Finally, in Scotland, citizens appreciated the involvement in the development process of an online self-management hub; they enjoyed providing feedback and suggestions for the improvement of services.

**User acceptance**

One of the most important success factors for any innovative product is a great user acceptance, since these are the people finally making use or working with a product.

In Campania, the ADD system seems to be well accepted by the target groups, carers and patients.

Likewise, with regard to the adoption of both RISC and SFGE in the region of Lazio, a great acceptance of the potential end-users has been identified assessed by means of the Baseline Assessment Frailty questionnaire.

In Scotland, a high user acceptance has been achieved by placing a focus on outcomes that really matter to the people including the local context, the community as well as outcome related aspects.

**Integration of the new solution into the existing environment**

Ideally, a new digital solution can be integrated into the existing system both organisationally and technically. Moreover, this should usually result in a faster and less expensive implementation and generate a higher acceptance in the people who eventually have to work with the new system.

In Andalusia, the implementation of Diraya has been aligned with the policies of the user organisation, thus promoting the successful realisation of the innovative system. Besides, the participants' patience as well as their involvement into the development process served the effective integration into the existing system.

**New benefits of the innovative practices**

The ADD protection system, an ICT based home care system developed in Campania, reduces displacements by the patient and improves personalised attention and care. Furthermore, the workload reduction of the primary carers, who can now focus on those cases requiring more attention, has been identified as a key benefit of the ADD system.

The Basque Country Risk Stratification includes new methodical aspects such as taking into account the identification of "new" chronic conditions as well as the existence and availability of new sources of information – pharmacy costs of prescribed vs. dispensed drugs or extending the target population to people younger than 14 years, for instance. Furthermore, the Risk Stratification has been proven a feasible solution providing relevant information to help in decision-making with regard to tailored interventions for chronic patients.

**Marketing and business communication**

The French ALOHA initiative sets a particularly good example of using a wide range of communication actions to facilitate the implementation of their innovative practice. Being present on congresses, forums, and exhibitions, establishing a widespread digital appearance making use of social networks such as twitter, organising themed weeks, where users are able to download free e-books have been identified as key factors facilitating the digital solution. Finally, the creative icon as well as the message delivery was the cherry on top of the communication campaign.

In Scotland, promotion events as well as contribution from the voluntary sector served to involve the target population.

**Funding, financial incentives and successful investments**

In Saxony, it was identified that financial incentives might help to motivate GPs to participate actively in cross sector cooperation's to introduce treatment pathways.

The amount of payment for IT companies that developed an EHR in Valencia was based on whether medical staff used the new system or not.

In Northern Ireland, the cost reduction as well as the reinvestment of the respective cost savings in the health care system has been a key factor facilitating the implementation of the STEPSelect platform.

In Scotland, funding has been identified as a catalyst for change, when implementing the "Living it Up" programme. Furthermore, community assets have been built, and investments in the voluntary sector have been arranged to facilitate the innovative solution.

## Training and education of the staff

The Irish "Let me decide" program identified assessment of the educational needs of the staff and corresponding training as a key success factor.

A good practice in the Madrid region that aims at people with a risk for falling and fractures identified that specialised training improved risk assessment and facilitated the designing of interventions.

Likewise, in the North West Coast of England, one pivotal success factor was that the developer of Teleswallowing began to work within the Trust's IT Department to enable other clinicians to benefit from her experience of using technology and how she overcame the barriers to change. In particular, it was important that the IT Department came to the forefront of importance with regard to changing clinical practices. Previously, the IT Department had very much had a back office function but with the increase in use of technology in clinical practice, it is increasingly becoming crucial.

## Networks, partnerships and collaboration

The falls prevention initiative in the Emilia Romagna region identified that regional networks helped to create a widely accepted framework that facilitates standardisation and interoperability.

Also at the ageing initiative in the region Coimbra, thematic networks supported the standardisation of procedures.

Other than that, experience from previous partnerships was used to build business models that bridge the gap between research and market. Collaboration between hospitals, pharmacies and primary health care centres was a key factor for the success of the Catalonian colorectal cancer screening program.

Similarly, in Campania, collaborating with two absolute experts in the field of telemedicine has resulted in the development of a sustainable, efficient, and innovative ICT based home care system.

Moreover, in Andalusia, close collaboration with the pharmaceutical corporation as well as with the technological industry has been identified as a key driver for the adoption of an electronic health record.

Finally, in Scotland, the co-design and co-development of "Living it Up" has been shown to be one of the main keys to the successful implementation of the platform.

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**Case study: The Nordic Reference Site Community – collaboration as key driver for knowledge exchange and upscaling**

The Nordic Reference Sites Norrbotten, Skane, South Norway, Stavanger, South Denmark,

Zealand, Oulu, Pirkanmaa, Helsinki and the EUREGHA secretariat took the opportunity to meet during the European Summit on Digital Innovation for Active and Healthy Ageing in December 2016 at an informal networking event.

It was a well attended and well received networking meeting, at the premises of the Summit, with over 30 participants from across the Nordic Ref Sites taking the opportunity to meet, get to know another and discuss collaboration possibilities.

It was decided to take the informal networking a bit further by arranging for a meeting at the next large event where many of the reference sites would be attending. ALEC in Lulea, Sweden, presented such an opportunity in early February 2017.

At ALEC, a smaller meeting with 5 of the Nordic Ref Sites took place. To underline the multi stakeholder character of the reference sites it was proposed to call the informal network "the Nordic reference site community". The objectives, roles and themes of collaboration have yet to be decided by the community, but in the draft minutes from the first meeting it is stated that the defined purpose is:

"Based upon common challenges, opportunities and strategies the Nordic Reference Site Community will work for the Nordic reference sites as a joint initiative for exchange of experiences, scaling up initiatives from the Nordic community, communicate a Nordic Reference Site perspective on health and care issues and provide assistance to the European Commission in the process of developing new policies as well as exploring joint funding opportunities."

The proposed focus areas are:

• Patient / person-centeredness
• eHealth / mHealth
• Connected health
• Testbeds

Physical meetings will take place during conferences and events where many of the ref sites are expected to attend, such as eHealth week in Malta, EIP on AHA meetings, ICIC and others.

To get the community up and running a mailing list will be drawn up and one idea is to use the ECHAlliance Connector facility profiling the reference sites as one community.

The geographical proximity, shared languages, and historical connections along with similar health care systems all add to facilitating the ease at which this informal network was established. In many of the reference sites there is also a political priority to connect with their neighbours. This can be seen as driver for upscaling. Another driver is the community's use of other events and conferences to organize informal meetings.

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**Case study: Networking and collaboration case study: Sprints**

EUREGHA is leading a Sprint in the framework of the B3 Action Group of the EIP on AHA. The Sprint, entitled "Integrated Care Policies for Successful Implementation and Scaling-up in European Regions" aims at using the Maturity Model (MM) to a) inform the introduction of innovative solutions to health- and social care service delivery in order to tackle demographic and societal challenges in the partner regions and b) to foster cultural and organisational change for the implementation of integrated care. The ultimate aim of the Sprint is to facilitate the organisation of study visits between the participating regions to exchange knowledge and experiences related to the implementation of integrated care solutions.

The general concept was to use the B3 MM to identify the level of maturity of implementation of integrated care and specific strengths and weaknesses among the participating regions to spur discussion and to identify potential points for knowledge and experience exchange.

In a later stage, the participating regions would volunteer to host study visits to:

a. Share good practices about policies implementing integrated care

b. Organise round-table discussions with policy-makers and health and social care managers, to discuss the prerequisites for the establishment of legal and governance instruments to develop

integrated care

c. Conduct site visits to hospitals/primary care facilities/patient homes etc. where integrated care is implemented

d. As a result of the knowledge exchange visits policy recommendations will be developed, both generic and region-specific recommendations

The first part of the Sprint was to identify partners interested in participating in applying the B3 MM to perform a self-assessment of their health care system/a specific practice across the 12 dimensions identified in the B3 MM.

Five regions, including four EUREGHA members (Flanders (BE), Catalonia (ES), Västra Götaland (SE) and Region Skåne (SE) and Zealand (DK) announced interest. Once the results have been collected (still pending in March 2017), the representatives will be brought together to 1) discuss their results and 2) discuss the perceived usefulness in applying the B3 MM. On the basis of this, the results will be summarised in a report, which will be disseminated among EUREGHA members and to the wider EIP on AHA network.

## 2.2.4    Examples from Reference Site applications

This section provides selected examples given by the Reference Sites in their applications to the 2016 Call.

**Addressing current healthcare needs and embedding the new system into current healthcare policies**

"The Region of Southern Denmark has acted as a catalyst for spreading the adoption of evaluation mechanisms. Through an EU tender, the MAST model was developed in European collaboration, creating a structured framework for assessing the effectiveness and contribution to quality of care of telemedicine applications." - The Region of Southern Denmark

"Asturias is working in a Regional strategy on Demographic Change, to cope with problems as well-being of elder population living in low populated and isolated rural areas; quality of life of elder population with chronic diseases and other age related pathologies; family needs in this new demographic context." - Government of the Principality of Asturias, Spain

"A specific law was issued on surgery after hip fracture after the identification of a large gap between evidence based guidelines and real practice. This action has led to large improvements." - Department of Epidemiology, Lazio Regional Health Service, Italy

"The National Institute for Health and Care Excellence (NICE) has issued guidance on medication adherence. This guideline offers best practice advice on the care of all people who are using medicines and also those who are receiving suboptimal benefit from medicines." - Yorkshire and the Humber Academic Health Science Network, UK

"Scotland's 'Up and About Plus' is an at-scale, national Falls Prevention Programme that improves the prevention and management of falls and fragility fractures in the community via a four stage integrated, person-centred care pathway. The pathway spans 1) supporting health improvement and self-management; 2) identifying individuals at risk of falls and/or fragility fractures at an early stage; 3) responding to individuals who have just fallen and require immediate assistance; and 4) co-ordinated, tailored management." - NHS Scotland, UK

**Public and private partnership**

"New initiatives to improve the system's capacity are based on dialogue between providers, better communication paths, more common documentation and development efforts between the 17 municipalities, the GPs, the citizen with support from research institutions and the private sector." - Region Zealand, Denmark

"AQUAS/TicSalut/HUBc Catalunya represents a connection between government, health providers, training, translational research institutes and ICT companies which constitutes a strategic alliance of top organizations that ensure the triple win model for the Catalan Reference Site." - Ministry of Health Catalonia, Spain

"Age Friendly Programmes are based firmly on the expressed views and participation of older people, and are fulfilled by Alliances comprised of senior decision-makers representing local authorities, police service, the HSE, service providers, businesses and community leaders." - COLLAGE, Ireland

"The North East England Healthy and Active Ageing strategic partnership includes a number of Universities and Teaching Hospitals who are leading on the development of innovative solutions for the cure and care of chronic diseases." - North East England, UK

"NHS24 also leads the Digital Health and Care Innovation Partnership (DHCIP) that brings together all the necessary stakeholders (government, public sector, enterprise agencies, third sector, academic and industry) to drive the synthesis of research, education and business that accelerates innovation in Digital Health and Care in Scotland." - NHS Scotland, UK

**Clear vision and strong political commitment**

"The Quality Strategy is the approach and shared focus for all our work to realise aims to deliver the highest quality healthcare to the people of Scotland and ensure that the NHS, Local Authorities and the Third Sector work together, and with patients, carers and the public, towards a shared goal of world-leading healthcare, in support of our 2020 Vision." - NHS Scotland, UK

"The strategic priorities of the Greater Manchester (GM) Ageing Hub are: GM will become the first age-friendly city region in the UK; GM will be a global centre of excellence for ageing, pioneering new research, technology and solutions across the whole range of ageing issues; GM will increase economic participation amongst the over 50s." - Greater Manchester Active and Healthy Ageing Coalition, UK

"The ministry of social affairs aims to further develop the supply structure in the health and care sector, bringing together actors from science, industry, welfare organisations, society and economy. Through the annual innovation programme 'care' and the impulse programme 'medicine and care', the use of technological innovations shall be promoted." - Ministry of Labour and Social Affairs, Families, Women and Senior Citizens, Baden-Württemberg, Germany

"Activities within the EIP on AHA are integral to our region's priorities. In order to deal with these complex and wide-ranging issue/actors the Region established a governance model carefully tailored to bring together different actions and stakeholders." - Emilia-Romagna Region, Regional Agency for Health and Social Care, Italy

"Formal policy commitments have been formulated so that innovation for active and healthy ageing is a strategic priority for the Northern Netherlands. All large knowledge institutions have Healthy Ageing as a strategic theme." - Healthy Ageing Network Northern Netherlands

"The Regional Development Plan Agder 2020 (adopted by the County Councils of Aust-Agder and Vest-Agder) gives a strong political and administrative commitment to combined efforts within eHealth." - Centre for eHealth and Health Care Technology, University of Agder, Norway

"A policy commitment to include innovation for active and healthy ageing is clearly included as a strategic priority in several Region Skåne policy documents." - Region Skåne, Sweden

**Previous research and piloting**

"The TreC project developed an interesting approach to procurement: a research organisation was funded to carry out extensive research and design and to develop a basic level prototype, once this had been developed and considered a feasible solution industry were then contracted for full development. This ensured the practicality of such a solution before further investment was carried out." - Autonomous Province of Trento, Italy

"The "Social Housing" Project was launched in 1999; initially pilot projects were funded. These pilots had to demonstrate a new methodological approach to solving the problem and be impactful, pointing to the requalification of the area by the building and territorial point of view." - D.G. Welfare, Region Lombardia, Italy

"The regional coordination of CARE Puglia (Chronic Care Model in Puglia) the pilot assistance model of diagnostics and therapeutics pathways of chronic patients is managed through the availability of an on line Information System, easily accessible, that allows to monitor in real time the diagnostic and therapeutic plan for the single patient and to check the efficiency of coaching strategies by care managers and care givers." - Puglia Region, Italy

"In the past years, Friuli Venezia Giulia (FVG) has promoted and funded several projects and pilots on domotics, accessibility and independent living. From now on new funding instruments will permit to scale-up theses local initiatives at regional level." - Autonomous Region Friuli Venezia Giulia, Italy

"Medical Delta combines fundamental research, large population cohort studies (classic, genetics and imaging) on the development of molecular technology to explore candidate biomarkers into validated change of lifestyle strategies and molecular diagnostics with stratified use of new, safe and effective medicines and therapies in order to cure or prevent progression along the healthcare chain for generic senior populations as well as targeted risk groups of elderly." - Foundation Medical Delta, Netherlands

"HvA and Amsta's pilot 'Amstelhuis' is also a test site for flexible living solutions (e.g. enabling ICT), providing researchers with real world evidence, and residents with innovative living solutions." - The Public Health Service of Amsterdam, Netherlands

**Networking and collaboration**

"The Health Innovation Exchange provides a platform for NHS staff and industry innovators across the Health and Care sector to connect and share innovative solutions, projects and products which support the ambition of providing world class patient care in a cost effective, efficient manner." - Yorkshire and the Humber Academic Health Science Network, UK

"ADL Smartcare, a provider of computer based self assessment for physical assisted living products has its research and development department based in Newcastle, where it works closely with Newcastle University, supported by Innovate UK funded Knowledge Transfer Partnerships, to develop the use of its large store of data." - North East England, UK

"One of the participatory processes within the respective regions is execution of a dialogue called Gesundheitskonferenz (platform where health and care actors are coming together on a regular basis) where e.g. problems at the interface between different sectors of health and care, professional and volunteer work, public and private domains are treated and solutions are suggested." - Ministry of Labour and Social Affairs, Families, Women and Senior Citizens, Baden-Württemberg, Germany

"Pharmacies and physicians meet in medicines commission assemblies to discuss latest topics about pharmaceuticals issues and coordinate and agree in regional prescriptions behaviour." - Gesundes Kinzigtal GmbH, Germany

"Healthcare organisations collaborate very closely with SME's and research institutions to achieve an integrated, location-independent solution and to anticipate the needs of the client." - POM West-Flanders, Belgium

**Local services, integration of the new solution into the existing environment**

"The establishment of the Patient Portal has been an important step for the development of health e-Government, allowing go directly to the citizen, who is offered a key to access a personalized space." - Regional Health Ministry of Murcia, Spain

"The merging of the older healthcare-oriented infrastructure dealing with all kinds of elderly typologies with a Public Social Service department and Primary Care, puts BSA in a position to complement health-related interventions with social assistance on a level of almost unprecedented process consolidation." - Badalona Serveis Assistencials (BSA), Spain

"The regional policies allowed Arsenal.IT to address its strategy towards projects on Active Ageing and Independent Living in order to design new services interoperable with existing ICT health infrastructures, for a future scale-up in whole region." - Arsenàl.IT, Italy

"The Technology Enabled Care Programme has enabled technology solutions to be embedded within local falls prevention and management pathways." - NHS Scotland,UK

"The Community Care Information System allows staff working in health and social care to use a single system and a shared electronic record of care across all of community, mental health and social care services, removing significant barriers to integrated care for all patients, including older people." - Welsh Government, UK

**Funding, financial incentives and investments**

"Funded with 2 Million Euro by the Ministry of Science, Research and Arts Baden-Württemberg, scientists from various fields work on the development and evaluation of AAL systems." - Ministry of Labour and Social Affairs, Families, Women and Senior Citizens, Baden-Württemberg, Germany

"In order to fund these services, municipalities levy taxes and receive state subsidies. Specialist care / secondary care in the municipal system is provided by 20 hospital districts, each of which is owned and funded by its member municipalities." - City of Oulu, Finland

"The Lombardy Region raises and manages funds for health care, plans activities in cooperation with so-called Local Health Authorities and monitors the delivery of minimum levels as defined by the central Italian Government. Revenues for Lombard health care fund raising are collected through Governmental and regional taxations; citizens co-pay for the services received and any deficit at regional level is covered by an increase of the co-payment." - Buongiornocreg, Italy

"The region Twente is using a lot of international funds to realize their ambition. Organisations part of this coalition are being well known partners in the EC programs like the FP5-7 and H2020 programs. Euregional funds are being used to work together with Germany on transnational developments and shared learning." - Regio Twente/ Vitaal Twente / TZA/ Universiteit Twente, Netherlands

"The health care system is in general publicly financed, but some of the services are based on an out-of-pocket payment. Nursing homes charge in general 75% of a person's income. This financial model reduces the health inequalities, by using a person's income as a base for the most expensive services." - Greater Stavanger, Norway

"That confidence saw for the first time the UK Government hand over control of £6 billion of public funding for health and social care to Greater Manchester in the Devolution Manchester deal that will enable the region to develop and outline our collective ambition for better health and social care across Greater Manchester in a five-year strategic vision." - Greater Manchester Active and Healthy Ageing Coalition, UK

"The 'Efficiency Through Technology Fund Wales' supports two types of projects: rapid assessment and scaling up. The balance between these has steadily shifted over the last three years from pilots to scaling up, with over 60% of the fund now focused on scaling up activities." - Welsh Government, UK

**New business models and innovations**

"A working group on the state level works on: support for implementing innovative procurement; operational guidelines for interoperability; a set of good practice documents; a toolkit for user empowerment; a report identifying the social and economic return on investment (ROI); a co-operation platform and a repository of information." - Ministry of Labour and Social Affairs, Families, Women and Senior Citizens, Baden-Württemberg, Germany

"Authorities responsible for health issues designed a new model of hospital centres planning and management in order to connect them with the rest of the entities that are part of the healthcare ecosystem, inside new models of healthcare areas, which are in turn inside a global network of resources." - Galician Health Ministry, Spain

"The R&D strategy of Campania Reference Site builds on validated and collaborative innovative good practices, and is developed to contribute to identify innovative business models to contribute to the medium and long-term sustainability of the regional social and health care systems on the verge of the exit from the contingency plan, turning the regional health system into a driver for growth." - Federico II University Hospital, Italy

"The business model has proven to be sustainable on its own without the contribution of a public funding. This model operating in "Casa alla Vela" consists in establishing a duplex revenue source of income where the resources provenance are coming in one side from the elderly residents that cover near 85% of the share while young students coming from foreign cities cover the other 15% for living in the home facilities and sharing time with the elderly." - Autonomous Province of Trento, Italy

**Faster benefit realisation of the innovative practices**

"Region Zealand has developed standard cure and care packages for major conditions to ensure well designed complex cure processes including all examinations and treatment. The packages ensure quick access to results from tests and examinations and thus fast access to treatment options." - Region Zealand, Denmark

"The electronic prescription eliminates paperwork and enables the physician to spend more time with their patients and also users avoid travel to the health centre with the sole purpose of collecting prescriptions." - Regional Health Ministry of Murcia, Spain

"Field nurses organize educational activities working with patients, in patient groups and in community, giving psychological support, stimulating the patients to take action in fighting their disease promoting self-management and assisting patients in acquiring skills needed for self-management." - City of Zagreb, Croatia

"The establishment of the Dementia registry is an important tool to identify needs and properly allocate resources in order to guarantee the best health solutions and social support for patients and their families. This is expected to have an important impact in terms of improvements of quality of life and reduction in health related costs." - Department of Epidemiology, Lazio Regional Health Service, Italy

"Arsenàl.IT is testing a decision support system in order to support the GPs and the Specialists in the prescription of lab tests to improve the prescriptive appropriateness. In next 12 months the plan is to put in place the control to prevent problems with interaction between drugs and scale up the decision support system in the whole region." - Arsenàl.IT, Italy

"Currently the services in Norrbotten consist of e-services on 1177.se (a national eService platform for healthcare), 1177 Care Guide on telephone and 1177 Care Guide web. This makes it possible for patient to have contact with the health care system to manage healthcare related issues and access their health information." - Norrbotten County Council , Sweden

**User experience design, user acceptance**

"Several test cycles has been conducted at the existing hospital where patients and relatives has had the opportunity to try out different piece of furniture and ideas for interior decoration. These results will be included in furnishing and planning of new hospital." - The Region of Southern Denmark

"The innovative approach developed at INCLIVA and UV consisted in the use of a mobile phone app to capture the interest and implication of women in the program." - Valencia Region VLC-EIP Reference Site (OPESVAL), Spain

"Those needing to exercise can access a social website where they can see how much they have walked, the days they have walked and the duration of their daily walks, etc. But what is more important is that they can share this information with others." - Health Care Innovation Lab Orbital 40, Spain

"Vita Salutis is a platform with tracking tools and personal progress indicators that helps to understand personal health context and set personal goals, helping in prevention of disease, particularly cardiovascular conditions and diabetes." - Regional Development Coordination Commission, Portugal

"Programmes and structures closer to the user are increasingly described as relevant trends in health systems and with obvious benefits. The User Portal ("Portal do Utente") is an initiative revealing the importance of the issue and may serve as a basis for the introduction of new features to ensure greater involvement of users in health care planning." - Porto4Ageing, Portugal

**Marketing and business communication**

"This AAL ecosystem will facilitate communication and will be set up on a long-term basis for developing and transferring new knowledge and new solutions among all stakeholders in order to minimise health care costs and fostering competitiveness and market growth." - Graz, Austria

"Research work led by Newcastle University investigating sustainable business models for assisted living technologies has informed national thinking about the need for new forums to establish interoperability standards, particularly as systems progress to allow mobility beyond the home, similar to those established in the early days of mobile telephony. The project also led to improved understanding of the need for business models to accommodate elements of different markets, from a primarily consumer low risk market, through to increasingly disease management systems with elements of clinical risk, which are likely to be publicly procured." - North East England, UK

**Training and education of staff**

"We stimulate the learning process and enable transfer of knowledge by organizing dedicated workshops, learning seminars and bigger networking events to share knowledge and best practices as well as start new collaborations." - LifeTechValley, Belgium

In Saxony there are several institutions which offer training and further education programmes to health and care professionals and other stakeholders, assisting them to learn how to implement and effectively work with innovative solutions. - Saxon State Ministry for Social Affairs and Consumer Protection, Germany

"A Regional Laboratory was created for training in Health Care with the aim to develop high level training courses for professional at regional, national and international level and to support change processes in health care delivery. The objectives of the initiatives are selected on the basis of the priorities of the regional planning documents and of the specific needs emerging in the health and social care practice." - Region Toscana, Italy

"The Public Health Service's 'stand firm' falls prevention programme includes education programmes for physiotherapists and occupational therapists regarding appropriate medication regimes." - The Public Health Service of Amsterdam, Netherlands

"All Gentoo's frontline staff have received dementia awareness training, with some holding additional NVQ qualifications and their wellbeing team have received training to complete the initial cognitive assessments that enable them to refer people for early diagnosis, where there is cause for concern." - North East England, UK

**Product development in close collaboration with end users**

"The seniors and care givers in this living lab group participate in this project to identify good screening tests to assess fitness to drive and driving ability in elderly with cognitive impairments and receive their feedback. These end-users are also addressed for driving simulation sessions." - LifeTechValley, Belgium

"In the building the creation of various clinical scenarios was planed; wards, waiting rooms, nursing controls, with greater technological development that allow the development within them of Living Lab environments in which to test in a systematic way the users experience. These scenarios may validate the results of different projects of health innovation." - Galician Health Ministry, Spain

"A multiservice user-friendly platform and the development of personalised ICT tools to improve the safety and comfort of seniors as well as the coordination between health and social care: 800 CARSAT retirees are testing these new devices and solutions which will be provided free of charge for two years." - MACVIA-France

## 2.3    Analysis of tools and methodologies used within the EIP framework

The aim of this task was to identify existing tools and methodologies for scaling up of innovative healthcare solutions. A precise stock-taking of analytical tools and methodology needs was conducted. The output of the analysis will be used in the mentoring phase where the study team will facilitate the awareness and transfer of tools and methodologies that proved to be efficient.

**Summary of analysis**

While there are a number of tools and methodologies that assert to support scaling-up of innovations in healthcare, three need special mention as they are arguably the most comprehensive, accepted and used.

The Maturity Model developed within the EIP-AHA Action Group B3 is comprehensive and tailored to the aspects which are of relevance to the study. The concentration on one action group has allowed for the development of a strong community around the model, with available resource database of over 80 documented good practices, which have been used by the study in other work tasks. Furthermore, the Maturity Model is one of few to specifically address scaling-up through match-making of different regions – comparison of the gaps and strengths allow for suitable matches to be identified.

MAST (Model of Assessment of Telemedicine) is also comprehensive and multidisciplinary. It is familiar to many EU stakeholders as it is based on HTA and EUnetHTA. However, it is not as robust as the Maturity Model and its application can be time-consuming. Furthermore, it does not focus on innovation as central aim of scaling-up, but rather on ex-post assessments of telemedicine outcomes. It is also restricted to assessing mature applications.

MAFEIP (Monitoring and Assessment Framework for the EIP on Active and Healthy Ageing) was created against the backdrop that EIP on AHA data is generally scarce and scattered. Nevertheless, the tool also allows for adaptation to different interventions, populations, and care contexts, especially as a support to evidence-based decision-making processes. Following a relatively quick development, the tool now has a web interface and is being actively promoted for use within EIP on AHA. MAFEIP's development is not meant to replace

existing tools and methodologies, as it builds on existing practices and approaches (such as the Markov model and Eurostat indicators) to provide an agreed way of measuring impact.

In general, the review shows that although developed for different purposes and settings, the tools and methodologies reviewed share common elements and aspects (see figure below). Due to the different context and the history of their development, the tools can be used for different goals (e.g. the maturity model for B3 specific innovations within AG B3).

A characteristics comparison of the three tools is presented in the table below.

| Characteristic | Maturity model | MAST | MAFEIP |
|---|---|---|---|
| **Intervention maturity** | Mostly mature applications | Matured telemedicine applications | Early-stage innovations and mature applications |
| **Topics** | Integrated care | Multidisciplinary | Multidisciplinary |
| **Robustness** | Robust | Not as robust | Robust |
| **Use (time spent)** | Average | Can be time-consuming | Average |
| **Community** | Strong integrated care community | Strong eEU community | Early stage, growing community |
| **Focus** | Benchmarking using different dimensions of integrated care | Outcomes of telemedicine | Impact of innovation in terms of health outcomes (health related quality of life) and resource use |
| **Form** | Online tool (ongoing development[15]) | Mast toolkit | Web-based online tool |

MAFEIP seems to offer the widest possibilities in terms of being suitable for assessment of any kind of innovation in health and care, and even beyond. In fact, the tools is actively being promoted and already first use cases from EU projects BeyondSilos, SmartCare, VPH-Dare and MD-Paedigree have been reported. A number of the twinning partners are currently exploring the use of the tool for assessing their twinning innovations.

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[15] See http://www.scirocco-project.eu/maturitymodel/
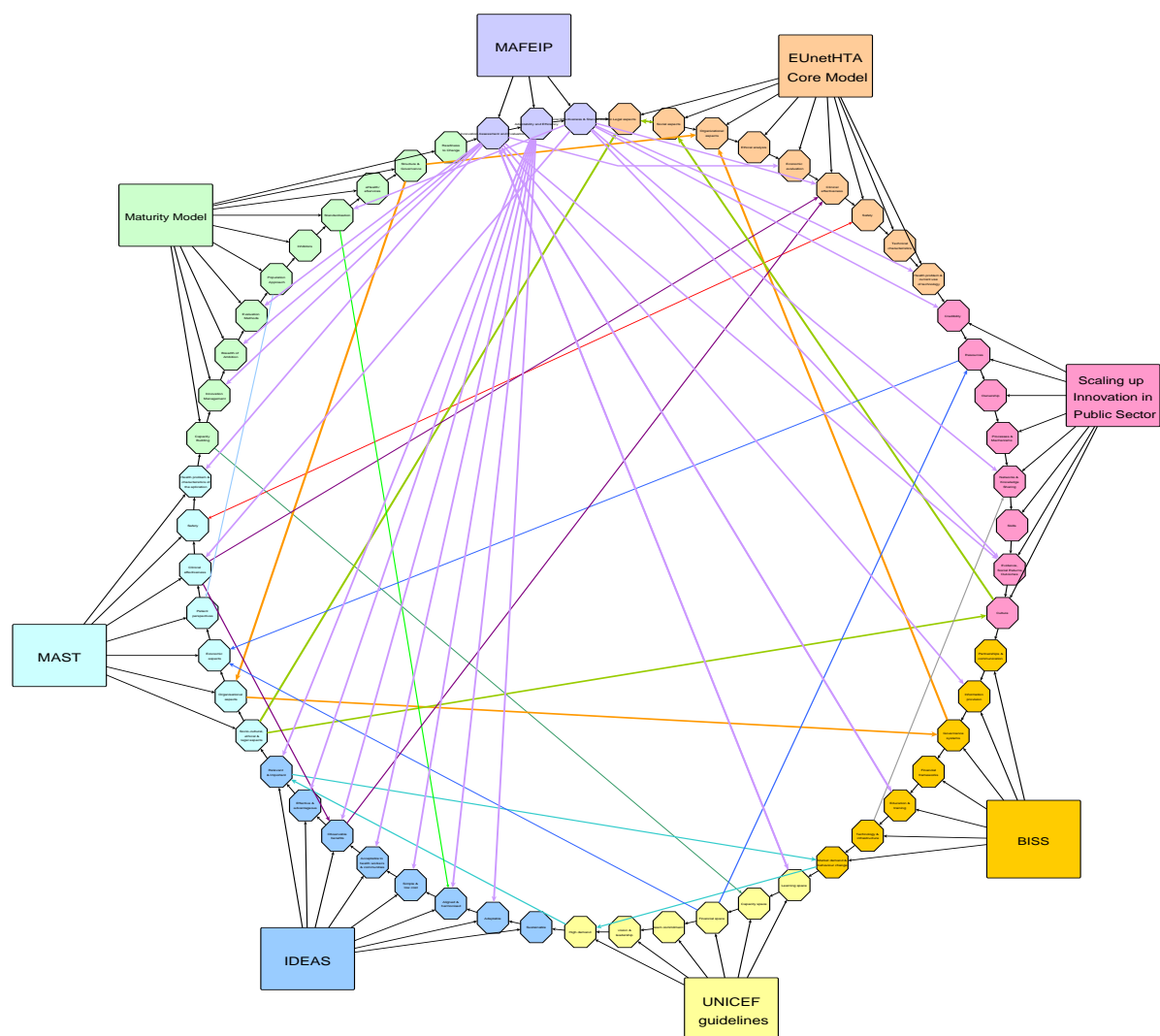
**Figure 4: Commonalities between aspects/elements of the reviewed tools and methodologies**

The models and methodologies that were considered in the review are further detailed in the subsequent sections.

## Maturity Model

The Maturity Model[16] aims at providing an objective measurement which identifies gaps and area for improvements to position the area being assessed according to their strengths and weakness, and thus offer the opportunities for sharing and learning of good practices by 'match making'. It is a comprehensive and systematic model allowing easy detection of innovation characteristics. Ten dimensions of assessment with list of indicators of maturity will allow assessors to rate the region's current state on a scale of 1 to 5. Yet the dimensions of assessments identified in the model might need modification to accommodate different regions and situations.

| | |
|---|---|
| **Contact organisation & person** | EIP-AHA Action Groups B3 |
| **Reason of development, target area** | The Maturity Model intended to show how healthcare systems are attempting to deliver more integrated care services for their citizens was originally created by the EIP-AHA Action Group B3 which focuses integrated care developments. It is a tool to accommodate the EU scaling up strategy in term of scale up and replication of integrated care solutions. The AG was aiming at a self-assessment tools which could assess a state's or region's progress and assets to support integrated care and innovation, which include readiness for integrated care, gaps and areas for improvement. |
| | The Maturity Model takes a bottom-up approach to capture experience and knowledge from the regions/local authorities and carry out benchmarking in terms of weakness and strengths. The many activities that need to be managed in order to deliver integrated care have been grouped into 10 dimensions, each addresses a part of the overall effort. By considering each dimension, assessing the current situation, and allocating measures of maturity within that domain (on a 0-5 scale), it is possible for a country or a region to develop a 'radar' diagram which reveals areas of strength and also gaps in capability. Using these insights, and comparing the radar diagram to with those of other regions/countries that have conducted the same assessment, it should be possible to find a mentor to fill the gaps and to offer knowledge and experiences to other sites.[17] Regions can benefit from resource database comprised of recommendations and relevant good practices from other regions (success factors, lesson learned, transferability). |
| **Key topics covered** | 10 dimension of maturity assessment with indicators**Fehler! Textmarke nicht definiert.** including: |

| Dimension | Objectives | Indicators |
|---|---|---|
| Readiness to Change | Compelling vision, sense of urgency, stakeholder support | Public consultation, clear strategic goals & milestones, stakeholder engagement |
| Structure & Governance | Sustain and deliver new systems, effective change management | Funded programmes, ICT competence centres, distributed leadership, communications |
| eHealth / eServices | Essential components, secure and trusted services, 'digital first' | Unique citizen ID, linked records, regional EHR, scale teleservices |
| Standardisation | Simplification of infrastructure, fewer integration points to manage, easier interoperability | Use of international standards, reduction in number applications, regional procurements, mandates |
| Inhibitors | Actions to remove barriers: legal, organisational, financial, skills | Laws to enable data sharing, financial incentives, training |
| Population | Understanding and anticipating | Risk stratification, range of |

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[16] Andera Pavlickova & John Crawford (March 2015). Presentation on B3 Maturity model: Readiness for integrated care https://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/pavlickova.pdf

[17] EIP-AHA B3 Action Group on Integrated Care. (May 2015). Maturity Model for Adoption of Integrated Care Enabled by ICT – Quick Start Guide.

| Approach | demand, meeting needs better | care pathways, prevention, feedback |
|---|---|---|
| Evaluation Methods | Evidence-based investment | Agencies -HTA, health impact, care cost/quality improvements |
| Breadth of Ambition | Fully integrated care services | Both vertical and horizontal integration, citizen engagement |
| Innovation Management | Faster adoption of proven ideas | Outreach to regions, academic & industry relations, procurement |
| Capacity Building | Increasing technology skills, continuous improvement | Capturing bottom-up innovation, deployment skills |

A framework of scope of practice and relevance was used to classify cases of good practice in the EIPAHA compilation into 8 action areas:

- Organizational models
- Change management
- Workforce development, education and training
- Risk stratification
- Care pathway implementation
- Patient empowerment
- ICT and teleservices
- Finance and Funding

| **Application, documented experiences** | Qualitative assessment based on interview and desk research on current situation, retrospective and prospective evaluation is the core of the Maturity Model. Twelve regions were assessed within the scope of integrated care:<br><br>- (2014) Athens; Basque Country; Catalonia; Galicia; N Ireland; Saxony<br>- (2015) S. Denmark; Skane; Scotland; Puglia; Medical Delta (Delft); Olomouc<br><br>32 reference sites together with another 86 good practice of integrated care projects were sampled and the detail of success factors and lessons learnt were recorded in a ToolKit to help other regions to implement and scale up these good practices.<br><br>Other examples of documented experience using the Maturity Model to facilitate scaling up of healthcare include:<br><br>- Growing integrated care stakeholder network as a result of dissemination at European and regional forums.<br>- Scaling up integrated care pathways – e.g. AIRWAYS ICP – through successful engagement with regional health ministries<br>- Evidence of inter-regional collaboration – e.g. Memorandums of Understanding between Scotland with Catalonia, Greece and Basque Country<br>- Development of regional EIP networks – e.g. Greece, Puglia, Languedoc Roussillon, etc<br>- Good Practice "pioneer" regions coaching "follower" regions in 2015 |
|---|---|
| **Strengths and weaknesses** | **Strengths**<br><br>- Allows easy and quick detection of areas of improvement, gaps and strengths<br>- Designed for AHA innovation or integrated care solutions<br>- Orientates efforts to the most effective collaborations<br>- Facilitates multidisciplinary discussions<br>- Provides baseline on state of art of integrated care in Europe<br>- Enables sharing of good practices and "matchmaking "of regions<br>- Not only focus on a healthcare system's capacity to adopt integrated approaches, but as well assesses whether a particular good practice is adoptable by a certain healthcare system<br>- Ability to discover further actions or attention needed before a system adopts a particular practice |
| **Possibility for Replication** | As the Maturity Model is primarily designed to evaluate integrated care innovations and solutions and their adoption, it can be easily incorporated as a tool to facilitate good practice identification and region matching in the scope of AHA scale-up. According to previous application and experience, the Maturity Model is shown applicable to assess and evaluate practices and healthcare systems across many settings of European countries and regions in the scope of integrated care. |

## MAST

The Model of Assessment of Telemedicine (MAST) [18,19] is a comprehensive and multidisciplinary tool in assessing the outcomes, strength, weakness and transferability of telemedicine applications. It covers seven domains of assessment accompanied by an extra transferability assessment investigating cross-border interoperability, scalability and generalizability. Only domains and outcomes that are considered relevant should be included when conducting an assessment for certain applications. The assessment is based on requests and comments from stakeholder and will be very time consuming.

| | |
|---|---|
| **Contact organisation & person** | Dr. Kristian Kidholm, Region of Southern Denmark |
| **Reason of development, target area** | The lack of high quality evidence on the effectiveness has been a main barrier of wider use and scaling up of telemedicine. The MethoTelemed project in 2009-2010 develops MAST for assessing effectiveness and contribution of telemedicine applications to quality of care which based on stakeholders' need of information for decision making. MAST is a multidisciplinary process that summarizes and evaluates information about the medical, social, economic and ethical issues related to the use of telemedicine in a systematic, unbiased, robust manner. |
| | Data collected through systematic literature review, controlled studies, stakeholder interview or survey will be used to produce valid and reliable estimates of outcome. |
| **Key topics covered** | Preceding assessment determines if it is relevant to use MAST to assess certain telemedicine application. This comprises of the expected outcomes of the application, relevant alternatives, and the level (national, regional, local) on which the assessment should be made which would be determined by the legislation, reimbursement, maturity status and number of patient. |
| | The core of MAST is a multidisciplinary assessment concerning the following domains and respective outcomes: |
| | 1. Health problem and characteristics of the application<br>2. Safety<br>3. Clinical effectiveness<br>4. Patient perspectives<br>5. Economic aspects<br>6. Organisational aspects<br>7. Socio-cultural, ethical and legal aspects |
| | Yet, only domains and outcomes that are expected to be affected and considered relevant for a comprehensive description of the application should be included. |
| | Apart from going through a multidisciplinary assessment, transferability of the results of a telemedicine applications as well need to be assessed in terms of cross-border transfer, scalability and generalizability. Examples of limitation for direct transferability of results include country specific reimbursement condition, healthcare price per hour, values and cultural influence on user preference and satisfaction. |
| **Application, documented experiences** | In the EC project **RENEWING HeALTH** aiming at large scale implementation of telemedicine services, MAST was used to assess outcomes of services. 20 pilots were set up in 9 European regions involving a patient population of 7900. The project has also collaborate with another EC project **inCASA** which aims to create and demonstrate citizen-centric technologies and a services network that can help and protect frail elderly people and prolong the time they can live well in their own homes. MAST was used as basis for studies of telemedicine in 8 countries. |
| | MAST was used to assess the **COPD Patient Briefcase**, a mobile communication interface which allows patients at Odense University Hospital Denmark to communicate with their doctors via video conference and to enter their own health measurement at home. The preceding assessment has shown that all legal issue concerning the COPD Patient Briefcase |

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[18]  Kristian Kidholm. Presentation on: RENEWINGHeALTH – Introduction to MAST

[19]  D'angelantonio, M. (2016) Presentation on: Complementary between MAST and the other scaling-up support tools and activities

have been resolved; reimbursement is in development and can be resolved on regional level; usual treatment of patients can be used as comparator. One large RCT with 270 patients, two interviews with patients and clinical staff, and analysis of results of existing literature were carried out within the domains of Safety, Clinical Effectiveness, Economic Outcomes, Patient Perspectives, and Organizational Aspect in the multidisciplinary assessment. Transferability assessment was made with comparison to Spain and Greece. [20]

Other projects using the MAST framework include[21]:

**EU Project**

- Renewing Health (19 RCT studies, 7.000 patients)
- United4Health  (3 observational studies, 20.000 patients)
- SmartCare (1 observational study, 9.000 patients)
- InCASA (5 observational studies)
- Integrated Home care (1 observational study)

**Single projects**

- Hospital@home: Telemedicine for geriatric patients (1 observational study, Denmark)
- Rehabilitation by videoconference (1 observational study, Denmark)
- Intelligent bed in Homecare (1 observational study, China)
- Patient@home (20 studies, welfare and telemedicine, Denmark)
- NerveCentre, Nottingham University Hospitals NHS Trust (1 observational study, England)
- Pulsoximeter for COPD patients in home care (1 observational study, Sjælland municipalities)
- CommoDITY12 -Telehealth for diabetes (1 observational study, Portavita, Amsterdam)
- Remote real-time video-EEG (1 observational study, La Rioja, Spain)
- Validation of MAST (Sante Service HAD, Paris)
- Mini-MAST checklist (Danish Health and Medicines Authority)

| | |
|---|---|
| **Strengths and weaknesses** | **Strengths**<br><br>- Based on the requests and comments from a large group of stakeholders and users of telemedicine.<br>- Multidisciplinary and comprehensive<br>- Based on scientific studies and criteria for quality<br>- Transferability of the estimated outcomes is described<br>- Based on HTA and EUnetHTA and therefore familiar to stakeholders in the EU, national health authorities, industry, academics and health professionals.<br><br>**Weaknesses**<br><br>- It can be time consuming if new empirical studies must be initiated<br>- It does not result in information on why telemedicine works. This information needs to be produced in other kinds of scientific studies.<br>- The model focuses on the outcomes of telemedicine (including organizational outcomes) and not the working processes when introducing the applications. Information about the process of implementation of telemedicine must be produced by using other kinds of assessments.<br>- MAST is only relevant in assessment of matured telemedicine applications. If the application is still being developed and still needs to be improved, other kinds of assessments should be carried out, e.g. in formative studies.<br>- The quality of the reports and publications based on MAST can vary because the model does not state a number of criteria to be fulfilled. However, the scientific criteria for quality of research within the different scientific disciplines can also be used as criteria for the quality of reports using the model. |
| **Possibility for Replication** | The three stages and seven domains suggested in MAST can seemingly be used not only to comprehensively assess telemedicine application but also many other types of matured |

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[20]  Kidholm et al. (2010) The MAST Manual. www.ouh.dk/dwn154071

[21]  Kristian Kidholm. Presentation on Assessment of e-helath technology.

https://eunethta.fedimbo.belgium.be/sites/5026.fedimbo.belgium.be/files/4.%20Kristian%20Kidholm_Plenary%20Innovative%20tools%20for%20HTA_HTA%202.0%20Europe.pdf

healthcare solution. It is an objective assessment tool providing quality evidence based on requests and comments of various stakeholders for decision making, compared with for exampled self-assessments.

Although MAST involves also assessments of transferability, scalability and generalizability, one problem to replicate MAST to support scaling up of healthcare solution is that it focuses on outcomes but not processes. It can be used to evaluate which telemedicine applications work and are good practice for possible scale-up, but makes no implication on why and in what situation these telemedicine applications work. Other kinds of assessment are therefore needed to determine why and under what circumstances certain applications work better than the others and how they can be scaled up matching fitting regions.

## MAFEIP

Monitoring and Assessment Framework for the EIP on AHA (MAFEIP) [22],[23]

| Contact organisation & person | Open Evidence and empirica info@mafeip.eu |
|---|---|
| **Objectives, reason for development, target area** | EIP on AHA data is generally scarce and scattered. Thus the MAFEIP was initially developed as a framework to address the EIP needs, and to monitor and assess the process outcomes of EIP on AHA. The preliminary idea of the MAFEIP tool in this context is to evaluate the EIP on AHA project as a whole, and not to evaluate and/or compare individual interventions or commitments. It has built up from principles of health economic evaluation and allows a comparative assessment of a certain health technology relative to a suitable standard care scenario. Outcome indicators used in the MAFEIP model were collected via various reviews and analyses within the scope of EIP on AHA. Although initially built in response to the EIP specific monitoring needs, the MAFEIP tool is now in the process of extending its reach beyond the EIP context. As MAFEIP is based on statistical and IT concepts that are already in use worldwide, it would not require extra knowledge for routine utilisation and in this way, users from various institutional backgrounds are invited and encouraged. MAFEIP is designed to adapt to different institutions, populations, and care contexts. It represents a clear support to evidence-based decision-making processes by providing an early assessment of the likelihood that a particular intervention would achieve its anticipated impact. The MAFEIP tool also helps in identifying what factors drive the effectiveness or efficiency of the intervention, which would then guide further design, development, or evaluation of the intervention. . |
| **Key topics covered** | Outcome indicators (OI) on intervention/commitment level in MAFEIP can be seen from three different perspectives according to the objectives of EIP-AHA: |

|  | Quality of Life | Sustainability |
|---|---|---|
| Primary OI | HR QoL<br>mortality | Incremental change in resource use<br>local unit cost for resources |
| Common secondary OI | risk factors<br>physical activities | (Common resource categories –<br>hospital admission; length of<br>hospital stay; emergency visits; |
| Specific secondary OI candidates | Adherence<br>Frailty<br>cognitive decline<br>functional status<br>falls<br>nutrition<br>mental health | primary care visits; specialist vis<br>institutionalization) |

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[22] Boehler, C. Presentation on: Results for process indicator ars, identification of outcome indicators & building a tool to link outcomes tot he EIP on AHA objectives.

[23] Boehler, C. Presentation on: MAFEIP Tool – conceptual framework, analytical approach & implementation

| | |
|---|---|
| | The tool model concept consists of:<br><br>Health states a target patient is currently in and/or may experience in the future<br>Probabilities to move from one health state to another, and for each health state<br>Costs (resource use valued in monetary units)<br>Values or utilities for health outcomes<br>The process includes the following steps:<br>1. Adapt the model by defining appropriate health states<br>2. Assess data availability for probabilities, costs, and health state values / utilities<br>3. Identify secondary sources of data if inputs for model parameters are missing<br>4. Populate and run the model for the base case and the intervention scenario<br>5. Calculate incremental health gain / incremental health system impact<br><br>The MAFEIP tool is planned with a web-based implementation where stakeholders input data remotely and background data will be provided to populate parameters with baseline estimates. The use of the web-based tool will be facilitated by user-friendly web interface, validity checks, background information and guidance by IPTS. |
| **Application, documented experiences** | The MAFEIP tool has been used for the early technology assessment of a planned device to predict falls in the elderly. [24] It has been shown that the tool can be applied to assess technologies even at an early stage of development (in this case already at the stage of 'proof of principle'). It does so by transforming methods conventionally used for informing 'decision to buy' into the 'decision to invest' development process of technology allowing an investor perspective which is important for many policy initiatives. MAFEIP can be useful for assessing the potential of a new technology providing valuable information for EIP-AHA to provide right support for respective innovations.<br><br>The tool development team has carried out various workshops to gather information and opinion from stakeholders, primarily those from local commitments, to allow evaluation and improvement of the tool. The MAFEIP model has improved on its flexibility to adapt to different interventions, populations and care setting matching the needs of context-specific assessment within the EIP-AHA scope. |
| **Strengths and weaknesses** | Strengths:<br>Synthesising best available evidence from multiple sources<br>Allowing adaptation to different interventions, populations, care contexts<br>Ensuring consistency in methods whilst minimizing duplication<br>Allowing early and iterative assessment of innovation<br>Remote access through web-implementation<br>Potential weakness<br>Data transfer to IPTS for assessing EIP on AHA objectives |
| **Possibility for Replication** | MAFEIP was initially designed specifically to assess interventions and technologies within EIP on AHA with a focus on the project objectives. The model is built matching needs of the stakeholder/commitments on context-specific assessment facilitating adaptation to different solutions and technologies in the scope of AHA.<br><br>The possibility of showing investor perspective in the assessment results provides valuable information on investment and potential and might eventually facilitate decision on whether a particular intervention is worth being scaled-up. The tool has also been developed to adapt to scenarios outside of the EIP context, and has been designed so that it may be utilized by anyone from various institutions or populations with no specific background required.<br><br>The web-based implementation of the tool allows easy replication and use, such that various reference sites are also able to work all at once. Moreover, Specific training and personalised support will be provided to users. These trainings and supportive material include a User Guide, informative videos, a help desk, and introductory presentations among others, and can be found in the MAFEIP website support section.[25] |

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[24] Boehler, C., De Graaf, G., Steuten, L., Abadie, F. & Pecchia, L. Presentation on:    Using the EIP on AHA monitoring tool for early technology assessment of a planned device to predict falls in the elderly.

[25] http://mafeip.eu/support/

## IDEAS' Health innovation scale-up catalysation

In heath innovation scale-up, one main task is to identify innovations which are suitable to be scaled up. The researchers distinguished multiples attributes of scalable health innovations and areas of implementer capacity that increased the prospects of government adoption and community uptake during interviews with stakeholders from different fields. There are eight main attributes in assessing whether a health innovation is likely to be scalable and six areas of implementer capacity which are particularly important in catalysing the scale-up of health innovations. Eleven key activities targeting the above mentioned attributes and capacities are suggested for catalysing scale-up[26].

| Contact organisation & person | Dr. Neil Spicer, IDEAS team |
|---|---|
| Reason for development, target area | Understanding the factors influencing scale-up is important for translating innovations that are effective in improving health and survival into policy and implemented at scale. The IDEAS (Informed DEcisions for ActionS in maternal and new born health) project from the London School of Hygiene and Tropical Medicine aims to improve evidence for maternal and newborn health (MNH) innovations and policies. A qualitative study involving interviews with stakeholders was carried out to explore factors and issues concerning scale-up of innovative interventions targeting mothers and newborns in Ethiopia, the Indian state of Uttar Pradesh and the six states of northeast Nigeria, which are settings with high burdens of maternal and neonatal mortality. |
| Key topics covered | A number of issues concerning the design of scalable health innovation were discussed and **attributes of scalable health innovations** were proposed as follows: |

| Attribute | |
|---|---|
| Relevant & important | • Addresses important and/or visible health problems/needs |
| Effective & advantageous | • Impacts positively on communities' health<br>• Has a comparative advantage over other innovations |
| Observable benefits | • Benefits and health impacts are visible<br>• Benefits are easily demonstrated through evidence |
| Acceptable to health workers & communities | • Culturally acceptable to sociocultural norms, religions, language, health beliefs and practices<br>• Appropriately branded using ideas and language meaningful to users<br>• Seen as being owned by communities<br>• Works with existing community structures and actors including village committees and traditional birth attendants<br>• Benefits and incentivises health workers<br>• Does not burden health workers by adding to their workload or making them more accountable for failure |
| Simple & low cost | • Simple/convenient to use and easily understood by health workers and communities<br>• Low cost to implement at scale and/or cost effective<br>• Low human resource inputs required<br>• Places no/minimal cost burden on user communities |
| Aligned & harmonised | • Builds on and aligns with existing government health systems<br>• Addresses needs/fills gaps in government health programmes<br>• Coordinates with other donor programmes |
| Adaptable | • Adaptable to different geographical, socioeconomic and cultural contexts<br>• Adaptable to different health systems contexts |

[26] Spicer, N., Bhattacharya, D., Dimka, R., Fanta, F., Mangham-Jefferies, L., Schellenberg, J., ... & Wickremasinghe, D. (2014). 'Scaling-up is a craft not a science': Catalysing scale-up of health innovations in Ethiopia, India and Nigeria. Social science & medicine, 121, 30-38. http://www.sciencedirect.com/science/article/pii/S0277953614006133

| Sustainable | • Avoids/has low recurrent costs |
|---|---|
| | • Includes local income generating schemes |

These can be seen as elements to be assessed when determining if a given health innovation is suitable for scale-up.

**Implementer capacity** for catalyzing innovation scale-up:

- Staff capacity. Staff with expertise and dedicated time for evaluation, advocacy and communication.
- Technical capacity. A strong track record for effective delivery and producing trustworthy evidence.
- Reputation. A reputation for integrity and sincerity rather than being financially orientated.
- Leadership. Charismatic leaders able to convince decision makers.
- Networks. Strong relationships with the government and other actors.
- Grant size and length. Implementers with larger, longer grants have more influence.

**Key strategies** for a programme implementer to catalyst scale-up include the followings :
1. Designing for Scale up
   - Designing scalable innovations
   - Planning for catalyzing scale-up
     - Integrating scale-up within programme plans
     - Building implementer capacity
2. Decision Making
   - Advocating effectively with government decision makers
   - Generating and communicating strong evidence
   - Ensuring government involvement throughout a project
   - Invoking policy champions and networks of allies
   - Aligning with government systems, policies, priorities and targets
   - Harmonizing efforts with other development partners and implementers
3. Delivery at Scale
   - Supporting and building the capacity of government for scale-up
4. Demand and Uptake
   - Working with community leaders, media and others to stimulate diffusion of innovations among communities

Types of **evidence** to be communicated with government and decision makers to catalyse health innovation scale-up:
- Quantitative evidence demonstrating outcomes and impacts
- Evidence on costs of implementing innovations/cost-effectiveness/estimated costs of scale-up
- Qualitative process data and operational lessons
- Mapping and needs/gaps assessments
- Benchmarking international best practices from programmes in other countries

| **Application, documented experiences** | Preliminary evaluation was carried out to identify barriers and enablers to scale-up within the context of the three regions aimed by the project. The evaluation was done mostly focusing on the regions' ability to adopt the key strategies suggested for scale-up. |
|---|---|
| **Strengths and weaknesses** | **Strengths**<br><br>The attribute of scalable innovations proposed here are mostly aligned with the seven domains of multidisciplinary assessment and transferability assessment in MAST, except it as well covers health worker perspectives on healthcare solution instead of only patient perspectives.<br><br>**Weakness**<br><br>• Only concerns necessary conditions for implementers but has no implication on what is needed in the health system or government policy to facilitate health innovation scale-up.<br>• Focuses on innovations and their current implementation's impacts on scaling up but does not concern target regions' impact on scaling-up a certain healthcare innovation<br>• Not a framework which can be used directly to evaluate health innovations and readiness of regions for scale-up. |
| **Possibility for Replication** | The framework proposed here for catalysing health innovation scale-up is mostly descriptive and has to be further developed before it can be used as a tool to assess health innovations or healthcare systems. The framework yet provides another perspective to look at health |

innovations scale-up, not only concerning the capacity of the regional or local healthcare systems but also that of the implementers. Similar to Scaling up Innovation in Public Sector (see below), the framework carries recommendations to facilitate system and capacity change for scale-up rather than assessing what and how to scale up.

## Guidelines of scaling up innovations and good practices (UNICEF India)

Six success criteria of scaling up health innovations are identified in the guidelines. For each criterion, the relevant challenges implementers may face are pointed out and strategies targeting these particular challenges are suggested. The six success criteria include: High demand for services; Vision & Leadership; Team and Stakeholder Commitment; Financial Space & Resources; Capacity Space & Building; Learning Space & Evaluation[27].

| | |
|---|---|
| Contact organisation & person | Charlotte Lattimer, UNICEF India Country Office |
| **Reason for development, target area** | In the case of India, where UNICEF resources are limited compared to national budgets, piloting is one of the key ways to cooperates with the Government of India (GoI) and seeks to influence GoI's own policies and programmes. <br><br> With the guidelines, the ICO wanted to improve its approach to piloting and scaling-up of innovationsa and good practices through better documentation of the results of pilot innovations and promoting early government involvement in the innovation process, careful assessment and costing of capacities. |
| **Key topics covered** | A number of success criteria and the respective challenges were identified to gauge if an intervention is ready for scale up: |

| Success Criteria | Challenges |
|---|---|
| **High demand** – there is strong take-up from communities for services and benefits provided by the pilot. | Communities are not accessing services, or not accessing them in an equitable way. |
| **Vision and leadership** – an individual or group sees the potential for scaling up and can drive the process forward, bringing others along with them. | Vision and leadership for the pilot is limited to UNICEF only and not shared by Government counterparts. |
| **Team commitment** – the entire team supports the pilot and the scaling up process. This includes Government counterparts (at political, bureaucratic and technical levels) as well as ICO staff. | There is resistance to change or reluctance to support the pilot approach. |
| **Financial Space** – windows of opportunity are there to mobilise the necessary resources for scaling up, preferably within existing budgets. | Funding is not available within the expected timeframe for the scaling up process. |
| **Capacity space** – capacity either already exists or can feasibly be developed to allow Government and other partners to take over management of the pilot. | Capacity gaps threaten the quality and sustainability of the scaled up intervention. |
| **Learning space** – the piloting and scaling up | Time pressures limit the possibility for |

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[27]  UNICEF India Country office (2013). Guidelines of Piloting and Scaling up Innovations and Good Practices. http://www.unicefinnovationsinsa.org/download/UNICEF%20ICO%20Piloting%20and%20Scaling%20Up%20Innovations%2 0and%20Good%20Practices.pdf

| | |
|---|---|
| | processes allows time for adequate review, reflection and adaptation of pilot approaches. | adequate reflection on and review of pilot successes and challenges. |
| **Application, documented experiences** | One example has been cited to indicate how the success criteria framework can be used to facilitate scale-up.<br><br>The success of the pilot '**Free referral transport system'** for safer institutional child-birth in Madhya Pradesh triggered up-scaling and state-wide replication. In order to preserve important elements of the pilot design and replicate the success factor of 'high demand for services', call-centres were set up locally and local staff are hired instead of redirecting all calls to a single call-centre. This ensures that callers will be accessing the services as local staff has local knowledge and dialect skills to communicate effectively with them. |
| **Possibility for Replication** | This framework is possible to be replicated as it concerns scale-up in general and does not seem to be limited to specific settings. Yet, as no detail description which elaborates on the success criteria can be found and the indicators suggested here are mostly covered by the Maturity Model (except 'Learning Space'), there does not seem to be a need to replicate this framework.<br><br>The 'Learning Space' criterion was not mentioned by other framework but is apparently an important factor to be considered in the scale-up process. |
| **Strengths and weaknesses** | **Strengths**<br><br>• Focus on environmental factors and organizational issues which could help determining in which settings or context the intervention can be replicate and scaled up<br><br>**Weakness**<br><br>• Not concerning features or objectives of the interventions, difficult to be matched with other regions by need/gap analysis<br>• No detailed description or sub-criteria of the 6 success criteria is available |

## Sustainable scale-up of business impacts (BISS)

Scale-up of a certain application includes the sustainable scale up also of its business impacts. This depends on the business model and organizational structure which the application is built on. Success factors for a successful and sustainable scale-up to happen can be divided into seven categories: Market demand & Behaviour Change; Technology & Infrastructure; Education & Training; Financial Frameworks; Governance Systems; Information Provision; and Partnership & Communication[28].

| | |
|---|---|
| Contact organisation & person | Collaborating Centre on Sustainable Consumption and Production, CSCP |
| **Reason of development, target area** | The overall objective of the BISS project is to identify and assess issues on the scaling up the impacts of innovative sustainable living business practices. The underpinning concepts, a categorisation of business models, scaling up pathways and success factors were addressed with a multi-disciplinary and multi-stakeholder approach.<br><br>Alongside the BISS, the CSCP also developed the Global Network on Sustainable Lifestyles which promote knowledge sharing and collaboration of sustainable lifestyle. Participants of workstudio in different countries are encouraged to match their need s to scale up sustainable living in Europe through business and social innovation with offers and skills of other participants. |
| **Key topics covered** | Scaling up pathways can be defined as mechanisms that describe how business impacts could be scaled up. Depending on the focus of the scaling up efforts, scaling-up pathways can be classified into the following categories: |

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[28] Business Innovation for Sustainable Scale-up BISS. (2014)Scaling up business impacts on sustainable living: Baseline assessment report.
http://api.ning.com/files/wBi6IgNyVI8qC5eryx6vhCgUHNLeQtczwkAjnvKGOWozVecWCqPcl59V7f6IlHKYtW17trTyt5id*yEr
MNvSdMOdv5cVtzO2/BISSBaselineAssessmentReport31Jan14.pdf

| Scaling up pathways | Categorizes | | | Description |
|---|---|---|---|---|
| Impacts of organisations | Scaling impacts by growing the organisation | Organic growth | | Scaling up by increasing the range and distribution of products and services and by opening new subsidiaries |
| | Scaling impacts beyond organisational boundaries | Acquisitive growth | | Scaling up by acquiring other firms |
| | | Dissemination | | Sharing ideas with others using advocacy, open-source change-making and creating social or political movements |
| | | Collabo-ration | Joint ventures | Collaborating by establishing a new legal entity (equitybased) |
| | | | Partner-ships | Collaborating on a contract basis rather than an equity basis |
| | | | Franchising | Collaborating by establishing a contract between a trademark owner (franchisor) and a local user (franchisee) to produce/sell products or services |
| | | | Smart networks | Collaborating by creating well-coordinated networks centred around a mission, rather than an organisation |
| | Scaling impacts by reducing organisational boundaries | Licensing | | Scaling up impacts by establishing a legal contract between a product / technology owner (licensor) and a local user (licensee) to produce the products / technologies that were initially developed by a licensor |
| | | Merger/scale | | Scaling up impacts by selling equity to another firm |
| Impacts of projects & programs | Quantitative scaling up (Spread, Replication, Nurture, Horizontal aggregation, Integration) | | | Increase in the membership base through project / programme spread, replication, nurturing by external organisations, horizontal aggregation between several projects/programs or integration into another project/programme |
| | Functional scaling up (Sectoral/Factoral integration) | | | Projects and programs expand the types of activities (e.g., from environmental |

| | | | |
|---|---|---|---|
| | | | intervention to health, credit, training, etc.) |
| | | Political scaling up (Information & mobilization, Networking) | Projects/programs move beyond service delivery and towards institutional change |
| | | Capacity scaling up | Project/programs improve efficiency and effectiveness through increased financial self sufficiency, diversification of funding sources, staff training, etc |
| | Impacts through value creation | Product substitution | Development of products or services that help to reduce the consumer's environmental impact by substituting more resource and energy intensive products with lower-impact products or services that serve the same or similar purpose. |
| | | Efficient use of products and services | The company actively aims to prevent problems such as overconsumption, or provides advice to consumers regarding product use during the consumption phase and/or at end-of-life stage to improve the efficiency of product use and disposal. |
| | | Shared use of products and services | Consumers get access to products through entrepreneurs (or through other consumers) who provide access to products |
| | | Longer use of products and services | Value creation by extending the lifespan of a product and avoiding strategies such as planned obsolescence. |
| | | Efficient end-of-life strategies | Efficient product re-use and recycling strategies (or so-called up-cycling strategies) can scale up the impacts of existing/new businesses and generate additional economic and consumer value |

In BISS, success factors for scaling up were proposed and categorized into the followings:

- **Market demand & behaviour change:** To switch to more sustainable lifestyles and living conditions, it is necessary to change stakeholder behaviours (e.g. encourage, discourage, enforce) and increase awareness among consumers, business, policy makers, financial institutions, and others.
- **Technology & infrastructure**: Fit-for-purpose, practical and feasible technologies and supporting infrastructure enables the implementation of the innovative business solutions.
- **Education & training**: Empower entrepreneurs with techniques and skills to understand consumers' needs and develop sustainable products and services that respond to such needs.
- **Financial frameworks**: The economic and financial means by which entrepreneurs and

| | businesses can leverage the development of sustainable products, services and business models. <br> • **Governance systems**: Governance systems support the creation of enabling environments for sustainable entrepreneurship and business innovation through reliable rules, information stability and trust among stakeholders. <br> • **Information provision**: During a scaling–up process it is not necessary to know everything but to connect with the right people and to have access to relevant and reliable data to support decision making. <br> • **Partnerships & communication**: Partnerships and alliances are an important precondition to develop any strategy to scale up sustainable living business impacts. Partnerships are the means by which different actors interact and enable the replication of impacts. |
|---|---|
| **Application, documented experiences** | The framework proposed here was based on multi-stakeholder workstudios held in Bogota (Colombia), Manila (Philippines), Accra (Ghana), and Berlin (Germany), project countries of the BISS project where different stakeholders together discuss opportunities, challenges, offers, needs to scale up business impact on sustainable living. Examples of projects or organizations were given to illustrate the different types of scaling up pathways and justify success factors, but no information was documented on how the framework aid scaling up in practice. |
| **Strengths and weaknesses** | **Strengths** <br><br> Classification of scaling up pathways is comprehensive and covers a wide range of scale up with multidisciplinary approach. <br><br> **Weaknesses** <br><br> • Provide a classification of scaling up and scaling up pathways, but no implication of the categories under the classification was given <br> • No information of what to do and how to do it after categorizing a solution according to its focus of scale up <br> • Methodology of match-making of offers and needs are not clear; seems to be merely suggestion of service individuals or organizations could provide and need |
| **Possibility for Replication** | Although the frameworks focus was on sustainable living business practice, some part of it can be generalized into other settings. The comprehensive classification of scaling up pathways could be replicated and aid decision making on what kind of scaling up could be done according to the focus of the impacts of a solution to be scaled up, though no recommendation or implication for each type of scaling up pathways is provided. |

## Scaling up Innovation in Public Sector

In the final report of the NSG Capacity Building Group[29], recommendations for scaling up innovations in the public sector are spread across four disciplines (capacity, culture, networks, evaluation) having innovation building as the common central target. Nine additional key activities are mentioned in details to assist implementation in accordance to the recommendations across the four disciplines.

| **Contact organisation & person** | Capability Building Programme, National School of Government UK |
|---|---|
| **Reason of development, target area** | A proposal to support scaling up innovation in public sector as a part of public service reform. There are good ideas of innovation of all kinds which could contribute to the public sector, yet they failed to be scaled up and spread. This way, opportunities to meet the challenge of structural change and limited resource the public sector faces are lost. <br><br> With the help of literature review and interviews with catalysts (funders, decision makers, vendors and designers) and practitioners (implementers), conditions to successful scale-up of |

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29 National School of Government Civil Service Capacity Building Group. (2011). Final report of the Capacity Building Programme Project Group - Scaling up Innovation in the Public Sector http://webarchive.nationalarchives.gov.uk/+/http://blogs.bis.gov.uk/publicsectorinnovation/files/2011/07/Scaling-Up-Innovation-in-the-Public-Sector-Full-Report.pdf

innovations across the public sector were analyzed. Four areas which need priority action were identified and recommendations were created for the priority action.

| **Key topics covered** | Definition of scale-up of innovation: |
|---|---|

Definition of scale-up of innovation:

"We disseminate, diffuse, exchange, share, and apply the lessons learned from innovative ideas more widely.  If something works, it should be adopted elsewhere (inside the same or another organisation) or, if not directly applicable, adapted to deliver similar benefits elsewhere."

Drivers and Levers for scaling up in the modern world include behaviour change, collaboration, co-production, openness, transparency, incentives, deregulation, enabling and influencing. Central government becomes the catalyst for change and stimulator of innovation – firstly by building the structures for localism and open public services; and secondly, by mobilising people and organisations to take forward opportunities created by the new landscape.

Eight core themes which highlight the prerequisites for and barriers to successful scaling up of innovation across the public sector were identified within opportunities and challenge of scaling up suggested by catalysts and practitioners. The themes are as follows:

| Culture | Building open and supportive culture that rewards and encourages inno with both the means and the permission to innovate. |
|---|---|
| | Requires: shift in attitudes, move away from risk adversity, senior buy i champions, and collective will. |
| Evidence, Social Returns, Outcomes | Importance of evidence in demonstrating the social return and positive provide the business case for scalability. |
| | Requires: horizon scanning, prototyping to gather evidence, evaluation business tool. |
| Skills | Being innovative and understanding how to scale up good ideas shou every public sector worker. |
| | Requires: public sector skill set focusing on being open, collaborative, creating a network of mentors and buddies. |
| Networks and Knowledge Sharing | Having in place networks (formal and informal) to: make connections, who have done it before, share learning and knowledge, share tools, p create relationships and dialogue, act as change agents, and support b |
| Processes and Mechanisms | Without organised processes and structures in place to encourage th public sector, it is difficult to facilitate and support the roll out of innovat |
| | Requires: open source policy making framework, flexibility to try an internally. |
| Ownership | 'Owning' an idea and being seen to own it acts as an incentive that There is also a role here for considering the role of community owners local voice. |
| Resources | Manage the resources, funding, expertise and support for scaling support an innovative idea, it's unlikely to get to a prototype stage, or to be adopted elsewhere. However, to over-resource at the start makes |
| Credibility | Credibility, endorsement, and reputation all provide the business case alongside proof of concept and proof that it 'works'. This generates investors or service 'buyers' to diffuse the idea. |

The eight core themes were analyzed and four areas were identified for bold recommendation of priority actions to support the systemic change required for innovation scale-up.

1. Create the conditions that maximise the **capacity** for innovative ideas to scale across the public sector;
   - Open Public Services
   - Processes and structures that support scaling up

- Flexible resource mechanisms
2. Ensure that the public sector has the organisational **culture**, leadership, and people conducive to supporting the scaling up of innovative ideas;
   - Proactive leadership support
   - Flexible organizational culture and environment
   - The right people skills
3. Establish **networks** that facilitate the dissemination of innovative ideas that could be scaled, supporting the spread of knowledge; and
   - Platform that support scaling up
   - Collaboration to facilitate scaling up
   - Active learning
4. Use appraisal and **evaluation** of innovative ideas to provide the business case for scaling, to ensure the right ideas are implemented and driven forward.
   - A scalable business model
   - Prototyping
   - Scaling up embedded into policy-making

Nine recommendations were at the end created according to the identified areas for priority actions to facilitate scaling up innovations across the public sector.

1. **Central coordination**
   Government should consider the merit of drawing together a small central resource to co-ordinate support for the scaling up activity needed to bring about the required organisational and cultural change at the centre. This streamlining will simplify overall co-ordination of support while allowing for individual differences in approach. This should also include linking in to the Open Public Services White Paper recommendations on common evaluation.
2. **Expert resource Pool**
   Central and local government should work together to establish a programme to facilitate and encourage public sector organisations at all levels to proactively come together to scale up specific innovations or areas of good practice from any source or sector. This should include: finding a way to pull together cross-agency teams to work on specific time-limited scaling projects; establishing Action Learning Sets; developing evaluation to suit different organisational circumstances; and support to make a business case for scaling up.
3. **Outcome-based commissioning**
   Establish an expert learning network in outcome-based commissioning for those working both in policy and practical delivery. This should include talking to Local Authorities and LGID. It will help those involved understand the range of approaches being used and share learning about what works best and in what circumstances.
4. **A. Portfolio Funding: develop**
   Design a model for portfolio management of resources whereby a number of ideas are funded in parallel and funding from those that fail can be diverted to those that succeed. This allows innovators to 'test it, prove it, grow it and adopt it'. Test the model with practitioners both within DH structures and with a range of Local Authorities.
   **B. Portfolio funding: adopt**
   Adopt learning from the testing at recommendation 4 and implement the model
5. **Scaling up Framework**
   Explore whether the tested model / process for scaling up digital innovation can be applied more widely and apply it.
6. **Corporate tools**
   Government should use corporate tools (e.g. Include scaling in Business plans and individual objectives); skills development (e.g. Include in CSL Skills Strategy and competency framework); and leadership activity (e.g. Cabinet Secretary champions scaling up in guidance and speeches) to encourage effective scaling up of innovation
7. **Mentor scheme**
   Establish a mentor or buddy scheme for individuals who have an idea they want to scale. The mentor provides one-to-one support to establish that the idea is scalable and what support is needed to make it happen. In turn, those supported are actively developed as change agents by the mentor to support others in the cycle. This requires explicit support from the employing organisation e.g. Allowing time for meetings
8. **One-stop shop**
   Establish a one-stop online shop for public sector innovators to find out about ideas that could be or have been adopted or adapted elsewhere. This should signpost existing sources of advice (e.g. Business Link, the Innovation Launch Pad and LGID's community of Practice), be in a searchable format and capture examples of successful scaling up in an interactive way.

| | 9. **Award**<br>Add a category to existing Civil Service Awards to incentivise scaling up activity. This will both reward effective scaling up activity and provide an opportunity to articulate the range of ideas that can be successfully scaled in future. It can also be used to help identify a network of Scaling Up Champions or future mentors. |
|---|---|
| **Application, documented experiences** | Within the nine recommendations, seven of them were proposed to be tested by the project team within the timeframe of 2011 to 2012 in the form of government department implementation. The implementation were spread between BIS, DCLG, LGID, DH and CO. |
| **Strengths and weaknesses** | **Strength**<br><br>• Took a cross-government and cross-sector approach; generalizable to innovation scale up of various field<br>• Considered the need to both facilitate scaling up from the centre and to provide dynamic support at the point of implementation<br><br>**Weakness**<br><br>• Recommendations focus only on organizational and systemic change |
| **Possibility for Replication** | The major results in this report are the recommendations for scaling up innovation, which are not entirely tools and methods to detect what and how to scale up but more of suggestion of how to carry out system and organizational change (from the point of the central government) to facilitate innovation scale-up.<br><br>Although originally focused on scaling up innovations across public sector, the results and recommendations of this report can be easily generalized and applied to other types of innovation in various fields due the flexible cross-sector approach taken. |

## EUnetHTA Core Model

Health Technology Assessment (HTA) [30] aims at in-depth and detailed assessment of health technology. It comprises of nine domains of assessment (Health problem and current use of technology; Technical characteristics; Safety; Clinical effectiveness; Economic evaluation; Ethical analysis; Organizational aspects; Social aspects; and Legal aspects), and under each domain, various topics and underlying issues will be thoroughly investigated. The HTA Core Model is a methodological framework consisting of a HTA ontology, methodological guidance and common reporting structure for collaborative production and sharing of HTA information.

| Contact organisation & person | EUnetHTA WP8 |
|---|---|
| **Reason of development, target area** | The EUnetHTA aimed at developing a framework that enables effective collaboration and sharing of information to overcome two main challenges of contemporary HTA: variance in the extent and scope of analysis, and differences in reporting the results which limit the international applicability of national or regional HTA reports. The team built on earlier work of the EUR-ASSESS and ECHTA/ECAHI project and focus on operationalizing the questions that should be asked and answered within HTA, providing an overview of state-of-the-art methodologies, and defining and standardizing the structure of the final product—the HTA report. |
| **Key topics covered** | The HTA Core Model comprise of three main components:<br><br>• a HTA ontology, an extensive list of generic questions that can be asked in an HTA with identified relations between those questions<br>• methodological guidance, which helps researchers in finding answers of the questions defines in the ontology<br>• a common reporting structure, standard format for the output of the answers of a HTA<br><br>Under the ontology, the Core Model organizes information of an HTA by dividing it into nine |

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[30] EUnetHTA. (Jun 2015) HTA Core Model - Version 3.0 Public Draft. http://meka.thl.fi/htacore/model/ HTACoreModel3.0_PUBLIC_DRAFT.pdf

domains:

- Health problem and current use of technology;
- Technical characteristics;
- Safety;
- Clinical effectiveness;
- Economic evaluation;
- Ethical analysis;
- Organizational aspects;
- Social aspects; and
- Legal aspects

Each domain comprises of topics which are further divided into issues. Each issue (the generic question) is presented as an assessment element in the format of an assessment element card with a combination of related information. Importance and transferability of an assessment element decide if it is a core element or not with a Core Matrix attempting to focus on useful issues applicable to international context.

The common reporting structure suggested in the Core Model is in form of result cards for each assessment elements. These results card are then organized into collections which form a coherent package of information of a HTA. The common reporting structure for core HTAs with extensive analysis of all nine domains and all core elements are as follows:

- **Collection Summary** Contains an overview of all findings in the collection. No recommendation regarding the technology can be included in core HTA information collections. A standard table is included summarizing the consequences of using or not using the technology and its comparator(s), see below.
- **Collection Methodology** Indicates the process and overall methods used for producing the collection.
- **Collection Introduction** Provides an overview to the collection, including the reasons why, and in which context the collection was produced.
- **Scope** A structured scope for the project providing a well-defined starting point for analysis within different domains. Ensures the coherence of analysis within different domains.
- **Domain-specific sections (one for each domain included in the collection)**
  - **Introduction of domain** Indicates the specific features of the technology that are noteworthy from the viewpoint of this domain as well as the motivation of including the domain in the collection.
  - **Domain methodology** Indicates the scientific methodology used within the analysis of this domain.
  - **Assessment elements of the domain**(each element contains the following sections)
- **Method** (optional) Can be used if the methodology used for answering the question(s) defined by an assessment element differs from the overall domain methodology, or if the domain methodology does not provide a detailed enough description.
- **Result** Answer to the research question(s) defined by one assessment element, with a focus on evidence or facts whenever feasible. Answers should respect each domain's scientific principles and style.
- **Comment** (optional) While the result field typically focuses on evidence or facts, this field can be used to add researchers' views on the result and its quality. Similar to discussion chapter of journal articles, but focused on the question(s) included in one card.
  - **Discussion** Similar to discussion chapter of journal articles, focusing on one domain. Interpretation, significance of methodological issues encountered and indications for further research can be included here.
  - **References** All references used in the result cards and domain texts (introduction, methodology, discussion).
  - **Appendices** All appendices of a domain.

**Collection Appendices** All appendices used in the collection-level chapters (summary, methodology, introduction, scope) or within more than one domain's content.

| | |
|---|---|
| **Application, documented experiences** | EUnetHTA partners and associates or other non-commercial parties can access HTA Core Model Online and use it to produce HTA information. A number of HTA projects using the HTA Core Model have been published on the HTA Core Model Online collection which include both core HTA and rapid assessments. |
| **Strengths and** | **Strengths** |

| weaknesses | • Very detailed description and examples are given under each domain, topics and issues<br>• Samples of assessment element cards available<br>• Relations between issues or domains are presented and analyzed<br>• Comprehensive guidance of how and where to look for necessary information to complete assessment<br>• Consider assessments elements' applicability in international context<br>• Involve comparison of technologies to comparators<br>• Enables effective international production and sharing of HTA results in a structured format<br><br>**Weaknesses**<br><br>• Designed only for diagnostic technologies, medical and surgical interventions, pharmaceuticals, and screening technologies<br>• Rather time consuming<br>• No explicit transferability and scalability assessment of the technologies |
|---|---|
| **Possibility for Replication** | The HTA Core Model preliminarily focuses only on four types of health technologies (diagnostic technologies, medical and surgical interventions, pharmaceuticals, and screening technologies), thus description or examples within the model are limited to certain context. Adaptation has to be done before it could be used to evaluate other health innovation or solutions.<br><br>The assessment done within the model although address a comprehensive lists of issues under nine domains, it does not explicitly consider the transferability and scalability of the technologies. MAST being an assessment model based on the HTA Core Model with extra interoperability, scalability and generalizability analysis seems to be a better and more suitable tool in the scope of ScaleAHA. |

## Integration Assessment

| Contact organisation & person | Open Evidence and empirica[31] |
|---|---|
| **Reason for development, target area** | The integrated assessment model was developed as a part of a tender in response to a Call concerning Health system performance and integrated care assessment from the EC.<br><br>Development of the model is based on systematic research on existing tools and frameworks related to assessment of integration care. Existing frameworks covering various aspects of integrated care provides a comprehensive basis for the current model to build on; these includes:<br><br>• The five dimensions of integration nest[32]<br>• Scale of functional integration[33]<br>• Balanced scorecard method (as found by Armitage et al.[34])<br>• Clinical microsystem self-assessment tool developed through the systematic analysis of 20 high performing clinical microsystems in North America<br>• Critical health system function and related integration elements[35]<br>• Key drivers for integration[36] |

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[31] Empirica & Open Evidence. (Feb 2016). Health system performance assessment - integrated care assessment - Tender in response to Call for tender Chafea/2015/Health/08 concerning Health system performance assessment - integrated care assessment Contract notice 2015/S 253-462302

[32] Kodner, D. L. (2009). All together now: a conceptual exploration of integrated care. Healthc Q, 13 Spec No, 6-15.

[33] Ahgren, B., & Axelsson, R. (2005). Evaluating integrated health care: a model for measurement. Int J Integr Care, 5, e01; discussion e03, e09.

[34] Armitage, Gail D., Suter, Esther, Oelke, Nelly D., & Adair, Carol E. (2009). Health systems integration: state of the evidence. International Journal of Integrated Care, 9.

[35] Atun, R., de Jongh, T., Secci, F., Ohiri, K., & Adeyi, O. (2010). A systematic review of the evidence on integration of targeted health interventions into health systems. Health Policy Plan, 25(1), 1-14. doi: 10.1093/heapol/czp053

[36] Suter, Esther, Oelke, Nelly D., Adair, Carol E., & Armitage, Gail D. (2009). Ten key principles for successful health systems integration. Healthcare quarterly (Toronto, Ont.), 13 Spec No, 16-23.

The assessment model covers the following areas concerning the implementation of integration care in a healthcare system: readiness, enablers & barriers, adoption, and impact. Each module is presented as a scoring system reflecting the current situation of the studied health system. This will be used to facilitate a quantitative structures cross-analysis which will be used as key concept for an in-depth qualitative mapping interview. The rating scale is divided into 5 bands which are related with the level of deployment so as to capture maturity level:

| | Description of level of deployment |
|---|---|
| First band | An action plan and/or isolated measures are in place. Deployment is limited. This corresponds to pilots, specific actions with a certain group of patients and projects at the design stage. Deployment (coverage in terms of geographical area and number of diseases) is very limited. |
| Second band | The action plan has been implemented but outcomes have not been evaluated. The plan is deployed in 25% of the relevant areas. This will apply when the action plans have been implemented in some hospitals, by some professionals or in certain departments, units or services, and for some chronic conditions, with a deployment of around 25%. It is likely that in this band no outcome evaluation has yet been made. |
| Third band | The action plan is being developed systematically. Outcomes have been evaluated. The plan is deployed in 50% of the relevant areas. This band assumes that the action plan is being systematically implemented (which means it is no longer a question of pilot projects based on the voluntary activities of a few individuals) and the assessment system has been designed. The implementation of these interventions involves a greater number of hospitals and professionals from different disciplines, and several chronic conditions, usually the most common ones (such as, diabetes, hypertension, asthma, COPD, depression, osteoarthritis, among others), with a deployment of approximately 50%. |
| Third band | The action plan has been systematically evaluated. The plan is deployed in 75% of the relevant areas. This band should be used when the action plan has been in practice for at least 2 years. Interventions are deployed in approximately 75% of relevant areas involving a broad range of professionals or many hospitals, as appropriate. These interventions involve many types of chronic conditions. Further, it has been possible to assess the interventions and the outcomes thereof are allowing improvements to be introduced in the ways of working in the organisation. |
| Fifth band | The action plan is part of the care model. It is deployed in over 85% of the areas and favours innovation. This is limited to cases where the action plan is fully integrated in clinical practice and there is deployment across over 85% of the organisation. Evaluation is geared towards improvement and innovation of new, radically different interventions, for example, of a new nature or involving the application of new technologies. |

**Key topics covered**

The assessment model covers four modules. Each modules are divided into a number of themes which are represented further by various indicators to be rated. Followings are modules and relevant themes:

**Readiness**

- Comprehensive services across the care continuum
- Patient focus
- Geographic coverage and rostering
- Standardized care delivery through interprofessional teams
- Performance management
- Information and Communication Technologies
- Organizational culture and leadership
- Professionals integration
- Governance structure
- Financial management

| | |
|---|---|
| | • Policy commitment |
| | **Enablers & Barriers** |
| | • Patient resistance to technology |
| | • Resistance from care managers and healthcare professionals involved |
| | • Lack of interoperability |
| | • Increased workload |
| | • Misalignment of incentives |
| | • Lack of legal certainty on liability |
| | • Creating the right context for INTEGRATED CARE deployment |
| | **Adoption** |
| | • Foci integration |
| | • Types of integration |
| | • Level of integration |
| | • Breadth of integration |
| | • Degree of integration |
| | **Impact** |
| | • Patient centeredness |
| | • Delivery system |
| | • Performance management |
| | • Quality of care |
| | • Result-focused learning |
| | • Interprofessional teamwork |
| | • Roles and tasks |
| | • Commitment |
| | • Transparent entrepreneurship |
| | • Outcomes of integrated care |
| **Application, documented experiences** | No application or experience can be found yet, as this model is proposed in a recet tender. |
| **Strengths and weaknesses** | **Strengths**<br><br>• A comprehensive theoretic basis built on systematic review of existing tools and frameworks<br>• Covers various aspects of integrated care implementation (from readiness, adoption to impact)<br>• Scale related with the level of deployment makes capture of maturity level possible<br>• Based on health system performance assessment framework, it emphasizes that the unit of analysis is an ecosysem but not a single site or area of care<br>• Aiming at assessing integration of care in all health system in EU<br>• Scorecard tool which can be completed quickly<br><br>**Weaknesses**<br><br>• Only quantitative assessment is carried out<br>• Rating of indicators without quantified and concrete description of each level on the scale<br>• Qualitative assessment has to be carried out based on the results from the current model in order to understand how the system is working and why |
| **Possibility for Replication** | The model proposed aims to provide a framework for integrated care assessment all EU countries. It covers various areas and aspects on integration care, focusing on the characteristics of the health systems as well as the process of the adoption. This should provide a tool which can be used to assess both the implementation of integration care and the environment it is in with a great degree of flexibility, which could facilitate matching of sites or region with similar charateristics.<br><br>As the model is in a scorecard format, it can be easily replicated and implemented across settings and nations. The results can also be easily analysed as a matching score as rating for each indicators are corresponding to five level of deployment and maturity. |

# 3    2016 Call for Reference Sites of the EIP on AHA

The ScaleAHA study supported the 2016 Call for Reference Sites of the European Innovation Partnership on Active and Healthy Ageing. The support included applications collection, eligibility check, and peer-review organisation of the eligible candidates. In practical terms, the support included wide dissemination of the call, setting-up the infrastructure to collect applications, continuous support to applicants via email and phone, setting-up of the peer review platform, conducting a briefing webinar, and providing assistance to applicants during the review period.

**Application process**

Preparation for the application process began in January. The online form for submission of applications was prepared by the study team. It is based on the content management system Limesurvey[37], which has the necessary features to facilitate the process and is well known to empirica, as it has been used in many other projects and studies performed for the European Commission.

The online form reproduces the format of the official call text with slight adjustments to facilitate an online presence, such as the use of character count for setting limits instead of word count, or use of sequential questions as opposed to table-style layout.



**Figure 5: Snapshot of the online application form (Section "About you")**

The online form allowed for the following types of questions:

- Entering information in text boxes
- Choosing from options using radio buttons (for the rating criteria)
- Upload of supportive files as evidence for fulfilment of the criteria

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[37]   https://www.limesurvey.org/

**Figure 6: Snapshot of the online application form (Section "Rating criteria")**

The answers collected in the back-end were exported to Microsoft Word to form the final application.



**Figure 7: Snapshot of the final application**

The Call for Reference Sites of the EIP on AHA 2016 was opened from 29 January to 15 April. A total of 81 applications from 22 countries were submitted.
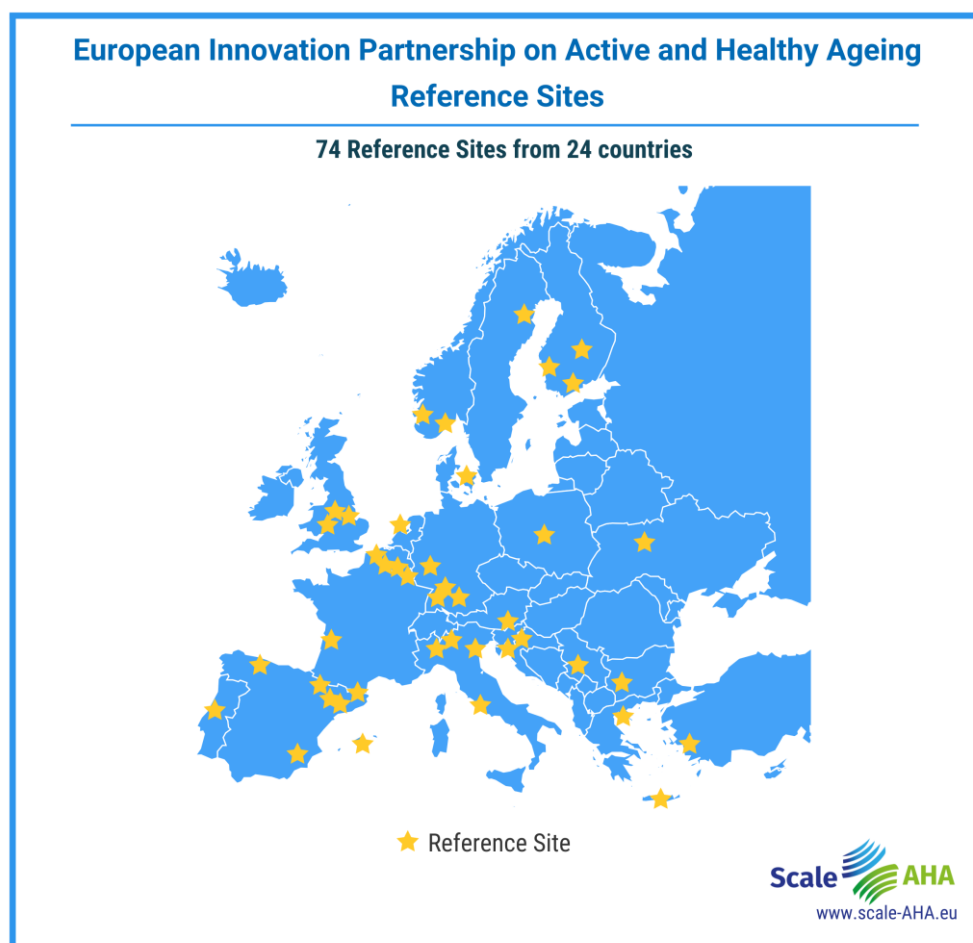
**Figure 8: Overview of Reference Sites**

During the application process, the following events need to be mentioned:

- A technical issue related to the character count for specific boxes led to the offer to each applicant to exhaust the limit of the specific fields. An adequate timeframe of one week was provided to all applicants for revising five text fields;
- the automatically generated PDF version of the application made available through the platform to the applicants did not contain formatting, however the exported versions from the platform contained all formatting as done by the applicants, with zero formatting losses;

**Eligibility check**

All 81 applications next underwent an eligibility check. This included examination of the applications with regards to the following criteria:

- The applications represent an ecosystem or alliance of stakeholders that reflect the "Quadruple helix approach", which includes the participation of government/healthcare providers, industry, academia and the civil society.
- RS should demonstrate they have comprehensive strategies in place, or under development, which direct and guide policies and practices in the region, including supporting an active and healthy ageing population.
- RS should showcase innovative components of their care model/systems that can serve as illustrations of good practice to other regions. RS should seek to scale up/replicate the practice, e.g. by submitting good practices to the EIP on AHA Repository of Innovative Practices, or by coaching other regions that wish to implement their good practices.

- RS should give evidence and concrete illustrations of the impact of such approaches on the ground. Robust proof includes impact on the ground and presentation of sound indicators aligned notably with the indicators supported by the MAFEIP.



**Figure 9: The Quadruple Helix approach**

Based on these criteria, three applications were deemed non-eligible. At the same time, four pairs of applications for the same geographical region were identified. The affected applicants were contacted and asked to merge their applications into one, to which all agreed. This meant that further four applications were removed, as they were merged with the other applications from the same region.

Taking part in the eligibility check were empirica, the EC, as well as three representatives of the Reference Sites Collaborative Network (RSCN), which were consulted by empirica and the EC in some cases.

In conclusion, 74 applications passed the eligibility check and were invited to the next step of the process.

**Allocation of reviewers for the peer review process**

empirica and the EC applied the following criteria for allocating reviewers to applications:

- Each application is to be reviewed by three reviewers
- The three reviewers should not be from the applicant's country
- At least one of the three reviewers should be a former RS
- Reviewers should come from at least two different levels based on their self-evaluation results
- With these criteria in mind, empirica developed a simple spreadsheet-based tool to perform the allocation without knowing the applicant's names during the process (just the IDs). The following figure is a snapshot of that process. The tool was also used to facilitate the setting-up of the infrastructure necessary to gather the review results in the form of an online review platform.

**Figure 10: Snapshot of the spreadsheet used to allocate reviewers to applications**

## Peer review briefing webinar

A webinar was organised on 10 May 2016 by empirica, the EC and the RSCN in order to brief the applicants about the next steps. Each applicant is automatically also a reviewer of the applications in a peer-review process supported by the ScaleAHA study.



**Figure 11: Snapshots from the slides used during the webinar**

Reviewers were briefed on the peer review process. Questions by applicants were gathered and answered during the webinar, and have been also put online.
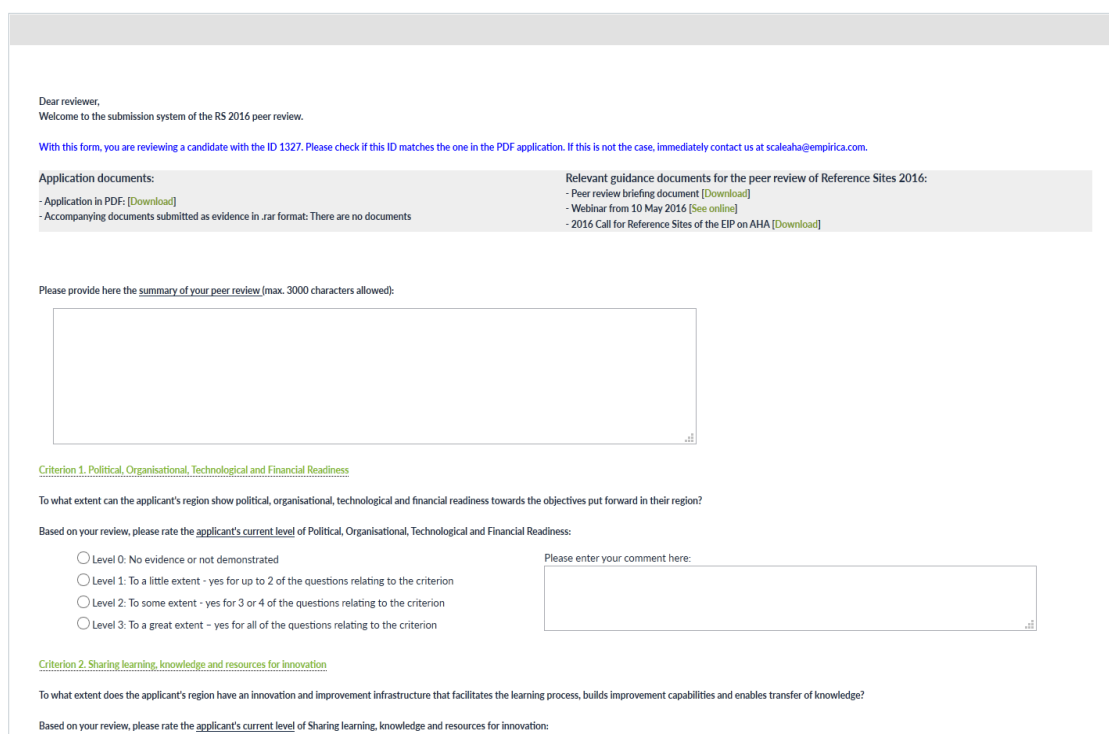
**Peer review process**

The reviewers received emails with links to the online platform and passwords to access the applications they have been allocated. Reviewers were asked to keep confidentiality by not distributing the applications and supporting documents outside of the stakeholders that form the ecosystem or stakeholder alliance in their region.

The online form for each peer review consists of:

- an evaluation summary (no more than 3000 characters with spaces)
- rating of the five criteria
- comments to support the rating of the five criteria

The deadline for submitting the reviews was set for 5 June 2016.



**Figure 12: Snapshot of the online review form**

**Results of the call**

As a result of the call, a total of 74 regional and local organisations have been awarded "Reference Site" status. Together these regions represent a commitment of over four billion € (2016-2019 period) to invest in innovative solutions that will lead to improvements in the quality of life of the ageing population, support efficiencies and sustainability of health and social care delivery and finally, stimulate economic growth and competitiveness. These investments will benefit an expected five million people in the next three years.

For the first time, as a result of the peer-review and expert review process in the 2016 Call, and given the "national and cross-regional dimension" of the applicant's activities, the panel of experts has decided to award the German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, the status of "National Reference for Excellence in promoting Innovation for Active and Healthy Ageing". Future calls will further explore the potential to have government-led National initiatives interested in participating in the EIP on AHA, proving an opportunity to showcase their innovative practices and contribution to scaling up innovation for the ageing population.

The awards were given at the European Summit on Innovation for Active and Healthy Ageing (5-8 December 2016).

Specific logos and style guides were developed as part of the PROEIPAHA project for the new Reference Sites (see below).



**Figure 13: Logos used by the 2016 Reference Sites of the EIP on AHA**

**Communications with the new Reference Sites**

empirica has been in regular communication with the 2016 Reference Sites on various occasions. The continuity of this communication will be ensured by the new platform of the Reference Site Collaborative Network (RSCN).

# 4 Transfer of Innovation Twinning Support Scheme: 2016 Pilot

The ScaleAHA team has supported the EC in implementing the 2016 Transfer of Innovation Twinning Support Scheme. It is a pilot scheme to support regional deployment of innovation by partners of the EIP on AHA through the reimbursement of expenses incurred in the transfer of innovative practices.

Regional organisations that are engaged in the works of the EIP on AHA by means of "Individual Commitments" or "Collaborative Commitments" and holding Reference Site status as a result of the 2016 call were able to apply to benefit from a scheme that supports expenses incurred to facilitate the transfer of innovative practices for implementation in another region. The focus has been laid on digitally-enabled innovative ICT solutions for health and care delivery for the ageing population.

There were two types of organisations involved:

- The "Organisation adopting the innovative practice (receiving/adopter organisation)" (the organisation that received the innovative practice and deployed / implemented it in its territory). This organisation was awarded Reference Site status in the 2016 call and will benefit from the experience and know-how developed by the "organisation transferring an innovative practice" in a particular field of intervention and that is included in the innovative practices repository of the EIP on AHA;
- The "Organisation transferring the innovative practice" (the originator organisation) with the experience and know-how developed in a particular field of intervention that is awarded Reference Site status in the 2016 call and is included in the innovative practices repository of the EIP on AHA.

The objective of this support scheme was to support the transfer of innovation (from the "organisation transferring the innovative practice" to the "organisation adopting the innovative practice") in a way that facilitated the latter's deployment of large-scale digitally-enabled ICT innovative solutions for health and care delivery to the ageing population. This initiative therefore contributes to the European scaling-up strategy of the EIP on AHA.

This scheme provided financial support to cover the travel and accommodation of experts from the "adopting organisation" to the "originator organisation" or vice-versa. It also covered expenses related to the "hosting" (such as transport within the region) incurred by hosting meetings. It did not cover fees for professional services (consulting, advisory services, moderation services etc.) and did not include the acquisition of products and services from third parties.

The total maximum amount to be claimed in expenses was capped at € 5,000 per twinning action. There can only be 1 hosting organisation for the twinning (which could be either the transferring organisation or the adopting organisation). Irrespective of the number of "adopting" organisations involved in the twinning action the maximum amount was capped at € 5,000 per twinning action.

**Application process**

Applications to the scheme were possible through a "joint request" (submitted through a brief online form) – that was to be completed between 20 July 2016 and 1 September 2016. The "joint request" was filled in by the adopting and transferring organisations together, requesting the twinning support, and providing details on the content of the twinning action, (notably which is the innovation practice to be transferred) and outlining the commitment to start implementing that innovative practice within the 2016-2018 timeframe (see Criteria for Application). An independent panel made up of the Scale AHA European project, PROEIPAHA and the European Commission reviewed the applications, resulting in 20 twinning actions that have been awarded funding.

**Application template**

The application form retrieved basic information about the adopter and originator organisations, such as the name of the Reference Site and of the responsible contact person, as well as the innovative practice to be transferred. The template also retrieved the type of ICT employed in the twinning practice and which EIP on AHA action groups the applicants belonged to.

**Innovative practice**

Describe the digitally-enabled innovation practice to be transferred.

A maximum of 1,000 characters is allowed per field.

| | |
|---|---|
| Practice description | |
| Link to the EIP on AHA Repository of innovative practices | |

Please specify the type of ICT enabled innovative solution for AHA.

- ☐ Regional/national EHR systems and summaries
- ☐ Care provider EHR systems integration (joined-up/shared records)
- ☐ Regional ePrescription system
- ☐ Integrated medicines management
- ☐ ICT tools supporting adherence to care plans
- ☐ Technology for falls prevention
- ☐ ICT-supported integration of health and social care services
- ☐ Homecare, tele monitoring and mobile health systems
- ☐ Multi-disciplinary team support, workflow, care planning and co-ordination

**Figure 10: Snapshot of the twinning application form (Section "Innovative practice")**

Further, the form asked to briefly describe the commitment for the innovative practice, including information about the budget, the problem addressed and the timeframe for the procurement. The applicants were also asked to fill out a framework for the twinning, describing the objectives, planned actions, expected outcomes and the expected impact of the planned actions. Also, a short confirmation was demanded, on whether the applicants were beneficiaries or applicants benefitting from the EU Structural Fonds in the field of active and healthy ageing, were involved in research and innovation projects or policy initiatives with strong connection to EIP on AHA objectives and high EU and regional added-value, planned to conduct twinning in the provided timeframe, were willing to document progress and report twinning outcomes to the ScaleAHA study and that adopter organisations were financially committed to procuring the practice until 2018.

**Eligibility check**

All applications submitted were reviewing by an independent panel made up of the ScaleAHA European project, PROEIPAHA and the European Commission, with regard to the following criteria:

- Whether or not they met the essential profile criteria (see below). If they did not meet the essential profile criteria they were deemed ineligible.
- Those applicants that met the essential profile criteria were evaluated on the "Other Criteria" that examine the merits and relevance of the twinning plan and the expected impact of implementation.

1) **Essential Profile Criteria (all these requirements had to be met in order for the application to qualify as eligible):**

Overall: The proposed twinning action relates to digitally enabled ICT innovation practice in active and healthy ageing. The ICT aspect of the practice is clearly described.

*a) Organisation transferring the innovative practice (originator organisation)*

- Awarded Reference-Site status at the 2016 Call for Reference Sites of the EIP on AHA (and therefore party to "Individual" or "Collaborative" Commitments entered in the 2016 Call for Commitments of the EIP on AHA)
- Innovation practices to be transferred in the twinning are already included in the EIP on AHA Innovative Practices Repository)
- Involvement in research and innovation projects or policy initiatives which have a strong connection with EIP on AHA objectives and with high EU and regional added-value.
- Involvement in networking activities between regional and national level to support best practice or knowledge exchange opportunities

*b) Organisation adopting the innovative practice (receiving/adopter organisation)*

- Awarded Reference-Site status (including Candidate Reference Sites) in the 2016 Call for Reference Sites of the EIP on AHA.
- Clearly established financial commitment to procure / implement large scale digitally-enabled ICT innovative solutions for health and care delivery to the ageing population within the 2016-2018 timeframe.

2) **Other Criteria** ("joint requests" that meet the essential profile criteria will then be evaluated according to the following criteria):

- Adopting / receiving organisation should be a beneficiary or be an applicant to benefit of EU Structural Funds in the field of active and healthy ageing
- Quality of the twinning plan description submitted (detail provided on financial commitment to procure / implement innovative practice)
- Expected impact of the twinning in terms of knowledge and know-how transferred/acquired, scale of impact of the implemented innovative practice and expected outcome.
- Needed to ensure a balanced distribution of support throughout the different intervention areas of the EIP on AHA Action Groups

The criteria were met by 20 twinning proposals that were subsequently accepted into the support scheme. However, three proposals had to be rejected on the grounds that the above named essential criteria were not fully met.

**Results of the call**

As a result of the call for the 2016 Pilot Twinning Support Scheme of the EIP on AHA, 20 twinning programmes have been accepted to transfer innovation towards deployment of large-scale digitally-enabled innovative solutions in Europe. The kick-off for the twinning actions took place between October and November 2016. The 20 twinnings involving organisations from various regions in Europe committed to work together on a multitude of innovative practices.

| Originator 2016 reference site name | Adopter(s) 2016 reference site name | Contact person |
|---|---|---|
| MACVIA-France Network (FR) | Campania (IT)<br>Catalonia (ES)<br>Centro Portugal (Ageing@Coimbra) (PT)<br>Lodz4Generations (PL)<br>Medical Delta (NL)<br>Northern Ireland (UK)<br>Regione Piemonte (IT)<br>Region of Southern Denmark (DK)<br>Global Alliance Chronic Respiratory Diseases Regional Network (TR)<br>Olomouc (CZ) | Jean Bousquet, MACVIA |
| Northern Ireland (UK) | Catalonia (ES) | Michael Scott, Northern Ireland |
| Northern Ireland (UK) | Olomouc (CZ) | Michael Scott, Northern Ireland |
| Pays de la Loire (FR) | Porto Metropolitan Area - Porto4Ageing (PT) | Elísio Costa, Porto Metropolitan Area |
| Northern Ireland (UK) | North West Coast of England (UK) | Michael Scott, Northern Ireland |
| Campania (IT) | Asturias (ES) | Ángel Retamar Arias, Asturias |
| Lazio (IT) | Porto Metropolitan Area - Porto4Ageing (PT) | Elísio Costa, Porto Metropolitan Area |
| Twente (NL) | Campania (IT) | Lex van Velsen |
| Andalusia (ES) | City of Zagreb (HR) | Ana Carriazo |
| Basque Country (ES) | Nouvelle-Aquitaine (FR) | Carole Doucet |
| Medical Delta Rotterdam (NL) | Campania (IT) | Edwig Goossens |
| Republic of Ireland Regional Network (COLLAGE) | Campania (IT)<br>Catalonia (ES)<br>Metropolitan Area of Porto (Porto4Ageing) | Rónán O'Caoimh |
| Basque Country (ES) | Liguria (IT) | Dolores Verdoy |
| Galicia (ES) | City of Zagreb (HR) | Susana Fernández Nocelo |
| Scotland (UK) | Basque Country (ES) | Dolores Verdoy |
| Campania (IT) | Olomouc | Zdeněk Gütter |
| Basque Country (ES) | Scotland (UK) | Donna Henderson |
| North West Coast of England (UK) | Oberbergischer Kreis (DE) | Wolfgang Goetzke |
| Scotland (UK) | Andalusia (ES) | Ana Carriazo |
| Andalusia (ES) | City of Kraljevo | Milan Vukovic |

**Figure 12: List of all organisations involved in the twinning support scheme 2016**

## Twinning sessions at the EIP on AHA Summit 2016

The members of the twinning programme met at the European Summit on Innovation for Active and Healthy Ageing in Brussels to coordinate actions and to attend the official Reference Site award ceremony led by Commissioner Oettinger and regional ministers.

## Twinning interim results

A template was provided for the interim report that was to be filled out by both originator and adopter(s) of the twinning practice. The template asked questions about the experience and evolution of the practice in the duration of the support scheme.

Questions in the template asked about the digital solution itself that was to be implemented during the twinning. The originator was asked to describe the evolution of the digital solution, detailing the background and the motivation behind the healthcare problem that the innovation addressed. The time-frame and costs were also inquired, as well as the long-term business strategy and whether a scaling up potential of the practice had been considered. The originator and adopter region were also asked about the success factors, but also the barriers and problems they encountered during the adoption process.

The adopter regional site was enquired about what had specifically triggered the interest in the innovative practice, as well as how the practice relates to the vision and strategy of the region/city and how the digital solution was implemented into investment plans.

Further, both sites were asked about what the objectives of the twinnings were and had to provide details about education and training in the solution, customisation of the solution, help with barriers to adoption, testimonials, shared evaluations, cost-benefit assessment, future co-development and more. Also, a concrete plan was to be detailed on how the practice was to be transferred. Evaluation techniques (including e.g. tools, metrics or indicators) were also prompted to find out about the way the twinning partners measured their success.

The adopter region was polled on what benefits and new opportunities for different stakeholders the innovative practice held in store and what the expected outcomes were. Adopters were also questioned about how citizens may benefit from the twinning support scheme.

Finally, both originator and adopter sites were asked to provide suggestions on how to improve the twinning scheme in the future.

## Final Reports

The beneficiaries of the Twinning support schemes have been requested to submit a final report in June 2017 describing in detail the outcomes of the twinning actions. The reports had to include answers to at least the following questions:

1. Did the twinning result in implementation, that is, implementation of the innovative practice in the adopting region?

If the twinning did not result in implementation:

2a-i What were the reasons not to move towards implementation of the digital solution / innovative practice?

2a-ii Were there alternative solutions that were selected for implementation instead?

If the twinning did result in implementation:

2b-i: What are the expected outcomes from the implementation of the innovative practice / digital solution (Quantify expected improvements in Quality of Life, efficiencies in provision of health and care services, and economic growth / job creation)

2b-ii: What is the timeframe for implementation

2b-iii: What is the approximate financial / budget envelope allocated to the implementation of the innovative practice / solution

3. What were the challenges faced with carrying out the twinning project as proposed initially

4. What other financing / funding instruments at EU, national or regional level were enacted to support the twinning and / or the implementation of the innovative practice / solution

5. What were the challenges faced when seeking to utilise European Structural and Investment Funds to support the implementation of innovative solutions

The writing and delivery of a final study report based on the final twinning reports was not part of this contract. However, the study team was able to update the report submitted at the end of the study to include the results of the twinning activities and an update of the analysis part. The results of the twinnings are reflected in chapter 10.

## 4.1 Expected benefits and new opportunities

The adopters of digital innovations through twinnings have identified a number of benefits and new opportunities resulting from the adoption. The following list summarises the key benefits for patients and their relatives and carers, for healthcare provider organisations, health professionals, regional authorities, and other stakeholders, mentioned in the twinning reports:

- Cost savings
- Better quality in healthcare service
- Development of healthcare services for complex patients
- Easier access to reliable health information
- Fostering better patient adherence to treatment
- New businesses or business models
- Timely diagnosis and better screening
- Supporting clinical decisions of healthcare personnel
- Better communication between healthcare professional and patient/patient's family
- Bigger involvement of family members in patients' care
- Contributing to the sustainability of the country
- Reduced healthcare visits
- Fostering research and development activities in the region
- New care pathways
- New job opportunities or roles for health professionals
- Further improvements to current healthcare delivery (e.g. new patient registry, new IT system)
- Patient empowerment

Examples of the expected benefits and impacts are provided in the table below.

| Better communication between healthcare professional and patient/patient's family | The Andalusian Telecare Service (SAT) has enabled easier and more personal communication between doctor and patient due to its easily accessible setup: a bracelet device that can be worn by the patient at home that is connected to a device in the healthcare centre that contains all patient information. |
|---|---|
| Better quality in healthcare service | One output of the Risk Stratification Tool and process is that patients with specific diseases may be identified, selected, and precisely grouped. Based on the data derived from the tool and based on the patient's specific need of care, the appropriate interventions and programmes would be deployed giving the patient a more coordinated, proactive, and personalised level of healthcare. |
| Bigger involvement of family members in patients' care | The Andalusian Telecare Service (SAT) allows the patients to be taken care of while staying at their own homes, which has also led to a bigger involvement of family members in the patients' care. |
| Cost savings<br><br>Contributing to the sustainability of the country | In Catalonia, Spain, adopting the STEPSelect system would affect the direct costs of medicines and indirect costs of having a more efficient system. This is because family physicians would better understand why one drug would be used instead of another drug from the same therapeutic group, thereby avoiding procurement of unnecessary medicines. As a public healthcare provider, all savings are also going to contribute to the sustainability of their country. |

| | |
|---|---|
| Easier access to reliable health information | The Living it Up (LiU) self-management hub contains information related to social and leisure activities, diet and physical exercise, healthcare, and aging among others. Its online, user-friendly platform gives the users in the adopter region easier access to health information. |
| Fostering better patient adherence to treatment | The Telerevalidatie.nl online portal provided the Campania adopter region the opportunity to implement a new organizational model for rehabilitation services. The e-health services applied to the rehabilitation resulted to reduction of adverse events during treatment or better patient adherence. |
| Fostering Research and Development activities in the region<br><br>New businesses or business models | Combining the ADD protection system from the originator site Campania with the already-existing Home Care Service in Asturias (SAD) would lead to a remodelled ICT platform and would therefore increase the demand of ICT companies and organizations within the healthcare system. This will imply the creation of new businesses and will foster R&D activities in companies that will want to find new services to be integrated within the SAD. |
| New care pathways | The mobile application FrailSurvey provides a very easy way to screen an elderly patient's frailty status based on their mobility, physical shape, vision and hearing, and nutrition, among others. Patient-centred care models based on frail status would develop a new type of care pathway for the elderly patients in the Porto4Ageing adopter region. |
| New job opportunities or roles for health professionals | The introduction of new and additional telemedicine solutions from the Teleswallowing remote assessment service would result to the empowerment of nurses and medical assistants in the rural region of Oberbergischer Kreis in being given a new role, *i.e.* to introduce the telemedicine system to the patients and to ensure its proper use and understanding. |
| Further improvements to current healthcare delivery (e.g. new Patient Registry, new IT system) | The STEPSelect system promotes transparency in prescription and assists physicians in deciding for one drug instead of other (possible more costly) drugs. These would lead to savings which will be invested to further improve healthcare delivery, such as creating a new patient registry, implementing a new IT system, and employing extra nurse staff. |
| Patient empowerment | Telemedicine tools such as the Teleswallowing remote assessment service and web portals such as the ALOHA web platform emphasize the patient's central role in managing their health. For example, the Teleswallowing assessment is done via a tablet, through which patients feel more confident in joining *e.g.* a virtual doctor's appointment or transferring vital data to their physician, along with additional support given by trained GPs and carers. The ALOHA platform integrates easily accessible information and provides tools for personal and tailored recommendations that empower users into making correct and good preventive choices. |

| Reduced healthcare visits | The Teleswallowing remote assessment service provides a remote health assessment that is up to 3 times faster than the standard health assessment. This reduces the time needed for the visit of one patient, leading to quicker appointments for all patients as well as a reduction of their waiting times. Due to the nature of the tool, patients will not need to come to the GP practice for all medical checkups, but can stay at their home where they are comfortable. Moreover, the Diraya e-prescription module offers patients a centralised appointment booking system, which prevents a patient's unnecessary visit to the health centre (e.g. when they only want to ask for repeated medication). |
|---|---|
| Timely diagnosis and better screening | The Quick Mild Cognitive Impairment screening application (Qmci) has been developed as a computerised application that reduced paper work and data entry, and generated a more accessible and flexible screening process. It will be used to rapidly identify patients with Mild Cognitive Impairment and dementia who may benefit from early intervention. |
| Supporting clinical decisions of healthcare personnel | The Risk Stratification tool collects data on the previous use of health resources, as well as demographic, socioeconomic and clinical variables from sources such as the Department of Health. Such collected data would provide enough summarised and relevant information that would support healthcare providers in their clinical decisions. |
| Other impacts: | |
| Support to procurement | In Andalusia, a public tender was launched through the Andalusian School of Public Health, public entity depending on the Regional Ministry of Health of Andalusia. The analysis of the LiU platform has impacted on two calls which are now closed and the awarded entities are developing and implementing the requested solutions. |
| Unforeseen spill-over effects | In some cases unforeseen benefits were observed, or spill-over effects. This was the case in Kraljevo, who originally were planned to adopt the Andalusian Telecare Service. The related visit in Andalusia had such a positive effect on the Kraljevo team, that as a result they developed jointly with the Youth Office NGO in Kraljevo a call center as part of their health centre, directed at solving issues among the younger population. There are currently talks with several organisations representing the elderly population to find a way of developing similar services in their contexts. |

## 4.2    eHealth twinning topics

Overall, the twinning activities cover a wide range of eHealth topics:

| Type of ICT solution | Innovative practice name and twinning partners | No. |
|---|---|---|
| Online health portals | LivingItUp (Scotland – Basque; Scotland – Andalusia), ALOHA (Pays de la Loire – Porto), Diraya (Andalusia – Zagreb), SAT (Andalusia – Kraljevo) | 4 |
| ICT-supported integration of health and social care services | LivingItUp (Scotland – Basque), ALOHA (Pays de la Loire – Porto), FrailSurvey (Lazio – Porto), SAT (Andalusia – Kraljevo) | 4 |
| Health and care needs assessment tools | Gastrological approach to malnutrition (Rotterdam – Campania), FrailSurvey (Lazio – Porto), Risk Stratification (Basque – Liguria, Scotland), SAT (Andalusia – Kraljevo) | 4 |
| ICT tools supporting adherence to care plans | LivingItUp (Scotland – Andalusia), ALOHA (Pays de la Loire – Porto), FrailSurvey (Lazio – Porto), SAT (Andalusia – Kraljevo) | 4 |
| Homecare, telemonitoring and mHealth systems | Telerevalidatie.nl (Twente – Campania), ADD Protection (Campania – Olomouc), SAT (Andalusia – Kraljevo) | 3 |
| Falls prevention | FrailSurvey (Lazio – Porto), Telerevalidatie.nl (Twente – Campania), SAT (Andalusia – Kraljevo) | 3 |
| Regional/national EHR systems and summaries | Diraya (Andalusia – Zagreb), IANUS (Galicia – Zagreb), SAT (Andalusia – Kraljevo) | 3 |
| Care provider EHR systems integration | Diraya (Andalusia – Zagreb), SAT (Andalusia – Kraljevo) | 3 |
| (Regional) ePrescription solution | IANUS (Galicia – Zagreb), Diraya/Receta XXI (Andalusia – Zagreb) | 3 |
| Tele-mentoring and virtual consultations | Telerevalidatie.nl (Twente – Campania), ADD Protection (Campania – Olomouc), SAT (Andalusia – Kraljevo) | 3 |
| Integrated medicines management | STEPSelect (Northern Ireland – Olomouc; Northern Ireland – North West Coast of England; Northern Ireland - Catalonia), SAT (Andalusia – Kraljevo) | 2 |
| Multi-disciplinary team, care co-ordination | LivingItUp (Scotland – Andalusia), SAT (Andalusia – Kraljevo) | 2 |
| Telecare service / call centre | SAT (Andalusia – Kraljevo) | 1 |
| Age friendly buildings | SAT (Andalusia – Kraljevo) | 1 |
| Other | Qmci within RAPCOG (Ireland – Porto, Campania, Catalonia) | 1 |

**Figure 14: Overview of eHealth twinning topics**

The categorisation of topics above is the result of work in the ScaleAHA study which dealt with examining scaling-up needs and potential. The study examined various sources, in particular:

- The documentation of the 32 Reference Sites from 2013[38]
- The applications of the 2016 Reference Sites
- A compilation of good practices by EIP-AHA Action Group B3[39]

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[38]  European Innovation Partnership on Active and Healthy Ageing: Reference Sites How To Guide

[39]  A compilation of good practices – Second Edition. Replicating and Tutoring Integrated Care for Chronic Diseases, Including Remote Monitoring at Regional Level. Action Group B3. November 2013

Other important sources include materials on topics from a SANCO twinning exercise and a report on the state-of-play of the Action Groups by PROEIPAHA[40].

Combined, these sources record more than 100 relevant practices that the ScaleAHA study team has examined.

The analysis was used to derive common elements to be used in self-assessments (as part of the call for RS and the call for transfer of innovation scheme). This categorisation allows for a generic list of AHA-related topics for self-assessment. The list has been used as part of the application for twinning of the 2016 pilot twinning support scheme.

## 4.3 Twinning archetypes and illustrative examples

In terms of scaling-up scope, the twinnings can be grouped into:

- Knowledge exchange & training, & digital skills: a central aspect of the innovation are the knowledge (know-how) transfer, required staff skills, and related training
- Adaptation: a mature innovation is being adopted by adjusting it to local conditions (e.g. translation into local language)
- Partial adoption: elements of the innovation (product, service, methodology) are being implemented using locally available infrastructure
- Full adoption: the innovation (product, service, methodology, strategy) is being implemented in its full scope by using local infrastructure *i.e.* the innovation is transferred and managed fully by the adopter
- Acquisition: the innovation is being implemented in its full scope by using the originator's infrastructure (paid for or free of charge), *i.e.* the originator still has primary ownership, but a license for use is granted to and acquired by the adopter

| Type | Description | Number | Example twinnings | |
|---|---|---|---|---|
| Knowledge exchange & training, digital skills | Focus on knowledge (know-how) exchange and training, a central aspect of the innovation are the required staff skills | 4 | ✓ Gastrological approach to malnutrition: Rotterdam - Campania<br>✓ SAT Andalusian Telecare Service: Andalusia – Kraljevo | ✓ Risk Stratification: Basque Country–Scotland<br>✓ Teleswallowing: NWCE - OBK |
| Adaptation | A mature innovation is being adopted by adjusting it to local conditions (e.g. translation into local language) | 6 | ✓ ADD protection: Campania – Asturias<br>✓ ADD protection: Campania - Olomouc<br>✓ STEPSelect: Northern Ireland – Catalonia | ✓ STEPSelect: Northern Ireland – NWCE<br>✓ STEPSelect: Northern Ireland – Olomouc<br>✓ Risk Stratification: Basque Country – Nouvelle-Aquitaine |
| Partial adoption | Elements or aspects of the innovation (product, service, methodology, strategy) are being implemented using locally available infrastructure | 8 | ✓ IANUS: Galicia – Zagreb<br>✓ Diraya: Andalusia – Zagreb<br>✓ Telerevalidatie.nl: Twente – Campania<br>✓ Living It Up: Scotland – Basque Country | ✓ Living It Up: Scotland – Andalusia<br>✓ FrailSurvey app: Lazio – Porto<br>✓ Qmci under RAPCOG: Ireland – Porto4Aging, Campania, Catalonia<br>✓ Risk Stratification: Basque Country – Liguria |
| Full adoption | The innovation (product, service, methodology, strategy) is being implemented in its full scope by using local infrastructure *i.e.* the innovation is transferred and managed fully by the adopter | 1 | ✓ ALOHA: Pays de la Loire - Porto | |
| Acquisition | The innovation is being implemented in its full scope by using the originator's infrastructure (paid for or free of charge), *i.e.* the originator still has primary ownership, but a license for use is granted to and acquired by the adopter | 1 | ✓ MASK Allergy Diary: MACVIA-France – 10 adopters: Campania, Catalonia, Ageing@Coimbra, Lodz4Generations, Medical Delta, | Northern Ireland, Regione Piemonte, Region of Southern Denmark, GARD Turkey (National Program on Chronic Airway Diseases) |

**Figure 15: Twinning archetypes**

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[40] Baptista, A., Leal, A.: D2.3 "Matrix of Deliverables from the Action Groups", January 2016, PROEIPAHA

### 4.3.1    Type 1: Knowledge exchange and training, digital skills

**Example from the practice "Gastrological approach to malnutrition" (Rotterdam – Campania)**

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Centre for Gastrology (Frankelandgroep Rotterdam), Medical Delta Rotterdam | Azienda Ospedaliera Universitaria Federico II, Campania | ICT supported gastrological approach to malnutrition |
| **Short description of the practice and twinning scope** | | |

Medical Delta Rotterdam is a leading centre for comprehensive food and nutrition programmes. With its best practice 'Gastrological approach to malnutrition', it wishes to share with other EU regions the knowledge related to using a digital platform to avoid malnutrition of elderly patients.

A digital Modular Gastrological Platform (MGP) facilitates inter-professional collaboration of gastro-teams (kitchen staff, IT staff, patients, informal caregivers). The approach provides personalised interventions using validated, ICT supported tools for nutritional screening, assessment and monitoring, aiming at improving food intake in older adults.

This ICT approach to preventing malnutrition has to be transferred to Campania region, who has political and financial support to adopt the MGP, as battling malnutrition is seen as a key point on the agenda of the region's healthcare programme.

In a series of visits, Rotterdam aims to provide dedicated training and knowledge to key staff in Campania in order to enable the MGP to be used in the region. The twinning is an excellent example of the need for structured & comprehensive knowledge exchange, training and upskilling as prerequisite for adopting the underlying IT structure.

In order for the 'Gastrological approach to malnutrition' to be applied successfully in Campania, structured knowledge exchange and training is to be provided to key stakeholders. This includes kitchen healthcare professionals, staff working in healthcare canteens, IT staff that will work with the digital platform, patients and their caregivers who will also interface with the platform, but also decision and policy makers who need to scale up the approach and ensure political and financial support.

The twinning therefore involves a **series of events (face-to-face meetings and webinars)** to share the knowledge and correct way of applying the approach, which has already been validated through two studies in Bruges and in Flanders. The events include:

- A **training session** in Naples which includes three main sessions: theoretical, practical (in the kitchen) and IT training sessions
- Dissemination events to promote and share the good practice with targeted stakeholders at regional and national level
- **Business case working group** with local decision makers to plan the adoption of the approach in Campania region

The time plan of the twinning foresees training (completed in April-June 2017), testing of the platform (July-October 2017), implementation in Campania (November 2017 – May 2018) and adoption and upscaling (May-December 2018). The twinning has received local political support as well as **financial aid of 180,000 € through the European Social Fund (ESC)**.

The twinning is an excellent example of a structured approach to using digital innovation, which requires comprehensive knowledge exchange, upskilling and training.

## 4.3.2    Type 2: Adaptation

**Example "ADD protection" (Campania – Olomouc)**

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Department of Medicine, Surgery and Odontoiatrics, Salerno University, Campania | University Hospital Olomouc, (with its unit Czech National eHealth Centre - NTMC) | ADD Protection (homecare, safe discharge) |
| **Short description of the practice and twinning scope** | | |

The innovative practice is a part of a system called the 'ADD protection' system, consisting in an ICT-based home monitoring system provided as a service by a private company of home care that allows the hospital staff to follow the patients at home, as if the patient was still in the hospital. The data collected at the patient's home are made available to the staff of the hospital through a web-based platform, which feeds the hospital Electronic Health Record (EHR) of the patient.

This practice will be adapted to the University Hospital Olomouc (OHU) (along with NTMC) in the Czech Republic, in which the innovation's 3 main areas – ICT in healthcare, homecare and integrated care – have been underdeveloped for a long time. In contrast, the adopter country already has and maintains an efficient acute and preventive care pathway. The ADD Protection system, once adapted to the local system, will lead to an even higher quality of healthcare for the patients and would reduce the length and frequency of hospital visits.

The Campania practice could not be fully transferred to the adopter region due to differences in health and social care systems as well as the extent of (healthcare) homecare, the absence of legislative and economic conditions, and the scope of the regional strategic agenda with regards to seniors and healthcare. Moreover, full implementation of the practice would mean a partial or full reform of the adopter's healthcare and finances. Nevertheless, **elements of the practice are to be adapted** to the local system of the adopter region. Financial support from external sources amounting to at least 20,000 € has also been established.

Key success factors in this twinning involved funding and creating different communication channels focused on information exchange and reviews of the intervention. Such communication channels included:

- Visit of the UHO team to Salerno, Campania
- Constant electronic communication between the originator and adopter regions
- Communicating with the Association of Homecare in the adopter region to review their view on innovations incorporated in the good practice
- Intensive communication with the Ministries and Insurances in order to enable better future decision-making at a national political level.
- A joint meeting in which it was decided that both parties would look for an EU project that would enable progress in palliative care, integrated care, homecare and patient empowerment (all of which are related to the innovative practice)

External resources (ESIF) are also being planned for the adaptation of this practice as well as for the implementation of the Czech National eHealth Strategy.

This twinning displays a strong determination in finding a proper solution in order to be able to implement the innovative practice without changing the adopter region's healthcare system.

### 4.3.3 Type 3: Partial adoption

**Example "STEPSelect" (Northern Ireland – Catalonia, NWCE, Olomouc)**

| Originator:<br>Medicines Optimisation Innovation Centre, Northern Ireland | Adopter:<br>Institut Catala de Salut, Catalonia, NHS Innovation Agency North West of England, North West Coast of England, and Czech National eHealth Centre, Olomouc | Innovative Practice:<br>STEPSelect |
|---|---|---|
| **Short description of the practice and twinning scope** | | |

The STEPSelect system is a web-based program which allows the selection of medicines by formulary committees in hospitals and other health care institutions on a transparent and bias-free basis.

This initiative delivers a clinician-driven procurement that ensures that they have a comprehensive input into the process. The process is predicated on the basis of safety and quality driving health gain and economy. It is evidence-based and enables the needs of specific patient groups to be taken into account especially older people and ensuring that recommendations in this population are based on evidence relating to that age group, *i.e.* are patient-centred.

The main objective of the project is to introduce the STEPSelect system developed in NI in Catalonia, North West England, and in Olomouc as a tool for the optimised selection and procurement of medicines for the elderly and other persons and to assess and validate that the adoption of this web-based program supports and strengthens local decision making capacity about medicines selection with economic and social benefits for the healthcare delivery system in particular for the elderly, while reducing inequalities in relation to access to relevant cost-effective medicines.

A combination of more transparency and efficiency in selecting medicines for the formulary in combination with a reduction of cost is a major need in the Catalonian, NHS West, and in the Czech contexts. The selection process of medicines is not always based on what is best for

the patient from a clinical perspective and too often medicines are selected on the basis of only their cost.

In order to improve the situation on medicines procurement in these countries, transparency is a key point. This allows family physicians to better understand why one drug should be used instead of another drug from the same therapeutic group. To fully grasp and be able to positively react to this concept, the twinning involved **a series of knowledge exchange meetings and trainings** that focused on analysing the medicine procurement scenario of the adopter region as well as introducing the STEPSelect method and its benefits to main actors from the adopter region. These meetings include:

- A study tour; whereas officials from the adopter region that are involved in medicines selection and policies especially for the elderly would travelled to NI.
- A landscape analysis of key stakeholders and end users involved in medicines selection in the adopter region;
- Evaluating the potential benefits of adapting the STEPSelect method to the adopter region's medicines selection and procurement environment constraints;
- Training the healthcare professionals on the appropriate use of STEPSelect;
- Running a pilot project focused on the introduction of STEPSelect;
- Evaluating the project impact (data, personnel, financing) required for sustainable implementation of the STEPSelect methodology in the adopter region.

The pilot has been given a time frame of about 12 months and involves a team of 2 persons as well as a clinical team of about 10 clinicians and pharmacists. So far, no other funding instruments have been enacted, but Horizon 2020 has been considered to support the twinning and implementation of the innovative practice.

**Example "Risk stratification Tool" (Basque Country – Liguria, Scotland, Nouvelle-Aquitaine)**

| Originator:<br>Kronikgune, Basque Country | Adopter:<br>Regione Liguria, Scotland, Nouvelle-Aquitaine | Innovative Practice:<br>Risk Stratification Tool |
|---|---|---|
| **Short description of the practice and twinning scope** | | |

Risk Stratification is based on predictive modelling using regression techniques and both the calibration and internal validation of the model have been performed using the data (standardised costs of admissions, visits and procedures provided to each patient) recorded in 2008 and 2009 from more than 2 million patients from the Basque Country. Thus, the expected use of health resources, the "output", is a proxy of patient morbidity and severity with different needs of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action.

The twinning action aims to:

• create the bases for a two-step risk stratification: through the RS tool, identify the population that will use more health resources and within this part of population (mostly old) favour the clinical decision making for the elderly by means of a validated Multidimensional Prognostic Index (MPI),

• implement and disseminate the use of MPI in older people to improve appropriateness and cost-benefit ratio of health interventions in hospitalised older patients (acute/subacute care interventions) and in community-dwelling older people living in nursing homes and at their home.

The Risk Stratification tool is being implemented through partial adoption in Liguria, Scotland and Nouvelle-Aquitaine.

The Liguria region comprises five local health agencies with different organisational structures, and therefore a plan for progressive sharing and dissemination of the RS tool and MPI throughout the region has been discussed.

The partial adoption of the RS tool has particularly been beneficial in Scotland as they already have a well-developed risk prediction tool in their own local tool SPARRA. The twinning therefore involved scoping the innovative practice to fit with the existing infrastructure. In order to create an operational plan and successfully evaluate the needs of the adopter regions, the twinning involved establishing different means of communication channels (e.g. working groups) such as those detailed below:

- Creation of a Working Coordinator Group (Liguria) and a Twinning Implementation Group (Scotland) between the transferring and the adopter organisations to undertake the operational planning and implementation of the twinning activities.
- For Liguria: Creation of a local group involving Galliera Hospital and Ligurian Local Health Agency of territorial relevance
- Creation of a Twinning Steering Board involving NHS 24, the Basque Health Department and Osakidetza to provide high level oversight of the twinning process and subsequent actions

The innovative practice has also been described, presented and tested:

- Introducing the RS concept into the training programs of Galliera Hospital

- Presentation of the innovative practice to the key players in the adopting region
- Scoping and potential adaptation of the innovative practice to fit with existing infrastructure – technological, health and care delivery models and care pathways
- Assessment of the impact of the innovative practice

Apart from hours spent for internal knowledge-sharing, no additional budget has been spent nor additional funds allocated in the adopter regions in order to implement the RS tool.

The general timeplan foreseen for partial adoption includes coordination and training (completed in November – December 2016), presentation to key players (completed during the study visit in February 2017), assessment and testing of the RS tool (May 2017), and implementation into local and regional structure of adopter site (May 2017 to December 2018).
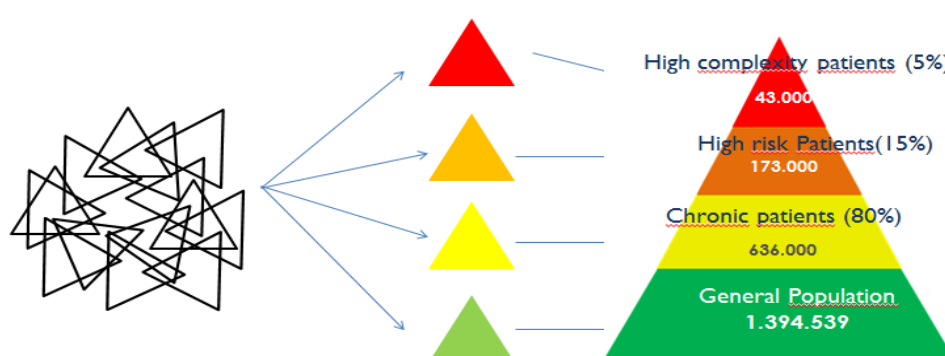


**Figure 16: Basque Country: Risk Stratification**

### 4.3.4 Type 4: Full adoption

**Example "ALOHA" (Loire – Porto)**

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Gerontopôle Autonomie | University of Porto, Porto | ALOHA |

| Longevite des Pays de la Loire, Pays de la Loire | Metropolitan Area | |
|---|---|---|
| **Short description of the practice and twinning scope** | | |

In Portugal, especially the northern regions, there is no platform or institution dealing with ageing issues for the elderly. In the context of the European and national demographic challenges and the sustainability of well-being and healthcare systems, ageing issues have been declared high priority. Hence the need for a platform that reduces the burden of morbidity, disability, functional decline and premature mortality related to infectious disease in seniors aged 55 and over.

The transferred innovative practice is based on the adaptation of a successful French good practice of the Metropolitan Region of Porto, which has institutional and financial back-up by federal ministries and research facilities. Since it is part of the regional priorities, there will be some external funds available to implement ageing solutions, of which Porto4Ageing is totally committed to raise.

This platform integrates an innovative e-Health expert system for the prevention of infectious diseases in seniors over 50 with or without non-communicable chronic diseases, thus reducing the burden of such diseases. This initiative aims to provide a web portal to inform, educate and engage seniors and healthcare professionals on prevention (vaccination, nutrition, physical activity, controlled use of antibiotics) providing tools for personal and tailored recommendations, in order to empower users and enable them to make correct and good preventive choices. Under this Twinning Scheme, we propose to implement this platform, following the same abovementioned principles.

The twinning is realised on a low budget (ca. 10.000€) given the short timeframe. Since the French platform already exists, the first months were dedicated to the acquaintance with the platform through meetings with the originator (face-to-face and by Skype). Moreover, internal meetings to present and display the platform to different stockholders that are part of the Porto4ageing consortium were also performed.

The actual process of adoption consists of three phases**:**

1. March 2017: **cloning** of the platform
2. End of May 2017: translation and cultural adaptation; new content created by Porto4Ageing consortium stakeholders
3. End of June 2017: dissemination of the adopted system on regional and national level; launch of the platform

To observe impacts of content and specific actions on the platform traffic, Google Analytics provide the most important metrics. Further qualitative and quantitative evaluations of the platform are being considered and the development of financial partnerships are envisaged to implement that.

The twinning has been successfully completed and widely disseminated.


### 4.3.5   Further examples of lessons learnt

*Financing/Budget*

Approximately a budget until 5,000 EUR was spent for Information Knowledge and Exchange. For example, the travel costs for a study visit for representatives from the Olomouc adopter region to the Salerno originator region cost approximately 1,500 EUR. Moreover, costs for the two exchange visits between the North West Coast of England and Oberbergischer Kreis Reference Sites (first a visit to England and then visit to Cologne, Germany) amounted to approximately 3,850 EUR. A study visit including a delegation of 6

people from the Zagreb reference Site to the Galicia originator site has amounted to 5,000 EUR.

The twinnings in which the innovative practice has been implemented on a low budget had finances until 10,000 EUR due to the short timeframe and the lengthy process of attaining the Twinning project budget. It has been mentioned that the process of (1) submitting a budget, (2) submitting invoices ex ante and (3) submitting invoices ex post incurs plenty of time and effort not warranted in relation to the amount of 5,000 EUR. For example, for the partial adoption of the FrailSurvey mobile application, 4,000 EUR was spent for technical development and 1,000 EUR for communication issues. Only 730 EUR was spent from the Twinning project budget. For the full adoption of the ALOHA e-health platform, a total of 7,300 EUR was spent for implementation and development of the Portuguese web platform (mainly supported by the University of Porto and private companies) and 2,400 EUR was spent from the Twinning project budget. However, based on the implementation of the ALOHA e-health platform in the originator site, more than 22,000 EUR is planned for human resources (22,000 EUR), semantic analysis of web-users (2,000 EUR) and yearly maintenance or technical issues (1,500 EUR) per year.

Twinnings that foresee a pilot phase before full adoption of the innovative practice expect an additional budget (*i.e.* excluding costs from Information Knowledge and Exchange) between 13,000 EUR and 20,000 EUR. For example, a pilot implementation of the IANUS EHR system in the Zagreb adopter site is expected to incur the following costs: 3,000 EUR for the development of the new solution for the pilot phase and 10,000 EUR for maintenance costs. This pilot is foreseen to impact 133,000 citizens.

The costs of the successfully adapted ADD protection system in the Asturias adopter region amounted to approximately 86,000 EUR for a target population of 1 million. On the other hand, for a full adoption, costs are estimated to reach an amount between 265,000 to 3 million EUR. For example, the budget foreseen for the design and implementation of the Andalusian AHA platform based on the adoption of the LiU online self-management hub amounted to a total of 263,046.47 EUR for 2016-2017. Within this budget, a public tender was launched and is now closed, whereas the awarded entities are already contributing to solutions for development and implementation of the platform. Additionally, based on experiences from the originator sites, full implementation of the innovative practice could also need further financing of millions of EUR for a target population of approximately 2 million patients. For example, the StepSelect system in Northern Ireland had a budget of 800 million EUR for a population of 1.8 million. Nevertheless, the use of the StepSelect system has accumulated regional savings of 20-25% as compared to the previous medicine procurement process, and these savings are ploughed back into the system to induce additional improvements in the healthcare delivery.

### *Scales of impact*

Even with partial adoption, the innovative practices have already impacted a given percentage of the region's population, ranging from 30 to 500 patients given the short timeframe. Pilot implementations within hospitals have a target population of 100,000 to 300,000. Upon successful full adoption, the innovative practices are expected to impact a population number from 400,000 (*e.g.* when the target population involves only patients with certain conditions) to more than 5 million patients (for many cases, in which the target is the whole regional population). This also corresponds to the number of users of the innovative practice already established in the originator sites (a range of 250,000 users *e.g.* users over 65 to over 1 million).

Target groups have also been expanded through the use of marketing and media. For example, the FrailSurvey mobile app has already reached 300 elderly patients within the first two months after its launch, whereas 50% have been successfully classified as frail. The mobile app has been featured in several Portuguese articles and magazines, highlighting the

importance of frailty screening and prevention. In the Andalusia originator site, one of the most important elements that enabled over 250,000 users to benefit from the SAT Andalusian Telecare service was the enforcement of laws which provided a stronger legal framework for the provision of telecare services for the elderly and those in need as well as established the SAT telecare service as one of the core services of the regional Agency.

*Timeframe and summary of implementation steps*

**Implementation Steps taken within the project timeframe**

The Information Knowledge and Exchange phase is usually achieved within 3 months.

For many cases partial adoption of the innovative practice has been achieved after 6 months *i.e.* full acquisition of the practice has been envisioned and the actions that would lead to full implementation have already begun, but within 6 months it was not possible to achieve such full acquisition of the innovative practice. This is because a pilot phase is required and done in order to study the usability and adaptability of the ICT tools (*e.g.* assessing potential clinical effect, measuring adherence to treatment, measuring user's satisfaction). Pilot phases are foreseen to take at least 12 months, and many of the twinnings that have reached the Partial Adoption phase have already started or are preparing for this pilot implementation.

Implementation steps that have been achieved within 6 months include:

- Organising various meetings for knowledge transfer (both regionally and cross-border) such as analysing the situation of the adopter site and analysing how to improve and adjust the existing infrastructure
- Creating working groups, multidisciplinary teams, expert panels that will lead workshops as described in the point below:
- Creating workshops that analyse the innovative practice or tool and detect what changes or improvements are necessary
- Translations of ICT tools into language of adopter site (*e.g.* for the language in mobile applications)
- Designing and planning for future implementation (*e.g.* creating roadmaps and study methodologies on how to involve more citizens and stakeholders, which layout and services to include in the final web platform, how to incorporate performance and results assessment
- Finding sponsors for pilot phase
  - o The NWC England-Oberbergischer Kreis twinning activities included looking for sponsors so that they can start a table PC pilot study to assess whether the elderly are comfortable with using table PCs.
- Beginning a pilot phase or pilot implementation (small-scale implementation at *e.g.* hospital level), an example is given in the next section (IANUS regional EHR system and ePrescription module).

**Specific examples of implementation steps and courses of action can be found below:**

- GAM Training Program for young chefs
  - o During the twinning activities, the Rotterdam-Campania Reference Sites have identified a major barrier preventing the adoption of the Gastrological Approach to Malnutrition to the Campania site, *i.e.* the need for a strong involvement of cooks and vocational schools. To address this need, a training program for young chefs has been defined
- Upgrades on pre-existing local infrastructures
  - o Different modules including a module for patient input of vital signs and an e-prescription module have been added for the pre-existing Zdravlje.Net web application in the Zagreb adopter site.

- Launch of public tender
  - Two calls for tenders were successfully launched through the Andalusian School of Public Health. The calls are now closed and the awarded entities are developing and implementing more solutions for the Andalusian AHA platform based on the LiU online self-management hub.
- Joint project applications
  - Following the twinning, the Campania and Olomouc Reference Sites have submitted their first join application in May 2017 for EC call HP-HJ-2017. One of the objectives of their twinning is to prepare joint project applications enabling the further development of their interventions, technological solutions and elements of the good practice.
- Public launch of innovative practice
  - The Porto4Ageing Reference Site has organised a public event for launching the FrailSruvey mobile app, in which different stakeholders were participants.

The twinnings that have achieved successful implementation of the innovative practice given the timeframe of the project were able to do so due to the lack of political or financial barriers that were already present from the start of the project. In these cases, the reference sites were able to focus on expanding their reach of potential users (publishing in magazines for the FrailSurvey mobile app, using social networks and using colourful and funny icons for the ALOHA e-health platform).

An overview of the reported implementation steps taken so far – <u>examples only</u> - is found in the Table below:

| Type | Implementation Steps/Characteristics | Timeframe and/or Budget | Targeted Population Number |
|---|---|---|---|
| **Knowledge Exchange & Training, Digital Skills** | <ul><li>Assessing the local situation and infrastructure</li><li>Gathering financial support (sponsors,</li><li>Gathering political support and acceptance from relevant key actors (e.g. Clinicians accepting the use of a new tool9</li><li>Creating collaboration teams involving key actors/stakeholders (professionals, private companies, etc)</li><li>Establishing meetings, workshops, webinars</li><li>Preparing for pilot phase (e.g. at hospital or primary care level)</li></ul> | <ul><li>3 months</li><li>until 4,000 EUR</li></ul> | <ul><li>First target population number would be for a pilot phase:  from a small group of 12 to whole hospital populations of 100,000 to 300,000.</li></ul> |
| **Adaptation** | <ul><li>Have sufficient financial support</li><li>Have an already-existing local infrastructure that can adapt to the innovative practice</li><li>Creating new businesses and foster research and development activities that will work on or further improve upon the newly adapted infrastructure</li><li>Providing more trainings (relevant to the new infrastructure)</li></ul> | <ul><li>Given twinning timeframe</li><li>86,000 EUR</li></ul> | <ul><li>Until 1 million</li></ul> |
| **Partial Adoption** | <ul><li>Pilot phases and implementations have started or are ongoing</li><li>Upgrading the local infrastructure /adding additional features</li><li>Analysing results from the validation or pilot</li></ul> | <ul><li>1 year for a pilot phase</li><li>10,000 to 20,000 EUR for a pilot phase</li></ul> | <ul><li>From a small group of 12 to whole hospital populations of >100,000 for a pilot phase</li></ul> |

| | | | |
|---|---|---|---|
| | phase | | |
| | • Designing roadmaps and planning on how to expand (adoption at higher levels -regional, national, etc) | | |
| | • Gathering financial support for future long-term adoption | | |
| | • Strengthening further the collaboration between Reference Sites or other possible actors | | |
| | • Expanding the target group size e.g. publishing in the media, large use of social networks, using colourful icons to attract attention, etc. | | |
| **Full Adoption** | • Financial and political support have been established for implementation of the practice<br><br>• Gathering more financial support to improve or expand the innovative practice<br><br>• Focus on expanding involvement of users / participants / patients through marketing strategies such as presence in congresses, forums, exhibitions, published media; large use of social networks, personalising content based on target group characteristics | • 1 – 12 years depending on available political support<br><br>• 250,000 to >3 million EUR | • From 60,000 (selected patient group) to >1 million (whole regional population) |

## Example of Clear Twinning Plan: Scotland-Basque Country twinning

### Twinning activities of Basque Country: Risk stratification and Living it Up

The Basque Country RS participated in four twinning activities, three times as originator (Risk Stratification Tool) and once as an adopter region (Living it Up). This enabled valuable lessons learnt brought about by the different perspectives gained from engaging in both roles of originator and adopter.



**Visit to Scotland 15/02/2017**

**Visit from Scotland 21/02/2017**

**Visit from Liguria Region 21/03/2017**

**Basque Country twinning activities**

The risk stratification tool developed by the Basque Country is being transferred to **Nouvelle Aquitaine, Scotland and the Liguria Region.** The tool classifies patients according to their risks covering more than two million citizens in the Basque Country. The data used are based on the previous use of health resources, demographic, socioeconomic and clinical variables. The outcome is the predicted next year healthcare costs. It functions as a proxy of patient morbidity and severity with different needs of care.

The Basque Country is also adopting the patient empowerment hub **Living It Up** developed by Scotland**.** Living it Up (LiU) is an online self-management hub and a digitally enabled community that provides holistic opportunities to support improved health, wellbeing and active lifestyles. LiU users are ables people to:

- Connect to their support circle (including family, friends, informal support and health and care professionals)

- Motivate in the using of technology to improve their health and wellbeing

- Empower to be confident contributors to the LiU community, sharing their experiences and knowledge.
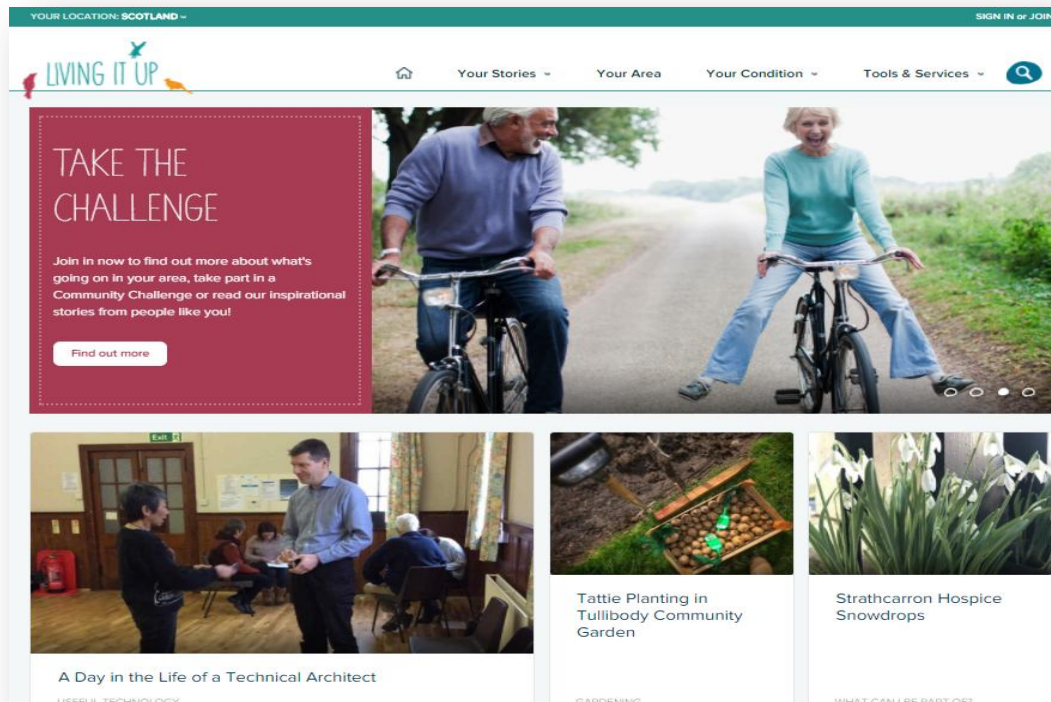
**Living it Up website**

The twinning between Scotland (originator) and the Basque Country (adopter) has the objective of learning from and possibly transferring key concepts and elements of the "Living it Up" online self-management hub and digitally enabled community in order to provide patients, citizens, caregivers and healthcare professionals with health information access and training.

Following these objectives, the twinning activities were guided by a clear twinning plan (see also the Figure below) that was established to coordinate and implement the innovative practice:

- The creation of a **Twinning Steering Board** involving key stakeholders in both regions to provide high level oversight of the process and subsequent actions
- The creation of a **Twinning Implementation Group** between the transferring and the adopting organisations – to undertake the operational planning and implementation of the twinning activities (face to face meetings and via webinars and teleconferences)
- The description and presentation of the innovative practice to the key players in the adopting region: identification and involvement
- Organising the Originator: involving actors, agenda, study visit, documentation

- Scoping and potential adaptation of the innovative practice to fit with existing infrastructure - technological, health and care delivery models and care pathways
- Creating a multidisciplinary team (doctors, nurses, university, associations, investigation centres, patients, tertiary sector, etc.) to analyse the interactive platform focused on chronic patients available in the Basque Country
- The creation of **working groups and workshops** implementing or detecting possible improvements for the platform; internal working team meeting to analyse the results obtained and to define further next steps.
- Providing further information and access to training sessions (including information campaigns, advertising, etc)

A Summary of the Basque Country Twinning Plan is found below:
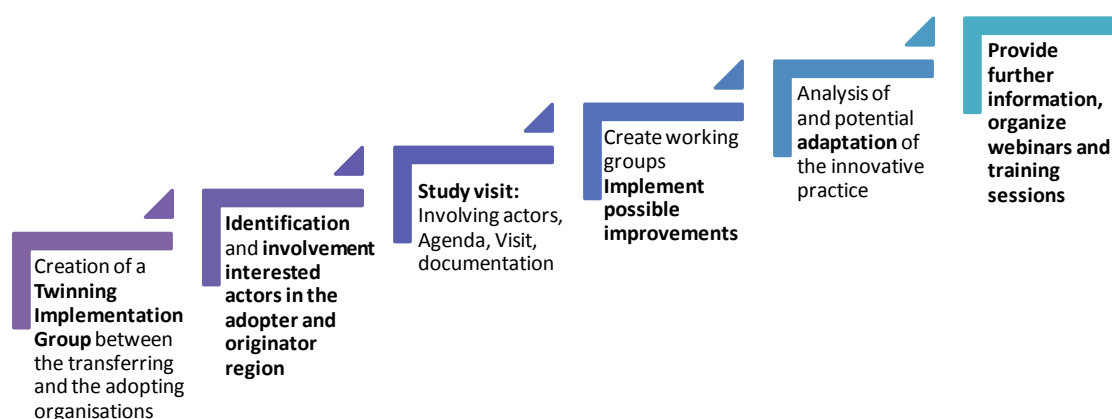


The following Basque Country adopter prerequisites have also been identified during the twinning:

**Awareness** of the good practice: Basque Country's whole population risk stratification through the EIP on AHA.

**Similar problems and policy strategies:** Chronic Care Model, patient empowerment

**Previous experience:** Risk prediction tools, used as part of clinical decision-making, active patients, patient centered programs,…

**Existing capacities:** Availability of rich individual level datasets and established expertise in modelling techniques and linkage of health and care information.

**Benchmarking:** Need to evaluate/develop existing initiatives: Sparra (Scotland), Multidimensional Prognostic Indices (Liguria)

**Ongoing or planned projects:** Extend SPARRA, model Osakidetza´s "Osasun Eskola" website,...

**Desire to collaborate:** Opportunity to stimulate further knowledge transfer to inform and improve how we design and deliver person-centred integrated care services.

**Example of initiated pilot projects**

The Andalusia-Zagreb and Galicia-Zagreb twinning actions led to :

The City of Zagreb Reference Site engaged in two complementary twinning actions with the Andalusia and Galicia Reference Sites. Study visits to the originator sites were organised

and provided insights on the Andalusian eHealth Strategy Diraya and the IANUS regional EHR system and ePrescription module.

During these study visits and along the course of the twinning activities, 4 areas of improvement have been identified for the Zagreb adopter site, namely:

1. Primary care Patient Inflow Management
2. Care for complex patients
3. Cross-specialty HCP communication
4. Mobile patient portal (m-Health setup)

In order to address these needs, pilot projects have been developed in which innovative solutions have been built to complement and add to the already existing web application in Zagreb, called *Zdravlje.net*

*Zdravlje.Net* is a secure web application that enables patient - GP communication in real time. It features prescription requests, message exchange, booking appointments and delivery of specialist's findings or lab results. The following 3 projects have been carried out from the learnings and needs identified during the twinning:

Project "Dnevnik Zdravlja" (*Health Diary*) is a new module upgrade for the *Zdravlje.Net* web application consisting of 3 sections: Weight, Blood Pressure/Heart Rate and Glucose.

Patients using the *Health Diary* can input their vital signs (BP, heart rate), glucose levels (with defined intake moments – on an empty stomach, before meal, after meal), height/weight values and waist width. Useful information is displayed to the patient based on the input data (warnings for elevated/low values, BMI, etc.).

Through this project, GPs can then (1) track their patients' health on a daily basis and react immediately if the values are concerning (call the patient in for a checkup, refer patient to a specialist) and (2) use this module as a prevention tool to engage a "healthy" patient to keep track of his own health and quality of life.

Project "Obavijesti za pacijente" (*Patient group messaging*) is also an upgrade of the *Zdravlje.Net* web application that enables the GP to send a message to a group of his/her patients. The GP uses the primary healthcare application where s/he can define patient groups s/he wants to send the message to. The selection criteria is designed to be multi-choice, which means that GPs can select one or more criteria (male, female, age range, having one or more chronic illnesses) to filter out patients, and the GP can easily send out a message to all such targeted patients (*e.g.* to remind older chronic patients about the yearly flu immunization). Patients receive a notification about new messages in the system and the message is visible in their *Zdravlje.Net* inbox.

Project "Komunikacija PZZ-SKZZ" provides easy *eConsultations* between GPs and specialists (*e.g.* cardiologists, psychiatrists, etc.) via two-way communication between both, starting with an *eConsultation* request from the GP. The *eConsultation* request to a specialist is generated within the GPs primary healthcare application using the patient's health record. The GP selects all patient data that is deemed important and adds it to the request. An expedited review of the request *e.g.* due to medical urgency may also be requested. The request is visible within the new web application for GPs, *Zdravlje.Net PRO*. The specialist can then accept or decline requests (with explanation why it was declined). All data sent from the GP is visible to the specialist. A messaging service is also connected to the request so that the specialist or GP can request or provide additional information between each other.

The goal of eConsultation requests is to gather specialist feedback about the patient's condition without having to send the patient to the specialist in person.

**Further implementation steps**

- Validation phase and analysis of results obtained from the small-scale or pilot implementation
  - o Under the Twente–Campania twinning: a joint evaluation session will be done to discuss and analyse the results of the 1-year pilot (which evaluates whether the practice is compatible with 2 patient groups). This would lead to further modifications of the Telerevalidatie.nl online portal based on the Italian setting.
- More data collection for data that is by far missing in the region
  - o For the Porto4Ageing adopter site, collecting data to evaluate the prevalence of frailty in the region is important to promote interventions that would prevent frailty, which may then motivate policy makers e.g. create relevant strategies that would support and facilitate the implementation of the innovative practice)
- Joint activities and training sessions between originator and adopter sites
  - o After several meetings and visits to Campania (under the Campania-Asturias twinning), it has been detected that there were several possibilities to improve upon the ADD Protection System by including ICT solutions developed by the adopter site. This had not been part of the original set of objectives, but the partners have planned R&D joint activities as well as training sessions (webinars) to address this opportunity.

**Business Case for Sustainability**

A business case for sustainability has been made for more than half of the innovative practices in the twinnings. Among the elements are:

- Constantly improving and maintaining the innovative practice or tool
  - o Under the SAT Andalusian Telecare Service—there is a quality management team that continuously works to identify redundancies in the infrastructure and key elements to endure the operation of the service *e.g.* in the event of power cuts; there is also a support centre so that in case of technical incidents or maintenance in one of the centres, the other centre can take full workload)
- Better security when accessing information *e.g.* medical data being available in at least 2 different locations to avoid data loss
- Sponsorship (*e.g.* from a pharmaceutical company, innovation agency, by winning project bids)
- Proof of usability
  - o The number of professionals that use the IANUS regional EHR system and ePrescription module in Galicia has increased by 92.85% (2009-2012).
- Economic viability
  - o The ADD Protection system can analyse and define a detailed cost per access at the home of the patient. The system was able to calculate an average amount of 400 EUR per patient.
- Public value, case for change, or proof that the practice brings benefits to the target group
  - o Based on assessments of health parameters from the ADD Protection system, clinical improvements have been shown after 1 month including: normalisation of blood pressure, saturation and glucose homeostasis, weight and liquid balance
- Optimised use of resources
  - o The StepSelect system generates 20-25% of savings, which are ploughed back into the system in order to induce additional improvements in healthcare delivery.
  - o The IANUS-EHR and e-prescription has led to the following concrete savings: 2.7 million EUR saved on plate printing each year, 0.7% yearly savings on

prescription pads, and a 10% reduction in annual medical consultation, among others.

**Expected Outcomes**

Expected outcomes of the twinning range from gaining financial support to beginning a pilot phase to actual and final implementation at a regional and national level. Concrete examples of expected outcomes are listed below:

- **Raised awareness in stakeholders to plan investments** into innovative solutions in the future. In the Kraljevo region, one major barrier that prevented implementation was the lack of financial support to invest in and develop new technologies in services. Nevertheless the twinning is expected to raise awareness in stakeholders on their current situation based on the information gained from the originator site's experiences and past difficulties.
- **Improved local approaches to health.** In the Basque – Scotland RS Tool twinning, the adopter site already has a well-developed risk prediction tool and therefore implementation of a new RS tool has not been planned. However, the twinning is expected to result in an improvement and the future development of the local RS Tool. The Rotterdam – Campania twinning on Gastrological Approach to Malnutrition is expected lead to an integration of a food record with the local hospital record.
- **Increased and detailed understanding of** both regions' **patient empowerment strategie**s. For example, the implementation of the LiU online self-management hub and digitally enabled community is expected to increase the number of citizens and professionals that contribute in the content of the platform (e.g. writing testimonials of their experiences in the field of empowerment).
- Improved **health literacy** and improved adherence to medical plans. For example, the ALOHA e-Health platform is expected to make senior patients more knowledgeable on the prevention of infectious diseases by providing information on vaccination, nutrition, and controlled use of antibiotics, among others. Improving the patients' awareness on such health topics would lead to an improved adherence to and participation in their medical plans.
- Implementation of a **pilot phase**. In some Reference Sites, although full implementation of the tool is not envisioned, the twinning has already resulted in pilot projects that contribute to a possible future integration of the innovative practice.
    - For example, in the Oberbergischer Kreis region, a table PC project has been initiated to first evaluate how easily the elderly patients are able to understand or use technical devices. This may be used as a prerequisite to the implementation of the Teleswallowing remote assessment service.
    - In the Campania adopter site, a demo version of the Telerevalidatie.nl online portal for rehabilitation at home will be implemented for 15 patients with chronic cardiac failure and 15 cystic fibrosis in order to specifically investigate its adherence to cardiological and respiratory home rehabilitation. This local form of validation will serve as a basis for the future scaling up of the innovative practice in the region.
- **Reduced time from onset** of patient's disease **to diagnosis**. For example, the Qmci screening application is expected to reduce paperwork, data entry and allow screening to be more accessible and flexible in order to rapidly identify patients that may already start benefitting from relevant interventions.
- **Further improvements** on the innovative practice of the **originator site**. In the Basque – Liguria twinning, concrete outcomes are expected to happen in both the adopter and originator sites: the implementation of the RS Tool in Liguria at a local, regional and national level as well as the implementation of a Multidimensional Prognostic Index (MPI) for selected patients (top 5 % high-risk patients) in the Basque

region. The aim of the latter would be to test if the MPI further improves the ability to manage the elderly with complex healthcare needs.

- **Better resource allocation** and reduction of regional health expenditure. The continuous use of the ADD Protection home-monitoring system would prevent unnecessary and costly visits to the hospital. Additionally, adopting a transparent medicines procurement strategy using the StepSelect system would prevent the dispensation of unnecessary medicines and would therefore lead to savings that could be used to further improve the health system.

- **Collection and evaluation of data that is by far still unavailable** in the adopter site. For example, in the Porto region, there is still no data on the prevalence of frailty. The FrailSurvey mobile app will enable the collection of data and the subsequent evaluation of the prevalence of frailty in the region.

- Stronger **relationships between the Reference Sites** and the possibility of **future impactful collaborations**.

# 5 Supporting the building-up of a Knowledge and Exchange Network

Through the 2016 Call for Reference Sites of the EIP on AHA, the study team has had regular exchanges with the RS and the subsequent organisations taking part in the twinning scheme. Furthermore, the study team has been in contact with a number of multipliers, both projects (e.g. SCIROCCO[41]) and persons (e.g. Leo Lewis, IFIC and B3 promoter). Relevant information in ScaleAHA has thus been disseminated through the key RS contacts and other multipliers.

## 5.1 Overview of existing mechanisms for knowledge collection and exchange

**EIP on AHA portal**

The portal for the EIP on AHA (https://ec.europa.eu/eip/ageing/home_en) has evolved in the last years through the PROEIPAHA support action, and has the functionality required for a knowledge community. It is maintained by the EC and is therefore well respected by EIP on AHA members and visited regularly. It is a major upgrade of its previous version and hosts a number of relevant resources

**EIP on AHA repository of innovative practices**

The repository of innovative practices is the basis for the European scaling up strategy. The scaling up strategy constitutes another step in the development of the EIP on AHA to mobilise sufficient resources and expertise, which combined with the collection of innovative practices will ensure implementation of innovative solutions for active and healthy ageing on a European scale.

Scale AHA has analysed in detail more than 70 innovative practices from the repository, paying attention, in particular, to lessons learned and transferability recommendations. It is essential for a good practice to be designed, developed and documented considering the replicability / transferability of the service in a systematic way.

Well organised, appropriate training of doctors and nurses is considered very important. "Cascade training" is particularly well received with clinicians.

Scalability of integrated care solutions across providers, regions and country-wide requires a shift in mind-set and a different way of working, new or changed organisational models. This takes time and lots of effort to promote collaborative work among different stakeholders.

**EIP on AHA library**

The EIP on AHA library aims to support knowledge sharing for active and healthy ageing. It gathers studies, papers, links, publications and more, background information about the EIP on AHA, as well as Action Groups and Reference Sites documents. Members can submit their own documents or links.

**EIP on AHA relevant events**

A dedicated section of the EIP on AHA portal keeps track of all international, national and local events related to active and healthy ageing taking place each month in Europe and beyond. Events can be searched browsed in detail (time, venue, agenda, etc), and new events can be added by members of the EIP on AHA.

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[41] http://www.scirocco-project.eu/

**EU Health Policy Platform**

The EU Health Policy Platform is a collaborative initiative to ease the communication between the Commission services and health stakeholders. It is aimed to be inclusive and to reflect geographical and professional diversity of the participants.

The objectives of the EU Health Policy Platform are to:

• Provide a framework for a dialogue between the Commission and stakeholders;
• Facilitate targeted discussions between the Commission services and stakeholders;
• Ensure transparency in the health policy dialogue;
• Contribute to building knowledge and expertise on public health issues;
• Support dissemination of information on DG Health and Food Safety's projects (e.g. co-funded Health Programme projects, including Joint Actions);
• Identify, share and encourage replication of good practices related to health policy;
• Gather and circulate research outcomes and ease the availability of results and outcomes to interested stakeholders;
• Provide information on other policy areas related to health following the "Health in All Policies" approach.

The EU Health Policy Platform operates in two ways:

• IT Platform - to enable online discussion and collaboration;
• Face-to-face meetings - to host targeted thematic discussions.

DG Health and Food Safety runs the secretariat of the EU Health Policy Platform. It moderates the IT Platform as well as coordinating the Commission's input and participation.

Existing communities (e.g. the B3 Yammer group) have began the migration process to this modern platform. It seems to be a very suitable platform for hosting and facilitating further joint work and collaboration around the twinning support scheme.

**RS communication and the RSCN**

Until the announcement of the 2016 Reference Sites, the ScaleAHA team had been communicating regarding their applications and any questions. Upon announcing the 74 RS, they automatically became members of the Reference Site Collaborative Network (RSCN). Its aim is to bring together RS and candidate RS using a single forum to promote cooperation; and develop and promote areas of innovative good practice and solutions, which contribute to improved health and care outcomes for citizens across Europe, and the development of sustainable economic growth and the creation of jobs.

The ScaleAHA continued to facilitate regular communication with the RS (EC announcements, relevant events, etc.) while the RSCN formed an executive board. Now the RSCN is working towards an official website and support to the RS is expected to be fully covered by the network after ScaleAHA's completion.

**ScaleAHA website and forum**

The website of the study is being maintained by adding news and announcing current initiatives, such as the 2016 Call for RS and the results of the twinning scheme. To facilitate the identification of suitable partners for twinning, the study has set up a forum http://www.scale-aha.eu/twinning.html). Many of the twinning partners have found themselves through this forum, which was especially useful for the new RS who had not been used to and could not benefit from previous meetings of the EIP on AHA and its Action Groups.

**Other mechanisms: events, newsletters**

The community consisting of RS and twinning organisations has been informed of relevant activities through the ScaleAHA newsletter (see chapter 7) and participation at events, such as the Summit on Active and Healthy Ageing (5-7 December 2016).

## 5.2    ScaleAHA support

ScaleAHA has been supporting the existing instruments throughout the study duration, actively promoting the call for commitments (repository of innovative practices), EC communications and requests, relevant events, etc.

In looking into the future of a knowledge exchange network, the ScaleAHA team has identified the essential elements which need to be present for the knowledge and exchange network to be adopted and regularly used by its members:

- Forms and self-assessments to record new information / progress and build a catalogue
- Profiles of the network members with detailed information about their activities, contact persons, networking and collaboration needs and wishes
- Facilitating the finding of matches/pairs based on existing information
- A section where matched organisations can exchange more detailed information securely
- Possibility to upload reports, materials, link to them and share also using social media
- General forum to explore synergies, collaboration opportunities and find new interested partners
- News section – with possibility to receive news via email on weekly/monthly basis
- Upcoming relevant events – management, addition of new events

*The EIP on AHA portal in combination with the EU Health Policy Platform appear to be the most suitable platform which should be further promoted to become a knowledge exchange hub. Both have been recently developed / redesigned to cater to the needs of the EIP on AHA community through modern tools and mechanisms.*

# 6    EU investments and funds

While there are different investment opportunities for the EIP on AHA organisations, there is the need to better understand if and how they are being used in order to promote them further among the EIP on AHA stakeholders and learn from each other to better absorb funds for digital health innovations.

The ScaleAHA team has examined the diffusion of the European Structural and Investment funds (ESIF) among the twinning organisations. ESIF investments in health are significant, with 41.7 million people in the EU benefitting from improved health services (including eHealth) from 2014 to 2020. The biggest beneficiaries of the Cohesion Policy Budget[42] 2014-2020 (351.8 bn EUR) will be Poland (77.57 bn €), Italy (32.82 bn €), and Spain (28.5 bn €), followed by Romania (22.99 bn €), Czech Republic (21.98 bn €) and Hungary (21.90 bn €).

**Investment approaches**

A 2016 report[43] summarises the Member State approaches to health funding from Structural Funds in four groups:

- Investments in health are funded almost exclusively from national resources and Structural Funds represent only a minor source of health investments supporting specific projects in the areas of research and development (biomedicine, pharmaceuticals), technology innovation, occupational health, elderly care, integration of health and social services, active and healthy ageing, healthy workplace and employees. This approach is typical in competitiveness and employment regions, such as the Nordic countries, the UK, Belgium, etc.
- Structural Funds represent a major source of financing used in the implementation of a transversal health care reforms ultimately aiming at minimising regional disparities and ensuring better access to and quality of care. This approach is seen in countries with existing health strategies and with complex health projects, e.g. in Lithuania, Romania, Slovenia, etc.
- Structural Funds represent a major source of financing used in the implementation of specific projects in the areas eHealth, psychiatric care reform, care deinstitutionalisation, etc., as seen in Greece, Spain, Cyprus, Italy, Slovakia, etc.
- Use of Structural Funds mainly for modernisation of health infrastructure (regional hospitals, procurement of new medical equipment) such as the case in Poland, Bulgaria and also the Czech Republic.

**Areas of investment in health**

The overarching challenge is the same for the whole European Union; however, the health system of each Member State faces its own unique challenges. The types of investments, therefore, differ between the individual countries.

Despite the relative differences, it is possible to identify major areas of health investment common to all EU Member States. These areas are: (i) deinstitutionalization and development of community-based care, (ii) promotion of active and healthy ageing, (iii) improving access to and quality of health care services, (iv) health promotion and disease prevention, (v) continued education of medical staff and (vi) increased efforts in the field of eHealth.

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[42]    Investing in health with the European Structural and Investment Funds, presentation given by Katarzyna Glowacka-Rochenbonne, DG Sante, 17 March 2016

[43]    "Mapping of the use of European Structural and Investment Funds in health in the 2007-2013 and 2014-2020 programming periods" report from 15 January 2016

Activities supported under active and healthy ageing are designed to help the elderly people to lead a healthy lifestyle. One way to do this is to prevent social exclusion and provide a means of meaningful participation in the society. Many countries are therefore investing in various programmes designed to provide continued employment for senior citizens. Sometimes these programmes are in the form of educational and training programmes for the elderly so that they can adjust to the changes in the workplace and can re-enter the work force (e.g. Austria, France). Sometimes they are in the form of financial aid or advisory services to the companies and the public sector (e.g. Austria, Netherlands). Besides helping the elderly citizens to re-enter the labour force, many countries are also investing in alternative programmes providing cultural, educational, and recreation activities aimed at older people (e.g. Portugal). These types of investments are also prevalent in the 'less developed' regions, for example in Latvia, Lithuania, and Slovenia. Some countries also plan to implement community-based services, including community health services (e.g. Malta, Czech Republic), intended to be focused, among others, on elderly people with, for example, the aim to support inclusion of the target group in community life.

**Use of ESIF funding by the twinning partners**

The ScaleAHA team has collected information about the use of ESIF funding for the twinning organisations. The results can be seen in the table below.

| Reference Site | Country | Function (originator / adopter) | Twinning | ESIF beneficiary or applicant | ERDF | ESF | CF | Other | ESIF € | Other sources € |
|---|---|---|---|---|---|---|---|---|---|---|
| Scotland | UK | Originator, Adopter | Living it Up, Risk stratification | Y | Y | N | N | N | 8.708.618 € | |
| MACVIA France | FR | Originator | Rhinitis and asthma app (with | Y | Y | N | N | N | 270.000 € | 1.400.000 € |
| Andalusia | ES | Adopter | Living it Up (with Scotland) | Y | Y | N | N | | 263.775 € | |
| Asturias | ES | Adopter | PERSSILAA | Y | Y | N | N | N | 172.966 € | 64.837 € |
| Northern Ireland | UK | Originator | STEPSelect | N | N | N | N | Y | | |
| Oberbergischer | DE | Adopter | Teleswallowing | Y | Y | N | N | Y | 40.000 € | 100.000 € |
| Campania | IT | Adopter | Gastrological Approach to Ma | Y | Y | Y | Y | N | 55.500.000 € | |
| | | | | | | | | | 64.955.358 € | 1.564.837 € |

It is clear that many of the 43 twinning organisations were not aware of the ESIF funding opportunities; this lack of awareness was not present in regions which are exceptionally active in the EIP on AHA and at EU level, such as Campania, MACVIA-France, Andalusia and Scotland. There is a clear need to raise awareness and provide guidance to regions on how to apply and absorb funding from ESIF and from other sources. It should also be worked towards providing information about the difference in the schemes under ESIF. For example, skills-related topics are best handled by ESF, whereas infrastructure innovations are addressed by the ERDF.

**Other funding opportunities**

Apart from ESIF, other funding opportunities may be used by the EIP on AHA stakeholders.

The Investment Plan for Europe (also called the "Juncker Plan") aims at unlocking public and private investments in the "real economy" of at least € 315 billion until 2018. The plan is executed by the European fund for strategic investments (EFSI) which was established as a managed account within the European Investment Bank (EIB) in 2015. In December 2016, the Council agreed its negotiating position on a new proposal for a regulation that prolongs the term of the fund until 31 December 2020. Another key change includes an increase in the investment target to €500 billion.

14% of the total budget is investments in digital solutions and those dealing with social infrastructure. Regarding health, the Investment Plan supports projects mostly in the following health areas, recognising the importance of infrastructure investments but also the role of innovation in health systems, research and medical education:

- Medical research
- Innovative products, services and delivery solutions (including by SMEs, mid-caps and start-ups)
- New models of health infrastructure especially for primary care and integrated care
- New technologies and eHealth
- Medical education and training

The European Fund for Strategic Investments - EFSI - and ESIF can be combined. The European Investment Bank (EIB) also offers financing under its Health and Life Science line. Additional EIB financing is available under the Horizon 2020 InnovFin infectious diseases facility.

# 7 Reference Sites investments related to DSM priorities

A short survey has been conducted in order to evaluate the alignment of Reference Sites' ongoing and planned investments to key priority areas of the Digital Single Market (DSM) mid-term review, namely investment in:

- EHRs using advanced analytics and providing secure access
- Health Data analytics using supercomputing/high-performance computing
- Digital Solutions that facilitate feedback interaction between citizens and care providers

Results of the survey showed that more than 30 organisations representing more than 20 Reference Sites are investing or planning to invest in implementing innovations related to these three DSM priority areas. More specifically, 18 organisations representing 15 Reference Sites have implemented EHRs using advanced analytics and providing secure access, 12 organisations representing 10 Reference Sites are doing health data analytics using supercomputing/high-performance computing, and 19 organisations representing 11 Reference Sites are rolling out digital solutions that facilitate feedback interaction between citizens and healthcare providers.

**Examples from RS:** The Kuopio Reference Site in Finland has been deploying solutions related to all three areas mentioned. It is a pioneer and contributor to a key project initiated by the Finnish Government on self-care and digital value services (in Finnish "Omahoidon Digitaaliset Arvopalvelut", ODA 2016-2018), which is driven by a vision of a new service model in healthcare and social welfare services. The new services will bring together the information from the Finnish national personal health record (OmaKanta, MyData, data entered by citizens) and electronic health record (Kanta, health data entered by healthcare professionals) platforms. One of the City of Kuopio's foci in the project is to collect information from many information systems such as healthcare, student welfare, family services and child protection. The big data will be then processed with advanced health data analytics and high-performance computing to enhance the welfare of children and their families. There is also discussion on utilizing artificial intelligence and cognitive learning. The new services are tested in pre-production pilots from 2017 (continuing in 2018).

The Milan Metropolitan - Bergamo Province Reference Site members already use the TelbiosConnect web platform for the proactive care coordination of chronic patients (300 GPs and 52,000 chronic patients) and for home telemonitoring of multichronic complex patients (GPs and 200 patients).

The Great Manchester Reference Site has been conducting a number of research projects in relation to big data analytics in different domains including: Health, Food, Smart Cities, Manufacturing, and Energy. They have developed automated algorithms based on image processing and machine learning that detects patterns in image datasets, used for detection of glaucoma. Following this research, Greater Manchester is interested in using Big Data Technologies, Health Data Analytics, and Cyber Security (for secure data).

The Northern Ireland Reference Site has begun the process of acquiring an EHR System which will include both patient access and the data analytics functionality. They are also involved in the EU funded MIDAS project (http://www.midasproject.eu/) on Big Data.

| Digital solution topic area | RS investing / implementing | RS interested |
|---|---|---|
| Electronic Health Record (EHR) systems providing for citizens' secure access to their health data and/or advanced health data analytics | 18 organisations representing 15 RS | 8 organisations representing 7 RS |
| Health data analytics using supercomputing / high-performance computing - advanced data infrastructure | 12 organisations representing 10 RS | 8 organisations representing 8 RS |

| Digital solution topic area | RS investing / implementing | RS interested |
|---|---|---|
| supporting health data exchange and use of big data | | |
| Digital solutions (integrated with health and care systems) that facilitate feedback interaction between citizens and healthcare providers | 19 organisations representing 11 RS | 9 organisations representing 8 RS |

**Examples from twinnings:**The twinning innovations are well aligned with some topics relevant to the Digital Single Market mid-term review priorities. Examples of the twinnings and corresponding topics are summarised in the Figure below.

**Example topics relevant to the Digital Single Market priorities**

**Twinnings - *examples***

**Health data analytics**

✓ Risk Stratification Tool
✓ MASK Allergy Diary

**Health data exchange and re-use; Advanced platforms EHR/PHR, ePrescription**

✓ Telerevalidatie
✓ Diraya
✓ IANUS

**Citizen & patient empowerment, access to data**

✓ Living It Up
✓ SAT Andalusian Telecare Service
✓ MASK Allergy Diary

**Prevention and patient-centered care**

✓ Living It Up
✓ ADD Protection / home-monitoring
✓ SAT Andalusian Telecare Service
✓ MASK Allergy Diary

# 8    Strengthening scaling-up strategies

The following summarises lessons learned from the 2016 Transfer of Innovation Scheme and policy recommendations made by the Reference Sites and the twinning partners.

**Lessons learned from the 2016 Transfer of Innovation Scheme**

In the interim reports of the twinning action in 2016 the individual twinning partners were asked to provide suggestions on how the twinning programme can be improved for the years to come. With an overall positive feedback to the twinning programme, specific recommendations to improve the scheme further were provided on a number of aspects and are presented in the categories below.

**Administrative and reporting recommendations**

Two twinning collaborations commented on how the administrative process of the twinning programme could be further improved. The participating organisations from the Basque country and the Nouvelle-Aquitaine region suggested having a more flexible and lighter reimbursement procedure. This view is shared by twinning partners Northern Ireland and Catalonia, who wish for less paperwork, in order to have more time for tasks related to the twinning. In addition, a suggestion to simplify the paperwork in addition to reducing it was made by NHS Innovation Agency North West of England (RS North West Coast of England). The twinning partners of Andalusia and the City of Zagreb requested that the full twinning documentation (report forms) be available at the start of the twinning so it could be used to guide the twinning process.

**Recommendations on the scheme's timeframe and reporting schedule**

The majority of suggestions regarding the twinning action plan to adopt digitally-enabled innovative ICT practices were directed at the timeframe of the activities. For instance, twinning partners Campania (Università di Salerno) and Asturias (CTIC Centro Tecnológico) pointed out that the twinning support scheme could be improved by **extending the timeframe of activities**. This view is shared by Medical Delta Rotterdam, NHS Scotland and RSs Campania, Basque Country and Oberbergischer Kreis. One argument was that the implementation of the solution is a **long-term commitment** and is therefore difficult to demonstrate visible impact of the twinning activity in as short a timeframe as 3 months.

Further, twinning partners at RSs Campania and Olomouc reported that practices in active and healthy ageing are "**mostly complex, and especially those that involve organisational aspects** in healthcare, innovation in care pathways, integrated care and multi-institutional ICT based solutions." Such practices therefore **have to be "understood in sufficient detail** and then the adopter can make [a] concrete plan for their scaling up". Twente and Campania suggested a pilot phase to better study the adaptability of the innovative solution. The schedule of twinning reports and accounting documents make the scheme "accountant driven", as compliance with specific national and institutional conditions for handling trips and invoices was needed.

**Twinning content-related recommendations**

In relation to the content of the scheme, Andalusia and the City of Zagreb reported that due to complexity of health systems, and differences between Reference Sites in legal frames and availability of resources, it is difficult to transfer the innovative practice without changes. It can be more important for the adopter to implement only the most relevant parts of the innovative practice thereby focusing more on experience how to implement and facilitating the flow of knowledge between RSs.

**Funding-related recommendations**

Various twinning organisations, including from RSs Northern Ireland, Catalonia, Basque Country and Salerno suggested raising the amount of funding of the scheme (currently being 5,000€ max.) and having it cover more types of expenses. Benefits were said to include an extended scope of activities and more tangible outcomes. "Bigger budgets and less applications (i.e., restrict the calls to less twinning pairs) are needed to achieve more tangible outcomes".

**Key policy recommendations from twinning organisations and Reference Sites**

Several Reference Sites emphasised that low digital literacy among the older generations posed a barrier to the introduction of new technologies. The twinning partners Porto and Pays de la Loire therefore suggested adopting policies that promote digital literacy. Other twinning organisations, including Università di Salerno (RS Campania) and CTIC Centro Tecnológico (RS Asturias) also pointed out that the lack of health professionals should also be countered by policies to ensure enough human resources in the area of ICT & active ageing in the respective regions.

Latter organisations also refer to the need to ensure data privacy through legislation in order to prompt measures that promote the interoperability of electronic devices and access to data systems. The Reference Sites City of Kraljevo and City of Zagreb also recommended that policy makers should facilitate the integration of health and social care by adopting legal frameworks for the implementation of innovative solutions in the area of health regarding issues such as ownership of medical data and security of the data.

The Reference Site Oberbergischer Kreis reports that due to the Bismarck system of health care in Germany a "federal endorsement to include additional telemedical solutions in the coverage of sickness funds would be beneficial", but the basis has already been set due to the recently enabled "e-health act".

**Reinforcing PROEIPAHA final report recommendations**

In the final report of the Support Action to Promote the European Innovation Partnership on Healthy and Active Aging (PROEIPAHA), set up by the European Commission, feedback and suggestions have been gathered on the experience of the EIP on AHA. The report formulates a number of relevant policy recommendations to the European Commission, given the common end of promoting innovative practices in the area of active and healthy ageing. The PROEIPAHA CSA specifically recommends:

- Continued and further support for the EIPonAHA Action Groups and the Reference Sites
- Continuing the Reference Sites initiative and further encouraging regions to apply through new calls
- Coordinated support to the EIPonAHA by European Commission DGs at European level
- Modernisation of ICT tools of the EIPonAHA compared to the current baseline
- Support for AHA solutions through public and private funding
- Information, education and high-level of engagement of the citizens in AHA issues

Of particular relevance to the recommendations from the Reference Sites is the continued support for the EIPonAHA Reference Sites in the short term and beyond 2020, in order to create an impact in active and healthy ageing and systemic change that will lead to real products and applications that the elderly could use. Also, the coordinated support by the European Commission DGs at the European level, especially DG SANTE (health issues), DG CONNECT (digitalization, digital services and technologies), DG REGIO (regional policies) and DG EMPL (employment and social affairs) to ensure coordination of programmes, initiatives and policy strategies to deploy activities, funding and human capital to strengthen the regions. Further, education and information programmes are needed to engage citizens in ageing issues and increase digital literacy in the population, as reflected also in the feedback of many of the twinning organisations.

# 9 Study dissemination and event organisation

ScaleAHA has actively disseminated study results and communicated relevant information to the EIP on AHA stakeholders. This section describes the different dissemination activities, reporting and event organisations in ScaleAHA.

## 9.1 Dissemination strategy

Efficient dissemination is a fundamental activity, since its success contributes decisively to both the short- and long-term impact of the study. This is ensured by careful and early planning of dissemination, communication and marketing activities and the commitment of all partners and stakeholders. It is important to consider that while many dissemination means are a 'push out' towards the target audience, they are only effective when there are also media and channels for the target audiences to provide feedback and take action.

The dissemination strategy provides key strategies for dissemination, communication and marketing to all relevant stakeholders. It elaborates on the details of the types of dissemination activities to be undertaken during the study lifetime, focusing on all relevant target groups and distinguishing between different geographical levels of dissemination and communication.

### 9.1.1 Dissemination target groups

Results of the study have been communicated to all relevant stakeholders. The basic target groups identified have been:

- EU, national and regional policy makers
- Local, regional and national health care and social care providers and funders
- Third party user organisations (older people/voluntary carers)
- Technology providers and their cluster associations
- Relevant research actors
- Press
- Civil society and the public at large

More specifically, dissemination activities directly addressed European regions across health, research and industry sectors at the same time.

Further specific target groups for dissemination could also be found in the Reference Site Collaborative Network (RSCN), regional networks such as CORAL, ERRIN, EUREGHA, the networks of ongoing ICT and health innovation EC funded projects like CareWell, BeyondSilos, and others.

### 9.1.2 Dissemination and communication channels

The Media Richness Theory[44] implies that different channels have various levels of influence on people and goes on to explain how important the right mix of channels is in order for the communication to not become oversimplified or overcomplicated (Figure 1).

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[44] Heeren, E., Lewis, R.: "Selecting communication media for distributed communities" in Journal of Computer Assisted Learning, 1997
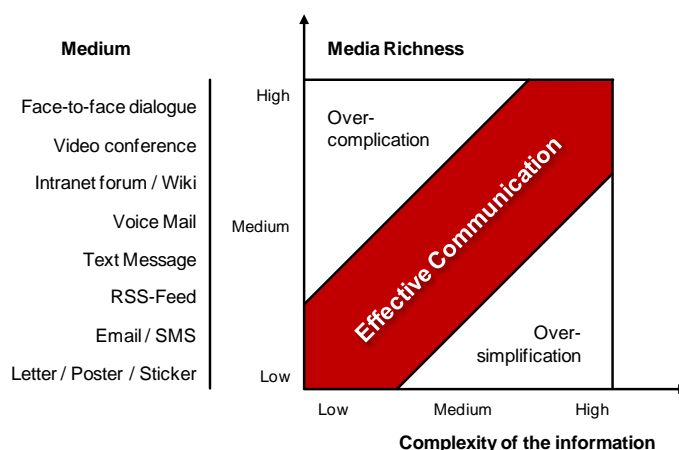
**Figure 17: Different Media as part of an effective communication**

In view of this, the study team developed a dissemination plan which ensured effective communication of the complex results of the study through the plurality and complexity of dissemination channels (Figure 2).
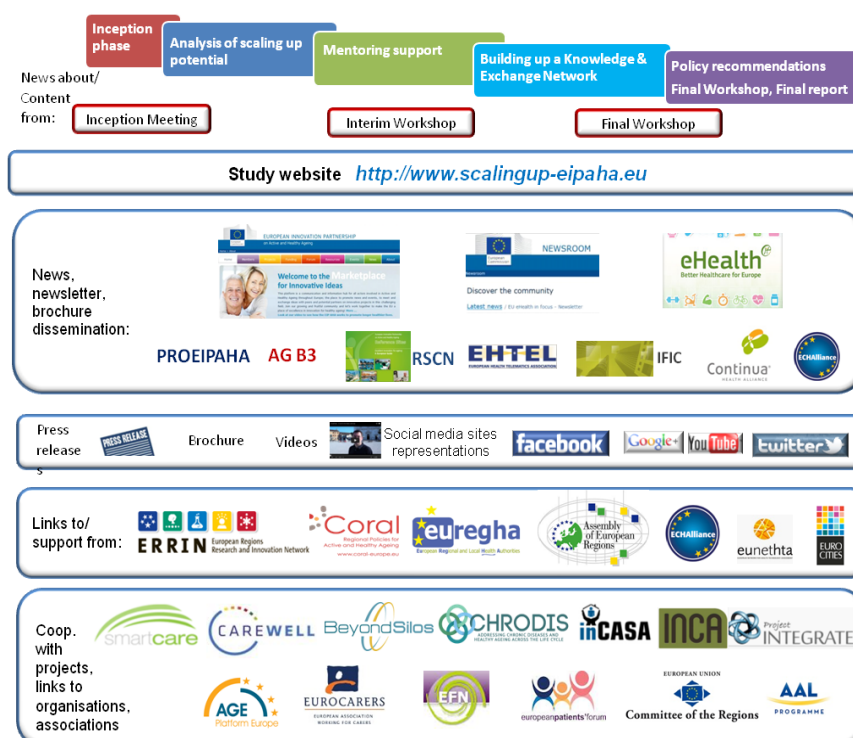


**Figure 18: Dissemination activities and channels**

### 9.1.3    Study visual identity

**ScaleAHA website**

The website of the study has been maintained by adding news and announcing ongoing initiatives, such as the 2016 Call for RS and 2016 Pilot Twinning Scheme.

**Figure 19: Snapshot of the ScaleAHA website**

**ScaleAHA twitter**

The dedicated Twitter account – @ScaleAHA –, has been active since the early months of the study and has been used to tweet news bites as well as re-tweet relevant messages. The Twitter feed has also been integrated into the website.
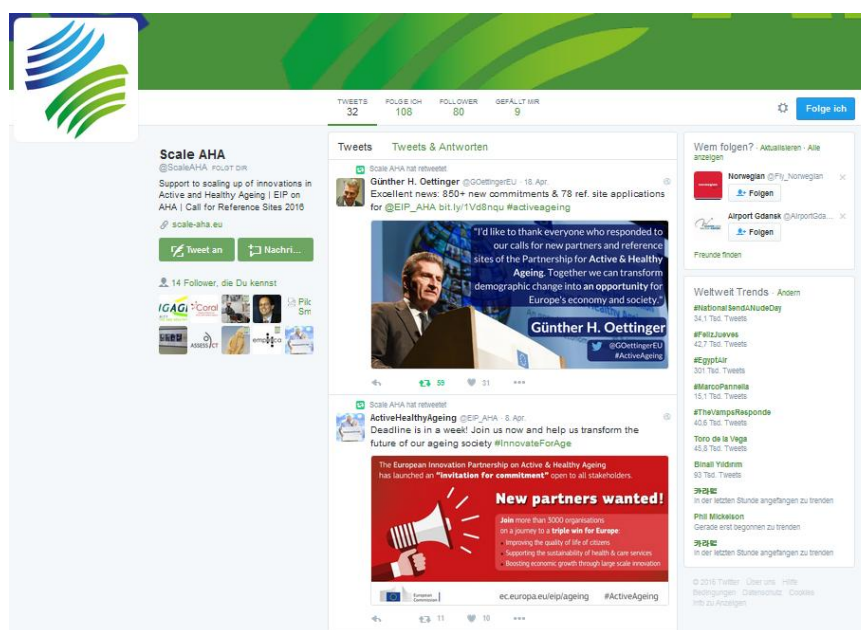


**Figure 20: Snapshot of the ScaleAHA twitter page**

**Logos**

The ScaleAHA logo, pictured below, has been prominently featured in all ScaleAHA dissemination materials and channels.



**Figure 21: The ScaleAHA study logo**

An additional Reference Site logo which indicates a sites rating (1 to 4 stars) has been created for the 74 Reference Sites to display in their dissemination activities.



**Figure 22: Reference Site logos (selection)**

## Newsletter No. 1

The first study newsletter included news about the two Calls of the EC – 2016 Call for Reference Sites and the Call for Commitments, as well as an introduction to the study, the MAFEIP tool, the Reference Sites Collaborative Network, and reports on other presentations and events the study team has been involved with. The newsletter was widely distributed on 13 April 2016 using empirica's channels – partners from projects and an internal database of relevant stakeholders (more than 3,400 addresses).



**Figure 23: Snapshot of ScaleAHA Newsletter No. 1**

The two calls were also featured as part of a dissemination newsletter circulated by the integrated care deployment project CareWell.

## Newsletter No. 2

The second study newsletter focused on announcing the results of the 2016 Call for Reference Sites of the EIP on AHA. It listed all 74 regional and local organisation awarded "Reference Site" status and offered details on the selection process. It also announced the Twinning Support Scheme which was open to Reference Sites between July and September 2016. The newsletter was widely distributed on 3 August 2016 using empirica's channels – partners from projects and relevant stakeholders (more than 3,400 addresses).
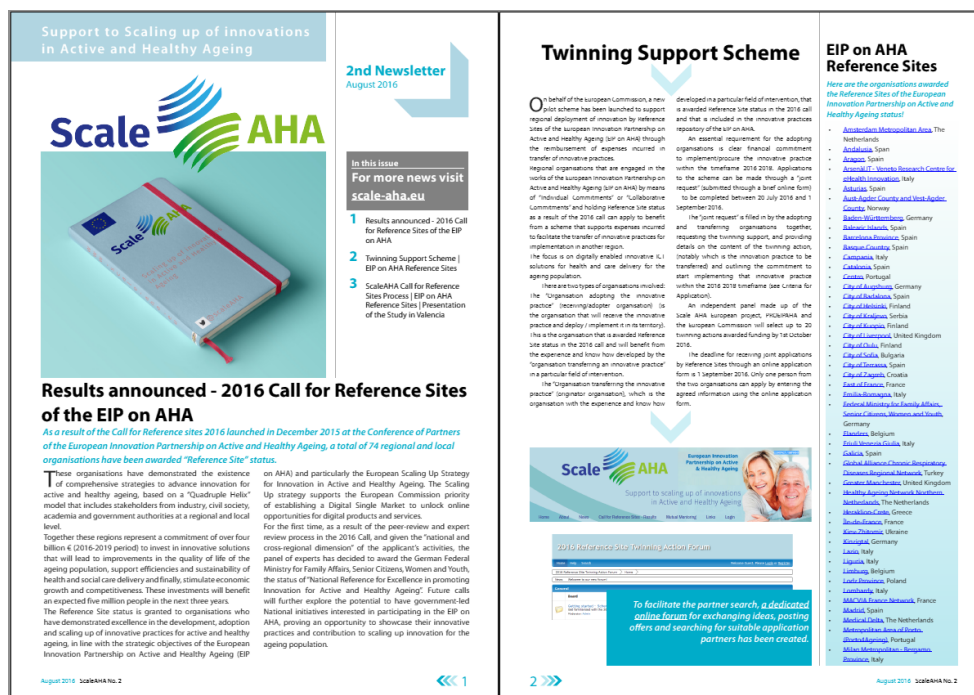
**Figure 24: Snapshot of ScaleAHA Newsletter No. 2**

## Newsletter No. 3

The third study newsletter focused on announcing the results of 2016 Pilot twinning support scheme of the EIP on AHA, listing the pairings of the participating organisations and the innovative practices It also announced the study's planned participation in the 2016 European Summit on Digital Innovation for Active and Healthy Ageing and past involvement in other events where results had been disseminated. The newsletter was widely distributed on 1 December 2016 using empirica's channels – partners from projects and an internal database of relevant stakeholders (more than 3,400 addresses).



**Figure 25: Snapshot of ScaleAHA Newsletter No. 3**

## Newsletter No. 4

The forth study newsletter featured the "Transfer of innovation on allergic rhinitis and asthma multi-morbidity in elderly people: MACVIA-ARIA Reference Site Twinning". Another topic of interest was the Monitoring and Assessment Framework for the EIP on Active and Healthy Ageing – the MAFEIP tool.



**Figure 26: Snapshot of ScaleAHA Newsletter No. 4**

## 9.2 Workshop on leveraging cooperation to de-risk investments in digital innovation for AHA

### 9.2.1 Summary

A session entitled "Reference Sites investment plans 2017-18: How to leverage cooperation to de-risk investments in digital innovation for active and healthy ageing" was held as part of the European Summit on Digital Innovation for Active and Healthy Ageing which took place in Brussels on 5-8 December 2016. Reference Sites (RS) were invited to share their investment plans in the context of the EC-funded "Transfer of Innovation Scheme". The goal of the session was to identify mechanisms that can be used in the future to accelerate and de-risk investments in innovation by the RS.

RS speakers included *Melania Alvarez* (Director General of Citizens Participation, Asturias), *Esteban de Manuel Keenoy* (Basque Country), *Donna Henderson* (Scotland), *Zdeněk Gütter* (Olomouc), *Vincenzo De Luca* (Campania), *Edwig Goossens* (Medical Delta Rotterdam), *Antonija Balenović* (City of Zagreb), *David de Mena* (Andalusia), *Elísio Costa*, (Metropolitan Area of Porto, Porto4Ageing), and *Jean Bousquet* (MACVIA France Network).

Asturias is drawing on cooperation and exchange of experience activities with other European regions to design its Strategy on Active Ageing, with the aim of having the Strategy approved in 2017.

Basque country is lending its knowledge in risk stratification to Scotland, Nouvelle-Aquitaine and Liguria, and is learning from Scotland about a self-management collaborative platform, "Living it Up", enabling access to information about self-management tools and services as well as training programmes for patients, citizens, caregivers and health and care professionals.

Scotland presented their Technology Enabled Care (TEC) Programme which was launched in 2014 aiming at extending the number of people benefiting from technology enabled care and support in the country. The three-year Scotland-wide programme has five key funding and support workstreams – home monitoring, video conferencing, telecare take up and switching from analogue to digital, and a national digital platform framework. Since 2015, an additional €10.5 million per year have been invested to support health and social care partnerships to develop and carry out tests of change and evidence positive, cost effective outcomes. The aim is to demonstrate and share measurable improvement in outcomes brought about by the implementation of technology enabled care such as reducing unnecessary hospital admissions, reduced length of stay in hospital, etc.

Porto4Ageing sees the Reference Site Collaborative Network (RSCN) as a great opportunity to meet European partners, promote cooperation, attend twinning events, join EU projects and exchange experience.

Medical Delta Rotterdam works with Campania to transfer an integrated vision on the nutritional approach to frailty, taking into account also the impact of social integration and psychosocial behaviour of the elderly.

Olomouc presented plans to invest about €40 million in the following years (mostly from European Structural and Investment Funds - ESIF, partly industry grants and own hospital investment), because the topic of active and healthy ageing is very important in the Czech Republic and supported by both policy makers and industry.

Zagreb plans to commit to providing €1.2 million in digitization and networking in the period of 2017-2018 to address challenges in the Croatian health care system.

Andalusia is currently working on 14 different commitments from 5 different EIP on AHA Action Groups, in accordance with the Andalusian eHealth Strategy Diraya.

A discussion round dealt with the suggestions for improvement of the EC-funded "Transfer of Innovation Scheme". Improving the future collaboration between twinning partners by maintaining and promoting a twinning web platform where the completion of the application forms can be updated was suggested by Asturias.

Scotland emphasised the relevance of networking when aiming at cooperating with twinning partners.

> *"The EIP - has been invaluable in terms of seeing other regions having similar strategic plans and ambitions. The best way of orientation has been through conferences and meetings, networking, and conversations.*
>
> *Our advice to future/new members is to come to the meetings to exchange ideas and network, network, network!" – Donna Henderson, NHS 24*

According to Campania, the twinning is an instrument for coordinated and targeted scale-up of good practices for AHA.

> *The "Transfer of Innovation Scheme helps to set out short, medium and long-term investments, stimulate multilevel collaboration between action groups and local focus groups in assessment of contextual needs and priorities, identify innovative and effective solutions, tailored to regional context, and assess the level of transferability and scale up of the good practices" – Vincenzo de Luca, Campania*

Another relevant aspect raised by Campania highlighted the importance of knowledge about costs with regard to implementing innovative technologies from other regions, which needs to be communicated to potential adopters at an early stage.

> *"There is no real knowledge of the business model. If we liked to test a new tool coming from another region, we would need to know how much it costs (because we do have the impact data).*
>
> *This is an important aspect that needs to be included in the next Call." – Vincenzo de Luca, Campania*

The ambitious twinning of MACVIA-France with ten different twinning partners was appreciated.

> *"The scaling-up of the allergy diary app MACVIA-France offers is outstanding and really fast." – a comment by an audience member*

### 9.2.2   Agenda

| EUROPEAN SUMMIT ON DIGITAL INNOVATION FOR ACTIVE & HEALTHY AGEING |
|---|
| **WEDNESDAY**, 7 December 2016 |
| **PLACE:  The Square (100 Hall)** |
| **TIME: 17:30 – 18:30** |
| **Workshop (WS3): Reference Sites investment plans 2017-18 –** *how to leverage cooperation to de-risk investments in digital innovation for health and ageing* |

| | |
|---|---|
| **SHORT DESCRIPTION** | The 74 Reference Sites of the EIP on AHA are committing to invest 4 billion Euros in digital innovation for active and healthy ageing. The session will discuss RS short-term investment plans, goals and expected outcomes, with a focus on leveraging cooperation to de-risk investments in digital innovation for health and ageing through the EC-funded "Transfer of Innovation Scheme". |
| **GOAL OF THE SESSION** | Build on the "Transfer of Innovation Scheme" and identify the mechanisms that can be used in the future to accelerate and de-risk investments in innovation by the Reference Sites. |
| **CONTENT GUIDELINES** | Welcome address by EC (5 min) <br><br> One speaker from a RS presenting (10 min) <br><br> Short statements from panellists – each 3-4 minutes (30 min max) <br><br> Discussion (15 min) |
| **SPEAKER** | **Melania Alvarez**, Director General of Citizens Participation, *Asturias* |
| **PANELLISTS** | **Esteban de Manuel Keenoy,** *Basque Country* <br><br> **Donna Henderson**, *Scotland* <br><br> **Zdeněk Gütter**, *Olomouc* <br><br> **Vincenzo De Luca**, *Campania* <br><br> **Edwig Goossens**, *Medical Delta Rotterdam* <br><br> **Antonija Balenović**, *City of Zagreb* <br><br> **David de Mena**, *Andalusia* <br><br> **Elísio Costa**, *Metropolitan Area of Porto (Porto4Ageing)* <br><br> **Jean Bousquet**, *MACVIA France Network* |
| **MODERATOR** | **Veli Stroetmann**, *ScaleAHA* |
| **EXPECTED OUTCOMES** | Exchange of information on objectives and implementation of the "Transfer of Innovation Scheme" <br><br> Suggestions for improvement of the "Transfer of Innovation Scheme" |

### 9.2.3 Presentations by Reference Sites

The presentations are available in Annex 2.

# 10 Twinning final results

## 10.1 Andalusia – Kraljevo (SAT)

### 10.1.1 Twinning overview

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Regional Ministry of Health of Andalusia, Andalusia | Belit d.o.o. Belgrade, Health Center Kraljevo, Center for Social work Kraljevo, Kraljevo | Andalusian Telecare Service (SAT) |

| Innovative Practice Description |
|---|
| The Andalusian Telecare Service (SAT) is a public social service that provides support and assistance to the elderly, disabled people and people in a dependency situation in Andalusia on a 24/7 basis.<br><br>It is supported by state of the art technology and its main purpose is to improve the quality of life of its users, formal and informal carers by facilitating the immediate access to a significant number of available social and health resources in response to situations of loneliness, social isolation, emergency and/or insecurity. This, in turn, provides the users with greater autonomy, independence and integration in their social environment. |

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/andalusian-telecare-service_en |

| Innovation Scope: |
|---|
| • Regional/national EHR systems and summaries<br>• Care provider EHR systems integration (joined-up/shared records)<br>• Regional ePrescription system<br>• Integrated medicines management<br>• ICT tools supporting adherence to care plans<br>• Technology for falls prevention<br>• ICT-supported integration of health and social care services<br>• Homecare, telemonitoring and mHealth systems<br>• Multidisciplinary team support, workflow, care planning and co-ordination<br>• Health and care needs assessment toolkit<br>• Telementoring and virtual consultations<br>• Telecare service/call centre<br>• Online health portals<br>• Age-friendly buildings<br>• Online access to EHR |

| Innovation Type: |
|---|
| ▪ Knowledge exchange and training |

| AHA Action Group: |
|---|
| ✓ A1. Prescription and adherence action at regional level<br>✓ A2. Personalised health management, starting with a Falls Prevention Initiative<br>✓ A3. Action for prevention of functional decline and frailty<br>✓ C2. Development of interoperable independent living solutions, including guidelines for business models<br>✓ D4. Age-friendly cities, buildings and environments |

| Twinning Objectives: |
|---|
| The region of Kraljevo successfully implemented the SmartCare project which is the first step in implementing ICT innovative solution in delivering joint social and health care to the elderly |

population. Effort was aimed to connect two institutions for the first time with electronic system. Now it would be beneficial to continue work further in having more advanced telecare solutions. Recent activities on SmartCare deployed the service only on limited number of users. This twinning will be a good chance to hear experiences in deployment of new teleservices to a much larger population.

Kraljevo region representatives were able to hear about general information about the social care provision in Andalusia and also how the health sector is organised and functioning.

Main focus of the visit was witnessing the functioning of telecare services which

- had over 195.000 users (66% free of charge),
- 64% of which were elderly people,
- 35% of which were in dependency situation,
- 0.5% people with disabilities,
- Received 15.000 calls a day,
- had 50 million calls since 2002.

| Twinning end result: |
| --- |

The twinning did not result in implementation. Financial capacity of Kraljevo region in regards to modernization of age related services in the region are very limited. Some of these services are also depending on national policies. It is not likely in the near future that local self-government in Kraljevo would have financial means to implement such a large scale system. Gathering political support for further developing new services was the first objective after the twinning visit. Next efforts will be directed to digitalisation of documentation in health and social sector. Also, there is necessity to begin with the process of implementing telemedicine and telecare services.

The Andalusias visit had very positive effect on the organisations of the new services in Kraljevo. Jointly with Youth Office NGO in Kraljevo our colleagues in the Health Centre created a mini Call Centre, which was directed to solve issues among the younger population. The experiences with the twinning scheme in Andalusia were valuable in developing this service. Now, there are talks with several organisations representing the elderly population to find a way of developing similar services in their contexts.

## 10.1.2 Background on SAT

### Description

In 2002 the Regional Ministry of Equality and Social Policies together with the Agency for Social Services and Dependency of Andalusia set up the Andalusian Telecare Service (SAT). It is considered one of the most important telecare centres in Europe due to the size of the population it serves (250.000 users), its technological infrastructure, its security systems and the guarantees it offers. The Service is managed with innovative and wide-ranging vision, given that this resource is designed for the social welfare of its citizens and to support the Public Social Service System.

The population which benefits from the SAT includes elderly people in a process of active and healthy aging, family members seeking conciliation, elderly dependent people and people with disabilities. The SAT aim is to improve quality of life helping to maintain their autonomy and social environment integration.

The Andalusian Telecare Service (SAT) is a public social service that provides support and assistance to the elderly, disabled people and people in a dependency situation in Andalusia on a 24/7 basis.

It is supported by state of the art technology and its main purpose is to improve the quality of life of its users, formal and informal carers by facilitating the immediate access to a significant number of available social and health resources in response to situations of loneliness, social isolation, emergency and/or insecurity. This, in turn, provides the users with greater autonomy, independence and integration in their social environment.

**Evolution in the Originator's region**

The SAT prevents and gives immediate response to situations of loneliness and social isolation, emergency or insecurity. This social resource enjoys high acceptance and appreciation among its users and between their families and caregivers for the comfort and safety that provides and because they feel accompanied. The beneficiary can contact the SAT 24 hours a day, 365 days a year, just by pressing the button on the Telecare device installed in their home, this device consists of a fixed terminal and a remote terminal shaped as a pendant or bracelet.

Once the person presses the button, the call is answered from the centre, immediately recognising the person making the call and with all necessary information to give a personal high-quality attention (data of the house and the beneficiaries, cohabitants and contacts: personal details, recent developments, diseases/allergies, habits and hobbies, skills, etc.) The beneficiaries can talk to telecare staff professionals using the "hands free" feature from any part of the house, without picking up the phone.

The process and time for adoption of the SAT has been carried out in different stages, the first step of the process was the agreement between the national institute for the elderly and social services (IMSERSO) and the Federation of Municipalities and Provinces (FEMP) in 1992 to look for synergies and cooperation in matters of social services and improvement of the quality of life of the elderly. This agreement was followed a few years later (1999) by a first pilot deployment for a telecare service in Andalusia at a small scale. The success and valuable feedback resulting from the first telecare service pilot operation and the creation of the Andalusian Foundation for Social Services (FASS) in 2000 provided the necessary platform and regional support to establish the Public Telecare Service in Andalusia (SAT) in 2002 with the first telecare centre located in Seville. Four years later in 2006, the second telecare centre was created in Málaga, this second telecare centre allowed for a better distribution of resources and quality of service, with Seville and Málaga covering western and eastern Andalusian regions respectively and providing a replication of the service in case of need or back up in both centres.

The coming into force of the Dependency Law 39/2006 in 2007 originated a wider and stronger legal framework for the provision of the telecare service for both elderly people and for people in a dependency situation, this scenario made the number of users grow significantly over 100.000 users.

During the period from 2008 to 2012, two major European research projects, namely "Commonwell" and "Independent" supported the technological development of the Andalusian telecare service by providing a common platform with the Public Emergency Services (061) and the Medical Advice Service (Salud Responde) in Andalusia.

These two projects consisted on the integration of social and health services, allowing the user of the telecare service to access the emergency services and the medical advice service through the telecare service with just one call, automatically transferring the voice and the data from the user to the health service whenever necessary, thus saving time, increasing efficiency and improving the overall quality of the service.

In 2011, the new political scenario in Andalusia integrated both the Andalusian Foundation for Social Services (FASS) and the Andalusian Foundation for Social Inclusion and Drug Dependence Care (FADAIS) into a single regional government Agency, the Agency of Dependency and Social Services of Andalusia, which consolidated the different regional social services provided by both former foundations and allowed for the consolidation of the telecare service as one of the core services provided by the Agency with over 250.000 users in the whole region of Andalusia.

The SAT activity is characterized by an innovative management, transparent and future-oriented, adaptable to changes that occur in society, demonstrating high quality and efficiency in the use of resources with a commitment to citizenship and to the environment.

As mentioned before, the service has been up-scaled at different stages, adapting itself to the increasing need for this type of service and keeping the pace of the political development around the provision of social services.

Both projects, Commonwell and Independent, provided the necessary technological platforms to integrate and increase the efficiency of the telecare service when managing health related calls.

In this sense, further actions have been implemented to tackle the sustainability of the service, including the provision of a support centre (in case of possible technical incidents or maintenance in one of the centres, the other can take full workload allowing the provision of service under normal conditions).

On the other hand, the quality management of the service is continuously working to indentify redundancies in the infrastructure and key elements to ensure the operation of the service in the event of power cuts and the 24x7 technical support services.
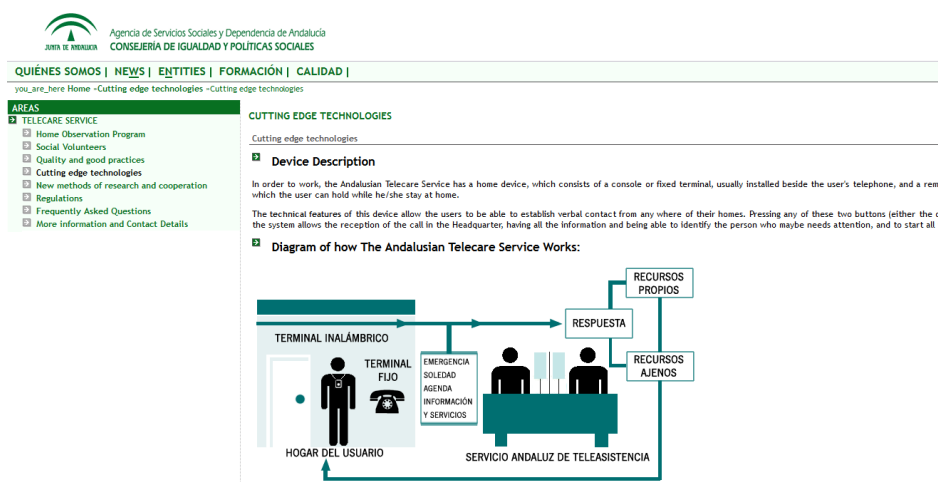


## Barriers and success factors experienced by the originator

The political and organisational scenario around the telecare service in Andalusia has been changing over a number of years since its creation. It was very important to assess and provide evidence at the very early stages of development in order to prove the added value of the service and the increase of quality of life of the elderly people in Andalusia.

The increasing number of users demanded more efficient technological solutions after the service was being deployed, for example, one of the technical problems was how to efficiently distribute the calls workload. Having two centres enabled to distribute the volume of calls and provide potential backup solutions. Calls from users were eventually handled by two different call centres covering the Eastern and Western provinces of Andalusia respectively and replicating the data in case of need from one to another.

On the other hand, the integration of the health service posed some technological barriers at first due to the different technological platforms used by each other. The exchange of information via web servers, the technical suitability assessment and the pilot phases prior to the final deployment provided the necessary feedback in order to overcome the different barriers.

Another barrier in terms of deployment was the lack of knowledge regarding the different health and social services provided by each of the organisations and the different action protocols implemented by them. It was essential to establish working groups and provide extensive and open communication in order to understand each other´s way of functioning. This required implementing and following a concrete roadmap and providing regular feedback throughout the entire process.

The main success factors for the implementation of the telecare service happened at two different levels. At the political level there was a solid and permanent commitment from the regional government of Andalusia to provide and implement a high quality service, assuming a compromise with the elderly, disabled people and people in a dependent situation in the region to improve their quality of life. The dependency law set down the legal framework for a complete and compensatory catalogue of services for people in a dependent situation including the telecare service as one of the basic packages. This in addition to that already provided to the elderly people and the continuous positive feedback received by the users and the society in general boosted the need to continue developing the service.

The other success factor was at the research and innovation level. ASSDA has been involved in different activities and programmes at Regional, National and European level in order to promote and implement new technological solutions, exchange good practices and develop innovative solutions for the services provided.

The current model focuses on optimising the telecommunication network which supports the telecare service. This network can redirect calls from users attending to different parameters. This redirection configures the system so that all calls from the eastern and western provinces of Andalusia are routed respectively towards one of the two centrals. This intelligent network increased the availability and quality of the service, since the call would be automatically redirected to a second call centre in case the call could not be answered in the first call centre.

Another example is the demand of health and emergency services via the telecare service which has been growing at the same time that the need to provide an integrated platform was becoming crucial in order to meet the increasing number of calls. The scenario in which this demand was evolving was affecting both social and health care service providers due to different factors, including inefficient referrals to the health services (whether it was emergency situations or ordinary medical consultations), duplication of calls, holding of the lines, timing, accuracy of the information and lack of setting common protocols.

In order to tackle the evolving scenario, ASSDA started a series of meetings and projects to promote the transfer of knowledge and roadmap with the next steps to create an integrated social and health platform using the existing services and infrastructures. This integrated service forms nowadays part of the regular telecare service.

Furthermore, ASSDA keeps an active team of people from the coordination of external action and the new technology area providing continuous feedback on new opportunities in order to improve and further develop the service in terms of quality, efficiency and effectiveness.

### 10.1.3  Adopter's needs and ambitions

Only recently, innovative solutions in integrated care of elderly people started to function in Kraljevo region mainly thanks to CIP ICT PSP programme and other EU projects. Members of Kraljevo reference site, which have the status of candidate reference location, immediately recognised the opportunity in study visits to more advanced regions of Europe. The mayor of City of Kraljevo received the award of candidate Reference Site in person; therefore we expect that in future we will have more support for new practices.  On the other hand, the care for elderly people in Kraljevo is still on basic level, system functions but without new and innovative services.

Overall situation in regards to the financial support to the innovative solutions for health and active and healthy aging is not very optimistic due to the national restrictions and hard financial situation in the institutions. We still have not received an answer from authorities in regards to their vision in this segment (Ministry of Health, Ministry of Social affairs and local self-government). We feel that initiatives like this might do a very positive impact on decision makers to recognise the necessity for investments in this field.

The region of Kraljevo successfully implemented the SmartCare project which is the first step in implementing ICT innovative solution in delivering joint social and health care to the elderly population. Efforts were aimed to connect two institutions with an electronic system for the first time. Now it would be beneficial to continue the work to produce more advanced telecare solutions. Recent activities on SmartCare deployed the service to a limited number of users only. This twinning will be a good chance to gather experiences in deployment of new teleservices to a much larger population.

## 10.1.4 Adoption and investment plan

The Kraljevo delegation learnt several highly important steps from their colleagues in Andalusia, which had to be completed in order to arrive at a high-quality telecare service:

• 1998 - various pilots started;
• 2002 - public telecare services in Andalusia SAT was formed
• 2006 - second telecare centre in Malaga opened
• 2007 - Law on dependency – important element which allows that everyone can use the service
• 2011 - Agency of dependency and social services in Andalusia

Furthermore, the Serbian delegation also paid attention to RESISTOR project, which aimed to create Single Social Record.

A very important point was set by the representative of the Andalusian health sector: there are over 1.500 primary healthcare units in Andalusia and 47 hospitals (secondary health institutions). It means that Andalusia region is paying much more attention in prevention, while situation in Kraljevo and Serbia as a whole went in the opposite direction in the last few years.

Region in Kraljevo is only at the beginning of implementing innovative integrated services for the elderly population. It has already been agreed upon among the twinning actors that we will continue our collaboration and that we will raise awareness of the possibilities of implementing new services in this field.

The main goal for the Adopters will be to obtain political support to continuously fund the SmartCare service together with expanding the number of people included. We heard a lot of useful information from colleagues in Andalusia which will help us to achieve this goal.

New services similar to teleservice in Andalusia can be added and offered to the users in the telecare domain. No such services exist in Serbia at the moment. Valuable contact with Andalusian technical provider Proasimut was made who produced a device MiMov (GPS enabled mobile device).

Currently, the economic situation in Serbia is not very favourable for developing new services and it is difficult to obtain funds for investing in new technologies and services. The social sector is underfunded with desperate need for investments in basic infrastructure. Other major barrier is a lack of autonomy in decision making of local self-government, but recently a new law has been passed which will give more possibilities to the local stakeholders. Fortunately, colleagues from Andalusia said that their journey was no easy walk too. They are here after almost 25 years of overcoming obstacles and getting momentum in creating these services.

We will consider as success:

• Any additional service in further integration of social and health services in the City of Kraljevo both in increasing number of services available but also increase of number of users,
• Any additional joint participation of the two regions in innovative projects and programmes such as H2020,

- Achieving at least one-star status of EIP on AHA membership after 3 year period.

## 10.1.5 Benefits and outcomes (adopter)

The new innovative practice would benefit:

- Health centres with reduced visits and better communication between doctor and patient and family members,
- Social centres already experienced improvement of work flows by creating new joint care plans for end users together with health professionals now that the service is ready to be scaled-up to the whole elderly population in the City of Kraljevo region,
- End users would experience better care service and increase in its quality,
- Family members would be more involved in end user care.

Twining activities are central parts of the whole involvement of the City of Kraljevo in the EIPonAHA initiative and, indeed, we expect to raise awareness in stakeholders to invest in innovative solutions in the future and to receive the full member status.

## 10.1.6 Recommendations

Policy decision makers in Serbia should focus in further integration between health and social care providers and to cover that field of operation with new legislation. Integrated care will happen; it is only matter of time and legal framework should be set for it.

## 10.2   Scotland – Andalusia (Living it Up)

## 10.2.1  Twinning overview

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| NHS 24, Scottish Centre for Telehealth and Telecare, Scotland | Regional Ministry of Health of Andalusia, Andalusia | Living It Up |

| Innovative Practice Description |
|---|
| The innovative practice that Scotland has shared with Andalusia is the experience of co-designing an online self-management hub called "Living it Up" (LiU) which has been designed with and for people aged 50+ living with one or more long-term health conditions. LiU is a digitally enabled community that provides holistic opportunities to support improved health, wellbeing and active lifestyles. LiU enables people to connect to their support circle (including family, friends, informal support and health and care professionals), to be motivated to use technology to improve their health and wellbeing and to be empowered to be confident contributors to the "Living it Up" community, sharing their experiences and knowledge. |

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/living-it_en |

| Innovation Scope: |
|---|
| • Online platform for self-monitoring for people above 50 with long term health conditions<br>• ICT-supported integration of health and social care services<br>• Multi-disciplinary team support, workflow, care planning and co-ordination |

| Innovation Type: |
|---|
| **Partial adoption**: there are elements and aspects of the LiU platform that have been adopted in the design and implementation of the Andalusian AHA platform. Among these elements:<br><br>• Mechanisms for citizens' engagement,<br>• Selection of services available in the platform and their layout,<br>• Ways to better involve different stakeholders,<br>• Need to incorporate performance and results assessment. |

| AHA Action Group: |
|---|
| ✓  B3. Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level |

| Twinning Objectives: |
|---|
| The objective of the twinning activities is to facilitate learning about the Living it Up self-management collaborative platform, the stakeholders involved, the implementation methodologies and the change management performed within health and care systems to enable access to information and training for patients, citizens, caregivers and health and care professionals. Objectives:<br><br>• Provide information about key learning from the development of "Living it Up" to enable Andalusian experts to acquire knowledge and skills in the design and development of digital platforms for the promotion of active and healthy ageing. Specific issues to be discussed have been: successes, challenges faced and things to do differently.<br>• Promote inter-regional partnerships between relevant experts and stakeholders to facilitate longer-term knowledge transfer and learning. This is currently on-going. |

| Twinning end result: |
|---|
| There are 1.2M people over 65 years in Andalusia and, along with health and social care professionals and their families and relatives, are the potential users of the Andalusian AHA platform. This digital solution will facilitate building alliances and collaborations among citizens, different |

professionals involved from health care, social care and education.

After the twinning activities, a wide range of recommendations were commented and several lessons have been shared, such as:

- Need of adequate coordination with other services potentially available,
- Link with local services and information in the community,
- Involvement of relevant experts,
- Incorporate evaluation and assessment performed during the implementation phase, similar to the one carried out during the implementation of LiU.

## 10.2.2  Background on Living It Up

**Description**

The "Living It Up programme" (LiU) started in June 2012. It was set up to creatively explore and pioneer how advances in technology could help support transformational change in our health and social care services and realise citizen, organisational and economic benefits. The main motivation has been the need to improve accessibility of services, provision of preventative tools and services and to provide a basis for an overarching national platform that can be integrated with other digital services and products.

LiU was established to provide a contribution to the following key challenges;

- Health & Wellbeing: Scotland, like many other countries, is facing the challenge of effectively managing an ageing and increasingly co-morbid population whilst controlling health and social care costs. Digital health is recognised as one of the key contributions to this challenge, as is further supporting the role of unpaid carers and the significant contribution they make. Our ageing population also represents a considerable opportunity if we can harness the wealth of experience and capacity.
- Technology: Advances in technology present a significant opportunity for health and social care if these can be developed in a way which supports public sector service transformation and addresses citizen aspirations and needs. Whilst new technological solutions present themselves on an increasingly regular basis, the healthcare sector is far behind other industries in adoption and integration, e.g. 75% of people manage their finances online but only 2% of people currently manage their healthcare online. Scotland is at the forefront of telecare adoption, but there remains evidence of limited user and carer awareness.
- Economic: Scotland is a worldwide leader in Life Sciences, ICT and electronic technologies. Many large technology firms have relocated to Scotland and there is a significant SME presence (approx. 800 companies in this space). However, many of these companies find it challenging to engage directly with potential users, and the health and care sector in Scotland is often regarded as a 'closed system'. SMEs also find it difficult to align their products with other technology solutions, representing a challenge for economic growth.

**Evolution in the originator's region**

Up to May 2015, LiU was an innovation project funded over three years by the Scottish Government and Innovate UK (previously the Technology Strategy Board) as part of the UK wide "dallas programme".

dallas sought to:

- Radically change the way people interact with health and social care services and empower them to take greater responsibility and ownership of their health and wellbeing.

- Roll out new technologies and services at scale and create a consumer market for wellbeing products and services, to promote wealth creation in the economy as well as providing wider public health and societal benefits.

Following the completion of the "dallas" innovation phase, LiU was funded by the Scottish Government over 2015/16 to consolidate its assets and begin to develop a service offering to deliver real benefits to the people of Scotland. The 2015-16 phase has been entitled 'Service Development Phase 1' (SD1). This phase included a specific evaluation of LiU, which was undertaken by Impact Generation Ltd, to evidence any return on investment from LiU and any impact on health & wellbeing outcomes. LiU is now an online, supported self-management hub, with approx. 50.000 page views per month and over 24.000 'signed up' users and subscribers. It is owned and managed by NHS 24, and is currently active in 11 geographic areas across Scotland.

Phases:

1. Solution-exploration phase (June - December 2012). The following activities were undertaken during this period: a) community engagement through individual interviews, focus groups, workshops and creation of community engagement website and b) preparation of communication materials and newsletters.

2. LiU service design (2013-2014). The following activities were undertaken in this period: feedback events, service development workshops, branding workshops and paper prototypes.

3. Turning co-design into a reality (2015-2017). Costs: £1-5M.

A summary of the process for adoption of the Living it Up programme is illustrated in the Figure below:
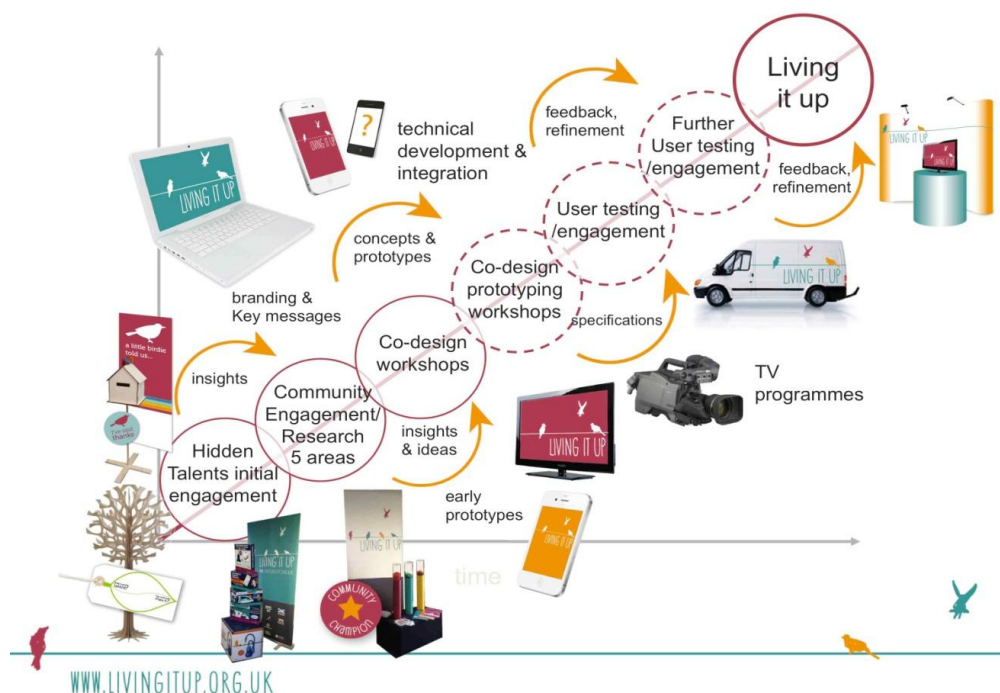


Outcomes:

Following an independent evaluation, we found that LiU has generated preventive behaviour/s in its users, including a three-times lower self-reported instance of using care services, six times higher self-reported instance of community volunteering plus a greater capacity to care for others and a willingness to trial new self-management techniques to look after their own health and wellbeing. Evidence also indicated that LiU active users have

greater levels of adherence to preventative care and health routines; more appropriate food selection and diet choices; more resilient coping management strategies for the care of their LTC when symptoms, environmental or social changes occur.

Best public value: A case for providing current and long-term public value, given via an independent social return on investment (SROI) calculation that shows a 37% return on the 2015/2016 investment made.

The business case for the sustainability of LiU solution has been led and developed by NHS 24 for the consideration by Scottish Government. NHS 24 is a developer of this digital solution. The business case is based on five principles:

- To provide a compelling case for change and identification of the contributions that can be made to the strategic priorities of the public sector – the "strategic case";
- To represent best public value – the "economic case";
- To be attractive to the market place, can be procured (as appropriate) and is commercially viable and sustainable – the "commercial case";
- To be affordable – the "financial case";
- To be achievable – "the management case".

**Barriers and success factors experienced by the originator**

The following barriers were observed in implementing the LiU solution:

- Multitude of partners involved from the beginning and it was difficult to manage them all; working with health and social care, 3rd sector, industry, manage service; we all speak different languages and work at different speeds,
- Health and care have many legal restrictions on what can be used and viewed on the partners' computers,
- Citizens' engagement was difficult at initial stages,
- Promoting an unfinished product to busy staff in health and social care; it took almost three years to develop the initial product,
- Staff could see the benefits but wanted something that is ready to buy with the opportunity to scale it down to the local level; anything new should be easy to implement,
- Fitting with local priorities: IT/eHealth helped to realise many things but also had to stick to their local improvement plans; local authorities focused on integrating both health and social care services presenting both challenges and opportunities,
- Changing workforce: time to establish required teams, fixed term contracts, unclear future – this all led to unstable workforce and gaps in support as staff changed,
- Navigation of the site: it is easy when you are in a one-to-one situation, addition of new services and becoming familiar enough with them requires further promotion,
- Search engine: there is a need to ensure accurate content and appropriate categorisation and encouraging citizens to take ownership of their entries.

Recommendations:

- Provide promotional information relevant to the groups/individuals we met,
- Integration of the tools must be promoted,
- Give citizens more reasons to keep coming back to the site,
- Consistent workforce,
- Clear on future funding and
- Closer collaboration with eHealth/ICT
- The following success factors facilitated the implementation of this digital solution:
- Co-design/co-production: people appreciated the involvement in the process; people enjoyed providing feedback and suggestions for the improvement of services,
- Local information: link with local services and information through ALISS (corporate service for local authorities in Scotland),

- Promotion of LiU: promotional events and merchandise, contribution from voluntary sector to involve target population,
- Video clips: citizens often prefer them to written words; provide opportunities for local teams to produce such clips; opportunity turn citizens into producers,
- Simplification of the platform with a better visual arrangement,
- Put political will and legislative/ policy framework into place,
- Visible leadership and trusting relationships across sectors and all levels,
- Contractual levers and incentives throughout the eco-system,
- Develop skill mix and enhance capability,
- Funding used as a catalyst for change,
- Build community assets and invest in the voluntary sector,
- Focus on places (i.e. home), communities and outcomes that matter to people,
- Understand the local context,
- Build trust in the front-line delivery team – use of champions,
- Learn and improve culture and personal outcomes,
- Empower people to change,
- Ensure people are able to collect the appropriate data to evidence changes,
- Co-design, co-create and co-develop change in collaboration.

### 10.2.3 Adopter's needs and ambitions

Andalusia is in the process of designing, developing and implementing a virtual platform (a digital solution) where citizens, their families, health, social services and other professionals (education, and public and private companies etc) can all interact with the main aim to foster active ageing. The platform will enable access to support activities related to active aging such as: training activities for citizens, professionals and specific groups that will promote the necessary skills; dissemination of good practices detected; information needed for collaboration and building partnerships between public and private entities working in this area. Common interests will be shared, contributing to knowledge management to progress the search for solutions to emerging problems and issues in relation to active ageing. This platform is very similar to what has been developed by the Scottish LiU platform.

The LiU platform was one of the good practices presented during the CASA project study visit in Scotland. The CASA project was an EU funded project under the Interreg IVC programme.

The Andalusian AHA Platform seeks to provide useful links, information and services for people over 65, their families and carers to promote active and healthy ageing. It is embedded in the Regional Strategy for Active and Healthy Ageing, in collaboration with the Regional Ministry for Equality and Social Policies and civil society, under the overall framework of the Andalusian Health Plan (endorsed by the Regional Government) and the Andalusian Plan for Promoting Personal Autonomy and Preventing Dependency. Its general aim is to create a common web space for fostering active ageing:

- Providing information, tools and advice on active ageing to contribute to healthy decision-making.
- Providing a space for communication among interested players in active ageing.
- Compiling active ageing best practices and scientific evidence for their dissemination.

This Andalusian AHA Platform is one of the Andalusian commitments of the EIPonAHA A3 Action Group.

Currently, ERD Funds are committed to the design, development and implementation of the Andalusian AHA platform: 263.046,47€ for 2016-2017.

The objective of the twinning activities is to facilitate learning about the LiU self-management collaborative platform, the stakeholders involved, the implementation methodologies and the

change management performed within health and care systems to enable access to information and training for patients, citizens, caregivers and health and care professionals.

Objectives:

1. Provide information about key learning from the development of "Living it Up" to enable Andalusian experts to acquire knowledge and skills in the design and development of digital platforms in the promotion of active and healthy ageing. Specific issues to be discussed have been: successes, challenges faced and things to do differently.

2. Promote inter-regional partnerships between relevant experts and stakeholders to facilitate longer-term knowledge transfer and learning. This is currently on-going.

### 10.2.4  Adoption and investment plan

1. Series of webinars with relevant experts to provide presentations of the innovative practice (functionality and implementation methodology) in order to explore the enablers and barriers encountered. Initial teleconference held on Nov 22nd 2016. (March - June 2017).

2. Study visit to Scotland RS by a delegation of Andalusia RS; meetings over two days to get to know in-depth aspects of the LiU platform. (January 12th and 13th 2017)

3. Analysis of lessons learned to determine how this will impact on the design of the Andalusian platform; internal report in process. (February – March 2017).

4. Dissemination of the outcomes/results of the twinning activities within both regions and within the EIP on AHA community, via a report on the study visit and subsequent outcomes (July 2017).

Milestones:

MS1 - Initial telecom (November 2016)

MS2 - Study visit (January 2017)

MS3 - Adaptation of the Andalusian AHA Platform to the lessons learned.

The total budget foreseen in the period for the design and implementation of the Andalusian AHA platform has been expended to be a total of 263.046,47€ for 2016-2017. A public tender was launched through the Andalusian School of Public Health, public entity depending on the Regional Ministry of Health of Andalusia.

The specific links to the call for tenders are:

*1. Call for the portal:*

http://contratacion.chap.junta-andalucia.es/contratacion/ContractNoticeDetail.action?code=2017-0000013035&pkCegr=1847672&seeAll=Y&lite=N

*2. Call for the videos:*

http://contratacion.chap.junta-andalucia.es/contratacion/ContractNoticeDetail.action?code=2017-0000011296&pkCegr=1847672&seeAll=Y&lite=N

Both calls are closed now and the awarded entities are developing and implementing the requested solutions.

No other funds are foreseen for the implementation of the Andalusian AHA platform besides the already committed ones.

Further collaboration between Scotland and Andalusia Reference Sites will be incorporated into their ongoing, regular contacts and activities.

## 10.2.5 Benefits and outcomes (adopter)

New opportunities for groups of older people participating in the definition of the AHA platform need to involve "champions"/engaged users/volunteers/digital promotion services in Andalusia.

After the identification of the needs of the different stakeholders involved and their expectations, categories of users will be defined with their main knowledge areas. The methodology that has been used is a participative approach, with workshops in all provinces in the region, involving a wide range of participants (citizens, public services, local authorities, associations, public enterprises, private enterprises, universities, regional government and social economy), with 363 actively involved attendants. Several committees have been formed: scientific, alliances with other regional ministries and entities, etc.

Potential users' main expectations of the platform's contents are: social and leisure activities, diet and physical exercise, health care, information and aging and relationships. Regarding the design of the AHA platform, their expectations related to easy access, easy application and the provision of clear and relevant information and services only.

Better communication among participants and access to reliable and relevant information to promote active aging will be the main benefits once the AHA platform is implemented.

Suggested indicators to evaluate the degree of success of the implementation/adaptation of the Andalusian AHA platform include:

- Number of stakeholders involved: number of workshops and participants in each of them; territorial distribution,
- Definition of the digital services to be offered: selection criteria and number of services included,
- Categorisation of users: number of users in each category (like the ones in LiU) that will allow us to compare citizens' engagement,
- Potential health benefits for citizens actively participating in the platform, with an adaptation of the evaluation performed during the initial stages of LiU.

It is important to highlight that the Andalusian AHA platform will be an open one, targeting over 1.2M people over 65 in the region. Besides, their family, health care and social care professionals are also expected to participate in the platform.

There has been very active involvement of participants during the design process, with 363 people engaged in different workshops organised in the 8 provinces. Gender representation has been as expected (60.3% women and 39.7% men).

Professionals have also participated in this process: 29 in total representing different entities: the Andalusian Council of Elderly People, the Regional Ministry of Education, the Regional Ministry of Equality and Social Policies, the Regional Ministry of Tourism and Sports, several universities, local authorities, social care entities (NGOs) as well as public and private enterprises.

## 10.2.6 Policy recommendations

Direct transfer of digital solutions is not always easy or feasible due to the different systems and cultures in which each one is developed. Nevertheless, there are common elements that cannot only be shared but transferred and adapted to the local situations.

In the case of regional governments with similar competencies in the field of health and health care, a common vision on the need of high-quality patient-centred health care is needed. Changing policy environments may affect the impact and results of the twinning activities.

## 10.3     North West Coast of England – Oberbergischer Kreis (Teleswallowing)

## 10.3.1  Twinning overview

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| North West Coast of England, United Kingdome | Oberbergischer Kreis, Germany | Teleswallowing |

| Innovative Practice Description |
|---|
| Blackpool Teaching Hospitals NHS Foundation Trust won one of the NHS Challenge Prizes for its submission 'The Workplace of the Future'. We wish to share our vision that clinicians in future will utilise digital solutions to deliver care. This includes using health apps and remote assessment such as Teleswallowing – a way to assess the eating and drinking abilities of residents living within care homes. |

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/teleswallowing_en |

| Innovation Scope: |
|---|
| ✓  ICT tools supporting adherence to care plans<br>✓  Homecare, tele monitoring and mobile health systems<br>✓  Multi-disciplinary team support, workflow, care planning and co-ordination<br>✓  Tele-mentoring and virtual consultations |

| Innovation Type: |
|---|
| ▪  **Knowledge exchange & training** |
| The main aspect of the transfer-of-innovation-visit was a broad and multifaceted exchange of information between regional experts. The visit in Blackpool at the Teaching Hospital Blackpool brought together the initiative Healthier Lancashire and South Cumbria, the Fylde Coast Vanguard, the Review of Health and Care Applications, the Innovation Programme from Lancashire Care NHS Foundation Trust, a GP, a German mobile health startup, the Regional Innovation Network "Healthy Ageing" and the health-region CologneBonn. |
| The visit in Cologne brought together the University of Applied Sciences Bochum, the project "DiaTrain" – Teletherapy of Aphasia following Stroke, the German Institute for Telemedicine and Health Promotion DITG with their approach of Telemedical Lifestyle Intervention, a German mobile health startup, the Regional Innovation Network "Healthy Ageing", the health-region CologneBonn and the originators from Blackpool |

| AHA Action Group: |
|---|
| ✓  B3. Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level |

| Twinning Objectives: |
|---|
| The objective of the Originator is to learn from our Cologne colleagues about how they deliver care and their ambitions for the future; to share the work we have achieved for the good of the general population. |
| The objective of the Adopter: We are working with both the GP already using first telemedical steps in the OBK as well as a start-up that focuses on establishing different telemedical solutions for hard-to-reach sites. The start-up also took part in our visit to England and could learn about tips and tricks from the vast experience in England and also made concrete plans to collaborate with some of the English partners. During the return visit of the reference site North West Coast of England, the start-up demonstrated their telemedicine usage and the English experts gave hints to improve the current situation. Additionally, other projects from the larger state of North Rhine-Westphalia reported on their digitalisation projects. This way, a mutual exchange of knowledge occurred that not only the members of our reference site could benefit from, but also experts from other cities. Also, the originator learned about different German approaches that might not be known / considered yet in England, which made it a win-win visit. |

**Twinning end result:**

The UK is one of the pioneers in Europe in the use of telemedical solutions and has a higher telecare penetration compared to other countries in Europe. An implementation of the innovative digital solution "teleswallowing" within a timeframe of three months was unrealizable considering the German systemic and structural conditions. The twinning did not result in concrete implementation of the innovative practice in the adopting region, however, the work being done in the reference site was improved by learning from the experiences of the originators.

The main reasons not to move towards an implementation of the digital solution "teleswallowing" were:

- structural barriers within the system: video-consultations are billable only since April 2017 • no standardised implementation model in Germany (compared to the centralized e-health approach in the NHS)
- due to Germany having more practicing therapists, the need to delegate in the area of speech and language therapy is lower than in the UK
- German staff does currently not necessarily have the capacity and capability to change from standard delivery methods
- different interests/concerns of relevant actors/players within the reference site complicated the intentions
- the very short timeframe didn't allow a sustainable integration of the complex innovative project
- missing financial resources

Implementing telemedical solutions is highly dependent on the support by sickness funds and GPs in Germany. We will continue to support doctors, GP's and care providers in general in going forward and motivate them to find and try out digital solutions. The framework of the Transfer-of-Innovation-Visits in Blackpool and Cologne resulted in interaction and new contacts between the participants. In the reference site Oberbergischer Kreis a further development of innovative medical and care approaches will occur within the next months. The experience that we, the adopter region, made during the twinning project will definitely enter in the upcoming considerations and we will use the expertise from the Originator region.

## 10.3.2  Background on Teleswallowing

### Description

Blackpool Teaching Hospitals NHS Foundation Trust won one of the NHS Challenge Prizes for its submission 'The Workplace of the Future'. We wish to share our vision that clinicians in future will utilise digital solutions to deliver care. This includes using health apps and remote assessment such as Teleswallowing – a way to assess the eating and drinking abilities of residents living within care homes.

### Evolution in the originator's region

Veronica Southern, Speech and Language Therapist, developed Teleswallowing (www.teleswallowing.com) at Blackpool Teaching Hospitals. This was in response to patients with swallowing problems waiting to be assessed and their condition deteriorating whilst waiting. She went on to develop Teleswallowing into a business with colleague Dr Liz Boaden, an internationally renowned clinical expert in dysphagia (eating and drinking problems). Veronica now works within the hospital's IT department and with her colleagues there, developed the vision of 'The Workplace of the Future', enabling clinicians to use technology to deliver care.

Teleswallowing has developed a training package which has a rapid delivery time, if internet connections are secured and simple devices procured. The vision of clinicians using technology is an on-going process with time needed for clinicians to loosen their attachment to traditional service delivery methods to embrace change.

Teleswallowing has evidenced that approximately £60 per assessment may be saved using the approach and that there is an increase by a factor of three in productivity ie that a 90 minute home visit can be delivered in 30 minutes using the Teleswallowing approach.

Teleswallowing Ltd is being assisted by the North West Coast Innovation Agency to build a business case for sustainability and it has won an NHS England Vanguard bid to deliver the solution into 147

care homes in the Blackpool area. Blackpool Teaching Hospital's vision of The Workplace of the Future is being developed within the Trust and being disseminated over the North West geographical area.

**Barriers and success factors experienced by the originator**

There are barriers in over-burdened staff not having the capacity to change from standard delivery methods. A hearts and minds change management process has to be deployed to look at staff values into why they do what they do, which relates to how they do what they do. There were technological barriers which have been overcome by technology and connectivity improving. There is some resistance within organisational management systems to 'have a go' at doing things differently and in allowing staff to have the time away from the clinical coalface to develop new systems – an on-going challenge.

One pivotal change was that the developer of Teleswallowing (Veronica Southern) began to work within the Trust's IT Department to enable other clinicians to benefit from her experience of using technology and how she got round the barriers to change. It was important that the IT Department came to the forefront of importance in regarding to changing clinical practices. Previously the IT Department has very much been a back office function but with the increase in use of technology in clinical practice, it is becoming pivotal.

### 10.3.3  Adopter's needs and ambitions

Our reference site Oberbergischer Kreis (OBK) is a very rural area, partially very thinly populated, with long distances in between villages and hard-to-reach sites. We were therefore already working on establishing telemedical and telecare solutions to ensure coverage of all patients in the area. However, we are still at the beginning and are only working with one GP so far. Another project teaching elderly how to use tablet PCs (among others to make them "fit" for telemedicine) is being planned. Learning about approaches to the "workplace of the future" and the usage of telemedicine in Blackpool and the surrounding areas by experts who are already quite experienced with using different telemedical approaches to accommodate lack of medical personnel and deal with financial and time pressure, is a great possibility for us to find out about other possible solutions to implement in our reference site.

Our reference site Oberbergischer Kreis (OBK) is a very rural area, partially very thinly populated, with long distances in between villages and hard-to-reach sites. We were therefore already working on establishing telemedical and telecare solutions to ensure coverage of all patients in the area. However, we are still at the beginning and are only working with one GP so far. Another project teaching elderly how to use tablet PCs (among others to make them "fit" for telemedicine) is being planned. Learning about approaches to the "workplace of the future" and the usage of telemedicine in Blackpool and the surrounding areas by experts who are already quite experienced with using different telemedical approaches to accommodate lack of medical personnel and deal with financial and time pressure, is a great possibility for us to find out about other possible solutions to implement in our reference site.

We therefore aim to establish a basis for the practical applicability of smart-(care)-devices by not technically-skilled seniors. These capabilities shall in the long term be expanded to the use of digital health care solutions (telemedicine concepts) to ensure additional options for medical treatments, care and participation. Therefore, in cooperation with a mobile service provider, tablet PCs shall be given to seniors living alone, identified by outpatient care services. Students of a participating academy shall act as a tandem partner to support and guide the seniors in using tablet PCs.

Originator: to learn from our Cologne colleagues about how they deliver care and their ambitions for the future; to share the work we have achieved for the good of the general population. Adopter: We are working with both the GP already using first telemedical steps in the OBK as well as a start-up that focuses on establishing different telemedical solutions for hard-to-reach sites. The start-up also took part in our visit to England and could learn about tips and tricks from the vast experience in England and also made concrete plans to collaborate with some of the English partners. During the return visit of the reference site North West Coast of England, the start-up demonstrated their telemedicine usage and the English experts gave hints to improve the current situation. Additionally, other projects from the larger state of North Rhine-Westphalia reported on their digitalisation projects. This way, a mutual

exchange of knowledge occurred that not only the members of our reference site could benefit from, but also experts from other cities. Also, the originator learned about different German approaches that might not be known/considered yet in England, which made it a win-win visit.

## 10.3.4 Adoption and investment plan

Originator: Jan 2017 – planned and implemented a knowledge/innovation sharing day for our Cologne colleagues. May 2017 planned and implemented a visit to Cologne to learn from our Cologne colleagues. Adopter: Implementing telemedical solutions is highly dependent on the support by sickness funds and GPs. We can therefore only support GPs and carers in going forward and motivate them to find and try out digital solutions, and not state a concrete implementation plan. However, the project focussing on tablet PCs for elderly is being planned with more concrete steps. Having academy students work with elderly living at home is a new approach that will be evaluated as well. We are currently looking to find sponsors for the tablet PCs. Once this has been achieved, the project will start with a small number of elderly and students (we expect to receive around 20 tablet PCs). The elderly will learn and experience how to use tablet PCs. Their capability as well as comfort to use tablet PCs will be evaluated. If successful, the elderly will be empowered to participate in telemedical solutions offered by their GP. Also, the overall well-being of the elderly can be improved by enabling them to keep in touch with relatives living far away. The English experience with working with (possibly reluctant) elderly patients will be included in the implementation phase to arrange and phrase the training and communication among the students and elderly accordingly.

The exchange visits for adoption-degree 1 "Knowledge exchange & training" amounted to 3.834,74 € in total, whereof 3.759,38 € where covered by the European Commission.

There were no other funding instruments enacted to support the twinning during the twinning time-frame.

One of the main barriers is the different organisation of healthcare systems in England and Germany. While the Beveridge/NHS system is centrally organized, the Bismarck system in Germany with different sickness funds relies on negotiations with individual sickness funds to achieve coverage of innovative approaches such as telemedicine. Hence, in order to implement a telemedical solution in a certain area, a sickness fund needs to be found that will cover the costs incurred by telemedicine for the part of the population insured by this fund (possibly for a trial period). Negotiations within the OBK have already taken place and the outcome so far looks promising.

Our English partners also experienced difficulties with elderly patients and the use of technology. While these cannot be easily overcome, we exchanged best-practices in communicating and training elderly to be more open towards the use of technology.

Originator: Teleswallowing has already been implemented and evaluated (see above). After the return visit to Germany a feedback session was organized to distil all the learning and to look at a way to disseminate our joint experience further. Adopter: a first success would already be the actual implementation of further telemedical solutions in the OBK. The reduction of travel time of the GP can easily be measured and is already reduced with the existing usage compared to bedside visits by the GP. A further reduction of travel time (also of the medical assistants) is expected. When other solutions are implemented, patients will be interviewed regarding their experiences with the new solutions to find out how to further improve the service and to get to know possible barriers (especially for elderly people) and how to overcome them. The tablet PC project will be evaluated. After each meeting of the student and the elderly person, both will answer a few short questions about what they have done together (e.g. learn how to use Skype), how easy/difficult it was to understand, how useful the new knowledge is, the overall experience with the tablet PC and their subjective perception of health and wellbeing. The progress will be monitored over the implementation period of three months. After this period, recommendations will be given on how to more easily enable elderly in the use of technical devices.

## 10.3.5 Benefits and outcomes (adopter)

The introduction of additional telemedical solutions equals a new care pathway. The main benefit will be a reduction of time needed for the visit of one patient and, therefore, quicker appointments for all patients and a reduction of waiting times. As a result, more continuous care is expected as well as a

reduction of costs per patient due to early assessment and treatment preventing deterioration in patient health and subsequent admittance to the hospital. Patients will not need to come to the GP practice for all medical checkups/consultations but can stay at their home where they are comfortable. New roles: Nurses/medical assistants will become empowered due to the new role of introducing telemedicine to patients and ensuring proper use and understanding. The GP will be able to see more patients without leaving the practice, but will have to get used to using the new technology (e.g. a virtual waiting room). With the tablet PC project, elderly will be prepared and enabled to participate in telemedical approaches offered by their GP and carers. They will be more confident in joining e.g. a virtual doctor's appointment or transferring vital data via telemedicine to their physician.

Telemedicine within the OBK is currently only used by one GP with selected patients. The twinning activities are expected to help this GP advance his usage of telemedicine to include more patients and to enable him to share his knowledge with other GPs in the area. How many patients will benefit from telemedicine in our reference site will depend on the number of GPs and sickness funds willing to collaborate. However, it is clear that the exchange of knowledge and experience will enable all participants, also the start-up and other telemedicine projects, to improve their current approaches and to eventually include a larger population.

The tablet PC project will in the first round focus on approximately 20 elderly. If successful, the academy has already signalled that they would be interested in integrating it in their training of students. An additional project in our reference site using telemedicine and digitalisation is currently being planned and will be applied for during autumn.

Telemedicine within the OBK is currently only used by one GP with selected patients. The twinning activities are expected to help this GP advance his usage of telemedicine to include more patients and to enable him to share his knowledge with other GPs in the area. How many patients will benefit from telemedicine in our reference site will depend on the number of GPs and sickness funds willing to collaborate. However, it is clear that the exchange of knowledge and experience will enable all participants, also the start-up and other telemedicine projects, to improve their current approaches and to eventually include a larger population. The tablet PC project will in the first round focus on approximately 20 elderly. If successful, the academy has already signalled that they would be interested in integrating it in their training of students. An additional project in our reference site using telemedicine and digitalisation is currently being planned and will be applied for during autumn.

## 10.3.6 Policy recommendations

Considering the Bismarck system in Germany, a further federal endorsement to include additional telemedical solutions in the coverage of sickness funds would be beneficial. However, with the "e-health act", the basis has already been set and the situation is expected to improve in the future. The local and regional levels are needed to motivate individual actors in the region to try out new approaches and to develop innovative solutions, and to find solutions for barriers.

## 10.4 Basque Country – Scotland (Risk Stratification)

## 10.4.1 Twinning overview

| Originator: Kronikgune, Basque Country | Adopter: NHS 24, Scottish Centre for Telehealth and Telecare, Scotland | Innovative Practice: Osakidetza – Risk Stratification |
|---|---|---|
| **Innovative Practice Description** | | |

The stratification process in the Basque Country (BC) classifies more than two million citizens according to the resources that they will require during the following twelve months. The data comes from Osakidetza (Basque Public Health Service) and the Department of Health, based on the previous use of health resources, demographic, socioeconomic and clinical variables.

The outcome (dependent variable) generated by the Basque Country Risk Stratification (RS) is the predicted next year healthcare costs (Predictive Index PI). Then population is classified in four groups according to the presence or not of a chronic disease, 95th percentile of healthcare costs is used and only for chronic population. Two different thresholds are being considered for next year's healthcare expenditure which will involve dividing the population into low- and high-cost patients: 95th and 99th percentiles of healthcare costs. This was used to assess the effectiveness of the tool, but actually only the 95th percentile is used and only for the chronic population. The RS is based on predictive modelling using regression techniques, and both the calibration and internal validation of the model have been performed using the data (standardized costs of admissions, visits and procedures provided to each patient) recorded in 2008 and 2009 from more than two million patients from the Basque Country.

Thus, the expected use of health resources, the "output", is a proxy of patient morbidity and severity with different needs of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action. Consequently, Integrated Intervention Programmes for multi-morbid and specific diseases patient groups (e.g. for diabetes, COPD, etc.) have been already deployed with the objective to provide anticipatory care and coordinated care to all patients identified through the risk stratification tool.

| **Link to the EIP on AHA Repository of innovative practices:** |
|---|

https://ec.europa.eu/eip/ageing/repository/population-risk-stratification-deployment-stratification-methods-basque-country_en

| **Innovation Scope:** |
|---|

• Risk Stratification Tool

| **Innovation Type:** |
|---|

• Knowledge exchange and training

The learning derived from the twinning process to date has led to an increased knowledge of the Basque RS approach and tool within Scotland. This is likely, in turn, to influence our thinking in the future development of the Scottish risk stratification tool, SPARRA and other related innovative developments in the field of risk stratification

| **AHA Action Group:** |
|---|

✓ A3 – Prevention of functional decline and frailty

| **Twinning Objectives:** |
|---|

The overall shared objective is to enhance implementation of innovation strategies on integrated health and care between Scotland and the Basque Country. One of these innovations is the RS tool as a predictive tool for chronic conditions management: the visit has allowed delegates and experts to exchange knowledge on population risk stratification strategies in order to strengthen programmes and build expertise finding new ways to address gaps in services and promote integrated care to treat and prevent chronic conditions. Later on the opportunity to transfer the good practice will be

further evaluated.

The constitution of a working group may be the first step in the transfer of learning: it will be in charge of identifying the main goal/purpose of risk stratification population (economic, health management, etc), any barriers and how to overcome them, and finally how to adapt the Basque learning to Scotland's regional health system.

The final objective of the working group will be to define the basis for further collaboration: it seems quite likely that this may be research collaboration in order to gather expertise and competences in risk stratification before starting a phase of transfer/adoption of approaches with other regions.

| Twinning end result: |
| --- |

We did not implement the Basque Country RS model in Scotland as a result of this twinning. However, the twinning has helped to facilitate internal discussion in Scotland on our approaches to risk stratification and tools to support a whole population approach, incorporating the lessons shared and learned during the visit.

Adoption of the Basque RS tool did not happen in Scotland as we have already a well-developed risk prediction tool in our own SPARRA tool.

That said, elements of the approach and development of the Basque tool and methodologies have provided invaluable learning for Scotland and will be used to inform our future developments in this field.

## 10.4.2  Background on Risk Stratification

**Description**

The stratification process in the Basque Country (BC) classifies more than two million citizens according to the resources that they will require during the following twelve months. The data comes from Osakidetza (Basque Public Health Service) and the Department of Health, based on the previous use of health resources, demographic, socioeconomic and clinical variables.

The outcome (dependent variable) generated by the Basque Country Risk Stratification (RS) is the predicted next year healthcare costs (Predictive Index PI). Then population is classified in four groups according to the presence or not of a chronic disease, 95th percentile of healthcare costs is used and only for chronic population. Two different thresholds are being considered for next year's healthcare expenditure which will involve dividing the population into low- and high-cost patients: 95th and 99th percentiles of healthcare costs. This was used to assess the effectiveness of the tool, but actually only the 95th percentile is used and only for the chronic population. The RS is based on predictive modelling using regression techniques, and both the calibration and internal validation of the model have been performed using the data (standardised costs of admissions, visits and procedures provided to each patient) recorded in 2008 and 2009 from more than two million patients from the Basque Country.

Increased life expectancy combined with other factors has produced a progressive growth in the prevalence of chronic diseases and multi-morbidity situations, especially in the older population strata. This, along with the increase in healthcare costs and social inequalities in health has fostered the promotion of health, through multisectorial actions and the development of new ways of healthcare management focused to improve the adequacy to health care needs of groups or population.

In the Basque Country (2.2 million inhabitants), 20.8% of the population are over 65. The Health and Care expenditure in 2015 was 3400M€, and it is estimated that 80% was used for chronic patients. It is projected that in 20 years, 26% of the Basque population will be older than 65 years. This epidemiological pattern requires the improvement of the management of chronic diseases.

In this context, in 2010 the Basque Government's Department of Health published a Strategy to tackle the challenge of chronicity in the Basque Country, containing a series of policies

and projects to reinvent the healthcare delivery model and adapt it to this new situation. In order for interventions to be effective and efficient, they should be implemented among those patients whose care needs match the profile for which they were designed. This fact raises the need to develop a population stratification system based on risk adjustment mechanisms.

The implementation and successive deployment of risk stratification in the Basque Country aims to facilitate case finding for appropriate interventions and optimisation of healthcare resources, being the predicted next year healthcare costs being the output that is generated.

The expected use of health resources (Predictive Index PI) as "output" allows comparisons between morbidities and patients with very different needs of attention. The main objectives of Risk Stratification Tool are to predict individual healthcare costs, and to identify patients who will have a high spending in the next 12 months, using administrative (EMR) data, processed by the Adjusted Clinical Groups Predictive Model (ACG-PM) system, and socioeconomic deprivation data for the population (>14 years old) of the Basque Country.

**Evolution in the originator's region**

In the Basque Country, three waves of stratification have been performed: 2011-2012, 2013-2014, 2015-2016. The prospective stratification of all the population assigned to Osakidetza was performed for the first time using the John Hopkins ACG-PM. Since October 2015, a customised version of this predictive model has been used.

The RS tool is deployed at a regional level where the entire population of patients (approximately two million) is stratified every two years to identify the top 5% high-risk patients for appropriate programmes. Concurrently, the research team performs periodic evaluation and optimisation of the RS model. In that respect, the model is recalibrated (i.e., the parameters of the predictive model are recalculated) and slight changes are introduced in the set of independent variables used as input to the RS model. Those activities are performed during refinement of the stratification strategy and associated programmes in the region.

The Risk score is already displayed in Osabide Global, the Electronic Health Record (EHR) from Osakidetza. For that, previously, clinicians have been trained in the use of risk stratification information in patients EHR.

There is no costs data available. Costs depend on availability and quality of existing information systems (the data bases to give detailed information to feed the sources that support the algorithm) and the availability of expert resources to process and analyse the information.

Outcomes:

An increase in chronic conditions is currently a big challenge to human health and to the sustainability of health systems. Risk adjustment systems may enable population stratification programmes to be developed and become instrumental in implementing new models of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action.

The latest available data from 2015-2016 stratification show that the edge marking off the 5% of the population with the highest PI (case management) was established at 4,91 (times the average citizen use of healthcare resources). It includes 65.669 people. The stratum levels for disease management (20% of the chronic population) were between 4,91 and 1,90 PI, including 262.676 people. The self-management stratum (75% of chronic population) 985.034 people includes under 1,90 PI. The promotion and prevention layer includes the population that has no chronic disease, 962.940 people.

The implementation and deployment of a RS model in the Basque Country provided the basis for the design of interventions targeting the identified subpopulation groups. Additionally, the linkage between different data sources not only has increased the predictive

performance of the model but also has given rise to other opportunities (e.g. epidemiological research, economic evaluation of programmes, etc.) within the healthcare system of the Basque Country.

Other outcomes are three waves of stratification performed 2011-2012, 2013-2014 and 2015-2016. Several scientific papers already published[45 46 47 48].

**Barriers and success factors experienced by the originator**

No significant political or organizational barriers have been identified.

The implementation and successive deployment of risk stratification in the Basque Country had two main aims: case finding and risk adjustment and capitation. Despite the fact that the RS has already been deployed for case finding purposes, some research activities are currently being performed in order to improve the final outcome of the procedure. The use of RS for risk adjustment and capitation has been investigated but not yet fully deployed.

The RS in the Basque Country uses data retrieved from primary care electronic medical records as well as from hospital and specialist outpatient care databases. More specifically, the RS model is based on the following categories of data used at different levels in the risk generation process: (i) diagnoses (from each contact with primary care, hospital admissions and day hospitals), (ii) socio-demographics (age, sex), (iii) pharmacy data (prescription data from PC-EMR), (iv) prior utilization obtained directly from PC-EMR, hospital admissions and specialist outpatient care information databases and (v) socio-economic data (census area of residence/deprivation index from MEDEA project). The patients' data confidentiality is ensured via the use of an opaque identifier inside the Basque Country population stratification programme (PREST) database.

Clinicians have been trained in the use of risk stratification information in patients the Electronic Health Record (EHR), by means of an educational program.

One of the most important success factors has been the fact that the Risk Stratification tool is totally aligned with the global health strategies approach deployed by Basque Country (BC) to address the challenge of chronicity, ageing and dependency. The Strategy on Chronicity from 2010, The Strategic Guidelines 2013-2016 of the Healthcare service, Osakidetza, and The Health Plan 2020, among others, have reinforced and extended this integrated approach. Multi-morbidity and its effect in patients, families and caregivers requires continuous research and innovation efforts. Search of efficiency and guaranteeing the quality of care provided, are the most important current challenge for policy makers, administrators, clinicians, and researchers in our health system.

Moreover, some changes in the Risk Stratification method have been already introduced by means of taking into account the identification of "new" chronic conditions and the existence and availability of new sources of information, including the pharmacy costs (prescribed vs. dispensed drugs) and widening target population to people less than 14 years old.

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[45] Mora J, De Massari D, Pauws S, op den Buijs J, David M, Prieto L, Contel J, Martí T, Bousquet J, de Manuel E3; ASSEHS Study Group. 2015. Selection of the method to appraise and compare health systems using risk stratification: the ASSEHS approach. Aging Clin Exp Res. 2015 Dec;27(6):767-74. doi: 10.1007/s40520-015-04585. Epub 2015 Oct 22

[46] Orueta JF, Nuño-Solinis R, Mateos M, Vergara I, Grandes G, Esnaola S. 2013. Predictive risk modelling in the Spanish population: a cross-sectional study. BMC Health Serv Res. 2013 Jul 9;13:269. doi: 10.1186/1472-696313-269

[47] Orueta JF, García-Ávarez A, García-Goñi iM, Paolucci F, Nuño-Solinís (2014) Prevalence and Costs of Multimorbidity by Deprivation Levels in the Basque Country: A Population Based Study Using Health Administrative Databases. PLoS ONE 9(2): e89787. doi:10.1371/journal.pone.0089787

[48] o Sauto Arce R, De Ormijana AS, Orueta JF, Gagnon MP, Nuño-Solinís R. 2014. A qualitative study on clinicians' perceptions about the implementation of a population risk stratification tool in primary care practice of the Basque health service. BMC Fam Pract. 2014 Sep 8;15:150. doi: 10.1186/1471-2296-15-150

The use of Risk Stratification tool in Basque Country shows that it is a feasible tool, which gives information to help the decision-making, which has to be tailored according the decision needs, that the support and participation of managers and clinicians in the deployment is crucial for its success and that the development has to be based on research.

### 10.4.3 Adopter's needs and ambitions

Risk prediction tools, used as part of clinical decision-making, have been shown to improve the quality of care, prevent adverse events, and decrease costs.

The formation of Integrated Joint Boards in Scotland, the rich individual level datasets that are available, the established expertise in modelling techniques and linkage of health and care information, provided an opportunity to strengthen collaboration and stimulate further knowledge transfer between Scotland and the Basque Country in the use of predictive analytics to inform and improve how we design and deliver person-centred integrated care services and support in Scotland.

Given the Basque Country's reputation as leaders in the field of risk stratification, we were keen to capitalise on their extensive learning and use it to inform the further development of our approaches in Scotland. The twinning specifically focussed on the transformation of health and social care models. This included the sharing of research and innovation in support of service redesign to address the challenges of demand and capacity by exploring the appropriate use of digital solutions and the evolution of population risk stratification tools and methods.

The Scottish Governments vision is that by 2018, a wide range of staff in all health and care partnerships will use Risk Prediction tools alongside professional judgement to identify adults who need anticipatory care, supported self management, or proactive and flexible care and support as their conditions and circumstances change. Resources have been made available to facilitate the following developments:

- Test the use of IoRN (Indicator of Relative Need) to enhance the specificity of the current SPARRA model to identify HRU (High Resource Use) and frailty cohorts.
- Explore use of primary care data for mental health diagnoses and chronic pain prescribing to identify complex GP caseload.
- Test the electronic Frailty Index against the enhanced SPARRA.
- Extend the current SPARRA model to include emerging methodologies and datasets – e.g. SAS, NHS24, Out of Hours, Social care, Primary care, District nursing, Community mental health and Intermediate care.
- Use Risk Prediction (RP) and prescribing data to identify high risk / high cost individuals to target pharmaceutical care and polyopharmacy reviews.
- Risk prediction is incorporated into the Technology Enabled Care and Active and Independent Living Improvement Programmes.
- Develop improvement resources (guidance, triggers, screening, and care bundles) to support staff to adopt RP in routine practice in primary care, community hospitals and acute care.
- Lever use of RP tools though the new GP contract and the review of District nursing roles and education.
- Establish a consortium with academics/innovation centres to explore use of citizen level data to identify trajectories that predict functional decline/social care use and are amenable to early intervention.
- Secure R&D funding through SFC and European Commission initiatives.

The overall shared objective is to enhance implementation of innovation strategies on integrated health and care between Scotland and the Basque Country. One of these innovations is the RS tool as a predictive tool for chronic conditions management: the visit has allowed delegates and experts to exchange knowledge on population risk stratification

strategies in order to strengthen programmes and build expertise finding new ways to address gaps in services and promote integrated care to treat and prevent chronic conditions. Later on the opportunity to transfer the good practice will be further evaluated.

The constitution of a working group may be the first step in the transfer of learning: it will be in charge of identifying the main goal/purpose of risk stratification population (economic, health management, etc), any barriers and how to overcome them, and finally how to adapt the Basque learning to Scotland's regional health system.

The final objective of the working group will be to define the basis for further collaboration: it seems quite likely that this may be research collaboration in order to gather expertise and competences in risk stratification before starting a phase of transfer/adoption of approaches with other regions.

### 10.4.4  Adoption and investment plan

Our plan foresees the

- Creation of a Twinning Steering Board involving NHS 24, the Basque Health Department and Osakidetza to provide high level oversight of the twinning process and subsequent actions (November 2016),
- Creation of a Twinning Implementation Group between the transferring and the adopting organisations – to undertake the operational planning and implementation of the twinning activities (November 2016),
- Description and presentation of the innovative practice to the key players in the adopting region (Study Visit – 21 February 2017),
- Scoping and potential adaptation of the innovative practice to fit with existing infrastructure - technological, health and care delivery models and care pathways (15 May 2017),
- Assessment of the impact of the innovative practice (15 May 2017),
- Promotion of the innovative practice to key stakeholders through dissemination of information via existing networks in Scotland (Digital Health and Care Learning Network Event session – 24 May 2017),
- Dissemination of the outcomes / results of the twinning activities within both regions and within the EIP on AHA community (Production of final report and dissemination via EIP on AHA Action Groups and Reference Sites – July 2017),

Full adoption of the Basque RS tool will not happen in Scotland as we have already a well-developed risk prediction tool in our own SPARRA tool.

That said, elements of the approach and development of the Basque tool and methodologies have provided invaluable learning for Scotland and will be used to inform our future developments in this field.

No additional funds have been committed to the implementation of risk stratification tools in Scotland.

Further collaboration between Scotland and the Basque Country Reference Sites will be incorporated into ongoing work under the Basque Country – Scotland Memorandum of Understanding

### 10.4.5  Benefits and outcomes (adopter)

Our concrete suggestions for policy makers at all levels are that the value of knowledge transfer and learning cannot be underestimated; however, it takes time and resources to enable the process and to facilitate tangible outcomes from that knowledge transfer/ exchange.

Suggestions for improvement:

- Longer timeline for the implementation of the twinning activities defined
- Longer time for analysing the results
- "Manage the expectations" – Recognize that the implementation of the solution is a long-term commitment and therefore it is difficult to demonstrate/report on the impact of the twinning activity in this timeline.
- More flexibility in managing the budget according to needs.

## 10.5 Campania – Olomouc (ADD Protection)

## 10.5.1 Twinning overview

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Department of Medicine, Surgery and Odontoiatrics, Salerno University, Campania | University Hospital Olomouc, (with its unit Czech National eHealth Centre - NTMC) | ADD Protection |

| Innovative Practice Description |
|---|
| The innovative practice is the part of the so-called 'ADD protection' system, consisting in an ICT-based home monitoring sytem provided as a service by a private company of home care, that allows the hospital staff to follow the patients at home, as if the patient was still in the hospital. The data collected at the patient's home are made available to the staff of the hospital through a web-based platform, which feeds the hospital Electronic Health Record (EHR) of the patient. |

The good practice implements pro-active and multidisciplinary management of chronic diseases, with an approach beyond the boundaries of the health system. The focus of the practice is on the integrated management of chronic diseases that increase the risk of frailty and disability - specifically: hypertension, atherosclerosis, endocrinometabolic diseases, heart failure, malnutrition, osteoporosis and compliance to therapy. The good practice has the following characteristics:

- An organisational model for managing homecare in the region with specific solution for Salerno sub region that uses ICT to integrate the community-targeted approach of healthcare, healthy lifestyles promotion and disease prevention with clinical databases,
- The scaling-up the use of the ICT-supported services to other outpatients clinics for chronic diseases and increase the number of chronically ill patients that are enrolled in homecare and telehealth based follow-up;
- The integration of all necessary processes between local healthcare providers (incl. family doctors), hospital and local health authorities to support continuity and integration of care by using shared database;
- The integration of novel tools in the services provided to home assisted patients, such as teleconsultation and telemonitoring of vital signs;
- A business model to run homecare by using innovative ICT solution;
- The design of innovation in line with up-to-date EU wide recognised methodologies and recommendations, including quadruple helix, integrated care, patient empowerment and challenging chronic diseases in line with EIPonAHA innovation framework and also healthcare and care delivery transformation enablers as presented in Blueprint Digital transformation of HC and C for the ageing society.

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/home-care-early-and-protected-hospital-discharge-assistenza-domiciliare-dimissioni_en |

| Innovation Scope: |
|---|
| • Homecare, tele monitoring and mobile health systems<br>• Tele-mentoring and virtual consultations |

| Innovation Type: |
|---|
| The twinning raised a considerable amount of interest in implementing the good practice in the Czech Republic. At the present time, a national project (funded from Structural funds in R&D field) has been defined and submitted in 2017. The degree of innovation of the twinning includes **level 1 and 2**. |

| AHA Action Group: |
|---|
| ✓ B3. Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level |

| Twinning Objectives: |
|---|
| The good practice in question actually relates to three areas (ICT in healthcare, homecare and |

integrated care) that are all in underdevelopment in the Czech Republic for long time. This is in contrast with relatively good, acute and in some cases preventive care of citizens in the Czech Republic.

Considering these complex conditions UHO- NTMC develops two groups of activities: firstly, working in committees and other teams established by key national stakeholders (namely both pertinent ministries, insurances, regions and city (Olomouc)), associations of care providers, medical societies to support new concepts and associated changes targeted to ICT use in various instances of health and social care. Secondly, UHO-NTMC collaborates with a large spectrum of stakeholders form EU countries (and beyond) to shape local concrete actions that evaluate, demonstrate and provide evidence for regional and national scaling-up and for negotiation with national stakeholders mentioned above. The aim is to prepare conditions for changes that would enable provisioning integrated solutions in homecare, especially for senior or disadvantaged patients, as known in many EU countries.

The first group of activities are ongoing and negotiations and other activities are included, e.g. further development of the Czech national strategy of eHealth will be ongoing in 2017 and 2018.

The original objectives of the twinning are amended as follows:

• To adapt UHOs ICT platform for healthcare to enable more diseases to monitor and support.

Technical-medical specification and procurement of new telemonitoring system that is under preparation in UHO will be directly influenced by elements that prove the practices' efficiency at the Originator's Site. This covers requirement for early collaboration with developer of the new system, defining technical requirements that would enable the future system to provide more services and capabilities, such as teleconsultation, and will enable integration with future EHR.

• To familiarise healthcare professionals in the Adopter country with utilising eHealth technology that enhances self-management. The professionals can acquaint themselves with care management pathways that include telemonitoring of patients with various diseases so that the healthcare professionals will be able to design suitable pathways in UHO.

At least six groups of diseases (six clinics of UHO), for example anticoagulation treatment, pulmonary diseases, oncology, diabetes, heart failure and patients' nutrition will be possible to address for enhancing care by the use of new ICT tools. These groups have been specified in the 1st half of 2017, under the guidance of NTMC.

• To progress patient empowerment in the Adopter country by taking control over their own physical health with a focus on chronic diseases, including cardiovascular conditions.

The new ICT based system of UHO will include capabilities to support patient empowerment. These include information about the disease and instruction for the patients and also teleconsultation with medical stuff.

• To scale-up a unique best practice using ICT for improving the physical condition of patients with chronic cardiovascular diseases on a European level.

This objective will be filled by directing a new program for patients with chronic diseases, incl. CVD that is under preparation in Olomouc region (complex UHO project to be decided at the beginning of 2018). It should enable the sharing of medical information between healthcare providers (hospitals) in the region and coordinate care. NTMC will also look for further opportunities to create a consortium for a future national or EU project that would cover the essentials of the good practice and will lead to their implementation.

• To understand essential aspects of integrated management of chronic diseases (incl. cardiovascular) in the view of design of similar programs in the context of the Czech Republic.

This objective will be filled by activities of NTMC in regards to the introduction of essential characteristics of the good practice to the stakeholders in homecare in the Czech Republic (i.e. first group of activities). The practice provides evidence that ICT-supported homecare can be viable in large scale. Organisational aspects, management and spectrum of services provided to patients in homecare will be integrated in a business model, which will be presented to stakeholders in the Czech Republic and aims to initiate a debate or progress in innovation of care of patients at home, especially seniors with chronic diseases. The first stakeholders are the Association of Homecare of the Czech Republic, Olomouc City and the whole region, the Ministry of Health and the Ministry of Labour and Social Affairs.

• To prepare joint project applications, that will enable further development of interventions, technological solutions and elements of the good practice by the Originator and Adopter.

The first joint project application following this twinning was submitted in May 2017 in EC call HP-HJ-2017.

| Twinning end result: |
|---|

Implementation has not been realised yet. Briefly, different healthcare systems, limited health homecare, not favourable economic conditions, underdeveloped eHealth services in the Czech Republic are the main hindrances.

## 10.5.2  Background on ADD Protection

**Description**

The innovative practice is the part of the so-called 'ADD protection' system, consisting in an ICT-based home monitoring system provided as a service by a private company of home care, that allows the hospital staff to follow the patients at home. The data collected at the patient's home are made available to the staff of the hospital through a web-based platform, which feeds the hospital Electronic Health Record (EHR) of the patient.

The good practice implemented pro-active and multidisciplinary management of chronic diseases, with an approach beyond the boundaries of the health system. The focus of the practice is on the integrated management of chronic diseases that increase the risk of frailty and disability - specifically: hypertension, atherosclerosis, endocrinometabolic diseases, heart failure, malnutrition, osteoporosis and compliance to therapy. The good practice has the following characteristics:

- An organisational model for managing homecare in the region with specific solution for Salerno sub region that uses ICT to integrate the community-targeted approach of healthcare, healthy lifestyles promotion and disease prevention with clinical databases,
- The scaling-up the use of the ICT-supported services to other outpatients clinics for chronic diseases and increase the number of chronically ill patients that are enrolled in homecare and telehealth based follow-up;
- The integration of all necessary processes between local healthcare providers (incl. family doctors), hospital and local health authorities to support continuity and integration of care by using shared database;
- The integration of novel tools in the services provided to home assisted patients, such as teleconsultation and telemonitoring of vital signs;
- A business model to run homecare by using innovative ICT solution;
- The design of innovation in line with up-to-date EU wide recognised methodologies and recommendations, including quadruple helix, integrated care, patient empowerment and challenging chronic diseases in line with EIPonAHA innovation framework and also healthcare and care delivery transformation enablers as presented in Blueprint Digital transformation of HC and C for the ageing society.

**Evolution in the originator's region**

Chronic multimorbidity patients often access hospitals for the reactivation of one condition, but once in the hospital, often the discharge is delayed by the exacerbation of the other conditions. The longer the stay, the more the conditions exacerbates. For this reason, early discharge represents an important target in the management of hospitalised patients. In order to favour an improved strategy in this area, the original ADD protection system in Salerno has been developed as an ICT-based home monitoring system designed as a service by a private company involved in home care. The service allows the hospital staff to follow the patient at home, as if the patient was still in the hospital.

ADD protection system is located on the University Hospital of the University of Salerno in Salerno, and is operated in partnership with the Interdepartmental Lab on Health Management of the University of Salerno, the AOU San Giovanni di Dio e Ruggi d'Aragona and Magaldi Life, a private Home Care Provider.

The organisational model of the good practice complies with the framework of homecare provisioning in Italy, i.e. the obligation to provide services to people/patients (elderly or others) in certain statuses of their health or after discharge from hospitals, with significant enhancements that improve care and

efficiency of associated processes. Homecare requires significant effort in coordination and in provisioning care at home. A number of stakeholders work with relevant health and personal information that is necessary to share. The service operates within a set up financial frame (controlled by the region) in order to be sustainable. ICT can help in many management and care processes to reduce workload in the coordination of care, make the processes faster, handle care of more patients and reduce mistakes that can occur due to human factors.

There were two time frames:

First, there is period of design and implementation of organizational model together with all stakeholders, which is several years task, if not continuous. Finding business model for running the practice for stakeholders that invest in it, which was a task for several month if first design proved viability.

Secondly, the technical part consists of modules like databases, web portals, management SW, videoconferencing and telemonitoring of vital signs and bio-parameters of patients. These modules are necessary to be integrated into one technical solution. This part takes several months or a year to develop, depending on the module. The telemonitoring module (vital signs) e.g. has still been in evaluation in the first half of 2017.

ICT solution was developed by a local company that also provides homecare. The solution was provided free of charge to the regional office in Salerno as part the business model. Cost of homecare is covered by Campania region. Regional office decides about payments to the provider of homecare for each patient.

Yes, business case is an essential part of the overall solution to guarantee its sustainability. There is evidence that the practice is economically viable and brings benefits to the target group. After one month, the health parameters assessed indicate that there are clinical ameliorations that can be measured (normalization of blood pressure, saturation and glucose homeostasis, weight and liquid balance).

Further research and development is needed in order to achieve market impact and for the practice to become routine use. The ADD Protection allows the analysis of the detailed cost per access at the home of the patient. According to the identified care pathways, the system is able to define the cost of each patient. So far, the average cost is around 400€. (curedom.aslsalerno.it/crm).

On the other hand, the model of Home Care Services and ICT based integration of clinical and management assessment of patient and service can be considered an initial "transfer" from the home care department of the Local Health Authority to the University Hospital.

## Barriers and success factors experienced by the originator

A major barrier has been to bring all the stakeholders together and work on innovations of homecare in a competitive environment (in the sense of other concepts of homecare or ICT driven innovations), both on regional (Campania) and national (Italy) levels (e.g. that there are also other solutions being developed in parallel and both regions and the country can select from more models for future support). Technical solution is an indispensable part but creation of functional organisational models is the core of the good practice. What was also challenging, that all had to be financed by operational resources only, e.g. without substantial extra investment. There were no extra barriers, as the new way of homecare provisioning addressed commonly recognised problems caused by insufficient capacity of the previous system to cope with increasing demand for homecare, especially by seniors.

Medical and strategic guidance by University Hospital of Salerno was one factor of success. A company was able to invest its resources in the development of a new solution including negotiation of a new organisational model and the design of a business model which should assure return of investment. The company also understood the challenge associated with ageing population and saw the deployment of new solutions in a broader context and not only as straightforward business. From a technical point of view it is better to have ICT development capabilities in-house as it is cheaper to develop solutions compared to buying them from third parties. The solution presented in this good practice is considered (status in June 2017) as successfully competing with other implemented homecare models that are presented in Campania region. Several years of joint effort yielded impressive solution and it was confirmed that its viability depends 80% on organizational measures and 20% on technology.

## 10.5.3 Adopter's needs and ambitions

A complex approach to the new integrated solution which actually appears to be fully in line with EIPonAHA guidance provided by its Action Groups (esp. AG B3).

- Implementation of theoretical principles in daily routine: advanced guidance (by university experts), common approach of all stakeholders, that is working together,  in addressing improvements of homecare to serve more patients more effectively, accurately and rapidly, with higher quality of care, based on optimum use of dedicated ICT.
- Developing a business model that reflects the supportive role of ICT in health (and social) care, i.e. it is not overvalued by over-dimensioned expansive development or supply of many technologies but rather set of well-designed modules that gradually improve management of care and its quality.

Technical solution as such is interesting in its functionality (the management and database SW, portal) but it is not considered key element of the practice and it could be designed and developed in line with local conditions in the Czech Rep. and Olomouc. The practice as seen in Salerno provoked to review various aspects of similar services provided in Olomouc region from organizational viewpoint, though they are different in its scope and quantity in comparison to Italy.  This relates especially the Czech form of homecare reimbursed by health insurance, here referenced as health homecare.

The good practice in Salerno has also opened question of suitable methods of procuring ICT solution, in this case for telehealth services provided by University Hospital Olomouc (UHO).  This is topical as there is program prepared for it in UHO. Telemonitoring services and their technologies evaluated in the good practice in Salerno are part of Beyond Silos EU project and their scopes are similar to those known in Olomouc Reference site. Exchange of relevant information regarding telemonitoring in various diseases is however very useful.

The practice as seen in Salerno spans over several stakeholders in health and social care. The practice demonstrates current viable application of ICT in healthcare (and social care) i.e. helps to keep the patients at home instead moving them to hospitals, palliative care providers or other institutional settings. UHO is complex healthcare provider in Olomouc region and its responsibility is given by state regulations. UHOs main focus including investment in innovation is in clinical care and clinically-relevant innovations. Homecare in the form as provided in Italy is not established in the CR. Original idea of this Twinning was to make use the experience of the good practice in development of new system for telemonitoring of patients with a range of diseases that are treated in UHO. This idea is still pursued but this Campania practice provides many more impetuses.

As most of the good practice is of organizational nature that are outside of sole remit of regional hospital (owned by state), and the model of care deployed by the good practice is so progressive, we came to conclusion the practice could serve as a sample for innovation in healthcare and use of ICT in the CR, Olomouc Region and the city, which means it should be beneficial to share the information about the practice with respective stakeholders in the CR. The practice would be worth to first present to the team that works on Czech National eHealth strategy (approved in Nov. 2016), which is on national level on Ministry of Health (NTMC was and should be in the next period part of a dedicated expert team).  Further stakeholders that could benefit of the good practice are authorities of Olomouc city, which develop programs for enhanced care of citizens, and providers of healthcare homecare in the City, and obviously other in the CR.

Implementation of the practice requires essential changes of the current health and social care system in the CR; that means first legal and economic conditions that would enable viability of such practice. As the Czech healthcare system has been developed for decades in given paradigm (strong concentration on medical interventions including prevention ones but less on patient empowerment and lifelong healthcare measures and non-hospital care) the changes may not be easy to implement for longer time. This is due to existing models of money flow in health and social care, reimbursement, and lack of regulation/supervision related to societal outcomes of reimbursed healthcare (such as impact on healthy years). Elements of the practice, including those related to telemedicine are subject UHO – NTMC, will be gradually verified with patients; in July 2017 the hospital still expects decision about assignment of the pertinent project that would enable to develop these activities.

The good practice in question actually relates 3 areas (ICT in healthcare, homecare and integrated care) that are all in underdeveloped stage in the CR for long time. This is in contrast with relatively good acute and in some cases preventive care of citizens in the CR.

Considering these complex conditions UHO – NTMC develops two groups of activities: firstly, working in committees and other teams established by key national stakeholders (namely both the pertinent ministries, insurances, Region, city (Olomouc), associations of care providers, medical societies to support new concepts and associated changes targeted to ICT use in various instances of health and social care. Secondly, UHO NTMC collaborate with large spectrum of stakeholders form EU countries (any beyond) to shape local concrete actions that evaluate, demonstrate and provide evidence for regional and national scaling up and for negotiation with national stakeholders mentioned above. The aim is to prepare conditions for changes that would enable provisioning integrated solutions in homecare, especially for senior or disadvantaged patients, as known in many EU countries.

The first group of activities are ongoing and negotiations and other activities incl. e.g. further development of Czech national strategy of eHealth will be ongoing in 2017 and 2018.

The original objectives of the Twinning (that mostly fall into second group) are amended as follows:

1. To adapt UHOs ICT platform for healthcare to enable more diseases to monitor and support.

Technical–medical specification and procurement of new telemonitoring system that is under preparation in UHO will be directly influenced by elements that prove effectivity in the good practice at the Originator. This covers requirement for early collaboration with developer of the new system, defining technical requirements that would enable the future system to provide more services and capabilities, such as teleconsultation, and will enable integration with future EHR.

2. To familiarize healthcare professionals in Adopter country with utilizing eHealth technology that enhances self-management. The professionals can get acquainted with care management pathways that include telemonitoring of patients with various diseases so that the healthcare professionals will be able to design suitable pathways in UHO;

At least 6 groups of diseases (6 clinics of UHO) for example anticoagulation treatment, pulmonary diseases, oncology, diabetes, heart failure and patients' nutrition will be possible to address for enhancing care by use of new ICT tool. These groups have been specified in the 1st half of 2017, under guidance of NTMC.

3. To progress in empowering patients in adopter country in taking control over their own physical health, with a focus on chronic diseases, including cardiovascular conditions;

The new ICT based system of UHO will include capabilities to support patient empowerment. These include information about the disease and instruction for the patients and also teleconsultation with medical stuff.

4. To scale-up a unique best practices using ICT for improving the physical condition of patients with chronic cardiovascular diseases on a European level;

This objective will be filled by directing new program for improved are for patient with chronic diseases, incl. CVD that is under preparation in Olomouc region (complex UHO project to be decided at the beginning of 2018). It should enable sharing medical information between healthcare providers (hospitals) in the region and coordinate care. NTMC will also look for further opportunities to create consortium for a future national or EU project that would cover the essentials of the good practice and will lead to their implementation.

5. To understand essential aspects of integrated management of chronic diseases (incl. cardiovascular) in the view of design similar programs in the context of the CR;

This objective will be filled by activity of NTMC in introduction of essential characteristics of the good practice to the stakeholders in homecare in the CR (i.e. first group of activities). The practice provide sort of evidence that ICT supported homecare can be viable in large scale. Organizational aspects, management and spectrum of services provided to patients in homecare, business model will be presented on working level to stakeholders in the CR with aim to initiate debate or progress in innovation of care of patients staying at home, especially seniors with chronic diseases. First stakeholders are Association of Homecare of the CR, Olomouc city and the Region, Ministry of Health and Ministry of Labour and Social Affairs.

6. Joint projects applications (new, added in the course of the Twinning in 1st half of 2017).

To prepare joint project applications enabling further develop the interventions, technologic solutions and elements of the good practice by the Originator and Adopter.

First joint project application following this Twinning was submitted in May 2017 in EC call HP-HJ-2017.

## 10.5.4 Adoption and investment plan

Complete practice as operated in Campania cannot be transferred as a whole to the CR in the time frame of Twinning  (till 2018) due to differences in health and social care systems, extend of (healthcare) homecare, absence legislative and economical conditions, scope of regional strategic agenda of the Region with regards to seniors and healthcare, and also remit of UHO. However, elements of the practice will be elaborated in particular activities as described in the objectives above. The program for creation of new telemonitoring set of services based on new system is under preparation in UHO in February 2017, with financial support of external sources amounting at least to 20000 Euro (still in planned regime). Synergies with other new programs of UHO, especially "Digitalization of processes in UHO" that is also under preparation in UHO will be sought by NTMC.

External activities, i.e. especially attraction of key stakeholders in debate concerning innovation of (healthcare) homecare in the CR, and Olomouc will be restricted to informative meetings in professional enthusiastic mode.  Schedule of Twinning scheme with given accounting rules did not enable to present the good practice to these stakeholders. The extend and quality of the practice was understood by the Adopter only during visit of UHO team (delegation of 3 representatives of UHO - NTMC) in Salerno in January 27, 2017, and complexity of handling of travel with the context of accounting in UHO did not allow reciprocal trip of the Originator to the CR. Given conditions of the Twinning, further collaboration  with the originator will be performed by electronic communication tools but intended presentation of the practice to key stakeholders in eHealth and healthcare homecare in the CR will have to be postponed. Further resources to enable this are explored by both teams in the Twinning.

Schedule: in August 2017, communication with the Association of Homecare in the CR to review their view on innovations incorporated in the good practice. (Initial conditions depicts e.g. fact, that ICT based intervention has not been subject of any systematic development in the area of Homecare in the CR, status July 2017).

As of 2017, intensive communication with the Ministries and insurances (esp. with the General insurance comp. that develops reimbursement codes). This will continue in 2018. As all the key enabling aspects are to be decided on national political level and should be incorporated into health (and currently separated social) care strategies, milestones can only mark meetings with stakeholders (taking e.g. into account also Autumn 2017 national election).

Both teams, and also Asturia as member of similar Twinning with Campania Reference site, agreed during joint meeting in Salerno in January 2017 that they would look for opportunity to jointly apply for a EU project that would enable to progress in the topics that are subject of the good practice (esp. palliative care, integrated care, homecare, patients empowerment - supported by ICT, nutrition). As already reported above, application for such project was submitted in May 2017.

It was spent 1 441,60 € in total for this TWINNING project. The amount was spent for the visit of the adopter´s team members (Mr. Gütter, Mrs. Lazarova, Mr. Stybnar) from University Hospital Olomouc to Salerno. The costs have covered air tickets, accommodation and other travel costs for these three persons.

Resources of ESIF (in more complex program) are planned for establishing the new telemedicine system in UHO. Implementation of Czech national eHealth strategy significantly relies on ESIF too. There were no other resources sought for the Twinning as such in 2017; this may change in 2018 as the new R&D project (the same complex program), if approved, enables support of such international activities.

There are not significant barriers in implementation of the telemedicine part of the practice in UHO. The major barrier is the still not yet assigned project (in July 2018). The new program of UHO for telemonitoring set of diseases can unexpectedly be modified or restricted but it is not signalled in July 2017. The resources (finance) were not assigned yet, however; the decision will be known in the beginning of 2018.

The barriers for full practice scaling up in the CR are listed above. It should be noted that NTMC works in the CR on the system oriented aspects of healthcare from "the bottom" (i.e. cannot immediately

influence politics, priorities, legislative process, and spectrum of regional strategies, external health and social care providers). Implementation of the practice would mean a partial (or even broader) reform of healthcare in the CR and it's financing. That is why there was new Adopter's idea (of 27.1.2017) to contribute to further elaboration of Czech national strategy of eHealth (esp. in its part "Telemedicine") by providing evidence that homecare can be operated in large scale with support of ICT tools and in sustainable manner. Due to underdeveloped eHealth in the CR, first effort will be given to clinical ICT based interventions and then to homecare ones, provided there is no significant interest in enhancing of parameters of health homecare (ICT could bring impressive savings in qualified nurses need, cost esp. for travelling). In this case, interest of homecare stakeholders may enable faster development of similar good practice in the CR as in Originator's country. Further, the idea of introduction of the business model of the practice to authorities and health homecare providers in Olomouc city, originally planned together with the Originator during their trip to the CR. This trip did not take place due to Twinning budged restriction (timing) and therefore only voluntary activities in this direction can follow.

## 10.5.5  Benefits and outcomes (adopter)

In UHO, the new telemonitoring system will be more effective in its capabilities to serve for given purposes, will be more open to future applications and will enable to provide  higher quality of healthcare to the patients and may also enable to reduce length and frequency of hospital visits. Further experience and competency in innovations in care will be gained by NTMC staff. In association with other projects (Structural funds), more jobs with high qualification should be generated when the new telemonitoring system is activated.

The benefits for various stakeholders in the CR are already implicitly listed above and they cover: possibility to enrich strategy of eHealth in the CR, definition of new ways of care provisioning, improvement in coordination of (healthcare) homecare, increase quality of care, definition of new business model for homecare,  design of methods of palliative care provisioning, progress in patient empowerment, projection of integrated care, delineation of topics and inspirations for municipal, regional and national health related strategies.

The Twinning contributes to the effort to design new EU project of the partners that would solve and further elaborate some aspect of the practice.

The good practice will also be presented to the EU project HoCare that maps homecare in EU countries, incl. CR, and will recommend future measures to strengthen homecare.

Specification of new UHO telemonitoring system by using elements of the Originator's good practice, usable for patients in the Region, particularly for those chronically ill. When implemented, n x 10 000 patients (in long term planning) with various diseases can be included in the new interventions. New best practices are expected to be defined, which the existing ones in NTMC will be upgraded.  Care plan of such patients can be optimized with higher portion of the time period spent at their homes, all with increased quality of care.

The Twinning work affects significant parts of the national population (CR has approx. 10M citizens) as the negotiations and support of ICT based innovations, which currently do not have assured financing, reimbursement and therefore any attempt to operate new service, be it provided by general practitioner, specialist, hospital or long-term care provider, is challenged by its sustainability.

## 10.5.6  Policy recommendations

With regards to healthcare system and homecare provisioning related questions, there will be best effort used in communication with stakeholders as they act outside of UHO/NTMC direct remit. NTMC will also use its expert-coordinating role on national level, e.g. in communication with insurances, the Region, city, Ministries and other stakeholders. These activities are outside of current NTMC budged but despite of this, frequency of relevant meetings aimed at promotion of the good practice essentials has been increased.

## 10.6    Scotland – Basque (Living it Up)

### 10.6.1  Twinning overview

| Originator:<br>NHS 24, Scottish Centre for Telehealth and Telecare, Scotland | Adopter:<br>Kronikgune, Basque Country | Innovative Practice:<br>LivingItUp |
|---|---|---|
| **Innovative Practice Description** | | |
| The innovative practice that Scotland wishes to share with the Basque Country is our experience of co-designing an online self-management hub called Living it Up (LiU) which has been designed with and for people aged 50+ living with one or more long-term health conditions. LiU is a digitally enabled community that provides holistic opportunities to support improved health, wellbeing and active lifestyles.  LiU enables people to: connect to their support circle (including family, friends, informal support and health and care professionals); to be motivated to use technology to improve their health and wellbeing; and to be empowered to be confident contributors to the Living it Up community, sharing their experiences and knowledge. | | |
| **Link to the EIP on AHA Repository of innovative practices:** | | |
| https://ec.europa.eu/eip/ageing/repository/living-it_en | | |
| **Innovation Scope:** | | |
| ▪   Online platform for self-monitoring for people above 50 with long term health conditions | | |
| **Innovation Type:** | | |
| ▪   **Partial adoption**<br>The goal of participating in this activity was to analyse the Basque Country scenario related to Patient Empowerment tools and start adapting and improving those tools that need some innovation. Also, start co-producing and co-creating with an interdisciplinary team and transferring the knowledge acquired were other fixed targets.<br>The twinning initiative has enabled to the Basque Country to start getting more knowledge about patient empowerment tools and start defining some tasks in order to start improving and adapting the services available for the citizen needs. These are some of the steps carried out in the region:<br>•   A Promotion Group in Osakidetza (Basque Public Health System), formed by health management and technical professionals related to e-Health and empowerment initiatives has been created.<br>•   A number of meetings with regional stakeholders have been organised to transfer the knowledge acquired and an analysis made regarding the Basque Country Scenario related to Patient Empowerment tools has been undertaken. In these meetings, the needs of adapting the existing infrastructures have been translated.<br>•   A webinar has been organised in order to go in depth with the Scottish region experience.<br>•   A multi-disciplinary team (doctors, nurses, university, associations, investigation centres, technological industry and patients) has been created, with the aim to co-design and adapt the existing interactive platform directed towards chronic patients.<br>•   A workshop with the multidisciplinary team has been organised.<br>•   The results obtained during the workshop are being analysed and the implementation plan of the digital solution is being defined.<br>So that we can say that some elements and aspects of the innovation are being implemented using locally available infrastructures. | | |
| **AHA Action Group:** | | |
| ✓   A3. Prevention of functional decline and frailty. | | |
| **Twinning Objectives:** | | |
| The objective is to learn from and consider transfer of key concepts and elements of the "Living it Up" self-management collaborative platform, the stakeholders involved, the implementation | | |

methodologies and the change management performed within health and care systems to enable access to information and training for patients, citizens, caregivers and health and care professionals. The goal is to improve Osakidetza's strategies to promote health and wellbeing and to encourage citizens to become Active Patients.

Operational objectives:

- Learn and analyse lessons learnt by the Scottish experience, and key success factors to consider.
- Analyse the Basque Country scenario related to the patient empowerment tools.
- Create working groups to implement possible improvements for the available tools.
- Provide information and access to existing training programmes to enable Basque experts to acquire knowledge and skills in the use of co-production and digital services in chronic disease management, with a focus on citizen empowerment and training for patients/citizens and caregivers.
- Develop implementation plans about how knowledge could be transferred.
- Promote inter-regional partnerships between entities and local stakeholders.
- Evaluate compliance with these objectives.
- Develop a support and updating plan of the digital platform and services.

| Twinning end result: |
| --- |
| Due to the tight timeline, we can't say that an innovative practice has been applied but new knowledge has been transferred to regional stakeholders. On the other hand, empowerment tools are being analysed to apply any improvement and the innovative practice. Furthermore, an implementation plan is being developed. <br><br> So, we can say that by the time being many steps have been taken in the twinning period and will be taken in the near future. |

## 10.6.2 Background on Living it Up

### Description

The innovative practice that Scotland wishes to share with the Basque Country is our experience of co-designing an online self-management hub called Living it Up (LiU) which has been designed with and for people aged 50+ living with one or more long-term health conditions. LiU is a digitally enabled community that provides holistic opportunities to support improved health, wellbeing and active lifestyles. LiU enables people to: connect to their support circle (including family, friends, informal support and health and care professionals); to be motivated to use technology to improve their health and wellbeing; and to be empowered to be confident contributors to the Living it Up community, sharing their experiences and knowledge.

### Evolution in the originator's region

The Living It Up programme (LiU) started in June 2012. It was set up to creatively explore and pioneer how advances in technology could help support transformational change in our health and social care services, and realise citizen, organisational and economic benefits. The main motivation has been the need to improve accessibility of services, provision of preventative tools and services and to provide a basis for an overarching national platform that can be integrated with other digital services and products.

LiU was established to provide a contribution to the following key challenges;

- Health & Wellbeing: Scotland, like many other countries, is facing the challenge of effectively managing an ageing and increasingly co-morbid population whilst controlling health and social care costs. Digital health is recognised as one of the key contributions to this challenge, as is further supporting the role of unpaid carers and the significant contribution they make. Our ageing population also represents a considerable opportunity if we can harness the wealth of experience and capacity.

- Technology: Advances in technology present a significant opportunity for health and social care if these can be developed in a way which supports public sector service transformation and addresses citizen aspirations and needs. Whilst new technological solutions present themselves on an increasingly regular basis, the healthcare sector is far behind other industries in adoption and integration, e.g. 75% of people manage their finances online but only 2% of people currently manage their healthcare online. Scotland is at the forefront of telecare adoption, but there remains evidence of limited user and carer awareness.
- Economic: Scotland is a worldwide leader in Life Sciences, ICT and electronic technologies. Many large technology firms have relocated to Scotland and there is a significant SME presence (approx. 800 companies in this space). However, many of these companies find it challenging to engage directly with potential users, and the health and care sector in Scotland is often regarded as a 'closed system'. SME's also find it difficult to align their products with other technology solutions, representing a challenge for economic growth.
- Up to May 2015, Living it Up (LiU) was an innovation project funded over 3 years by the Scottish Government and Innovate UK (previously the Technology Strategy Board) as part of the UK wide dallas programme.
- dallas sought to;
- Radically change the way people interact with health and social care services, and empower them to take greater responsibility and ownership of their health and wellbeing.
- Roll out new technologies and services at scale and create a consumer market for wellbeing products and services, to promote wealth creation in the economy as well as providing wider public health and societal benefits.

Following the completion of the dallas innovation phase, LiU was funded by the Scottish Government over 2015/16 to consolidate its assets and begin to develop a service offering to deliver real benefits to the people of Scotland. The 2015-16 phase has been entitled 'Service Development Phase 1' (SD1). This phase included a specific evaluation of LiU, which was undertaken by Impact Generation Ltd, to evidence any return on investment from LiU and any impact on health & wellbeing outcomes. LiU is now an online, supported self-management hub, with approx. 50,000 page views per month and over 24,000 'signed up' users and subscribers. It is owned and managed by NHS 24, and is currently active in 11 geographic areas across Scotland.

Phases:

1. Solution exploration phase (June - December 2012). The following activities were undertaken during this period: a) Community engagement through individual interviews, focus groups, workshops and creation of community engagement website b) Preparation of communication materials – newsletters.

2. LiU service design (2013-2014). The following activities were undertaken in this period: feedback events, service development workshops, branding workshops, paper prototypes.

3. Turning co-design into a reality (2015-2016);

Costs & Outcomes:

Following an independent evaluation, it found that LiU has generated preventive behaviour/s in its users, including a three-times lower self-reported instance of using care services, six times higher self-reported instance of community volunteering plus a greater capacity to care for others and a willingness to trial new self-management techniques to look after their own health and wellbeing. Evidence also indicated that LiU active users have greater levels of adherence to preventative care and health routines; more appropriate food selection and diet choices; more resilient coping management strategies for the care of their LTC when symptoms, environmental or social changes occur.

Best public value:  A case for providing current and long-term public value, given via an independent social return on investment (SROI) calculation that shows a 37% return on the 2015/2016 investment made.

The business case for the sustainability of LiU solution has been led and developed by NHS 24 for the consideration by Scottish Government. NHS 24 is a developer of this digital solution. The business case is based on five principles:

1. Provide a compelling case for change and identifies the contribution that can be made to the strategic priorities of the public sector – the "strategic case";

2. Represent best public value – the "economic case";

3. be attractive to the market place, can be procured (as appropriate) and is commercially viable and sustainable – the "commercial case";

4. be affordable – the "financial case";

5. be achievable – "the management case".

**Barriers and success factors experienced by the originator**

The following barriers were identified during the development of the LiU solution:

- Multitude of partners involved from the beginning and it was difficult to manage all them; working with health and social care, 3rd sector, industry, manage service; we all speak different language and work at different speed;
- Health and care have many restrictions on what can be used and seen on organisational PC's;
- Citizens' engagement was difficult at initial stages;
- Promoting unfinished product to busy staff in health and social care; it took almost 3 years to develop the initial product;
- Staff could see the benefits but want something that is ready to use buy with the opportunity to make it local; anything new should be easily implemented;
- Fitting with local priorities; IT/eHealth could make things happen much easier but also have their local improvement plans to work to; local authorities have been at the same integrating health and social care services, this presents both challenges and opportunities.
- Changing workforce – time to establish required teams; fixed term contracts; unclear future – this all lead to unstable workforce and gaps in support when there are changes of staff;
- Navigation of the site; it is easy when you are in a one-to-one situation; addition of new services and becoming familiar enough with them require further promotion;
- Search engine; there is a need to ensure accurate content and categorising appropriately and encouraging citizens to take ownership of entries.

Recommendations:

- Have promotional information relevant to the groups/ individuals we met
- More integration with the tools is needed
- Give citizens more reasons to keep coming back to the site
- Consistent workforce
- Clear on future funding
- Closer working with eHealth / ICT (3) reinvestment of cost savings in the health care system

The following success factors facilitate the implementation of this digital solution:
- Co-design/co-production: people appreciated the involvement in the process; people enjoyed providing feedback and suggestions for the improvement of services

- Hyper local information: link with local services and information through ALISS (corporate service for local authorities in Scotland).
- Promotion of LiU: promotional events and merchandise, contribution from voluntary sector to involve target population.
- Video-clips – citizens like then and often prefer them to written words; opportunities for local teams to produce; opportunities to teach citizens to produce.
- Simplification of the platform with a better visual arrangement
- Political will and legislative/ policy framework in place
- Visible leadership and trusting relationships across sectors and all levels
- Contractual levers and incentives throughout the eco-system
- Develop skill mix and capability
- Funding used as a catalyst for change
- Build community assets and invest in the voluntary sector
- Focus on place, home, community and outcomes that matter to people
- Understand the local context
- Build trust in the front-line delivery team – to act as champions
- Learn and improve culture and personal outcomes
- Empower people to change
- Ensure you can collect the right data to evidence changes
- Co-design, co-create and co-develop change in partnership

## 10.6.3 Adopter's needs and ambitions

For the Basque Country, as adopter, the final goal is to enrich current strategies and tools on patient empowerment and participation. More specific, we wanted to analyse in depth the Scottish programme "Living it up" and consider ideas, concepts and contents that could be transferred to the Basque scenario and Osakidetza´s tools (Basque Health Public system).

With that aim, during the study visit both regions worked together to look into "Living it up" programme, looking for key elements in order to achieve a successful implementation:

- Political support: defined lines of work
- Methodology for the development of contents
- Training of professionals and patients
- Dissemination strategy as key element to success,
- Citizen participation
- "Sociological map": aspects to take into account

In the framework of this twinning, the Basque Country aims to achieve strengthened health literacy, the highest protection and promotion of the individual rights and ensure the participation in decision making and self-care.

For the Basque Health Ministry, the patient is the main axis in the Health system, and it is included as a strategic line In the Health Plan. The Basque Health Plan 2013-2020 promotes a strategy for ageing and chronic patient care based on self-care promotion and population education.

Osakidetza offers a School of Patients "Osasun Eskola" through http://www.osakidetza.euskadi.eus/osasuneskola/es/. It facilitates and provides on line information and training not only to patients and caregivers but also to citizens, aimed at maintaining and promoting population health and health performance by making responsible disease-related decisions.

It is also implementing an Active Patient educational programme in self-care. It helps chronic patients or caregivers to acquire knowledge, skills and motivation related to their diseases and their management. The goal is to provide information, train in self-care and promote changes for healthier lifestyles.

Moreover, Osakidetza is currently working on the development of a platform that brings together all the offered blog services. This platform is focused on chronic patients, caregivers and citizens in general. Different working groups will be created to develop and boost this tool in the region. On the other hand, the health system is also analysing the possibility of launching an interactive platform for chronic people, where they could share their experience and knowledge.

The objective is to learn from and consider transfer of key concepts and elements of the "Living it Up" self-management collaborative platform, the stakeholders involved, the implementation methodologies and the change management performed within health and care systems to enable access to information and training for patients, citizens, caregivers and health and care professionals. The goal is to improve Osakidetza's strategies to promote health and wellbeing and to encourage citizens to become Active Patients.

Operational objectives:

- Learn and analyse lessons learnt by the Scottish experience, and key success factors to consider.
- Analyse the Basque Country scenario related to the patient empowerment tools.
- Create working groups to implement possible improvements for the available tools.
- Provide information and access to existing training programmes to enable Basque experts to acquire knowledge and skills in the use of co-production and digital services in chronic disease management, with a focus on citizen empowerment and training for patients/citizens and caregivers.
- Develop implementation plans about how knowledge could be transferred.
- Promote inter-regional partnerships between entities and local stakeholders.
- Evaluate compliance with these objectives.
- Develop a support and updating plan of the digital platform and services.

### 10.6.4 Adoption and investment plan

The steps needed to coordinate and implement the innovative practice are:

- Twinning Steering Board (NHS 24, the Basque Health Department and Osakidetza) to provide high level oversight of the twinning process (November-December 2016).
- Implementation group between the both organisations to undertake the operational planning and implementation of the activities (November-December 2016)
- Promotion Group in Osakidetza, formed by health, management and technical professionals (January 2017).
- Presentation of the innovative practice (functionality and implementation methodology) to key players in the adopting region, in order to make known the enablers and barriers encountered (Study visit February 15th 2017).
- Networking: meeting of the internal working groups to analyse the knowledge acquired during the visit and analyse how to transfer the knowledge and Scottish innovative practice to regional stakeholders (March 2017)
- Analyse of the Basque Country scenario related to patient empowerment tools.
- Meeting with different stakeholders from the Basque Country Health System to transfer the knowledge acquired during the visit to Scotland.  (March 2017)
- Webinar with the Scottish region to answer some doubts about LIU innovative practice (March 2017)
- First analysis on how to adapt and improve the existing infrastructure - technological, health and care delivery models – to the ideas become interested to implement in the Basque Country (April-May 2017).
- Create a multidisciplinary team (doctors, nurses, university, associations, investigation centres, technological industry, patients and tertiary sector) to analyse the interactive platform focused on Chronic Patients available in the Basque Country.

- Organize a workshop with the team to analyse the platform and select and detect the changes and improvements necessary to apply on the platform. (June 2017).
- Internal working team meeting to analyse the results obtained and to define the next steps. (July 2017)
- Assessment and dissemination of the outcomes and impact of the innovative practice. (Final report production and dissemination through Action Groups and Reference sites – EIP on AHA).

For the time being, half of the budget available to perform the twinning has been spent and justified. When it comes to the time horizon, there isn't a budget defined for adapting and implementing the digital solution.

The Promotion Group will analyse the possibility to apply for external funding (national or regional level) to work out and support the implementation of the innovative practice in the region.

These are the barriers that have been identified:

- Budget
- Timeline
- Technological platform infrastructure
- Legal policy terms (patients´ data management)
- Lack of interest in changing the roll through professionals
- Lack of digital skills between citizens
- Human Resources: to define and create a team to execute the project.

These barriers could be overcome the following way:

- Organizing internal meetings starting from the policy level, with the aim of showing the importance of adapting and improving the existing tools, and getting a budget for it.
- Analysing which platforms could be adapted or implemented to the Basque Health System infrastructure.
- Internal meetings with law professionals to adapt the law and needs for patients´ data management.
- Organising training and networking with citizens and professionals, to show the advantages and uses of these adapted tools, and encourage their use.

In a first phase, it was considered to use the Google Analytics tool in order to measure indicators such as the number of visits, number of users, time and so on. As the final innovative practice hasn't been applied yet, the Google Analytics tool has been used to analyse the visits of the empowerment platforms available in the Basque Country and see its impact among citizens.

In the long term, once the innovative practice has been implemented and the existing platforms have been adapted, a specific evaluation plan will set out self-fulfilling scales to see the evolution in health indicators and health literacy through questionnaires, quality of life, therapeutic adherence, etc.

## 10.6.5 Benefits and outcomes (adopter)

In the next iteration, once the digital implementation plan is developed, it is expected that new responsibilities, new tasks and competencies will be set up among professionals.

Citizens will acquire skills to become active patients, and manage and control better their health and pathologies.

The interaction between healthcare services and users will be improved and will be closer.

The citizen will have as reference the same digital solution for consultation and they will know that the information available will be reliable and easy access.

These tools will encourage people to take responsibility of their health and wellbeing.

The expected outcome of the twinning will be an increased and detailed understanding of both regions' patient empowerment strategies, including the use of innovative tools and techniques.

The anticipated outcomes of the twinning activities are:

- Increased number of citizens and professionals involved in co-production and co-creation activities.
- Enhanced contribution of professionals and citizens incorporating content and/or testimonials of their experience in the field of empowerment.
- Promoted involvement and partnerships within and beyond the health system (associations, institutions, etc.)
- Increased levels of health literacy and satisfaction of citizens about their health.
- Improve in the interaction between citizen and the Health system.
- It is expected that all chronic patients and their informal caregivers will benefit from this initiative.

Once the innovative practice will be implemented more than 1.3 Million chronic people could benefit of it. Moreover, Primary Care professional and care givers could benefit from the digital solution.

## 10.6.6  Policy recommendations

Self-management has been shown to be most effective at improving outcomes across the wide range of diseases and populations in which it has been studied. However, it is a challenge to separate the effect of self-management from other elements. Self-management support requires a provider, a health care team or user-friendly empowerment tools to perform a certain set of tasks to create the self-efficacy necessary for a patient. It also needs the individual to deal confidently with their own range of emotional, physical, and physiological symptoms of their chronic disease, wellbeing or health literacy. Self-management empowers and prepares users to manage their health and health care in the following ways:

- Emphasizes the patient's central role in managing their health.
- Uses effective self-management support strategies that include assessment, goal setting, action planning, problem solving and follow-up.
- Organises internal and community resources to provide on-going self-management support to patients.

These arguments make necessary the involvement of policy makers at a macro level, so that a proper scenario where these initiatives could be carried out is defined.

So, it is very important to define a budget and have more funds available to have more possibilities to improve and implement a digital solution. On the other hand, it is also important to include these initiatives in the strategic lines of the regional, national government and EU level.

## 10.7 Galicia – Zagreb (IANUS)

### 10.7.1 Twinning overview

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Consellería de Sanidade de Galicia, Galicia | Health Centre Zagreb-Centre, City of Zagreb | *IANUS* |

| Innovative Practice Description |
|---|
| The implementation of an electronic medical history system is one of the strategic axes, which have been agreed upon by the Health Ministry and the autonomous communities in general; this is for the development of ICT systems applied to health care. What has allowed *IANUS* to reach one of its goals is the ability to provide a powerful and effective tool for managing clinical information, having a single model of access to information through a web application. It is about a single shared medical history, providing integrated care to patients when the integration of care processes and the continuity of care between primary and specialized care in any SERGAS centre is improved, minimizing testing and allowing shared management of the same.

The information is available in an integrated, simple way, which avoids the separation of information which can be generated from any patient at any level of health care and being completely accessible to authorized healthcare professionals, also including the image that healthcare provides. This , in turn, improves patient safety, allowing for better diagnosis and for tailored and individualised treatments.

Through *IANUS*, electronic prescriptions and dispensations of all medication throughout all of the Galician Public Health System is guaranteed. All the community pharmacies are connected to *IANUS* for dispensations. This is a major benefit for the population and mainly for the elderly population, which allows for a unique and extraordinary comprehensive amount of information on pharmacotherapy resource consumption, adherence to treatment, drug interactions and even an additional element to stratify the population. In addition, *IANUS* bears the supply and the pharmacotherapeutic care to over 8,000 patients in nursing homes, which is done from the hospital pharmacy service. Moreover, *IANUS* allows effective and efficient management of the patient care program for poly-pharmacy patients in Galicia.

Of a population of 2,781,498 people in Galicia, *IANUS* is accessible to 18,000 Galician Health Service System users, 2,700,000 patients who can access their record via internet and indirectly for 5,000 pharmacists in pharmacies. Currently 100% of health centres and hospitals of Galicia and 100% of pharmacies are connected. |

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/electronic-medical-record-system-*IANUS*-improves-regional-health-care-galicia_en |

| Innovation Scope: |
|---|
| • Regional/national EHR systems and summaries<br>• Regional ePrescription system |

| Innovation Type: |
|---|

▪ **Knowledge exchange and training**

City of Zagreb Reference Site engaged in two complementary twinning actions with Andalusia and Galicia Reference Sites. Study visits to originating reference sites were organized. Twinning action provided insights into the Galician health systems' organisational details, technical aspects of Electronic Health Record, health-related digital solutions and the *IANUS* system. Study visit reports were sent to important stakeholders/decision makers in Croatian health system and workshops with experts from Galicia RS are planned to facilitate implementation/scaling-up of innovative digital solutions.

▪ **Partial adoption**

Exchanged knowledge and experience from both Andalusian and Galician Reference Sites fostered development of pilot projects using innovative digital solutions. Brief description of the existing patient portal *Zdravlje.Net* and pilot-projects that resulted from twinning actions is provided below.

*Zdravlje.Net* is a secure web application that enables patient-GP communication in real time. It features prescription requests, message exchange, booking appointments and delivery of specialist's findings or lab results.

The communication itself is effortless for both, but especially for the GP office – no additional administration is needed aside regular work within the GP's application for primary healthcare. Both patient and GP receive instant notifications about new messages or content from the opposite party.

The GP initially defines the feature permissions for his patient and which medicine is available for therapy renewal (i.e. therapies for chronic illnesses). Afterwards, content for the enabled features is added or removed by one click by the GP in his own application.

The patients automatically receive feedback about their prescription requests when the GP accepts or refuses the request. Messages and appointment reasons from the patient are categorized and displayed to the GP. All communication and request history by the patient is visible and stored within the patient's health record.

*Zdravlje.Net* benefits both patient and doctor: fewer unnecessary visits or calls to the GP, no crowded waiting rooms or busy communication channels, better care for patients with chronic diseases, etc.

Project "Dnevnik Zdravlja" (*Health Diary*) is an upgrade on the existing web application *Zdravlje.Net*.

*Health Diary* is a new module consisting of three sections: weight, blood pressure/heart rate and glucose.

Patients using the *Health Diary* can input their vital signs (blood pressure, heart rate), glucose levels (with defined intake moments – on an empty stomach, before meal, after meal), height/weight values and waist width. Useful information is displayed to the patient based on the input data (warnings for elevated/low values, BMI, etc.).

The measurement data is momentarily available in the GPs application (within the patient's health record).

With the project "Dnevnik Zdravlja" (*Health Diary*) GPs can track their patients' health on a daily basis and react immediately if the values are concerning (call the patient in for a check-up, refer him to a specialist) or even use it as a prevention tool to engage a "healthy" patient to keep track of his own health and quality of life.

Project "Obavijesti za pacijente" (*Patient group messaging*) is also an upgrade on the existing web application *Zdravlje.Net* - it enables the GP to send a message to a group of his patients. The GP uses his primary healthcare application where he can define patient groups he wants to send the message to. The selection criteria are multi choice – meaning GPs can select one or more criteria to filter out patients. The criteria include: male, female, age group (from-to range) and chronic illnesses (one or more). *Zdravlje.Net* users (patients) are filtered according to the set criteria and the GP can easily send out a message to all targeted patients (i.e. remind older chronic patients about the yearly flu immunization). Patients receive a notification about new messages in the system and the message is visible in their *Zdravlje.Net* inbox.

Project "Komunikacija PZZ-SKZZ" provides easy e-Consultations for GPs with specialists

(cardiologists, psychiatrists, etc.) via two-way communication between both, starting with an e-Consultation request from the GP.

The goal of e-Consultation requests is to gather specialist feedback about the patient's condition without sending the patient in person to the specialist. The specialist can then advise the GP about further steps based on the patient's condition.

The GP sends a structured e-Consultation requests towards a specific field of medicine, healthcare institution or directly to a specified specialist. The request is generated within the GPs primary healthcare application using the patient's health record. The GP selects all patient data he deems important and adds it to the request. He can also request an expedited review of the request because of some medical urgency.

The request is visible within the new web application for GPs, *Zdravlje.Net PRO*. The specialist can then accept or decline requests (with explanation why it was declined). All data sent from the GP is visible to the specialist. The specialist or GP can also request or provide additional information, if needed, about the patient over a messaging service connected to the request. Upon reviewing all information the specialist can send out his findings/results.

| **AHA Action Group:** |
|---|

✓ A1. Prescription and adherence action at regional level
✓ B3. Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level

| **Twinning Objectives:** |
|---|

The objective of the twinning is the transfer of knowledge on how to implement and scale-up new eHealth services.

The twinning will allow knowing the technical and organisational aspects of *IANUS*, the Galician Electronic Medical History system. The knowledge and best procedures to accomplish the main interests from City of Zagreb and to further develop pilot-projects will be transferred. The twinning will allow knowing technical and organisational aspects that facilitates the implementation of a powerful EHR. The best practices of Galicia will be shared, which has an integrated EHR not only accessible for health professionals (Primary care, Secondary care) but also for patients through a secure online access.

During twinning actions with (Galicia and Andalusia) 4 areas that could be improved were identified:

• Primary care Patient Inflow Management
• Care for complex patients
• Cross-specialty HCP communication
• Mobile patient portal (m-Health setup)

Pilot projects improving those areas are currently in different stages of completion.

Sessions and workshops in the City of Zagreb Reference Site with important national level stakeholder representatives and Reference Site teams are planned.

Dedicated workshops for education of personnel in eHealth solutions are planned and carried out.

| **Twinning end result:** |
|---|

Twinning resulted in pilot-projects/innovative practices implementation that can affect population covered by Health Centre Zagreb-Centre (133.000 citizens). If proven successful innovative practices are ready to be scaled-up regionally (790.000 citizens) and nationally.

## 10.7.2  Background on IANUS

**Description**

*IANUS*: Electronic Medical Record

The implementation of an electronic medical history system is one of the strategic axes, which have been agreed upon by the Health Ministry and the autonomous communities in

general; this is for the development of ICT systems applied to health care. What has allowed *IANUS* to reach one of its goals is the ability to provide a powerful and effective tool for managing clinical information, having a single model of access to information through a web application. It is about a single shared medical history, providing integrated care to patients when the integration of care processes and the continuity of care between primary and specialized care in any SERGAS centre is improved, minimizing testing and allowing shared management of the same.

The information is available in an integrated, simple way, which avoids the separation of information which can be generated from any patient at any level of health care and being completely accessible to authorized healthcare professionals, also including the image that healthcare provides. This , in turn, improves patient safety, allowing for better diagnosis and for tailored and individualised treatments.

Through *IANUS*, electronic prescriptions and dispensations of all medication throughout all of the Galician Public Health System is guaranteed. All the community pharmacies are connected to *IANUS* for dispensations. This is a major benefit for the population and mainly for the elderly population, which allows for a unique and extraordinary comprehensive amount of information on pharmacotherapy resource consumption, adherence to treatment, drug interactions and even an additional element to stratify the population. In addition, *IANUS* bears the supply and the pharmacotherapeutic care to over 8,000 patients in nursing homes, which is done from the hospital pharmacy service. Moreover, *IANUS* allows effective and efficient management of the patient care program for poly-pharmacy patients in Galicia.

Of a population of 2,781,498 people in Galicia, IANUS is accessible to 18,000 Galician Health Service System users, 2,700,000 patients who can access their record via internet and indirectly for 5,000 pharmacists in pharmacies. Currently 100% of health centres and hospitals of Galicia and 100% of pharmacies are connected.

**Evolution in the originator's region**

- Enable SERGAS professionals to have access to the relevant data from medical records when and where needed of all patients covered (2,7 M)
- Empower all groups of SERGAS health employees (doctors, nurses and pharmacists in the area of primary care) with a powerful tool for managing clinical information, having a single model to access information through a web application
- Allow the availability of an integrated view of clinical information which has been generated from a patient on any health care level
- Improving the fluidity of health care processes, such as prescribing, through a tool which provides information shared to all involved parties
- Providing patients with the continual care, ensuring access to all professionals with the information which has been generated in the many health services and also allowing access to the citizens themselves with the clinical information necessary to facilitate the care process.

The process for adoption was as follows:

- Identify strategic need and opportunity for improvement. The board of SERGAS and several hospitals, as well as the IT unit detected a clear need for digitalization of clinical information,
- Create experts groups to guide the innovative solution definition, including all relevant stakeholders: medical and nursery staff, medical director, hospital managers, IT specialists, etc,
- Allocate budget not only for initial investment, but for maintenance and evolution of the solution,
- Promote several public contracts to implement the solution,

- Perform change management and communication to the professionals. Several methods were employed for motivating the professionals: more than 500 training sessions, technical support was enhanced,
- Monitor change: a dashboard with process indicators of progress was built and made available to relevant stakeholders,
- The time needed for this innovative practice to be deployed was more than three years.

The cost is calculated including only direct costs for IT services of software development of HER and change management (users training and IT helpdesk). IT raised up to 3,5M€ per year from 2006-2015.

An alternative estimation of cost could be made using total cost of IT investment in the Galician Health Service, including network and data management infrastructure, desktop equipment. The estimated costs are not exclusively dedicated to the EHR, but to other applications, so this second estimation could be closer to reality but lacks accuracy: Estimated direct investment: 25M€

Benefits on the health status and quality of life of Galician population:

- It is easier for practitioners to request diagnostic tests which are deemed necessary by the integration process,
- A larger amount of information which is relevant for decision making, resulting in enhanced security, together with a larger preservation of data is very difficult to emulate on a conventional system. This increase in security is the result of having all the information on medical records, which allows for a better diagnosis and more adapted treatments to the needs of the patients,
- A greater integration of the care processes, specifically, improving the continuity of patient care between primary care and specialized hospital care and also when the process is done in different hospitals,
- Better information to citizens with access to the basic information about their own medical records using their national identification number on the internet. The *IANUS* system allows the user to access their hospitalization information and pharmacological treatment data. This is especially beneficial to those patients with chronic illnesses (80 citizens consult this daily),
- The improvement in efficiency of care can already be seen as a greater accessibility to the information (with more than 7,000 consultations to discharge reports),
- As the application is integrated with the electronic prescription system, appointments are minimized especially for those chronically ill patients at the time of soliciting their medication),
- Since the information is mechanized, perfectly legible, reading errors, and errors in the interpretation of medication or the applicable doses is eliminated.

Business model:

- Rate of professionals which use *IANUS* increased to 92.85% or 15,040 in total (2009-2012),
- Accessible clinical information increased and the duplication of testing declined,
- Different applications were incorporated and integrated into one platform, which allowed the work to be done more efficiently; quality of administrative work improved because information is mechanized and perfectly legible and administrative work decreased,
- Diagnostic testing´s time improved. Queued waiting time for the transferring of information was eliminated and 33% improvement in some service response times was achieved.
- The electronic prescription reduced frequenting the primary care consultations by 10% or 2,500,000 total consultations,
- This increased the amount of time for consultation of illnesses, which was generated by reduction in prescription consultations. These were estimated to be 125,000 hours

annually. Those centres, which apply ePrescription, increased by 93.86% from 44 to 457 (2009-2012) and by 251.81% from 386 to 1,358 (2009-2012) in pharmacies,

- Improvement in prescription and doses assistance for each patient resulted in less misinterpretations in the treatment and the applicable doses,
- A 4% reduction in ER visits in the last year for all of SERGAS was achieved,
- An improvement in the tools for medical research: the existence of a revised protocol done by the ethics investigation committee. This allowed access to cases by pathological units in all hospitals in the autonomous community,
- An improvement in proactive campaigns due to the fact that planning is done more precisely,
- Better security when accessing the information: the management of the access to medical records for each patient and the available data are available in at least two different locations; this is done to avoid data loss,
- A 75% saving in costs associated with the elimination of the film as a support for medical imaging and a reduction in the risk of fire in electronic devices was achieved.

**Barriers and success factors experienced by the originator**

- Implementing the EMR system requires profound changes in the way professionals work and it is technologically challenging because of the number of connections and integrations with other systems in order to provide the information efficiently. The way to solve these barriers was the use of integration standards such as HL7 or IHE, technologies like, XML, Web Services, SOA, user-friendly training (for over 16,000 hours), investments in computer equipment, introduction of new tools and ways of doing things: changing from physical to electronic support. In return they offered advantages in quality, safety and care efficiency, the preservation and use of data, which has favoured the receptivity from professionals and patients to change.
- The EMR is supported by a self-traceable permit system. Another basic function that *IANUS* has is its file on information about medical history.
- The information exchange also improved by a coding based on diagnosis, symptoms and treatments which are based on a CIAP-2 coding allowing the exploitation of information on prescriptions, referrals and pathology costs, such as incorrect treatments.
- It was necessary to have medical equipment, which allowed the integration of information into a digital medical record.
- Given the rejection from users due to network drops or the slow system performance, a star-shaped network was created which linked major hospitals to the SERGAS hub in Santiago de Compostela and health care centres to nearby hospitals. A monitoring system platform was put into service in order to supervise the entire system.

To enable patients to access *IANUS* from their home, the use of mobile devices through hospitals' home services is introduced.

New business models and services were opened:
- Paper records were digitalised. SERGAS foresaw a 15M€ investment in the last 5 years,
- Computerised bedside systems which allow professionals to access patient medical records, the patient are now also equipped with interactive digital services in their rooms. The amount of business volume in these types of services is estimated at 1M€ per hospital and year.

Moreover, public savings were achieved with:
- Image on an integrated digital format in the medical records, 2,7M€ were saved on plate printing each year,
- Since the implementation of the electronic prescription and records:
  - Annual medical consultation in medical centres dropped by 2,500,000 (a 10% reduction)

- The transfer of first time patients from medical centres to hospital consultation decreased by 18%.
- At 100%, electronic dispensing facilitates huge amounts of data-based treatments. This allowed for the establishment of follow-up programs in important aspects like: medication adherence, reconciliation, polypharmacy program.
- With the elimination of the printed prescription, 0.75 M€ per year were saved on prescription pads.

Furthermore *IANUS* provided valuable information to different sectors, which turned it into a source of unlimited knowledge. This knowledge can be transferred to the private sector, which would end up being beneficial for both parties.

### 10.7.3  Adopter's needs and ambitions

City of Zagreb Reference Site found motivation in the 2016 Pilot Twinning Support Scheme and has decided to survey twinning proposals with the intention to find digital solutions related to Active and Healthy Aging that could be piloted/implemented in the City of Zagreb Reference site and to learn from experiences of Reference Sites that have successful eHealth strategies in place, so the City of Zagreb reference Site engaged in twinning action with Andalusia Reference Site. Meanwhile, City of Sofia Candidate Reference Site aborted the twinning action with Galicia and because of the similarities between Galician and Andalusian twinning offers City of Zagreb started another (complementary) twinning action with Galicia.

In Croatia, eHealth strategies are carried out on the national level. Some parts of the strategy are planned to be implemented during 2017. City of Zagreb Reference Site is an ecosystem comprised of healthcare providers, regional authorities, national Reference Centre for Protection of Health of Elderly, IT industry organisations, academia and others and as such can influence decision makers on the regional and national level. Resulting from the twinnings, plans were formed for pilot projects which are to be carried out using existing budget for deployment and implementation of eHealth solutions as well as IT industry resources. Projects should provide better, more integrated eHealth service to the population of the City of Zagreb Reference Site, especially the elderly. They also have the potential to be scaled-up to the national level.

The objective of the twinning is the transfer of knowledge on how to implement and scale-up new eHealth services.

The twinning will allow knowing technical and organisational aspects of *IANUS*, the Galician Electronic Medical History system. The knowledge and best procedures to accomplish the main interests from City of Zagreb and to further develop pilot projects will be transferred. The twinning will allow knowing technical and organisational aspects that facilitates the implementation of a powerful EHR. The best practices of Galicia will be shared, which has an integrated EHR not only accessible for health professionals (Primary care, Secondary care) but also for patients through a secure on-line access.

During twinning actions with (Galicia and Andalusia) 4 areas that could be improved were identified:

- Primary care Patient Inflow Management
- Care for complex patients
- Cross-specialty HCP communication
- Mobile patient portal (m-Health setup)

Pilot projects improving those areas are currently in different stages of completion.

Sessions and workshops in the City of Zagreb Reference Site with important national level stakeholder representatives and Reference Site teams are planned.

Dedicated workshops for education of personnel in eHealth solutions are planned and carried out.

### 10.7.4 Adoption and investment plan

A concrete investment plan is enumerated below:

- Sharing of information and documents from both sides, in order to better know the adopter's side starting point.
- Study visit to Galicia RS with a delegation of City of Zagreb RS for 3 days (27th-30th March) to get to know in-depth aspects of the Galician eHealth Strategy and the *IANUS* System. Special focus will be given to:
  - Patients' online access to EHR, eHealth
  - Incorporation of different levels of care to the single EHR throughout the region,
  - Prescription decision support tools,
  - Overall framework and elements to take into account.
  - The visit will take place at the Regional Ministry of Health, a primary care centre and a hospital, all in the city of Santiago. A complete demonstration of the system working (including the above mentioned points of interest) and interviews with key actors will be included.
- Workshop in City of Zagreb with key actors in the adopting RS and exchange of lessons learned among them
- Low level of technical skills and not seeing the benefits often results in resistance to using new ICT solutions, especially in elderly population. Educational workshops will be organised to overcome those barriers. Currently, forums are organised in some city districts with various topics; innovative solutions and calls to age-adapted workshops could be put on the agenda.
- Sessions explaining the benefits of innovative solutions are planned with various stakeholders and decision makers to mobilise political will to upscale the solutions.
- Evaluation and research methodology for pilot projects is still being discussed.

Milestones:

MS1 - Initial teleconference (February 2017).

MS2 - Study visit (March 2017).

MS3 - City of Zagreb initial development.

Total budget of 28.000€ is planned/spent for this twinning action for 2017.

- 5.000€ are spent for the study visit to Galicia by a delegation of 6 people
- 10.000€ are planned for workshop in City of Zagreb with key actors including expenses for the visit of the Andalusian and Galician RS expert teams to the adopting RS and exchange of lessons learned among RSs following the planned twinning action in October
- 3.000€ are spent for development of new digital solutions (pilot-projects)
- 10.000€ are planned for maintenance costs of pilot-projects for 2017
- For this twinning action funding and resources were provided by Health Centre Zagreb – Centre and MCS Grupa d.o.o.

### 10.7.5 Benefits and outcomes (adopter)

New communication channels between citizens, healthcare providers and health care workers will be opened. Healthcare services for complex patients will be developed based on examples from Galician health services and experiences from EU CIP CareWell project.

Depending on the degree of implementation up to 790.000 citizens could benefit from innovative practices in the City of Zagreb Reference Site. Some solutions could be implemented on the national level.

133.000 citizens of Zagreb are potentially affected by pilot projects resulting from twinning actions. 101 GP teams as well as 13 specialist teams (six cardiologists, four psychiatrists and three neurologists) are able to use new digital solutions.

## 10.7.6 Recommendations

Policy decision makers should open as many available resources (financial, human, media engagement) for implementation of innovative solutions since they show clear benefits for the citizens and health systems.

A more comprehensive legal regulatory frame should be established and introduced on EU level regarding legal issues (ownership of medical data, security of the data, etc.).

## 10.8    Basque – Liguria (Risk Stratification)

### 10.8.1  Twinning overview

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Kronikgune, Basque Country | Regione Liguria | Risk Stratification |

| Innovative Practice Description |
|---|
| The stratification process in the Basque Country (BC) classifies more than two million citizens according to the resources that they will require during the following twelve months. The data comes from Osakidetza (Basque Public Health Service) and the Department of Health, based on the previous use of health resources, demographic, socioeconomic and clinical variables.<br><br>The outcome (dependent variable) generated by the Basque Country Risk Stratification (RS) is the predicted next year healthcare costs (Predicitive Index PI). Then population is classified in four groups according to the presence or not of a chronic disease, 95th percentile of healthcare costs is used and only for chronic population. Two different thresholds are being considered for next year's healthcare expenditure which will involve dividing the population into low- and high-cost patients: 95th and 99th percentiles of healthcare costs. This was used only to assess the effectiveness of the tool, but actually only 95th percentile is used and only for chronic population. The RS is based on predictive modelling using regression techniques and both the calibration and internal validation of the model have been performed using the data (standardised costs of admissions, visits and procedures provided to each patient) recorded in 2008 and 2009 from more than 2 million patients from the Basque Country. Thus, the expected use of health resources, the "output", is a proxy of patient morbidity and severity with different needs of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action. Consequently, Integrated Intervention Programmes for multi-morbid and specific diseases patient groups (e.g. for diabetes, COPD, etc.) have been already deployed with the objective to provide anticipatory care and coordinated care to all patients identified through the risk stratification tool. |

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/population-risk-stratification-deployment-stratification-methods-basque-country_en |

| Innovation Scope: |
|---|
| • Health and care needs assessment toolkit |

| Innovation Type: |
|---|
| • Knowledge exchange & training |

| AHA Action Group: |
|---|
| ✓ B3. Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level |

| Twinning Objectives: |
|---|
| The twinning action aims:<br>• To create the bases for a two-step risk stratification: through the RS tool, identify the population that will use more health resources and within this part of population (mostly old) favour the clinical decision making for the elderly by means of a validated Multidimensional Prognostic Index (MPI),<br>• To implement and disseminate the use of MPI in older people to improve appropriateness and cost-benefit ratio of health interventions in hospitalised older patients (acute/subacute care interventions) and in community-dwelling older people living in nursing-home and at their home. |

| Twinning end result: |
|---|
| The twinning did not yet result in implementation. RS is a comprehensive, systemic and effective practice. It takes more time than the lifetime of this twinning to generate and sustain the technical |

and political consensus that is necessary to finance and adopt the practice. Nevertheless, the hints received were precious, the exchange absolutely fruitful and the process for evaluating the adoption of the practice has indeed started, especially at the level of the regional central health agency.

## 10.8.2 Background on Risk Stratification

**Description**

The stratification process in the Basque Country (BC) classifies more than two million citizens according to the resources that they will require during the following twelve months. The data comes from Osakidetza (Basque Public Health Service) and the Department of Health, based on the previous use of health resources, demographic, socioeconomic and clinical variables.

The outcome (dependent variable) generated by the Basque Country Risk Stratification (RS) is the predicted next year healthcare costs (Predicitive Index PI). Then population is classified in four groups according to the presence or not of a chronic disease, 95th percentile of healthcare costs is used and only for chronic population. Two different thresholds are being considered for next year's healthcare expenditure which will involve dividing the population into low- and high-cost patients: 95th and 99th percentiles of healthcare costs. This was used only to assess the effectiveness of the tool, but actually only 95th percentile is used and only for chronic population. The RS is based on predictive modelling using regression techniques, and both the calibration and internal validation of the model have been performed using the data (standardized costs of admissions, visits and procedures provided to each patient) recorded in 2008 and 2009 from more than 2 million patients from the Basque Country. Thus, the expected use of health resources, the "output", is a proxy of patient morbidity and severity with different needs of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action. Consequently, Integrated Intervention Programmes for multi-morbid and specific diseases patient groups (e.g. for diabetes, COPD, etc.) have been already deployed with the objective to provide anticipatory care and coordinated care to all patients identified through the risk stratification tool.

Within the Basque Country healthcare system, a customized version of the Adjusted Clinical Groups (ACG) Predictive Model is used for risk stratification (RS). The aim of the risk stratification is mainly case finding; RS is deployed to stratify the entire population of the Basque Country being by next year's healthcare cost. Then population is classified in four groups according to the presence or not of a chronic disease, with a special focus on the 95th percentile of chronic population. To stratify by use of healthcare resources allows identifying and selecting target populations that may benefit from specific programs of action. The RS model is based on diagnoses, socio-demographic data, pharmacy data, prior health care utilisation, and socio-economic data. Currently work is being carried out to develop mechanisms to perform a periodic evaluation and optimisation of the RS model, and to improve the tool enabling data collection in a more regular basis.

**Evolution in the originator's region**

Increased life expectancy combined with other factors has produced a progressive growth in the prevalence of chronic diseases and multimorbidity situations, especially in the older population strata. This, along with the increase in healthcare costs and social inequalities in health has fostered the promotion of health, through multisectorial actions and the development of new ways of healthcare management focused to improve the adequacy to health care needs of groups or population. In the Basque Country (2.2M citizens), 20.8% of the population are over 65. The Health and Care expenditure in 2015 was 3.400M€, and it is estimated that 80% was used for chronic patients. It is projected that in 20 years, 26% of the Basque population will be older than 65 years. This epidemiological pattern requires the

improvement of the management of chronic diseases. In this context, in 2010 the Basque Government's Department of Health published a strategy to tackle the challenge of chronicity in the Basque Country, containing a series of policies and projects to reinvent the healthcare delivery model and adapt it to this new situation. In order for interventions to be effective and efficient, they should be implemented among those patients whose care needs match the profile for which they were designed. This fact raises the need to develop a population stratification system based on risk adjustment mechanisms. The implementation and successive deployment of risk stratification in the Basque Country aims to facilitate case finding for appropriate interventions and optimization of healthcare resources, being the predicted next year healthcare costs being the output that is generated. The expected use of health resources (Predicitive Index PI) as "output" allows comparisons between morbidities and patients with very different needs of attention. The main objectives of Risk Stratification Tool are to predict individual healthcare costs and to identify patients who will have a high spending in the next 12 months, using administrative (EMR) data, processed by the Adjusted Clinical Groups Predictive Model (ACG-PM) system and socioeconomic deprivation data for the population (>14 years old) of the Basque Country.

In the Basque Country, three waves of stratification have been performed: 2011-2012, 2013-2014, 2015-2016. The prospective stratification of all the population assigned to Osakidetza was performed for the first time using the John Hopkins ACG-PM. Since October 2015, a customized version of this predictive model has been used. The RS tool is deployed at a regional level where the entire population of patients (approximately two million) is stratified every two years to identify the top 5% high-risk patients for appropriate programmes. Concurrently, the research team performs periodic evaluation and optimisation of the RS model. In that respect, the model is recalibrated (i.e., the parameters of the predictive model are recalculated) and slight changes are introduced in the set of independent variables used as input to the RS model. Those activities are performed during refinement of the stratification strategy and associated programmes in the region. The Risk score is already displayed in Osabide Global, the Electronic Health Record (EHR) from Osakidetza. For that, previously, clinicians have been trained in the use of risk stratification information in patients EHR.

There are not costs data available. Costs depend on availability and quality of existing information systems (the data bases to give detailed information to feed the sources that support the algorithm) and the availability of expert resources to process and analyse the information.

An increase in chronic conditions is currently big challenge to human health and to the sustainability of health systems. Risk adjustment systems may enable population stratification programmes to be developed and become instrumental in implementing new models of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action. The latest available data from 2015-2016 stratification show that the edge marking off the 5% of the population with the highest PI (case management) was established at 4,91 (times the average citizen use of healthcare resources). It includes 65.669 people. The stratum levels for disease management (20% of the chronic population) were between 4,91 and 1,90 IP, including 262.676 people. The self-stratum of disease (75% of chronic population) 985.034 people includes a minor 1,90 PI. The promotion and prevention layer includes the population that has no chronic disease, 962.940 people. The implementation and deployment of a RS model in the Basque Country provided the basis for the design of interventions targeting the identified subpopulation groups. Additionally, the linkage between different data sources not only has increased the predictive performance of the model but also has given rise to other opportunities (e.g. epidemiological research, economic evaluation of programmes, etc.) within the healthcare system of the

Basque Country. Other outcomes are three waves of stratification performed 2011-2012, 2013-2014 and 2015-2016. Several scientific papers already published[49] [50] [51] [52].

A business case is out of the scope for this innovative practice. The main challenge of RS tool is the sensitivity and specificity of the tool and the actual use of the information to recruit patients for the predefined interventions, programs and Integrated Care Pathways. The segmentation in risk groups and the identification of adequate target patients should optimize the uses of resources.

**Barriers and success factors experienced by the originator**

No significant political or organisational barriers have been identified. The implementation and successive deployment of risk stratification in the Basque Country had two main aims: case finding and risk adjustment and capitation. Despite the fact that the RS has already been deployed for case finding purposes, some research activities are currently being performed in order to improve the final outcome of the procedure. The use of RS for risk adjustment and capitation has been investigated but not yet deployed. The RS in the Basque Country uses data retrieved from primary care electronic medical records as well as from hospital and specialist outpatient care databases. More specifically, the RS model is based on the following categories of data used at different levels in the risk generation process: (i) diagnoses (from each contact with primary care, hospital admissions and day hospitals), (ii) socio-demographics (age, sex), (iii) pharmacy data (prescription data from PC-EMR), (iv) prior utilisation obtained directly from PC-EMR, hospital admissions and specialist outpatient care information databases and (v) socio-economic data (census area of residence/deprivation index from MEDEA project). The patients' data confidentiality is ensured via the use of an opaque identifier inside the Basque Country population stratification programme (PREST) database. Clinicians have been trained in the use of risk stratification information in patients the Electronic Health Record (EHR), by means of an educational program.

One of the most important success factors has been the fact that the Risk Stratification tool is totally aligned with the global health strategies approach deployed by Basque Country (BC) to address the challenge of chronicity, ageing and dependency. The Strategy on Chronicity from 2010, The Strategic Guidelines 2013-2016 of the Healthcare service, Osakidetza, and The Health Plan 2020, among others, have reinforced and extended this integrated approach. Multi-morbidity and its effect in patients, families and caregivers requires continuous research and innovation efforts. Search of efficiency and guaranteeing the quality of care provided, are the most important current challenge for policy makers, administrators, clinicians, and researchers in our health system. Moreover, some changes in the Risk Stratification method have been already introduced by means of taking into account the identification of "new" chronic conditions and the existence and availability of new sources of information, including the pharmacy costs (prescribed vs. dispensed drugs) and widening target population to people less than 14 years old. The use of Risk Stratification tool in Basque Country shows that it is a feasible tool, which gives information to help the decision

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[49] Mora J, De Massari D, Pauws S, op den Buijs J, David M, Prieto L, Contel J, Martí T, Bousquet J, de Manuel E3; ASSEHS Study Group. 2015. Selection of the method to appraise and compare health systems using risk stratification: the ASSEHS approach. Aging Clin Exp Res. 2015 Dec;27(6):767-74. doi: 10.1007/s40520-015-04585. Epub 2015 Oct 22

[50] Orueta JF, Nuño-Solinis R, Mateos M, Vergara I, Grandes G, Esnaola S. 2013. Predictive risk modelling in the Spanish population: a cross-sectional study. BMC Health Serv Res. 2013 Jul 9;13:269. doi: 10.1186/1472-696313-269

[51] Orueta JF, García-Ávarez A, García-Goñi iM, Paolucci F, Nuño-Solinís (2014) Prevalence and Costs of Multimorbidity by Deprivation Levels in the Basque Country: A Population Based Study Using Health Administrative Databases. PLoS ONE 9(2): e89787. doi:10.1371/journal.pone.0089787

[52] o Sauto Arce R, De Ormijana AS, Orueta JF, Gagnon MP, Nuño-Solinís R. 2014. A qualitative study on clinicians' perceptions about the implementation of a population risk stratification tool in primary care practice of the Basque health service. BMC Fam Pract. 2014 Sep 8;15:150. doi: 10.1186/1471-2296-15-150

making, which has to be tailored according the decision needs, that the support and participation of managers and clinicians in the deployment is crucial for its success and that the development has to be based on research.

### 10.8.3  Adopter's needs and ambitions

Liguria Region has an ageing index (residents over 65 years old/100 residents below 15 years old) that is twice as high as that of Europe (in 2013 respectively 239.5 and 117.7 – Eurostat datasets EU28) and by January 2017 the inhabitants over 65 years in this region are 28.4% (www.istat.it). This progressive aging of the population implies a dramatic increase in chronic diseases and the need for healthcare. For this reason, proper use of health resources is an urgent problem in terms of equity and economic sustainability. In this respect, the adoption of tools that can predict the consumption of health resources (like Basque Country Risk Stratification) becomes essential for the planning and management of the regional health system. Moreover, the possibility of integrating the Risk Stratification (RS) tool with a validated Multidimensional Prognostic Index (MPI) in older people to improve appropriateness and cost-benefit ratio of health interventions could be another means of streamlining these interventions in the elderly population.

The EC funded "MPI_AGE project-Using Multidimensional Prognostic Indices (MPI-www.mpiage.eu) to improve cost-effectiveness of interventions in multimorbid frail older persons" implemented the MPI in different older populations and settings (Angleman 2015) in order to evaluate if a different individual prognostic profile was associated with a different mortality rate after treatments of specific disorders, i.e. diabetes, coronary disease, atrial fibrillation (Pilotto 2015-2016). The overall results of this multicentre project suggested that with full access to prognostic information derived from CGA-based predictive tools, physicians are better equipped to make clinical decisions that are aligned with their patients' needs in terms of safety and efficacy. Despite clinical recommendations to incorporate patients' prognosis in clinical decisions, recent studies demonstrated that several barriers, as uncertainty in predicting prognosis, may limit the implementation of these recommendations.

The twinning action aims:

- To create the bases for a two-step risk stratification: through the RS tool, identify the population that will use more health resources and within this part of population (mostly old) favour  the clinical decision making for the elderly by means of a validated Multidimensional Prognostic Index (MPI) and
- To implement and disseminate the use of MPI in older people to improve appropriateness and cost-benefit ratio of health interventions in hospitalized older patients (acute/sub acute care interventions) and in community-dwelling older people living in nursing-home and at their home.

### 10.8.4  Adoption and investment plan

The description of the Action Plan for the transfer of the innovative practice:

- Creation of a Working Coordinator Group between the transferring and the adopter organizations (November-December 2016)
- Creation of a local group involving Galliera Hospital and Ligurian Local Health Agency of territorial relevance (November-December 2016)
- Study visit (March 21st 2017)
- Adaptation of the innovative practice (June 2017)
- Promotion of the innovative practice (July 2017)
- Assessment of the innovative practice.

No budget has been spent yet, apart from the men/hours consumed for the explanation and internal knowledge sharing, in the perspective of introducing the RS "concept" into the training programs of Galliera hospital and, later, at the regional level.

Liguria Region included 5 local health agencies with different organizational structures. The recent creation of a single local health regional agency with directing and coordination functions (ALISA, which is part of the workgroup involved in this project) can be an opportunity for change. A plan for progressive sharing and dissemination of the RS tool and MPI throughout the region has already been considered.

The expected outcomes are as follows:

- Implementation of the RS tool in Liguria Region in scheduled times: the integration of the risk stratification tool into the existing framework will be realised in three phases: Galliera Hospital (as a pilot phase – summer 2017) -> Ligurian Local Health Agency of territorial relevance (till June 2018)-> whole Region (31/12/2018).
- Implementation of MPI in Basque Country in a selected elderly population (belonging to the top 5% high-risk patients) to test if MPI further improves the ability to manage the elderly patient with complex health-care needs.

## 10.8.5  Benefits and outcomes (adopter)

Beneficiaries of this action may be the regional healthcare system, for a more rational use of overall health-care resources; the patients, because they can have proactive and personalized interventions and healthcare providers, because they can be facilitated in clinical decisions. Further benefits for the Adopting Country might be reduction of Health-related costs linked to a reduction of inappropriate and/or unnecessary prescription drug use, prevention screening programs, and inappropriate and/or unnecessary hospitalization of elderly people. If successfully implemented, the practice would benefit the overall health system of the region, so potentially the vast majority of the population (especially elderly).

## 10.8.6  Policy recommendations

The most convincing tool would be a sound cost/benefit analysis demonstrating the savings in the short, medium and long terms generated by the adoption of the practice.

## 10.9 Republic of Ireland Regional Network – Metropolitan Area of Porto - Porto4Ageing, Campania, Catalonia (RAPCOG)

### 10.9.1 Twinning overview

| Originator:<br>COLLAGE<br>Ireland | Adopter:<br>Porto4Ageing, Portugal;<br>Region of Campania, Italy;<br>Region of Catalonia, Spain | Innovative Practice:<br>RAPid COmmunity COGnitive screening Programme – RAPCOG |
|---|---|---|
| **Innovative Practice Description** | | |
| This Twinning initiative involved the scaling up, refinement and development of an existing, validated short computerised cognitive application: the Quick Mild Cognitive Impairment (Qmci) screen, which was previously incorporated into a IT solution (smart phone/tablet application) for mobile cognitive screening in the community in a risk pathway called the RAPid COmmunity COGnitive screening Programme – RAPCOG. The emphasis of this twinning exercise was to develop and validate translated versions of this into the adopter site' languages to prepare the ground for the use of electronic screening by healthcare professionals in the community (public health nurses or equivalent and primary care providers). | | |
| **Link to the EIP on AHA Repository of innovative practices:** | | |
| https://ec.europa.eu/eip/ageing/repository/rapid-community-cognitive-screening-programme_en | | |
| **Innovation Scope:** | | |
| ✓ Electronic screening performed by healthcare professionals | | |
| **Innovation Type:** | | |
| ✓ **Stage 3, partial adoption**:<br>This is because the validation process is ongoing. The nature of this project means that six months is insufficient time to see full adoption or acquisition but that the necessary steps towards this are in place. | | |
| **AHA Action Group:** | | |
| ✓ B3. Integrated Care | | |
| **Twinning Objectives:** | | |
| The following objectives with key milestones for the transfer and adoption of the RAPCOG programme in the three EIP on AHA reference sites were agreed and met during the Twinning exercise:<br><br>Objective 1: Plan a kick-off meeting, explain the rationale, baseline data and evidence behind the innovation with a view to developing a protocol.<br><br>Objective 2: Develop a clear protocol with timelines for up scaling the intervention.<br><br>Objective 3: Translate and culturally adapt the instrument into the local languages of the adopter countries.<br><br>Objective 4: Complete the translation step incorporating feed-back from a field trial in the adopter sites with a view to begin the validation of the instruments in clinical practice.<br><br>Objective 5: Validate the translated versions of the Q*mci* screen with a view to incorporating them into an updated version of the Q*mci* screen smart phone / tablet application once validated. | | |
| **Twinning end result:** | | |
| The twinning didn't result in implementation, but the evidence to support its implementation in primary care in adopted sites is being built. | | |

## 10.9.2  Background on the Qmci screening application

**Description**

Diagnosing early cognitive impairment is important but challenging as most short cognitive screens available for use by community healthcare workers are inaccurate (poor sensitivity and specificity) or too resource (especially time) intensive. The prevalence of cognitive impairment is increasing worldwide but particularly in the EU due to an ageing population. The adopter site have an extensive track record in developing short cognitive screens, which have shown to be more reliable and accurate than longer more established versions. The motivation in this case was to develop a more streamlined process to assess older adults in the community (primary care and with public health nurses). Through the EIP on AHA the originator staff had previously worked with the adopter sites which had expressed an interest in using this instrument but were keen to avoid traditional 'pen and paper' assessments. The Campania reference site was involved in the FP7 funded PERSSILAA project with the originator and used the Qmci screen as a valid, reliable and rapid screen for Mild Cognitive Impairment (MCI) and dementia in that project. Given the ageing of the local populations in all three adopter sites (Italy, Spain and Portugal) each recognized the need to rapidly identify patients who may benefit from early intervention with new and emerging pharmacological and non-pharmacological treatments. The originator site as part of a quality improvement process developed a computerised application to reduce paper work, data entry and allow screening to be more accessible and flexible, particularly for use by busy mobile healthcare professionals working in the community. This may represent the future of cognitive screening and all three adopter sites were interested in exploring the potential of this approach in their sites.

**Evolution in the originator's region**

Trainers from the originator site travelled to one of the adopter sites (Barcelona, Catalonia) to provide training to local staff as well as partners from the other two adopter sites. This involved a defined review of existing structures and systems in the originator country, education sessions on the ground in the Catalonian ministry of health as well as workshops with staff. Face-to-face meetings with clinic and community based staff were also conducted. Translation followed by back translation happened prior to the site visits, which identified local and cultural issues with adaption, adoption and implementation (M1). These were discussed and deliberated upon during the face-to-face meeting and a plan (protocol) was accepted to (M2). After this, the originator site continued to support the validation process and provide logistical, statistical and expert clinical support for each site (M3-6). Milestones were set for trialling the translated version and beginning their validation in the adopter sites – a central step in showing that the instrument and IT application are acceptable and accurate for use in the adopter sites. Sampling and trialling in the field then proceeded in these sites (M3-6). A follow-up meeting was scheduled for M4 (interim – progress meeting) and for M6 (end). The final meeting of the three was held in the originator site. Thereafter, the originator will convert the IT application after validation and further advise on the screening process outlined in RAPCOG and trialled in the PERSSILAA and CARTS studies (>M6).

The adopter sites have so far absorbed costs of development. The outcomes of interest included the number of patients screened and subsequently diagnosed with cognitive impairment and the accuracy of the translated and adapted versions in predicting cognitive impairment. The test-retest reliability of the computerised version against a traditional 'pen and paper' version' is also important. Preliminary results are expected towards the end of 2017.

A business case was developed for a computerised version of this application, which included sponsorship from a pharmaceutical company. Without financial support, the final part of the initiative will not be possible. More data on outcomes and on the benefits/risk of

cognitive screening in the community is required before a more formal scaling up of adoption is supported.

**Barriers and success factors experienced by the originator**

The main **barriers** the originators faced in developing a practical solution for the RAPCOG programme related to the lack of organisational structures available to support wide spread community based case-finding in the adopter sites. There are insufficient memory clinics or physicians specialised in diagnosing cognitive impairment in several of these, hence the concept and traditional models in place to support the adaption and ultimate adoption were limited. The development of an IT solution in the form of a computerised application itself made the implementation of RAPCOG locally more practical and arguably more acceptable to busy healthcare professionals. In the adopter countries there are different systems for screening and assessing cognitive impairment, different from the originator site, most notably a lack of geriatricians or specialists in dementia. To develop validated translations, adaptions were required to compensate for a lack of these systems by re-organising primary care services. This was discussed at the first twinning meeting in Feb 2017 (M2) and led to the development and subsequent implementation of the study protocol, which was important to mitigate foreseen barriers.

There were several factors that contributed to the **success** of the Twinning initiative. The main success factor was the history of cooperation and existing collaboration between the Twinning partners from their previous successful involvement in the European Innovation Partnership on Active and Healthy Aging (EIP on AHA) as well as in previous EU funded IT projects such as PERSSILAA. Another was the extensive work conducted and experience available in the originator site in this area that readily allowed modelling and up scaling of previous work. The project is ongoing and at an advanced stage in the adopter site. These data were presented along the operational model in a 'show and tell' style at the twinning initiative kick off meeting (M2) and a problem solving approach was taken throughout the subsequent face-to-face meetings (M4 and M6) to address difficulties encountered by the adopter sites.

## 10.9.3  Adopter's needs and ambitions

The adopters all met through the EIP on AHA engaging with several of the action groups but particularly with A3 on preventing frailty and functional decline. Through this, the adopters became familiar with the RAPCOG good practice, which was part of the suite of good practices developed by Ireland´s reference site for active and healthy ageing under the EIP on AHA, see https://ec.europa.eu/eip/ageing/commitments-tracker/a3/rapid-community-cognitive-screening-programme_en. As health care professionals and researchers are faced with a more challenging case mix and a growing older population with multi-morbidity including often subtle cognitive impairment, there is a need to develop processes (both instruments but especially e-solutions) to save time and money while remaining acceptable (to healthcare professionals and patients), valid and reliable. That RAPCOG develops short cognitive screens that can be translated and adapted for different regions and then easily developed into an existing smart phone and tablet application is innovative and would match well with existing local screening initiatives that are ongoing in the adopter sites.

There is a growing and ageing population in each of the three adopter sites. This has been accompanied by an increased prevalence of cognitive impairment including dementia. Some of this is occult and prodromal, also known as mild cognitive impairment. There is increasing awareness of the need to develop solutions to quickly, accurately and cost effectively identify these patients, particularly in primary care where they usually present and where resources are most limited to investigate. Recently local government authorities in the adopter sites have begun investing more in community services. Primary care is increasingly mobile with case managers visiting patients in their own homes. Having an e-solution, which is portable

to accurately and efficiently case-find suitable patients with cognitive impairment to support the need to manage these or refer on to secondary care is important. RAPCOG will help support primary care health care workers in their decision-making. This will align with each of the adopter sites goals of prevention of functional decline and cognitive frailty, supporting adjustable care needs.

The following objectives with key milestones for the transfer and adoption of the RAPCOG programme in the three EIP on AHA reference sites were agreed and met during the Twinning exercise:

Objective 1: Plan a kick-off meeting, explain the rationale, baseline data and evidence behind the innovation with a view to developing a protocol.

Objective 2: Develop a clear protocol with timelines for up scaling the intervention.

Objective 3: Translate and culturally adapt the instrument into the local languages of the adopter countries.

Objective 4: Complete the translation step incorporating feed-back from a field trial in the adopter sites with a view to begin the validation of the instruments in clinical practice.

Objective 5: Validate the translated versions of the Qmci screen with a view to incorporating them into an updated version of the Qmci screen smart phone / tablet application once validated.

## 10.9.4  Adoption and investment plan

The following milestones to transfer the innovative solution were agreed and largely met during the Twinning exercise characterised by each of the objectives based on the a priori agreed milestones and their timeline in months (M):

Milestone 1: Project kicked off Jan 1 2017 Month (M) 1

Milestone 2: Twinning visit happening Feb 2017 (M2)

Milestone 3: Completion of all translated materials to the three adopter languages M3

Milestone 4: Study site initiation M3

Milestone 5: Follow-up meeting proposed for Porto, Portugal April 2017 to review progress & data collection 2017 End M4 beginning M5

Milestone 6: Final review meeting Cork, Ireland June 2017 M6

Milestone 7: Preliminary data collection and review of preliminary data M7

Outcome 1: The project began officially on Jan 1 2017 Month (M) 1 and a Skype call was instigated.

Outcome 2: The first face-to-face twinning visit took place on the Feb 2017 M2 and a draft protocol was developed. Issues relating to cultural and language barriers were discussed in order to lay the work for the translation process.

Objective 3: Initial translation of materials in the three-adopter languages was planned for the end of M3.

Objective 4: A follow-up meeting took place in Porto in April 2017 (M4) to review progress & data collection with a final review meeting in Cork, Ireland in June 2017 (M6).

Objective 5: Preliminary data collected as part of the project were reviewed and a plan instigated on completing the validation, which is ongoing.

We have designed an evaluation format which will evaluate the degree of success looking at process and outcome variables of selection and procurement of medicines.

To date, the project has cost in addition to the twinning funding provided for transport and accommodation approximately €2,000 in terms of the costs of translation and back translation with professional translators. In kind expenses in terms of time spent on the project are calculated at €10,000 bringing the current cost to almost €17,000.

To date, no other funding streams have been activated though we are currently exploring the potential for sponsorship to update the current version of the IT application once the validation process is complete.

The three adopter sites collectively reported that cultural differences between the countries were a major challenge in translating the instruments in a way that the results would be consistent between sites. Round table discussion through the forum of the twinning support scheme was really valued by all. Face-to-face discussion facilitated these nuanced discussions akin to a mini Delphi consensus panel. In addition, challenges have been encountered with recruiting sufficiently trained staff to validate the instrument in each of the adopter countries resulting in the need to bring in additional staff from other sites. Further, it is expected that additional resources in terms of funding will be required to fully incorporate of the translated versions into the IT application. Sufficient local skill sets have been predominantly clinical and to bring the results of the project to market will require capital investment.

The following outcome measures will be used as the validation of the translated versions and their incorporation into the existing IT solution and RAPCOG pathway is completed:

- Inter-rater reliability,
- Sensitivity and specificity,
- Test-retest reliability,
- Time to complete screening

## 10.9.5 Benefits and outcomes (adopter)

Once fully validated and implemented it is hoped that the new solution will help streamline cognitive screening assessments in the community in each of the adopted sites. This expected to save time, resources and money. It is also expected that it may lead to improved screening (case-finding) pathway with more patients receiving prompt and timely diagnosis of cognitive impairment. Further evidence is required to confirm the benefits of community-based screening but initially it may help improve case-finding. In addition new opportunities have arisen following discussions with other twinning sites linked to the adopters (e.g. Naples, Campania site in Italy is also twinned to a reference site in Croatia in a different twinning initiative. The Croatian site in Zagreb has now agreed to participate in ongoing research in this area by translating and validating the Qmci screen into Croatian (Qmci-Cro):

https://ec.europa.eu/eip/ageing/commitments-tracker/a3/validation-croatian-version-quick-mild-cognitive-impairment-screen-qmci-cro-0_en.

The most important outcome will be reduced time from onset of disease to diagnosis. While there is insufficient information on the benefits/risks of cognitive screening, there is growing support for earlier diagnosis, particularly as the potential for better treatments and risk factor modification are established. Comparison data (i.e. inter-rater reliability, accuracy in terms of sensitivity and specificity) with existing screening instruments will also be obtained. Further, comparisons between the IT solution and the traditional 'pen and paper' versions will be made. Estimates of those likely to benefit:

- Portugal – Lisbon and Porto: 500 patients
- Italy – Naples: 1000 patients
- Spain – Barcelona: 300 patients

Based on the estimates of those likely to benefit, calculated a priori before the twinning initiative began:

- Portugal – Lisbon and Porto: 166/500 patients screened and assessed in the community.

- Italy – Naples: 500/1000 patients

- Spain – Barcelona: 300 patients – translations completed and validated commencing in primary care.

## 10.9.6  Policy recommendations

The primary perceived barriers were cultural and language differences. The role of the EIP on AHA and worthwhile activities such as this twinning initiative should be encouraged and expanded to broaden the cross-cultural exchange.

The costs associated with the digitalisation of clinical solutions needs to be absorbed not only by researchers but also by local, regional, national and EU level organisations. Enhanced funding, even limited bursaries as start up funds for prototypes/very preliminary research projects is required. Large scale funding of the order of the Framework (i.e. H2020) is unrealistic for many prototypes or pilot studies. The assumption that local, regional or national authorities will fund these is false. If anything these are the stages that require EU support - local, regional or national authorities are more likely to back a "proven winner" not start-ups!.

## 10.10 Medical Delta Rotterdam – Campania (Gastrological Approach to Malnutrition)

### 10.10.1 Twinning overview

| Originator: Centre for Gastrology (Frankelandgroep Rotterdam), Medical Delta Rotterdam | Adopter: Azienda Ospedaliera Universitaria Federico II, Campania | Innovative Practice: Gastrological approach to malnutrition |
|---|---|---|
| **Innovative Practice Description** | | |

Gastrological Approach to Malnutrition

According to the vision of the EIP-AHA A3 AG Food & Nutrition, the gastrological approach should be the primary approach to prevent or treat malnutrition in non-frail, pre-frail or frail elderly in all healthcare settings. The focus on the gastrological approach is to carry out ICT supported personalized interventions that take advantage of validated screening, assessment and monitoring tools, recognizing a coherent set of activities aimed at improving food intake in elderly persons. Inter-professional collaborating gastro-teams manage selective taste control and optimize meal contexts. A digital Modular Gastrological Platform (MGP) is built to facilitate these inter-professional efforts. MGP focuses on supporting workflows in the Primary and Secondary Care Level. MGP fits into the idea of integrating nutritional data in the medical/nursing/dietetic records. Authorized professionals have also access to nutritional data in the platform, to satisfy taste and choice of meals of older-adults.

**Link to the EIP on AHA Repository of innovative practices:**

https://ec.europa.eu/eip/ageing/repository/gastrological-approach-malnutrition-0_en

**Innovation Scope:**

• Health and care needs assessment toolkit

**Innovation Type:**

• Knowledge exchange & training

**AHA Action Group:**

✓ A3. Action for prevention of functional decline and frailty

**Twinning Objectives:**

The objectives of the twinning are:

• To share knowledge and experience in the primary nutritional approach to prevent/treat malnutrition in older people/patients in healthcare facilities. The approach provides personalized interventions using validated, ICT supported, tools for nutritional screening, assessment and monitoring, aimed at improving food intake in older adults.
• To enhance Federico II University Hospital ICT platform for prevention of malnutrition.
• To define a business model that can be adapted to the context of the Campania region. The Focus Group on Food and Nutrition of the Campania RS and Centre for Gastrology will work jointly on an implementation plan in order to adopt the good practice.
• To familiarise healthcare professionals, in collaboration with adopters, with utilizing eHealth technology for the primary nutritional approach. Due to University Hospital's experience in training activities to promote the use of ICT among different kind of users, provide training in ICT tools used by the platform will be an specific objective to be developed by Campania to different groups of users: doctors, nutritionists, cooks, nurses and patients.
• To involve patients in personalised health campaigns to increase adherence to the Gastrological Approach to Malnutrition.

**Twinning end result:**

Implementation has not been realised yet.

We should involve a wider number of vocational cooking schools, chefs and private companies providing food. It is important to insert targeted professional figures in a pilot study to facilitate the implementation of the GAM and assess the adoption of the innovative ICT supported model.

In order to overcome barriers in adoption of innovative practice, a new organisational model will be implemented in order to organise the services following the GAM. Furthermore, a demo version of the tool will be implemented to assess the usability from healthcare professionals providing training on the GAM involving chefs and other professionals, in order to finalise the adoption of the innovative model.

## 10.10.2 Background on Gastrological Approach to Malnutrition

**Description**

According to the vision of the EIP-AHA A3 AG Food & Nutrition, the gastrological approach should be the primary approach to prevent or treat malnutrition in non-frail, pre-frail or frail elderly in all healthcare settings. The focus on the gastrological approach is to carry out ICT supported personalized interventions that take advantage of validated screening, assessment and monitoring tools, recognizing a coherent set of activities aimed at improving food intake in elderly persons. Inter-professional collaborating gastro-teams manage selective taste control and optimize meal contexts. A digital Modular Gastrological Platform (MGP) is built to facilitate these inter-professional efforts. MGP focuses on supporting workflows in the Primary and Secondary Care Level. MGP fits into the idea of integrating nutritional data in the medical/nursing/dietetic records. Authorized professionals have also access to nutritional data in the platform, to satisfy taste and choice of meals of older-adults.

**Evolution in the originator's region**

The average life expectancy in Europe is increasing and as a consequence invalidity and the need for care are expected to increase. A greater portion of older people in Europe live in their own residence. Many feel healthy and have the ability to live an active life. Older people prefer to live independently in their own home as long as possible, and try to adapt to their situation and health condition. From this perspective it is important to focus on maintaining good self-perceived health as long as possible. This means promoting health, preventing disease and empowering older adults to take advantage of novel technologies. Risk for malnutrition is often associated with diseases and social factors (Pirlich, 2005) and can lead to consequences like complications associated with diseases and treatment, impaired health and impaired quality of life (Alberda, 2006). The present good practice will address malnutrition sustainably and tailoring the ICT tools to local settings and platforms.

The implementation of the digital MGP implies the linking of Primary SAM to Primary Food Care. The patients and their relatives are the key stakeholders have to deliver basic data to the digital MGP on food and nutrition, like body weight and height, food preferences and dislikes. Therefore, the gastrological approach should be implemented in the kitchens of healthcare institutions and catering companies. This includes education of kitchen staff, patients and relatives on the use of the digital MGP, in particular patient authorized data acquisition and the use of the recipe module. This should be combined with the practice of cooking processes like taste steering and selective taste steering. In this way all patients might benefit from the right to healthy, delicious meals. Medical staff, nurses and nurse aids on the other hand should be educated on the use of the digital MGP, in particular on data acquisition and the use of recommended screening tools.

For this reason the first twinning meeting has been hold in Naples/Rome next March 15-16th and consisted of two parts:

- A training session on Gastrological Approach to Malnutrition which includes three main aspects: theoretical, practical (in the kitchen) and IT.

A dissemination event for the promotion and sharing of good practice with targeted stakeholders at regional and national level.

There is no evaluation data available yet. A business case for sustainability or scaling up of adoption has been made.

**Barriers and success factors experienced by the originator**

A major barrier was the lack of financial resources.

The EPC-based results from two studies that were set up in Bruges and in the Netherlands/Flanders are among the success factors.

## 10.10.3 Adopter's needs and ambitions

Malnutrition is a very important determinant of "frailty" in older adults, a term that is widely used to identify those who are at high risk of adverse health outcomes (including falls), becoming dependent, suffering from co-morbid illness, undergoing admissions to institution and increased mortality rates. Unintended weight loss, exhaustion, weakness and slow walking speed may all reflect a correlation with nutritional status or malnutrition. Other indicators of frailty, such as presence of chronic diseases, are also linked to nutrition.

Tackling nutritional gaps plays a pivotal role in preventive medicine, and in health promotion. Healthy and active ageing is meant to help individuals and society to develop and maintain physical, mental, and socioeconomic wellbeing, allowing them to remain productive and independent as they age. As Food and Nutrition is one of the strategic assets of the Campania region, the gastrological approach to active and healthy living brings the potential for economic development, conjugating innovation, cultural heritage and loco-regional resources.

The objectives of the twinning are:

- To share knowledge and experience in the primary nutritional approach to prevent/treat malnutrition in older people/patients in healthcare facilities. The approach provides personalized interventions using validated, ICT supported, tools for nutritional screening, assessment and monitoring, aimed at improving food intake in older adults.
- To enhance Federico II University Hospital ICT platform for prevention of malnutrition.
- To define a business model that can be adapted to the context of the Campania region. The Focus Group on Food and Nutrition of the Campania RS and Centre for Gastrology will work jointly on an implementation plan in order to adopt the good practice.
- To familiarise healthcare professionals, in collaboration with adopters, with utilizing eHealth technology for the primary nutritional approach. Due to University Hospital's experience in training activities to promote the use of ICT among different kind of users, provide training in ICT tools used by the platform will be an specific objective to be developed by Campania to different groups of users: doctors, nutritionists, cooks, nurses and patients.
- To involve patients in personalised health campaigns to increase adherence to the Gastrological Approach to Malnutrition.

## 10.10.4 Adoption and investment plan

1. Twinning Meeting March 15-16th 2017 in Naples and Rome:

The meetings proved pivotal to design a number of activities "on the ground" in order to implement the transferring of the Centre for Gastrology's Good Practice to Campania setting.

The involvement of the policy makers ensured the commitment of Campania Region in establishing a formal agreement with Rotterdam, to be perfected as soon as possible. The involvement of key-stakeholders along the food chain ensures adequate implementation, training and scale-up. Part of this was the collaboration between Rotterdam and Campania under an international ESF program project.

2. April 2017-June 2017: GAM Training

During this period, the Federico II University Hospital, in accordance with the plan, defined a training program for young chefs, according to emerging needs shared during the twinning meetings. These activities are the core of the project proposal, under ESF – Transnational program, which has positively passed the evaluation. In addition, webinars and telematic meetings continued with the Centre for Gastrology. Federico II University Hospital, in collaboration with Campania Region, established a working group that involved professionals, several municipalities and decision makers in order to adopt the guidelines from gastrological approach for managing public canteens (schools and public institutions).

3. July 2017-October 2017: Experimentation

During this phase, the ICT tools used in Rotterdam will be tested in Federico II University Hospital, in order to assess the process and functionalities implemented. During this period a demo version of the tool will be adopted by the hospital, in order to assess the perceived "ease of use" and "usefulness" from the patients and professionals. The results of the pilot study will be disseminated during targeted stakeholders meeting.

4. Nov 2017-May 2018: Implementation

During this period, the new defined functionalities in ICT applications and tools will be implemented. The tool will be scaled-up to all regions.

5. May 2018-Dec 2018: Adoption

Within this last phase, the tested models, tools and algorithms will be used by care professionals and patients.

The European Social Fund (ESF) – Transnational program project was enacted to enhance knowledge and skills of professionals, caregivers and chefs to improve GAM in healthcare.

Contribution from ESF: 180.000€

Contribution from VCF: 120.000€

The main barrier identified to the adoption of the model in Campania is the need for a strong involvement of chefs, vocational schools and private companies providing food.

The second barrier identified is the lack of human resources with skills in the field of ICT & Active Ageing in the Campania region.

The success of the implementation of the digital solution/innovative practice will be measured by the following indicators:

- Number of professionals in the adopter region's hospital using the solution before the end of 2018. (Objective: 10)
- Number of hospitals or health centres starting the adoption of ICT tools for Gastrological Approach to Malnutrition before 2019. (Objective 2).
- Number of events: dissemination event of the implementation of Gastrological Approach to Malnutrition in the adopter country as a showcase for using eHealth to prevent malnutrition, before 2019. (Objective: 1).

## 10.10.5 Benefits and outcomes (adopter)

- Identification of emerging training needs for new professional figures (post-graduate training for chefs),
- Identification of emerging training needs for professionals (multidisciplinary training),
- New job opportunities to contribute to sustainable improvement of health outcomes,
- Valorisation of local food chains in terms of healthy diets,

  Outcomes are as follows:
- Integration of the ICT supported food record with hospital record,
- Interoperability with GPs record,
- Empowerment of patients and relatives on primary culinary interventions.

## 10.10.6 Recommendations

As the main barrier identified to adopt the practice is the need for a strong involvement of chefs, vocational schools and private companies providing food, Campania Regional Focus Group on Food and Nutrition will involve the targeted stakeholders.

In order to ensure the availability of human resources with skills in the field of ICT & Active Ageing, training programmes should be promoted in the regions.

## 10.11   Basque – Nouvelle Aquitaine (Risk Stratification)

## 10.11.1 Twinning overview

| Originator: Kronikgune and Osakidetza, Basque Country | Adopter: Région Nouvelle-Aquitaine, Nouvelle-Aquitaine | Innovative Practice: Risk Stratification |
|---|---|---|
| **Innovative Practice Description** | | |

The stratification process in the Basque Country (BC) classifies more than two million citizens according to the resources that they will require during the following twelve months. The data comes from Osakidetza (Basque Public Health Service) and the Department of Health, based on the previous use of health resources, demographic, socioeconomic and clinical variables.

The outcome (dependent variable) generated by the Basque Country Risk Stratification (RS) is the predicted next year healthcare costs (Predictive Index PI). Then population is classified in four groups according to the presence or not of a chronic disease, 95th percentile of healthcare costs is used and only for chronic population. Two different thresholds are being considered for next year's healthcare expenditure which will involve dividing the population into low- and high-cost patients: 95th and 99th percentiles of healthcare costs. This was used only to assess the effectiveness of the tool, but actually only 95th percentile is used and only for chronic population. The RS is based on predictive modelling using regression techniques, and both the calibration and internal validation of the model have been performed using the data (standardized costs of admissions, visits and procedures provided to each patient) recorded in 2008 and 2009 from more than 2 million patients from the Basque Country.

Thus, the expected use of health resources, the "output", is a proxy of patient morbidity and severity with different needs of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action. Consequently, Integrated Intervention Programmes for multi-morbid and specific diseases patient groups (e.g. for diabetes, COPD, etc.) have been already deployed with the objective to provide anticipatory care and coordinated care to all patients identified through the risk stratification tool.

| **Link to the EIP on AHA Repository of innovative practices:** |
|---|

https://ec.europa.eu/eip/ageing/repository/population-risk-stratification-deployment-stratification-methods-basque-country_en

| **Innovation Scope:** |
|---|

✓   Health and care needs assessment toolkit

| **Innovation Type:** |
|---|

✓   Knowledge exchange & training (through the exchange and field visit)
✓   Adaptation (through the field visit, which allowed a deeper understanding of the innovation)

| **AHA Action Group:** |
|---|

✓   A3. Action for prevention of functional decline and frailty

| **Twinning Objectives:** |
|---|

The overall shared objective is to enhance implementation of innovation strategies on integrated health care within Nouvelle-Aquitaine and Basque Country. One of these innovations could be the RS tool as a predictive tool for the management of chronic conditions: the visit has allowed delegates and experts to have a deeper exchange with RS experts in order to strengthen their own programs and build expertise.

Collaboration in the research field in order to gather expertise and competences before starting a phase of transfer/adoption of the good practice has also been considered possible.

| **Twinning end result:** |
|---|

The twinning did not yet result in the implementation of the innovative practice due to certain barriers

(*e.g.* differences in how to access the system through primary care centres, differences in medical cost coverage). Alternative solutions are going to be considered.

## 10.11.2 Background on Risk Stratification

**Description**

The stratification process in the Basque Country (BC) classifies more than two million citizens according to the resources that they will require during the following twelve months. The data comes from Osakidetza (Basque Public Health Service) and the Department of Health, based on the previous use of health resources, demographic, socioeconomic and clinical variables.

The outcome (dependent variable) generated by the Basque Country Risk Stratification (RS) is the predicted next year healthcare costs (Predictive Index PI). Then population is classified in four groups according to the presence or not of a chronic disease, 95th percentile of healthcare costs is used and only for chronic population. Two different thresholds are being considered for next year's healthcare expenditure which will involve dividing the population into low- and high-cost patients: 95th and 99th percentiles of healthcare costs. This was used only to assess the effectiveness of the tool, but actually only 95th percentile is used and only for chronic population. The RS is based on predictive modelling using regression techniques, and both the calibration and internal validation of the model have been performed using the data (standardized costs of admissions, visits and procedures provided to each patient) recorded in 2008 and 2009 from more than 2 million patients from the Basque Country.

Thus, the expected use of health resources, the "output", is a proxy of patient morbidity and severity with different needs of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action. Consequently, Integrated Intervention Programmes for multi-morbid and specific diseases patient groups (e.g. for diabetes, COPD, etc.) have been already deployed with the objective to provide anticipatory care and coordinated care to all patients identified through the risk stratification tool.

**Evolution in the originator's region**

Increased life expectancy combined with other factors has produced a progressive growth in the prevalence of chronic diseases and multi-morbidity situations, especially in the older population strata. This, along with the increase in healthcare costs and social inequalities in health has fostered the promotion of health, through multi-sectorial actions and the development of new ways of healthcare management focused on improving the adequacy of the health care needs of the population.

In the Basque Country (2.2 million inhabitants), 20.8% of the population are over 65. The Health and Care expenditure in 2015 was EUR 3,400M, and it is estimated that 80% was spent for chronic patients. It is projected that in 20 years, 26% of the Basque population will be older than 65 years. This epidemiological pattern requires the improvement of the management of chronic diseases.

In this context, in 2010 the Basque Government's Department of Health published a Strategy to tackle the challenge of Chronicity in the Basque Country, containing a series of policies and projects to reinvent the healthcare delivery model and adapt it to this new situation. In order for interventions to be effective and efficient, they should be implemented among those patients whose care needs match the profile for which they were designed. This fact raises the need to develop a population stratification system based on risk adjustment mechanisms.

The implementation and successive deployment of risk stratification in the Basque Country aims to facilitate case-finding for appropriate interventions and optimisation of healthcare resources.

The expected use of health resources (Predictive Index - PI), would allow comparisons between morbidities and patients with very different attentive needs. The main objectives of the Risk Stratification Tool are to predict individual healthcare costs and to identify patients who will have high expenses in the next 12 months, using administrative (EMR) data that is processed by the Adjusted Clinical Groups Predictive Model (ACG-PM) system as well as the socioeconomic deprivation data for the population (>14 years old) of the Basque Country.

In the Basque Country, three waves of stratification have been performed: in 2011 – 2012, 2013 – 2014, and in 2015 – 2016. The prospective stratification of the whole population assigned to *Osakidetza* was performed for the first time using the John Hopkins ACG-PM. Since October 2015, a customized version of this predictive model has been used.

The RS tool is deployed at a regional level where the entire population of patients (approximately 2 million) is stratified every two years to identify the top 5% high-risk patients for appropriate programmes. Concurrently, the research team performs periodic evaluation and optimisation of the RS model. In that respect, the model is recalibrated (*i.e.* the parameters of the predictive model are recalculated) and slight changes are introduced in the set of independent variables used as input to the RS model. Those activities are performed during refinement of the stratification strategy and associated programmes in the region.

The Risk Score is already displayed in *Osabide Global*, the Electronic Health Record (EHR) under *Osakidetza*. For that, previously, clinicians have been trained in the use of risk stratification information in patients EHR.

There are currently no cost data available. Costs depend on availability and quality of existing information systems (the databases to give detailed information to feed the sources that support the algorithm) and the availability of expert resources to process and analyse the information.

Outcomes include the following:

- An increase in chronic conditions is currently a big challenge to human health and to the sustainability of the health systems. Risk adjustment systems may enable population stratification programmes to be developed and become instrumental in implementing new models of care. The aim of stratifying is to identify and select target groups that may benefit from specific programmes of action.
- The latest available data from 2015 – 2016 stratification show that the edge marking off the 5% of the population with the highest PI (case management) was established at 4.91. This includes 65,669 people. The stratum boundaries for disease management (20% of the chronic population) were between 4.91 (multiplied by the average number of citizen use of healthcare resources) and 1.90 PI, including 262,676 people. The self-management stratum of disease (75% of the chronic population) includes 985,034 people that are under 1.90 PI. The promotion and prevention layer includes the population that has no chronic disease (962,940 people).
- The implementation and deployment of an RS model in the Basque Country provided the basis for the design of interventions targeting the identified subpopulation. Additionally, the linkage between different data sources not only has increased the predictive performance of the model but also has given rise to other opportunities (*e.g.* epidemiological research, economic evaluation of programmes, etc.) within the healthcare system of the Basque Country.

Other outcomes are:

- The three waves of stratification performed: in 2011 – 2012, 2013 – 2014, and in 2015 – 2016.
- Several scientific papers have already been published:

- Mora J, De Massari D, Pauws S, op den Buijs J, David M, Prieto L, Contel J, Martí T, Bousquet J, de Manuel E3; ASSEHS Study Group. 2015. Selection of the method to appraise and compare health systems using risk stratification: the ASSEHS approach. Aging Clin Exp Res. 2015 Dec;27(6):767-74. doi: 10.1007/s40520-015-0458-5. Epub 2015 Oct 22.
- Orueta JF, Nuño-Solinis R, Mateos M, Vergara I, Grandes G, Esnaola S. 2013. Predictive risk modelling in the Spanish population: a cross-sectional study. BMC Health Serv Res. 2013 Jul 9;13:269. doi: 10.1186/1472-6963-13-269.
- Orueta JF, García-Álvarez A, García-Goñi iM, Paolucci F, Nuño-Solinís (2014) Prevalence and Costs of Multimorbidity by Deprivation Levels in the Basque Country: A Population Based Study Using Health Administrative Databases. PLoS ONE 9(2): e89787. doi:10.1371/journal.pone.0089787
- Sauto Arce R, De Ormijana AS, Orueta JF, Gagnon MP, Nuño-Solinís R. 2014. A qualitative study on clinicians' perceptions about the implementation of a population risk stratification tool in primary care practice of the Basque health service. BMC Fam Pract. 2014 Sep 8;15:150. doi: 10.1186/1471-2296-15-150.

A business case is out for the scope of this innovative practice. The main challenge of the RS tool is working on the sensitivity and specificity of the tool as well as on the actual use of the information required to recruit patients for the predefined interventions, programs, and Integrated Care Pathways. The segmentation in risk groups and the identification of adequate target patients should optimise resource use.

**Barriers and success factors experienced by the originator**

No significant political or organizational barriers have been identified. The implementation and successive deployment of risk stratification in the Basque Country had two main aims: case-finding and risk adjustment and capitation payment. Despite the fact that the RS has already been deployed for case-finding purposes, some research activities are currently being performed in order to improve the final outcome of the procedure. The use of RS for risk adjustment and capitation payment has been investigated but not yet fully deployed.

The RS in the Basque Country uses data retrieved from primary care electronic medical records as well as from hospital and specialist outpatient care databases. More specifically, the RS model is based on the following categories of data used at different levels in the risk generation process: (i) diagnoses (from each contact with primary care, hospital admissions and day hospitals), (ii) socio-demographics (age, sex), (iii) pharmacy data (prescription data from PC-EMR), (iv) prior utilization obtained directly from PC-EMR, hospital admissions and specialist outpatient care information databases and (v) socio-economic data (census area of residence/deprivation index from MEDEA project). The patients' data confidentiality is ensured via the use of an opaque identifier inside the Basque Country population stratification programme (PREST) database.

Clinicians have been trained in the use of risk stratification information in patients the Electronic Health Record (EHR), by means of an educational program.

One of the most important success factors has been the fact that the Risk Stratification tool is totally aligned with the global health strategies approach deployed by the Basque Country (BC) to address the challenge of chronicity, ageing and dependency. The Strategy on Chronicity from 2010, The Strategic Guidelines 2013 – 2016 of the Healthcare service, *Osakidetza* and The Health Plan 2020, among others, have reinforced and extended this integrated approach. Multi-morbidity and its effect in patients, families and caregivers require continuous research and innovation efforts. Search of efficiency and guaranteeing the quality of care providers are the most important current challenge for policy makers, administrators, clinicians, and researchers in our health system.

Moreover, some changes in the Risk Stratification method have been already introduced by means of taking into account the identification of "new" chronic conditions and the existence and availability of new sources of information, including the pharmacy costs (prescribed *vs* dispensed drugs) and widening target population to people less than 14 years old.

The use of Risk Stratification tool in Basque Country has proven that it is a feasible tool, which gives information that helps in the decision-making, which has to be tailored according the decision needs, and in which the support and participation of managers and clinicians in the deployment is crucial for its success. It has also been identified that the tool development would need to be based on research.

## 10.11.3 Adopter's needs and ambitions

Both Regions Nouvelle-Aquitaine and Basque Country have had several exchanges in the framework of the EuroRegion within which they have identified two main thematic fields for further/deeper exchanges: chronic diseases and their effects on older population. The "Risk stratification tool" developed by the Basque Country has seemed to be a possible answer to these common challenges: a means to identify people at risk of frailty and a tool that will allow coordinated interventions. Nouvelle-Aquitaine has been taking advantage of the expertise gained from the Basque Country on the new conceptual framework of the Chronic Care Model within which "the individuals and their environment, their health and their needs have become the central focus of the System at the expense of merely ttreating the illness."

Nouvelle-Aquitaine identified that the system could be further experimented within the framework of the project "Digital Healthcare Territory", in order to promote the emergence of leading/innovative territories in the field of e-health in order to better address the needs of the population.

Nouvelle-Aquitaine has taken into account the 1.6 million people aged 60+, or roughly 4% of population. As a matter of fact ageing comes with an epidemiological change in population that means increased chronic diseases and loss of autonomy for people. As the elderly represents an important percentage of the actual population, policy and decision makers have to think about new ways to address this population needs with multiple chronic conditions.

Health regional policies are trying to tackle this challenge and the Regional Plan for Health identifies chronic diseases, pathologies related to age and loss of autonomy as priorities that need to be taken in consideration by specific programs. In a general manner, the objective is to stimulate and coordinate the development of adapted pathways of care and support for the elderly and chronic patients in order to improve the quality and efficiency of services provided through an improved follow-up of patients, their therapeutic education, and the coordination of care provided in ambulatory, hospital and long-term care settings.

Concerning chronic disease management, three main objectives have been defined: insuring a continuum of care and a better coordination between professionals from social and health care sector; facilitating information exchange among professionals; and improving risks prevention, in particular, for risks related to drug prescriptions and interactions.

There are two relevant ongoing pilots within the regional territory:

- "Paerpa": a national experimental program that intends to improve care pathways (health, medical-social and social care) for people aged 75+. This program mainly focuses on the introduction of organisational and technological innovation aimed at implementing an integrated model of care for the elderly.
- "Santé Landes": a program more focused on chronic patients, in which the main objective is to improve the follow up of chronic patients at home delivering more qualitative services. It is a pilot based on the deployment of ICT devices in order to facilitate and smoothen the coordination involved.

As shown by the described experiences, the context and the environment of the adopter is able to favourably welcome the RS tool approach proposed by the Basque Country as an added value to ongoing programs and actions. The RS tool could help standardise the process and have a broader impact on professionals' practices.

Concerning budget and investment plans, an amount of 3M Euros is foreseen to support companies in the establishment of concept proofs or for the scaling of digital solutions/innovations in Nouvelle-Aquitaine.

The overall shared objective is to enhance implementation of innovation strategies on integrated health care within Nouvelle-Aquitaine and Basque Country. One of these innovations could be the RS tool as a predictive tool for the management of chronic conditions: the visit has allowed delegates and experts to have a deeper exchange with RS experts in order to strengthen their own programs and build expertise.

Collaboration in the research field in order to gather expertise and competences before starting a phase of transfer/adoption of the good practice has also been considered possible.

## 10.11.4 Adoption and investment plan

The field visit took place at the end of May 2017 and a visit report has been written. Two points have been identified for transfer:

- data collection
- methodology

A meeting of the transfer team (involving Regional Council, University, Bordeaux and Limoges Hospitals from Nouvelle Aquitaine and Basque Health Department and Osakidetza from Basque Country) is foreseen in late October in order to establish an action plan that will consider an analysis of the feasibility of population risk stratification in Nouvelle-Aquitaine. The main result of that meeting will be a first draft of the action plan including a timetable and set of milestones, in order to enable the transfer of the innovative practice from the Basque Country to Nouvelle-Aquitaine.  Further meetings will take place in order to realise the actions of the plan according to the progress of the tasks carried out, monitor the activities performed, and identify risks and contingency plans if needed.

As of now, no additional funds have been committed to the adoption of the innovative practice in Nouvelle-Aquitaine. It is so far impossible to make a more precise estimation as a very big transformation of the adopter's health system would be needed. Financing through the EuroRegion and its annual call for projects is currently being considered.

The main barriers identified so far include differences in:

- the access to the system through the primary care centres
- medical cost coverage

Even if the field visit allowed a deeper understanding of the innovation, expertise from other fields of competences will be needed in order to establish the possible solutions to overcome these difficulties. This will be achieved within the following months by submitting the elements to the expert team that was not complete at the time of the visit.

As the healthcare systems of the Basque Country and the Nouvelle-Aquitaine region are very different, this twinning action aims to evaluate the possibility of a transfer. This evaluation is carried out by Public Health Research Laboratories.

The result of the twining action includes a series of indicators estimating the ability of Nouvelle-Aquitaine to carry out an implementation of this kind of Risk Stratification at an infra-regional or regional level.

## 10.11.5 Benefits and outcomes (adopter)

Further activities are needed to be able to concretise the benefits and opportunities. Although there has not been enough time to explore further, it is expected that the RS would lead to a significant change in the Nouvelle-Aquitaine health system (and to the national one): to transform a liberal health system into a more integrated one. The tool could also benefit a wide spectrum of stakeholders: (i) the regional healthcare system, due to a better use of resources, (ii) the patients, as they can have personalised interventions and (iii) the healthcare providers, since the tool can support them in clinical decisions.

The adoption of this solution would theoretically benefit the whole Nouvelle-Aquitaine population (almost 6 million people). But at this time this solution is very focused on hospital scenarios.

The adoption would mean a complete reorganisation of the health system. More reasonably, in a preliminary phase, an implementation at a local level within a pilot that can involve 100 000 patients could be expected.

## 10.11.6 Recommendations

- Longer timeline for the implementation of the twinning activities defined.
- Longer time for analysing the results; as the timeline for implementing the activities is short, it is impossible to get any mid-term result.
- "Manage the expectations" – Recognize that the implementation of RS is a long-term commitment and therefore it is difficult to demonstrate / report on the impact of the twinning activity in the timeline defined.
- More flexibility in managing the budget according to needs.

## 10.12 Andalusia – Zagreb (Diraya)

### 10.12.1 Twinning overview

| Originator:<br>Regional Ministry of Health of Andalusia, Andalusia | Adopter:<br>Health centre Zagreb – Centar, City of Zagreb | Innovative Practice:<br>Diraya |
|---|---|---|
| **Innovative Practice Description** | | |

The Andalusian Public Healthcare System has adopted corporate information systems, accessible to all health professionals, as a strategy to cater for citizens' mobility and the participation of many multidisciplinary teams of professionals involved in healthcare processes. The AeHS (Diraya) helps health professionals in their daily work, integrating all health information for each patient in one single electronic health record, available when and where needed within the Andalusian Public healthcare network, at all levels of care: primary healthcare, outpatient specialised care, emergencies and inpatient care. Community pharmacies (private offices) also access the medication record for dispensing the e-prescribed drugs. Reduction of administrative tasks has contributed to its use. Diraya facilitates patients' care continuity and enables access to all healthcare services available. Of interest are the ePrescription/eDispensation module, as well as the eLab and the eX-ray ones. Patients also benefit from the AeHS, thanks to the use of the centralised appointment/booking system, the use of electronic prescription (Receta XXI), avoiding unnecessary visits to the health centre just to ask for repeated medication (of special interest for long term conditions), as well as personal access to their healthcare information through ClicSalud. Different health apps are being connected to the system.

**Link to the EIP on AHA Repository of innovative practices:**

https://ec.europa.eu/eip/ageing/repository/andalusian-ehealth-strategy-system-diraya_en

**Innovation Scope:**

- Regional/national EHR systems and summaries
- Care provider EHR systems integration (joined-up/shared records)
- Regional ePrescription system
- Online access to EHR

**Innovation Type:**

- **Knowledge exchange and training**

City of Zagreb Reference Site engaged in two complementary twinning actions with Andalusia and Galicia Reference Sites. Study visits to originating Reference sites were organized. Twinning action provided insights into Andalusian health system organisational details, technical aspects of electronic Health Record, health-related digital solutions and Diraya system. Study visit reports were sent to important stakeholders/decision makers in Croatian health system and workshops with experts from Andalusia RS are planned to facilitate implementation/scaling-up of innovative digital solutions.

- **Partial adoption**

Exchanged knowledge and experience from both Andalusian and Galician Reference Sites fostered development of pilot projects using innovative digital solutions. Brief description of the existing patient portal *Zdravlje.Net* and pilot-projects that resulted from twinning actions is provided below.

*Zdravlje.Net* is a secure web application that enables patient - GP communication in real time. It features prescription requests, message exchange, booking appointments and delivery of specialist's findings or lab results.

The communication itself is effortless for both, but especially for the GP office – no additional administration is needed aside regular work within the GP's application for primary healthcare. Both patient and GP receive instant notifications about new messages or content from the opposite party.

The GP initially defines the feature permissions for his patient and which medicine is available for therapy renewal (therapies for chronic illnesses for example). Afterwards, content for the enabled

features is added or removed by one click by the GPs in their own application.

The patients receive feedback about their prescription requests automatically when the GP accepts or refuses the request. Messages and appointment reasons from the patient are categorised and displayed to the GP. All communication and request history by the patient is visible and stored within the patient's health record.

*Zdravlje.Net* benefits both patient and doctor: fewer unnecessary visits or calls to the GP, no crowded waiting rooms or busy communication channels, better care for patients with chronic diseases, etc.

Project "Dnevnik Zdravlja" (*Health Diary*) is an upgrade on the existing web application *Zdravlje.Net.*

Health Diary is a new module consisting of three sections: Weight, Blood pressure/Heart rate and Glucose.

Patients using the Health Diary can input their vital signs (blood pressure, heart rate), glucose levels (with defined intake moments – on an empty stomach, before meal, after meal), height/weight values and waist width. Useful information is displayed to the patient based on the input data (warnings for elevated/low values, BMI, etc.).

The measurement data is momentarily available in the GPs application (within the patient's health record).

With the project "Dnevnik Zdravlja" (*Health Diary*) GPs can track their patients' health on a daily basis and react immediately if the values are concerning (call the patient in for a checkup, refer him to a specialist) or even use it as a prevention tool to engage a "healthy" patient to keep track of his own health and quality of life.

Project "Obavijesti za pacijente" (*Patient group messaging*) is also an upgrade on the existing web application *Zdravlje.Net* - it enables the GP to send a message to a group of his patients. The GP uses his primary healthcare application where he can define patient groups he wants to send the message to. The selection criteria are multi choice – meaning GPs can select one or more criteria to filter out patients. The criteria include: male, female, age group (from-to range) and chronic illnesses (one or more). *Zdravlje.Net* users (patients) are filtered according to the set criteria and the GP can easily send out a message to all targeted patients (e.g. remind older chronic patients about the yearly flu immunisation). Patients receive a notification about new messages in the system and the message is visible in their *Zdravlje.Net* inbox.

Project "Komunikacija PZZ-SKZZ" provides easy eConsultations for GPs with specialists (cardiologists, psychiatrists, etc.) via two-way communication between both, starting with an eConsultation request from the GP.

The goal of eConsultation requests is to gather specialist feedback about the patient's condition without sending the patient in person to the specialist. The specialist can then advise the GP about further steps based on the patient's condition.

The GP sends a structured eConsultation requests towards a specific field of medicine, healthcare institution or directly to a specified specialist. The request is generated within the GPs primary healthcare application using the patient's health record. The GP selects all patient data he deems important and adds it to the request. He can also request an expedited review of the request because of some medical urgency.

The request is visible within the new web application for GPs, *Zdravlje.Net* PRO. The specialist can then accept or decline requests (with explanation why it was declined). All data sent from the GP is visible to the specialist. The specialist or GP can also request or provide additional information, if needed, about the patient over a messaging service connected to the request. Upon reviewing all information the specialist can send out his findings/results.

| AHA Action Group: |
| --- |

- ✓ B3. Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level

| Twinning Objectives: |
| --- |

An eHealth Strategy implementation at all levels of care is a complex experience requiring the contribution of different stakeholders. Andalusia RS has a vast experience on the definition, appropriation, maintenance, sustainability and scaling-up of its eHealth Strategy. The knowledge and best procedures to accomplish the main interests from City of Zagreb will be transferred. Particularly, all the elements needed in the full deployment of the Diraya system will be shared as well as the

technological aspect of it.

The system is supported technologically by the Andalusian Healthcare Service (SAS).

The overall information of the strategy and technical requirements are systematised and ready to be transferred. Transfer time would depend on the recipient's departure status in terms of information systems already implemented and degree of integration among them.

The objective of the twinning is the transfer of knowledge on how to implement and scale-up new eHealth services. After the study visit of delegation from City of Zagreb Reference Site to Seville, 4 areas that could be improved using Diraya-inspired innovative solutions were identified:

1. Primary care Patient Inflow Management
2. Care for complex patients
3. Cross-specialty HCP communication
4. Primary care appointment mobile application (mHealth setup)

Pilot projects improving those areas are currently being planned.

Initially, sessions and workshops in the City of Zagreb Reference Site with important national level stakeholder representatives and Reference Site teams were planned. This session has been postponed due to recent changes in Andalusia Reference Site and difficulties in the local agendas.

Dedicated workshops for education of personnel in eHealth solutions are planned.

**Twinning end result:**

Twinning resulted in pilot-projects/innovative practices implementation that can affect population covered by Health Centre Zagreb – Centar (133.000 citizens). If proven successful innovative practices are ready to be scaled-up regionally (790.000 citizens) and nationally.

## 10.12.2 Background on Diraya

### Description

The Andalusian Public Healthcare System has adopted corporate information systems, accessible to all health professionals, as a strategy to cater for citizens' mobility and the participation of many multidisciplinary teams of professionals involved in healthcare processes. The AeHS (Diraya) helps health professionals in their daily work, integrating all health information for each patient in one single electronic health record, available when and where needed within the Andalusian Public healthcare network, at all levels of care: primary healthcare, outpatient specialised care, emergencies and inpatient care. Community pharmacies (private offices) also access the medication record for dispensing the e-prescribed drugs. Reduction of administrative tasks has contributed to its use. Diraya facilitates patients' care continuity and enables access to all healthcare services available. Of interest are the ePrescription/eDispensation module, as well as the eLab and the eX-ray ones. Patients also benefit from the AeHS, thanks to the use of the centralised appointment/booking system, the use of electronic prescription (Receta XXI), avoiding unnecessary visits to the health centre just to ask for repeated medication (of special interest for long term conditions), as well as personal access to their healthcare information through ClicSalud. Different health apps are being connected to the system.

### Evolution in the originator's region

Several factors contributed to the decision to create Diraya as the strategic information system that can eventually knit patients' health information gathered in different healthcare environments into a single, accessible EHR:

- Integration of clinical and patient information as part of its overall strategy to improve the quality and efficiency of healthcare across the region (a priority for the Regional Ministry of Health of Andalusia),

- Existence of a previous EHR at primary healthcare centres, with limited features (ePrescribing was not possible and the information available could not be processed and used for clinical management and public health purposes),
- Implementation of an ePrescription/eDispensation system in collaboration with Official Colleges of Pharmacists in the region,
- Implication of all relevant stakeholders (healthcare professionals at different levels of care, healthcare managers, industry and patients),
- Addressing patients' needs and requests,
- Strong political support and commitment.

Problems encountered included:
- Lack of IT skills in healthcare professionals and staff at initial stages,
- Limitation in digital communications capacity partially solved with the Corporate IT network,
- Change management.

Process and time for adoption:

Development of Diraya began in 2000. The new system replaced the local health information system used in primary healthcare centres (PHCs). Many PHCs received the first release of Diraya in 2003 with a mixed architecture of data stored in central and local databases. The centralised version was available from 2004 and replaced the local databases. In 2006, Diraya expanded to emergency and outpatient specialised care in hospitals. The ePrescribing module, Receta XXI, was introduced in primary care in 2003, and extended later to outpatient care and hospitals. 2004-2009 was the implementation phase, a very complex one due to extension of the territory and healthcare network dimension. During 2010 to 2012, Diraya faced a stabilisation stage, limiting new functionalities and centred in technological improvements. Today, all centres (primary care, hospitals, emergency units …) in the Public Healthcare System are connected to Diraya. The eLab module has been incorporated in all primary care centres and will be available in all hospitals by the end of 2017 (40% are connected now already). The eX-ray module (corporate RIS and PACs) is also available currently. The mobility EHR, for ambulances within emergency care has been developed and is also available since 2015.

Costs and outcomes:

Some of the most significant benefits include:

- Reduction of more than 15% in GP visits for patients who have their first prescription using Receta XXI for an episode of care
- Sustained cumulative cash savings from generic prescribing of some €100M
- Reduction of non-attendances in outpatient specialised care of 10%
- Application of determined protocols and standards throughout the region
- More efficient employment of health professionals along all healthcare services
- Reduced support costs of a centralised database replacing many local databases
- More efficient appointments with Salud Responde, the regional call centre

Examples of impact:
- Increase usage and user satisfaction of AeHS
- 100% coverage of mobile intensive care units for training in mobile health applications
- Data from 2016:
    - >160 M ePrescriptions
    - 40.7 M PHC visits
    - 4.6 M outpatient visits
    - 85% of all discharge reports
    - 3.4 M emergency care visits
    - 61.6 M eLab tests

- 10.96 M x-ray images
- 89 M appointments
- 1.8 M vaccines
- 212.954 patients' access to EHR

Costs: Between 1999 and 2010, it has been estimated a total cost of € 279M has been spend in the development, implementation and fully operation of Diraya[53].

Some data about the economic impact of the AeHS:

- ePrescription savings of € 3,1M (elimination of printing cost and €3,2M data management)
- Decrease of hospital admissions (from an average stay of 7,5 days in 2008 to 7,16 in 2012
- Decrease of consultations in family medicine (-16,11% from 2007 to 2012)

Specific studies and assessments based on healthcare service information systems have been carried out. Also specific assessments have been made of specific services in some European projects (i.e., Patients' empowerment in PALANTE project[54]).[55]

Business scale:

The Andalusian Healthcare Service, public body in charge of healthcare provision in the region, is in charge of the current maintenance and development of Diraya.

**Barriers and success factors experienced by the originator**

A major problem at initial stages was the limitation of the communication infrastructure used to connect all primary healthcare centres in the region. The lack of the appropriate broadband caused multiple system crashes that caused discomfort in professionals and patients. This is currently solved thanks to a wider dedication of the IT corporate infrastructure.

Limited or lack of IT skills of healthcare professionals at the beginning of implementation was needed to address.

Initial difficulties regarding services included in Diraya such as the use of a centralised appointment system were needed to facilitate the implementation of regional regulations on waiting times for referrals and diagnostic procedures. This service implied the centralisation of all booking systems and "list" held throughout the different facilities and professionals in the Andalusian Health Service.

Fundamental factors helping to overcome these barriers include a strong and stable political leadership and support, the engagement of motivated healthcare professionals, as well as the alignment of the eHealth solution as part of a wider health strategy.

Success factors include:
- Clear vision from the leadership maintained over time
- Continued political support and commitment
- Alignment of the Diraya system with the healthcare policies and wider strategies of the organisation, focusing on patient-centred care, continuity of care, consistent and coherent healthcare, improving quality

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[53] (www.ehr-impact.eu)

[54] www.palante-project.eu).

[55] More information about its socioeconomic impact can be found in EHR Impact study - http://www.ehr-impact.eu/index.htm.

- Involvement of highly engaged healthcare professionals in the design and implementation of the system, in close collaboration with technical staff
- Previous funding for an IT system form national programme
- Collaborative model: alliances with the pharmaceutical corporation and technological companies
- Capability to implement new services based on interoperable solutions
- Connections with evaluation tools to assess professionals' performance linked to their professional career
  - Patience and illusion of all involved in the project
- Use of international standards for IT solution development: SOA, HL7, IHE and DICOM

## 10.12.3 Adopter's needs and ambitions

Motivated by the 2016 Pilot Twinning Support Scheme, City of Zagreb Reference Site decided to survey twining proposals. The intention was to find digital solutions related to Active and Healthy Aging that could be piloted/implemented in the City of Zagreb Reference site and to learn from experiences of Reference Sites that have successful eHealth strategies in place. More than 20 years of experience in eHealth systems development and an elaborate operating system made Andalusia Reference Site the best candidate to transfer knowledge and innovative solutions.

In Croatia eHealth strategy is carried on the national level. Some parts of the strategy are planned to be implemented during 2017. City of Zagreb Reference Site is an ecosystem comprised of Health Care Providers, regional authority, national Reference Centre for Protection of Health of Elderly, IT industry organisations, academia and others and as such can influence decision makers on regional and national level. Resulting from this twinning, plans are formed for pilot projects which are to be carried out using existing budget for deployment and implementation of eHealth solutions as well as IT industry resources. Projects should provide better, more integrated eHealth service to the population of the City of Zagreb Reference Site, especially the elderly. They also have the potential to be scaled-up to national level.

An eHealth Strategy implementation at all levels of care is a complex experience requiring the contribution of different stakeholders. Andalusia RS has a vast experience on the definition, appropriation, maintenance, sustainability and scaling-up of its eHealth strategy. The knowledge and best procedures to accomplish the main interests from City of Zagreb will be transferred. Particularly, all the elements needed in the full deployment of the Diraya system will be shared as well as the technological aspect of it.

The system is supported technologically by the Andalusian Healthcare Service (SAS).

The overall information of the strategy and technical requirements are systematised and ready to be transferred. Transfer time would depend on the recipient's departure status in terms of information systems already implemented and degree of integration among them.

The objective of the twinning is the transfer of knowledge on how to implement and scale-up new eHealth services. After the study visit of delegation from City of Zagreb Reference Site to Seville, four areas that could be improved using Diraya-inspired innovative solutions were identified:

1. Primary care Patient Inflow Management
2. Care for complex patients
3. Cross-specialty HCP communication
4. Primary care appointment mobile application (mHealth setup)

Pilot projects improving those areas are currently being planned.

Initially, sessions and workshops in the City of Zagreb Reference Site with important national level stakeholder representatives and Reference Site teams were planned. These sessions has been postponed due to recent changes in Andalusia Reference Site and difficulties in the local agendas.

Dedicated workshops for education of personnel in eHealth solutions are planned.

## 10.12.4 Adoption and investment plan

1. Sharing of information and documents from both sides, in order to better know the adopter's side starting point.

2. Study visit to Andalusia RS by a delegation of City of Zagreb RS, during 3 days (23rd-25th January) to get to know in-depth aspects of the Andalusian eHealth strategy and the Diraya system. Special focus will be given to:

• Patients' online access to EHR, ClicSalud,
• Incorporation of different levels of care to the single EHR throughout the region,
• Prescribing decision support tools,
• Overall framework and elements to consider.

The visit has taken place at the Regional Ministry of Health, the IT Department of the Andalusian Health Service, a primary care centre, a hospital and a pharmacy, all in the city of Seville. A complete demonstration of the system working (including the above-mentioned points of interest) and interviews with key actors will be included.

3. Workshop in City of Zagreb with key actors in the adopting RS and exchange of lessons learned among them.

Milestones:

MS1 - Initial teleconference (November 2016).

MS2 - Study visit (January 2017).

MS3 - City of Zagreb initial development.

Budget spent:

Total budget of 28.000€ is planned/spent for this twinning action for 2017 as follows:

• 5.000€ spent for study visit to Andalusia by delegation of five people,
• 10.000€ planned for workshops in City of Zagreb with key actors including expenses for a visit of the Andalusian and Galician RS expert teams to the adopting RS and exchange of lessons learned among RS following planned twinning action in October,
• 3.000€ spent for the development of new digital solutions (pilot-projects) and
• 10.000€ planned for maintenance costs of pilot-projects for 2017.

For this twinning action funding and resources were provided by Health Centre Zagreb – Centar and MCS Grupa d.o.o.

Low level of technical skills and not seeing the benefits often results in resistance to using new ICT solutions, especially in elderly population. Educational workshops will be organised to overcome those barriers. Currently, forums are organised in city districts with various topics; innovative solutions and calls to age-adapted workshops could be put on the agenda.

Sessions explaining the benefits of innovative solutions are planned with various stakeholders and decision makers to mobilise political will to upscale the solutions.

Evaluation and research methodology for pilot projects is still being discussed, and will consider encouraging the adopter's health professionals' awareness and involvement.

## 10.12.5 Benefits and outcomes (adopter)

New communication channels between citizens, healthcare providers and healthcare workers will be opened. Healthcare services for complex patients will be developed based on examples from Andalusia health services and experiences from EU CIP CareWell project.

Depending on the degree of implementation, up to 790.000 citizens could benefit from innovative practices in the City of Zagreb Reference Site. Some solutions could be implemented on national level.

133.000 citizens of Zagreb can potentially be affected by pilot-projects resulting from twinning actions. 101 GP teams as well as 13 specialist teams (six cardiologists, four psychiatrists and three neurologists) are able to use new digital solutions.

## 10.12.6 Recommendations

Determination to provide support goes beyond formal recognition. Policy decision makers should open as many available resources (financial, human, media engagement) for implementation of innovative solutions since they show clear benefits for the citizens and health systems.

A more comprehensive legal regulatory frame should be established and introduced on EU level regarding legal issues (ownership of medical data, security of the data, etc.).

## 10.13   Twente – Campania (Telerevalidatie.nl)

## 10.13.1 Twinning overview

| Originator: Roessingh Research and Development, Twente, Netherlands | Adopter: Federico II University Hospital, Campania | Innovative Practice: *Telerevalidatie.nl* |
|---|---|---|
| **Innovative Practice Description** | | |

*Telerevalidatie.nl* is an online portal that supports rehabilitation at home (either as a replacement of care provided in a care facility or as additional care). A set of different functionalities allow for the patient of a rehabilitation centre, hospital or physical therapy practice to receive tailored patient information and a personalized training schedule with instruction videos and allows him/her to track their training progress and physical activity during the day.

*Telerevalidatie.nl* is an online platform for promoting self-management of patients with chronic diseases and older adults. The platform allows remote supervised physical training by means of videos configured by care professionals as a personalized training schedule, physical activity monitoring and coaching, and online communication. In the Netherlands this platform is used in various rehabilitation centres and hospitals. Within the PERSSILAA project (FP7-ICT-610359), the content was further developed into a self-management program and this module is used and evaluated in the Twente and Campania region for training physical function of pre-frail older adults. Campania region envisions a stronger focus on self-management and life style interventions for their patients. For this they aim for broadening the use of online platforms by their patients. As such, this twinning action focuses on transferring *Telerevalidatie.nl* for use within hospitals from the Twente reference site to Campania

| **Link to the EIP on AHA Repository of innovative practices:** |
|---|

https://ec.europa.eu/eip/ageing/repository/personalised-ict-supported-service-independent-living-and-active-ageing_en

| **Innovation Scope:** |
|---|

- Technology for falls prevention
- Homecare, Telemonitoring and mobile health systems
- Telementoring and virtual consultations

| **Innovation Type:** |
|---|

We characterise the twinning effort as level 3: **partial adoption**. Federico II University Hospital showed its willingness to buy a demo version of the tool.  We have already designed the methodology. The study will consider patients that undergo cardio rehabilitation and patients with cystic fibrosis, for a period of one-year. This pilot is focused on assessing potential clinical effect, measuring the adherence to the treatment (in terms of compliance) and the user's satisfaction (in terms of "ease of use" and "usefulness"). We have already submitted the experimental protocol to the Ethical Committee and we are waiting for the approval. We are providing the Italian translation of the platform and creating a group of professionals in order to set up the activities and start the pilot in September 2017. Based on the pilot's results, a decision on further actions will be made.

| **AHA Action Group:** |
|---|

✓   A3. Action for prevention of functional decline and frailty

| **Twinning Objectives:** |
|---|

The objectives of the twinning action (with an overall objective of scaling up *Telerevalidatie.nl* on a European level, starting with the reference site of Campania) are further specified as:

- To familiarize healthcare professionals in Campania with utilizing eHealth technology that enhances self-management via on site experience of telemedicine innovations for rehabilitation care in the Netherlands

- To implement *Telerevalidatie.nl* in Campania. For this, implementation plans on the aspects of compliance with existing care paths, interoperability with existing health technology and customization of the existing technology will be developed.
- To train healthcare professionals, management and IT specialists in Campania on how to implement *Telerevalidatie.nl* in their context.

to customize *Telerevalidatie.nl* for implementation in Campania (including adapting parameters, translation of content into Italian).

| Twinning end result: |
|---|
| The twinning action resulted in a roadmap towards full implementation and led to an important first step, namely a pilot evaluation. An experimental protocol has already been transmitted to the Ethical Committee and is yet to be approved. The Italian version of the platform is not available yet. Patient enrolment is scheduled for September 2017. Based on the pilot's results, a decision on further actions will be made. |

## 10.13.2 Background on Telerevalidatie.nl

### Description

*Telerevalidatie.nl* is an online portal that supports rehabilitation at home (either as a replacement of care provided in a care facility or as additional care). A set of different functionalities allow for the patient of a rehabilitation centre, hospital or physical therapy practice to receive tailored patient information and a personalized training schedule with instruction videos and allows him/her to track their training progress and physical activity during the day.

*Telerevalidatie.nl* is an online platform for promoting self-management of patients with chronic diseases and older adults. The platform allows remotely supervised physical training by means of videos configured by care professionals as a personalized training schedule, physical activity monitoring and coaching, and online communication. In the Netherlands this platform is used in various rehabilitation centres and hospitals. Within the PERSSILAA project (FP7-ICT-610359), the content was further developed into a self-management program and this module is used and evaluated in the Twente and Campania region for training physical functions of pre-frail older adults. The Campania region envisions a stronger focus on self-management and life style interventions for their patients. For this they aim for broadening the use of online platforms by their patients. As such, this twinning action focuses on transferring *Telerevalidatie.nl* to be used within hospitals from the Twente reference site to Campania.

### Evolution in the originator's region

Growing patient numbers, tightening budgets, and patients' desire to be in control over their treatment, necessitated the development of a telemedicine service that allows for rehabilitation without the direct help of healthcare professionals.

After technical development (which was based on extensive requirements in regards to engineering activities with both patients and care professionals), implementation of the portal technology was done on a per-department basis. In our case, we started with offering the technology to patients with COPD and chronic pain, after which other departments followed. The process from start to end (including training, developing treatment protocols etc.) would take about 6 months per department.

We have performed many studies to evaluate Telerevalidatie.nl. It has been tested and evaluated for patients with chronic pain, patients with COPD, stroke patients and patients with hand trauma. Usability and user satisfaction is high among all patient groups and their professionals. In addition, we have found similar treatment outcomes when *Telerevalidatie.nl* was implemented as substitution to normal rehabilitation, which indicates that therapy

sessions might be reduced with the use of *Telerevalidatie.nl* in the home setting of patients. Currently, a study is being performed to assess the practice's cost-effectiveness.

A business case for scaling up of the technology to other sites has not been made.

**Barriers and success factors experienced by the originator**

We experienced different barriers when developing and implementing *telerevalidatie.nl*. On the political front, management of healthcare organizations found it difficult to make a definite decision on implementing a telemedicine portal, as the involved costs could not be linked directly to a specific treatment, and thus would not be reimbursed by healthcare insurance. On the organizational front, we experienced that lack of time hinders successful implementation. Healthcare professionals are extremely busy, and learning to use a new technology and new working procedures comes 'on top' of their workload. Next, they were hesitant to change their way of working. Technically, finally, we experienced that connecting the portal to other technologies (such as the electronic medical record) posed challenges.

We overcame these barriers by starting small and focusing on quick wins (i.e., start with the most promising application areas and the most enthusiastic professionals) and then to spread the success as an example over the organization.

Important success factors include developing telemedicine technology in close collaboration with end-users (patients and healthcare professionals), the use of champions within an organization for effective and efficient implementation, and a constant focus on scalability of the solution while creating technical designs.

## 10.13.3 Adopter's needs and ambitions

*Telerevalidatie.nl* is an IT-tool that enables remote rehabilitation of different types of patients. It is an effective tool and easily applicable to Campania context.

The management of rehabilitation services in Campania is expensive and ineffective, as:

- They are not able to meet the demands due to cost cuts,
- There is no integration with supervised physical activity,
- It is not integrated with innovative solutions that can contribute to health outcomes improvement and sustainability.

*Telerevalidatie.nl* provides the opportunity to integrate standard rehabilitation services with solutions that can improve health outcomes by patient's empowerment. In addition, we would like to integrate *Telerevalidatie.nl* services with other e-health services currently active in our hospital.

Increased average life expectancy depends on improved management of conditions such as *cystic fibrosis*, cardiovascular diseases and cancer that are success stories of modern medicine. These patients undergo complex treatments that take advantage to different types of rehabilitation. Implementing digital solutions contribute to maintain good self-perceived health, prevent occurrence/re-occurrence of disease, emergence of co-morbidities and ensure the adherence to rehabilitation therapy.

The adaptation of novel ICT tools to respond to specific patient needs is an added value as well as a powerful tool to ensure the improvement of overall health outcomes for diseases at high rate of resources consumption.

Campania strategy for the Digital Agenda is aligned with the EU and national strategy for digital health and foresees as one of its overall directories using digital transformation of the services for the improvement of the quality of life of its citizens.

This approach is also aligned with the new "Essential Level of Assistance" (LEA) issued by the Italian MoH, where new digital devices have been made available to Italian patients, such

as eye-communication devices, key-boards for disability; digital hearing devices; domestic devices and advanced adapted devices for motor disabilities.

The objectives of the twinning action (with an overall objective of scaling-up *Telerevalidatie.nl* on a European level, starting with the reference site of Campania) are further specified as:

- To familiarize healthcare professionals in Campania with utilizing eHealth technology that enhances self-management via on site experience of telemedicine innovations for rehabilitation care in the Netherlands,
- To implement *Telerevalidatie.nl* in Campania. For this, implementation plans on the aspects of compliance with existing care paths, interoperability with existing health technology and customization of the existing technology will be developed,
- To train healthcare professionals, management, and IT specialists in Campania on how to implement *Telerevalidatie.nl* in their context,
- To customize *Telerevalidatie.nl* for implementation in Campania (including adapting parameters, translation of content into Italian).

## 10.13.4 Adoption and investment plan

The action plan, as specified in the application has been achieved as follows:

- Visit of relevant actors from Campania to the Dutch eHealth week activities in Twente (Roessingh Centre for rehabilitation) in which they experienced different telemedicine innovations for rehabilitation care (including Telerevalidatie.nl) on Jan 23, 2017 (achieved)
- First intake of wishes and needs of Campania stakeholders (management, healthcare and IT) for the implementation of Telerevalidatie.nl, as well as specification of the role of the portal technology in the care paths in which implementation will be done in first instance, on Jan 23, 2017 (achieved)
- Focus group with health care professionals at Campania region in February 2017 (achieved)
- Defining implementation/treatment protocol for the use of *Telerevalidatie.nl* in Campania region in February/March 2017 (achieved)
- Customization of *Telerevalidatie.nl* for use in Campania by originator (achieved)
- *Telerevalidatie.nl* training/seminar in Naples with Campania stakeholders (achieved)
- Training of health care professionals and mapping next steps (achieved)
- Campania pilot protocol for validation of *Telerevalidatie.nl* in *cystic fibrosis* and cardiology rehabilitation units of Federico II University Hospital submitted to Ethical Committee (protocol is finished, and medical ethical approval is pending)
- Start one-year pilot for usability testing and clinical evaluation in two patient groups
- Joined evaluation session about the results of the pilot, leading to further modifications for *Telerevalidatie.nl* for the Italian setting

The innovation practices have not been adopted yet. In order to adopt the demo version of Telerevalidatie.nl, Federico II University Hospital will spend 5.000€.

No financing has been enacted to support the twinning implementation. Campania ERDF on Digital Agenda, AAL Programme, and Public Procurement for Innovative Procurements could be enacted to scale it up.

The main barriers to the adoption of *Telerevalidatie.nl* in Campania are:

- The tool's adaptability to local organizational models. To overcome this obstacle, we planned to implement a one-year pilot project with a demo version of the tool, in order to evaluate the adaptability in cardiology rehabilitation and *cystic fibrosis.*
- ICT skills of patients, adherence to treatment and user satisfaction.

In the pilot phase, we will mainly target patients with basic IT skills, to enable them to use the tool efficiently. The adoption of the tool should be integrated with patients ICT training.

In order to evaluate the adoption of the platform, during the study we will measure:

• The patient compliance, e.g. measuring how many times the patients will connect to the platform and the number of exercises completed for each session,
• The user satisfaction, e.g. estimating the perceived "ease of use" and "usefulness",
•
• Despite the fact that evaluation of the implementation of *Telerevalidatie.nl* in Campania is outside the scope of this twinning action, we plan the following evaluation to determine the implementation success:
•
• Data log analysis of portal use by patients and healthcare professionals (e.g., log ins, therapy compliance);
• Assessment of Patient Reported Outcome Measures (PROMs) via the *Telerevalidatie.nl* clinometric module.

## 10.13.5 Benefits and outcomes (adopter)

*Telerevalidatie.nl* provides the opportunity to implement a new organizational model for rehabilitation services. The eHealth services applied to the rehabilitation offer many advantages:

• Avoided costs for the health system,
• Foster adherence to treatment resulting in reduction in adverse events,
• Optimise health professionals' activities, as it prevents the overcrowding of hospital practices.

The twinning's strategy consists of the implementation of a pilot project that is a demo version of *Telerevalidatie.nl* platform. The main purpose is to assess the potential adoption of the tool in cardiac failure and *cystic fibrosis* patients.

The pilot project will investigate the adherence to cardiological and respiratory rehabilitation performed by the patients at home. Secondly, it will verify that the ICT tool allows patients to perform the exercises properly and to increase self-management of their rehabilitation. Finally, it will verify the user satisfaction of *Telerevalidatie.nl* tool, pointing out the critical issues.

The study involves:

• 15 patients with chronic cardiac failure of the "Department of Internal Medicine and Cardiology Rehabilitation" of Federico II University Hospital,
• 15 adult patients with cystic fibrosis of Federico II Hospital University.

Through the twinning the reference site and the hospital will validate the new tool on a local level, preparing for a future scale-up to the entire region.

The group of specialists will consist of:

• Institutional stakeholders (Campania Reference Site Coordinator), who will scale-up the innovation after the pilot
• A representative of the Clinical Directorate, who will assess the opportunity of the adoption of the platform in the hospital's service provisions
• A principal Investigator, who will be the scientific supervisor and will coordinate the activities of the study,
• Physicians, who will enrol the patients and carry out the activities,
• Data managers, who will analyse and disseminate the outcomes of the experimentation.

## 10.13.6 Recommendations

In order to harmonise the adoption of the good practice in the organizational model of the adopters, it is necessary to provide a pilot phase to evaluate the adaptability and usability of ICT tools.

By means of the pilot, it will be possible to identify the potential barriers to the scaling-up of the good practices to a larger population. During the experimentation, an institutional stakeholder will be involved to be aware of the results and critical issues of the tool. This will help the regional health authorities to overcome identified barriers on the basis of the results of the pilot study.

E-Health tools should be designed in such a way that they can be easily scaled-up towards 1) different patient populations and 2) different organizational models throughout Europe. It is impossible to design one technology-supported health service that can be scaled-up without adaptation throughout all European member states.

## 10.14   Lazio – Porto (FrailSurvey mobile app)

## 10.14.1 Twinning overview

| Originator: Department of Biomedicine and Prevention – University of Rome Tor Vergata, Lazio regional Health Service | Adopter: University of Porto, Porto Metropolitan Area | Innovative Practice: FrailSurvey mobile app |
|---|---|---|

| Innovative Practice Description |
|---|
| In this twinning activity, a tool for screening of frailty in community-dwelling older adults was developed. The app, named **FrailSurvey,** based on the Groningen Frailty Index, assesses diverse sides of the life of the elderly, namely their mobility, physical shape, vision, hearing, nutrition, as well as cognitive and psychosocial aspects. The results obtained in terms of frailty status will be important for healthy ageing among community-dwelling older people, as it can help lifestyle changes to prevent or revert their frail status. The mobile app is free of charge and is available for IOS and Android operating systems. <br><br> Baseline Assessment is made up by two instruments: Risk Instrument for Screening in the Community (RISC) and Short Functional Geriatric Evaluation (SFGE). RISC stratifies risk of adverse healthcare outcomes by measuring the magnitude of functional, physical, state mental concern and ability of caregiver to cope with these concerns. It then summarises the perceived risk using a subjective, global score of risk. In case there are no concerns in these three domains, the SFGE assesses the risk of negative outcomes in individuals with minimal physical or cognitive impairment by exploring socio-economic domains. The SFGE score classifies citizens in three strata according to the risk of negative outcomes. Both instruments stratify the patients at greatest risk of institutionalisation, hospitalisation and death. |

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/baseline-assessment-frailty-application_en |

| Innovation Scope: |
|---|
| • ICT tools supporting adherence to care plans <br> • Technology for falls prevention <br> • ICT-supported integration of health and social care services <br> • Health and care needs assessment toolkit |

| Innovation Type: |
|---|
| **Partial adoption**. DEP - Lazio regional health service has a web-based ICT tool for screening of frailty in older adults. This tool is associated with a community intervention on frailty. However, as in our region we don't have an intervention associated to the web screening tool yet. Instead, we develop a mobile phone app for self-assessment of frailty, using the advantage of the experience of DEP - Lazio regional health service reference site. |

| AHA Action Group: |
|---|
| ✓   A3. Action for prevention of functional decline and frailty |

| Twinning Objectives: |
|---|
| This twinning activity aimed to act as a step stone to other future endeavours between Porto4Ageing and DEP - Lazio regional health service and it is an objective that both institutions are fully committed to. Indeed, both Reference Sites are already working together to find other good practices for new twinning activities, and searching for opportunities for joint projects in a near future. |

| Twinning end result: |
|---|
| We have a mobile phone app (FRAILSURVEY) available for free download in Portuguese language for self-assessment of frailty. |

## 10.14.2 Background on the FrailSurvey mobile app

**Description**

In this twinning activity, a tool for screening of frailty in community-dwelling older adults was developed. The app, named **FrailSurvey,** based on the Groningen Frailty Index, assesses diverse sides of the life of the elderly, namely their mobility, physical shape, vision, hearing, nutrition, as well as cognitive and psychosocial aspects. The results obtained in terms of frailty status will be important for healthy ageing among community-dwelling older people, as it can help lifestyle changes to prevent or revert their frail status. The mobile app is free of charge and is available for IOS and Android operating systems.

Baseline Assessment is made up by two instruments: Risk Instrument for Screening in the Community (RISC) and Short Functional Geriatric Evaluation (SFGE). RISC stratifies risk of adverse healthcare outcomes by measuring the magnitude of functional, physical, state mental concern and ability of caregiver to cope with these concerns. It then summarises the perceived risk using a subjective, global score of risk. In case there are no concerns in these three domains, the SFGE assesses the risk of negative outcomes in individuals with minimal physical or cognitive impairment by exploring socio-economic domains. The SFGE score classifies citizens in three strata according to the risk of negative outcomes. Both instruments stratify the patients at greatest risk of institutionalisation, hospitalisation and death.

**Evolution in the originator's region**

In the context of the European and National demographic challenges, and the sustainability of well-being and healthcare systems, the ultimate goal of the application is to reduce the burden of morbidity, disability, functional decline and premature mortality related to frailty in seniors aged 65 and over.

Old patients require a more comprehensive approach in order to prevent disability, recurrent hospitalisations and related health and social care costs. To be successful in the care of frail older adults with chronic diseases, interventions must integrate adequate healthcare with a supportive social environment able to foster the patient through different stages of diseases. Therefore we aim to develop and implement a set of ICT-based procedures to reduce both the incidence of frailty at an individual level (reduction/delay of functional decline) and the consequences of frailty at a population level, especially in harmony with the needs of health and social care services (reduction of institutionalization and hospitalization), based on questionnaires. Thus, it is important to identify factors that should be targeted in order to delay or postpone further decline and disability.

The main motivations for the creation of this application are to fill the gap that exists in terms of tools to screen frailty in an easy way in the community.

The innovative practice has been introduced in the daily activity of a well-established service: the "Long Live the Elderly" service, run by the Community of Sant' Egidio in Rome and other Italian cities since 2004 (http://www.longlivetheelderly.org/).

There is no available calculation of investment per citizen/service user/patient.

Evidence is based on qualitative success stories. Two comparison studies have been set up to assess the characteristics of BAF. The first one on 207 older adults evaluated the correspondence between BAF and the two questionnaires from which BAF was originated (RISC and FGE): the level of agreement was very high in terms of score. Moreover, less hospital re-admission (economic) were also observed.

The sustainability is assured by "Long Live the Elderly" service that use them since 2004.

**Barriers and success factors experienced by the originator**

The most important barrier was the lack of digital literacy of senior population, as well as of care professionals and caregivers. In order to mitigate this barrier, training on digital skills has been developed.

The BAF questionnaire has been chosen for the baseline assessment in the EIPonAHA synergy program "Impact of Community-based Program on Prevention and Mitigation of Frailty" – ICP-PMF that is operating in six EU countries (Italy, Ireland, Spain, Portugal, the Netherlands and Hungary).

### 10.14.3 Adopter's needs and ambitions

The interest, first and foremost, stemmed from the fact that the web survey was a proved success. Taking and twinning a successful practice was of large importance for Porto4Ageing, as on one hand it was a great opportunity to serve the ageing population and an ageing society, and on the other hand, to establish Porto4Ageing as a leading infrastructure, which cares for the well-being of the elderly.

In the northern region of Portugal, and indeed in the whole country, there is not a similar tool to screen, in an easy way, frailty in a community. This fact shows that there was a gap to fill. We are thus convinced that the implementation of this solution is responding to a very specific need, which will potentially be overcome through this twinning process.

Ageing issues are a priority at a regional and national level. They are clearly mentioned on the smart specialisation strategies of both North of Portugal and Portugal. Institutionally-wise, (at University of Porto, where Porto4Ageing is currently based) ageing issues have also been made a priority by the management bodies, which means that this project and indeed Porto4Ageing activities are totally in line with the regional needs and priorities.

Since it is part of the regional priorities, there will be some external funds available to implement ageing solutions, of which Porto4Ageing is totally committed to raise.

This twinning activity aimed to act as a stepping-stone to other future endeavours between Porto4Ageing and DEP - Lazio regional health service and it is an objective that both institutions are fully committed to. Indeed, both Reference Sites are already working together to find other good practices for new twinning activities, and searching for opportunities for joint projects in a near future.

### 10.14.4 Adoption and investment plan

The first months of the twinning activities were dedicated to the acquaintance with the platform through meetings with the originator (face-to-face and by Skype). Moreover, internal meetings to present and display the application to different stakeholders that are part of Porto4ageing consortium were also performed. Below, a detailed timeline of the project implementation:

Month 1-2: Translation and cultural adaptation of the questionnaire

Month 2-3: Technical development of the application

Month 3-4: Dissemination of the application and data analysis

Month 4-5: Dissemination and launch of the platform at a national level in Portugal

Porto4Ageing organized a public event for the launching of the platform. Different participants and stakeholders took part, as it was a session in the programme of the Porto4Ageing Open Day.

From the twinning project budget only 729.70€ were spent. We only spent this amount given that very little time was given for the twinning activities.

We spent 4,000€ for the technical Development and 1,000€ for communication issues.

The project has been mainly supported by funds of the University of Porto, as well as by funds of private companies.

The main barrier that the adopter faced was the lack of digital literacy of senior population and caregivers. This barrier will be mitigated with the development of training to improve digital literacy in this population.

The evaluation of the degree of success of the implementation of this digital solution will be assessed through the number of downloads and by the number of seniors/caregiver/care professionals that fully fill in the questionnaire.

## 10.14.5 Benefits and outcomes (adopter)

very easy way, to screen the frailty status. This fact will be important for the development of new patient centred care models in our region, based on frail status.

Moreover, the fact that two Reference Sites are working together and are exchanging practices will strengthen their relationship, which may lead to further joint ventures and collaborations. Thus, under this scheme, it is aimed to enable patients to have a more active and healthy life, through the implementation of an innovative ICT-based solution.

In terms of outcomes of this twinning activity, we expect that different healthcare providers and caregivers (formal and informal) of Metropolitan Region of Porto, and also at national level, use this survey for the screening and management of senior population in the community. Stratification of seniors according to frailty status will enable caregivers and heath care professional to shape care according to patients' needs.

We also expect to collect data to evaluate the prevalence of frailty in the region. This information could be important to promote specific intervention to prevent frailty at a local level. Moreover, it will be also important for policy makers as no data about frailty is available at the moment.

It is also expected that this scheme will strengthen the relationship between the Reference Sites and act as a step stone for future and impactful collaborations.

It is expected that approximately 300.000 seniors could benefit from this twinning activity in our region.

The web platform was launched on 7th July. Several Portuguese media bodies covered the event[56] [57] [58] [59] [60] [61]. These news were vital to highlight how important is the screening of frailty in the community and to reinforce the importance of its prevention. Moreover, in two months, after the app launch, 300 older adults filled in the questionnaire, and had access to their frail status (50% were classified as frail) and tailored recommendations – a service provided by the app.

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[56]    http://www.dn.pt/noticias-magazine/interior/aplicacao-criada-no-porto-permite-aos-idosos-avaliar-a-sua-forma-fisica-7202703.html

[57] http://www.noticiasmagazine.pt/2017/aplicacao-criada-no-porto-permite-aos-idosos-avaliar-forma-fisica/

[58]    http://www.jn.pt/noticias-magazine/interior/aplicacao-criada-no-porto-permite-aos-idosos-avaliar-a-sua-forma-fisica-7202720.html

[59] https://www.noticiasaominuto.com/tech/786746/aplicacao-criada-no-porto-permite-aos-idosos-avaliar-a-sua-forma-fisica

[60] http://saudeonline.pt/2017/05/03/inovacao-aplicacao-movel-permite-aos-idosos-avaliar-a-sua-forma-fisica/

[61]    http://24.sapo.pt/tecnologia/artigos/avaliar-a-mobilidade-a-alimentacao-e-a-forma-fisica-dos-idosos-a-aplicacao-foi-desenvolvida-no-porto

## 10.14.6 Recommendations

The further adoption of policies that promote digital literacy in the senior population and in health professionals is recommended.

## 10.14.7 Results

The twinning has been successfully completed and disseminated using the information below.

## 10.15   Campania – Asturias (ADD protection)

## 10.15.1 Twinning overview

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Department of Medicine, Surgery and Odontoiatrics, Salerno University, Campania, Italy | CTIC Centro Tecnológico Asturias, Spain | ADD Protection |

| Innovative Practice Description |
|---|
| The innovative practice to be transferred is the Home Care for Early and Protected Hospital Discharge, which is part of the so-called 'Assistenza Domiciliare per Dimissioni Protette (ADD) protection' system, which consists of an ICT-based home-monitoring service provided by a private company of home care. It allows the hospital staff to follow the patient at home, as if they were still in the hospital. The data collected at the patient's home are made available to the staff of the hospital through a web-based platform, which feeds the hospital electronic health records (EHR) of each patient. |

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/personalised-ict-supported-service-independent-living-and-active-ageing_en |

| Innovation Scope: |
|---|
| ▪ ICT based home monitoring system<br>▪ ICT tools supporting adherence to care plans<br>▪ Multi-disciplinary team support, workflow, care planning and co-ordination |

| Innovation Type: |
|---|
| **Adaptation:** CTIC has adapted an important part of the Campania nel Cuore - ADD protection Best Practice, mainly related to its model in the field of patient relationship management in the area of cardiology predictions. CTIC has adapted this innovation by adjusting it to the local conditions of the project 'Stratistix', aiming at developing new algorithms and tools for multimorbidity stratification and risk prediction. |

| AHA Action Group: |
|---|
| ✓ A1. Prescription and adherence action at regional level<br>✓ B3. Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level |

| Twinning Objectives: |
|---|
| The objectives of the twinning are:<br>- To enhance CTIC ICT platform for multimorbidity risk stratification and prevention with Cardiovascular data and analytics based on Campania use case.<br>- To adapt the ICT platforms on the regions for personalized health care to integrate protection modules for Care Pathway and tele-monitoring tools. Initially, only the adaptation of the adopter ICT platform was considered as an objective, but after the meetings and visits in Campania, several possibilities have been detected regarding the adaptation of the platform of the originator, by including parts of the solutions developed by CTIC. This will imply R&D joint activities as well as training sessions implemented by webinars between both partners during the twinning action.<br>- To familiarize healthcare professionals, in collaboration with adopter, with utilizing eHealth technology for risk stratification. Due to CTIC's experience in training activities to promote the use of ICT among different kind of users, provide training in ICT tools used by the platform will be a specific objective to be developed by CTIC to different groups of users: doctors, nurses and patients.<br>- To involve patients in personalized health campaigns to increase adherence to treatments. By providing use cases from Campania, related to home diagnostic/therapeutic pathways in continuity with the hospital medical records, CTIC will make patients from Asturias aware of the benefits of the |

| solution, improving their adherence to treatments. |
|---|
| **Twinning end result:** |
| The twinning results are still under development, so it is not possible to confirm at this stage the implementation of the innovative practice or its adapted approach to the region. Cardiology predictions in CTIC algorithm package following Campania guidelines have been included, but there is still no evidence of the implementation as the project is not completely developed yet. The project is still under development (ending in 2018). No alternative solutions have been selected, as the implementation will be assessed once the project will finish. |

## 10.15.2 Background on ADD protection

### Description

The innovative practice to be transferred is the Home Care for Early and Protected Hospital Discharge, which is part of the so-called 'Assistenza Domiciliare per Dimissioni Protette (ADD) protection' system, which consists of an ICT-based home-monitoring service provided by a private company of home care. It allows the hospital staff to follow the patient at home, as if they were still in the hospital. The data collected at the patient's home are made available to the staff of the hospital through a web-based platform, which feeds the hospital electronic health records (eHR) of each patient.

### Evolution in the originator's region

Chronic multimorbid patients often have access to a hospital during reactivation of one condition, but once in the hospital, discharge is often delayed by the exacerbation of other conditions. The longer the stay, the more the conditions exacerbate.

For this reason, early discharge represents an important target in the management of hospitalised patients. In order to favour an improved strategy in this area, the original ADD protection system in Salerno has developed an ICT-based home monitoring provided as a service by a private company of home care, which allows the hospital staff to follow the patient at home as if they would still be in the hospital.

ADD protection is based on the University Hospital of the University of Salerno in Salerno, and is provided in partnership with the Interdepartmental Lab on Health Management of the University of Salerno, the AOU San Giovanni di Dio e Ruggi d'Aragona and Magaldi Life, a private Home Care Provider.

The organisational model of the practice complies with the system of homecare provisioning in Italy, *i.e.* obligation to provide service to people/patient (elderly or others) in certain status of their health or after discharge from hospital. This requires significant effort in coordination and in provisioning care at home. A number of stakeholders work with relevant health and personal information that is necessary to share, all in defined financial frame. ICT can help in many management and care processes, reduce workload in coordination of care, make the processes faster, handle care of more patients and reduce mistakes that can occur due to human factors.

First, a period of design and implementation of the organisational model together with all stakeholders needs to be done. This task takes several years, if not for the whole term of use. Finding business models to run the practice for investing stakeholders takes several months, if the first design proved viable.

The practice is an evolution of BEYOND SILOS, a 3-year pilot study of FP7 (CIP-ICT-PSP-2013-7, Pilot Type B), and an ongoing (2014-02-01 to 2017-02-28) project that has added

ICT-based clinical and social assessments through questionnaires and telemonitoring to the existing web-based platform CUREDOM, which is used for the management of Home Care.

Modules such as database, web portal, management SW, videoconferencing, and telemonitoring need to be integrated into one technical solution. Developments and implementations of modules take several months or a year, depending on the module.

The time for deployment takes less than a year. As of 2017, ADD Protection is ready for transfer, but the innovative practice has not yet been transferred outside the region. The innovative practice has been developed on a local/regional/national level and transferability has been considered. Structural, political and systematic recommendations have also been presented.

The implementation of the use of integrated care for intermediate level of assistance as well as the introduction of the telemonitoring service for biological parameters has been the objective of a study at the AOU San Giovanni di Dio e Ruggi d'Aragona. The following table includes the cost per person per one month of integrated care for a Care Pathway of Resistant Hypertension:

| Activities | Number of activities | Gross Costs | Fraction of Patients needing activity | Average Cost |
|---|---|---|---|---|
| Cardiac Ultrasounds | 7 | 357,00 € | 0,37 | 18,79 € |
| Sovraortic arteries US | 12 | 612,00 € | 0,63 | 32,21 € |
| Cardiologist Visit | 53 | 2.703,00 € | 2,79 | 142,26 € |
| Chest Xray | 3 | 93,60 € | 0,16 | 4,93 € |
| Geriatrician Visit | 6 | 306,00 € | 0,32 | 16,11 € |
| Pneumologist Visit | 3 | 153,00 € | 0,16 | 8,05 € |
| Nurse accesses | 122 | 3.806,40 € | 6,42 | 200,34 € |
| TOTAL | 206 | 8.031,00 € | 10,85 | 422,69 € |

A business case has been prepared and is an essential part of the overall solution to guarantee its sustainability. There is evidence that the practice is economically viable and brings benefits to the target group. After one month, the health parameters assessed indicate that there are clinical improvements that can be measured (normalisation of blood pressure, saturation and glucose homeostasis, weight and liquid balance).

Further research and development is needed in order to achieve market impact and for the practice to become routine use. The ADD Protection allows the analysis of the detailed cost per access at the home of the patient. According to the identified care pathways, the system is able to define the cost of each patient. So far, the average cost is around 400€[62].

On the other hand, the model of Home Care Services and ICT based integration of clinical and management assessment of patient and service can be considered an initial "transfer" from the home care department of the Local Health Authority to the University Hospital.

**Barriers and success factors experienced by the originator**

There were two major barriers in the implementation of ADD protection: cultural and organisational.

The cultural obstacle was that doctors working in the hospital were not used to relying on clinical data that are not collected by the hospital itself.

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[62] curedom.aslsalerno.it/crm

The organisation barrier was related to the lack of impact of hospital doctors in the community care and the rigidity of security protocols in hospital servers, which do not facilitate receiving data from home devices.

Both obstacles were overcome by the involvement of private enterprises that are responsible for delivering homecare in the Salerno area. The agile access to information and the possibility to check for the quality of the data has increased the trust of hospital doctors on the home care delivered. Furthermore, the possibility to use the enterprise access to the Local Health Authority servers has facilitated telemedicine from the home of the patients.

There were also strategic challenges because the practice is operated in a competitive environment, where other solutions including related to ICT-driven homecare innovations exist at a regional and national level. This meant that the practice needed to demonstrate excellent results to become a long-term part of homecare services in the region.

ADD protection stems from the initiatives of two main champions in the telemedicine field in Salerno: Guido Iaccarino in the AOU San Giovanni di Dio e Ruggi d'Aragona Hospital (medical and strategic guidance) and Eugenio Magaldi in the Magaldi Home enterprise (business model, IT solution developer and homecare service provider). They have identified a common objective and developed a new model of care that was sustainable and efficient. From the work of these two partners, ADD Protection has been realized and become a good practice of the Campania Region.

Apart from the involvement of these two champions, other success factors that facilitated the implementation of the ADD protection system in Salerno include:

• The new model of patient care that reduces patient displacements and improves personalized attention and care.
• Positive perception of the patient's attention and follow-up.
• Reduction in the workload of primary care physicians, enabling them to focus on cases that require more attention.

### 10.15.3 Adopter's needs and ambitions

TIC Centro Tecnológico has been working in the area of innovation for active and healthy ageing for years. Within this context, CTIC is currently working in the area of patients suffering from chronic multimorbidity in order to find better care strategies for this kind of patients, resulting in more efficient treatments both from the patients and the health system point of view. Thus, CTIC works nowadays in a project aimed at developing new algorithms and tools for multimorbidity stratification and risk prediction, focusing in endocrinology and oncology patients.

On the other hand, CTIC has been one of the promoters of the candidacy for the region of Asturias for Reference Site in AHA, selected in 2016 and awarded with two stars. Due to its involvement in Asturias Reference Site, CTIC has detected the Best Practice Campania nel Cuore-ADD protection and its work in chronic multimorbid patients, specifically in the field of cardiology predictors and ICT tools, as well as Campania's model in the field of patient relationship management in this area.

This BP is completely aligned with the above mentioned work that the Centre is developing in multimorbidity and risk prediction, so Campania's knowledge can be incorporated to improve CTIC's solutions within this field, as well as CTIC's researches can complement Campania's knowledge in order to find joint products / services to improve healthy and active ageing capacities in both regions.

Regarding the needs, continuous monitoring of high risk population in cardiovascular diseases is a heavy resource consumption strategy, not affordable by Health Services if it is not heavily based on ICT tools. So there is a need of better resources allocation as well as

intensive multidisciplinary research activities are requested to design a complete ICT ecosystem tailored to the region, patient profile and health system organization.

Regarding the fitting into CTIC's investment plans and the availability of funding and organisational support, CTIC is currently developing the national funded project 'Stratistix' (2016-2018, Ref: RTC-2016-5418-1), aimed at developing new algorithms and tools for multimorbidity stratification and risk prediction. The national funding for CTIC in this project is 85.672,00 €, in addition to the own resources from the Centre allocated to it. Within this framework, CTIC will adopt important parts of the Campania nel Cuore-ADD protection Best Practice, in order to include in the 'Stratistix' project results cardiology predictors and ICT tools, learned from Campania, as well as their model in the field of patient relationship management in this area.

## 10.15.4 Adoption and investment plan

The objectives of the twinning include the following:

*   To enhance the CTIC ICT platform for multimorbidity risk stratification and prevention with cardiovascular data and analytics, based on the Campania use case.
*   To adapt the ICT platforms to the regions for personalised health care in order to integrate protection modules for Care Pathway and telemonitoring tools. Initially, only the adaptation of the adopter ICT platform was considered as an objective, but after the meetings and visits in Campania, several other possibilities that involve including parts of the solutions developed by CTIC have been detected. This will imply R&D joint activities as well as training sessions implemented by webinars between both partners during the twinning action.
*   To familiarize healthcare professionals, in collaboration with the adopter, with utilizing eHealth technology for risk stratification. Due to CTIC's experience in training activities to promote the use of ICT among different kinds of users, providing training in ICT tools used by the platform will be a specific objective to be developed by CTIC to different groups of users: doctors, nurses and patients.
*   To involve patients in personalized health campaigns to increase their adherence to treatments. By providing use cases from Campania related to home diagnostic/therapeutic pathways in continuity with the hospital medical records, CTIC will make patients from Asturias aware of the benefits of the solution, improving their adherence to treatments. After the twinning meeting in Salerno, the following steps will follow under the twinning scheme:

    1.  February 2017 – May 2017

During the first four months, CTIC will study the Campania use case known on-site during the visit in January. They will also continue having calls, emails and webinars with people known in Campania to adopt know-how, in order to include Cardiology data and risk stratification algorithms:

*   Task 1: Review Campania use case.
*   Task 2: Include Cardiology predictors in CTIC algorithm package, following Campania guidelines.

    2.  May 2017 – October 2017

During this phase, the ICT tools used in the Campania ecosystem will be evaluated so CTIC can extract and analyse the process and features implemented by them.

    3.  November  201 – May 2018

During this period, the new defined features in ICT applications and tools will be implemented.

4. May 2018-Dec 2018.

Within this last phase, tested model, tools and algorithms will be used by care professionals and patients.

The main barrier identified against the adoption of the model in Asturias is the need for access to data systems of electronic devices, which are proprietary systems. To be able to capture these data, CTIC would have to come to a collaboration agreement with each of the owners of the companies of the devices, something that is feasible as CTIC is already collaborating with companies in this field.

The second barrier identified is the lack of human resources with skills in the field of ICT & active ageing in the region of Asturias. CTIC has wide experience in training activities to promote the use of ICT among different kind of users, so this barrier would be faced by training different users in the ICT tools used by the platform.

The success of the implementation of the digital solution / innovative practice will be measured by the following indicators:

- The number of professionals of the adopter country hospital using the solution before the end of 2018. Objective: 11.
- The number of hospitals or health centres starting the adoption of ICT tools for risk stratification and personalized health before 2019. Objective: 2.
- The number of events: e.g. a dissemination event of the implementation of ADD Protection in the adopter country as a showcase for using eHealth to support self-management by means of a symposium around the topic. This should be organized by the reference sites adopter country and Campania, and be held in the adopter country or in Salerno. Objective: 1.

## 10.15.5 Benefits and outcomes (adopter)

One important strength has been identified is the possibility to use an existing service in Asturias to adapt the model (e.g. through the Home Care Service (Sistema de Ayuda a Domicilio (SAD)). The existing Home Care Service in Asturias (SAD) can be improved and completed with the digital solution from Campania, which then would increase the demand in the health and care system among ICT companies and organizations. This will imply the creation of new businesses and will foster R&D activities in these companies, which will try to find new services to be integrated within the SAD. This will also foster the sustainable creation of ICT & health companies in the region, as well as the need of specific training in ICT for different groups of users.

The expected enrichment of CTIC's ICT stratification and personalized medicine platform with data and algorithms from Cardiology clinical area will impact 6.5% of the Asturian population or a total of 60,000 persons. It would also lead to better resource allocation and a reduction of regional health expenditure.

## 10.15.6 Recommendations

As the main barrier identified to adopt the practice is the need for access to data systems of electronic devices (as they are proprietary systems), measures promoting the interoperability of devices by ensuring the privacy of data would be established.

In order to ensure the availability of human resources with skills in the field of ICT & Active Ageing, training programmes should be promoted in the regions.

## 10.16   Northern Ireland – North West Coast of England (STEPSelect)

## 10.16.1 Twinning overview

| Originator: | Adopter: | Innovative Practice: |
|---|---|---|
| Medicines Optimisation Innovation Centre, Northern Ireland | NHS Innovation Agency North West of England, North West Coast of England | STEPSelect |

| Innovative Practice Description |
|---|
| The STEPSelect system is a web-based programme, which allows the selection of medicines by formulary committees in hospitals and other health care institutions on a transparent and bias free basis. It is a comprehensive and well-researched web-based ICT application designed to optimize the selection and procurement of medicines. Developed in NHI since 2006, STEPSelect is now used for selection and procurement of almost €800 million of medicines in NI annually. STEPSelect is associated with improvements in the quality of prescribing, while reducing the cost of medicines by 20-25% for selected therapeutic groups. Since 2006, STEPSelect has been the focus of around 200 publications in peer reviewed journals on its main methods and outcomes.<br><br>This initiative delivers a clinician driven procurement process that ensures that they have a comprehensive input into the process. The process is predicated on the basis of safety and quality driving health gain and economy. It is evidence-based and also takes account of risk assessment of products It also enables the needs of specific patient groups to be taken into account, especially older people and ensuring that recommendations in this population are based on evidence relating to that age group, i.e. patient centred. |

| Link to the EIP on AHA Repository of innovative practices: |
|---|
| https://ec.europa.eu/eip/ageing/repository/safe-therapeutic-economic-pharmaceutical-selection_en |

| Innovation Scope: |
|---|
| • Integrated medicines management |

| Innovation Type: |
|---|
| The twinning raised a considerable amount of interest in implementing the STEPSelect system at a local level. At the present time, a pilot project is being considered at operational level in a healthcare setting. The degree of innovation of the twinning includes step 1 (Knowledge exchange & training) as well as step 2 (adoption). |

| AHA Action Group: |
|---|
| ✓  A1. Prescription and adherence action at regional level |

| Twinning Objectives: |
|---|
| The main objective of the project is to introduce the STEPSelect platform developed in NI in North West England as a tool for the optimized selection and procurement of medicines for the elderly and other persons and to assess and validate that the adoption of this web-based programme supports and strengthens local decision making capacity about medicines selection with economic and social benefits for the healthcare delivery system in particular for the elderly, while reducing inequalities in relation to access to relevant cost-effective medicines. Finally, the project will identify both potential facilitators and barriers to scaling-up in North West England. |

| Twinning end result: |
|---|
| A pilot project is planned so it is too early days to assess if the innovative practice will be adopted all over NWC. |

## 10.16.2 Background on STEPSelect

**Description**

The digital solution is the STEPSelect system. This is a web-based program, which allows the selection of medicines by formulary committees in hospitals and other health care institutions on a transparent and bias free basis.

This twinning project seeks to scale-up STEPSelect, a comprehensive and well-researched framework methodology developed in NI designed to optimize the selection and procurement of medicines for the elderly and others. Developed since 2006 by the NHS in NI, STEPSelect is a web-based ICT application, which is now used for selection and procurement of almost 800M€ of medicines in NI annually. STEPSelect is associated with improvements in the quality of prescribing, while reducing the cost of medicines by 20-25% for selected therapeutic groups. Since 2006, STEPSelect has been the focus of around 200 publications in peer reviewed journals on its main methods and outcomes. STEPSelect is one of the cornerstones of the quality policy for pharmaceuticals developed by the NI Ministry of Health.

This initiative delivers a clinician driven procurement process that ensures that they have a comprehensive input into the process. The process is predicated on the basis of safety and quality driving health gain and economy. It is evidenced based and also takes account of risk assessment of products It also enables the needs of specific patient groups to be taken into account especially older people and ensuring that recommendations in this population are based on evidence relating to that age group, i.e. patient centred.

**Evolution in the originator's region**

STEPSelect was developed since 2006 and is fully operational in Northern Ireland. It was developed in a joint collaboration with Digitalis Mm Ltd, a Dutch/Irish based company specialised in the development of knowledge products for health professionals. A major weakness of many formulary committee proceedings is that they lack transparency and are often too much concerned with reducing the cost of medicines rather than a clinical approach. STEPSelect is overcoming these problems and essentially is a method for clinical procurement of medicines.

The plan is to set up a pilot project involving the selection of medicines for a particular therapeutic group and then to apply the STEPSelect method on a broader basis. Time involvement is six months for the pilot and another six months for wider application.

Activities foreseen will take place during the time slot indicated by the EIP Twinning Instrument: between October 19th and January 31st 2017. The following activities are foreseen during this period; (1) Study visit to NI, (2) Landscape analysis, (3) Training of local staff in STEPSelect methodology, (4) Set up of pilot selection of drugs in various therapeutic fields, (5) Evaluation, impact assessment and wider applicability and (6) End report.

The use of the STEPSelect generally results in savings up to 25% on the cost of selected medicines. The system therefore pays itself!

STEPSelect in Northern Ireland forms the backbone of medicines procurement in this part of the UK. On a total budget of 800M€ (for a population of 1.8 million) the business case is that for therapeutic fields where STEPSelect is applied savings in the region of 20-25% can be generated. In Northern Ireland these savings are then ploughed back into the system in order to induce additional improvements in health care delivery.

**Barriers and success factors experienced by the originator**

There was initial resistance from clinicians, who feared about their clinical freedom. However, they quickly saw that STEPSelect in fact increases their clinical freedom as it adds to transparency in medicines selection in a major way. A major mitigating factor was that

resource savings due to the implementation of STEPSelect were reinvested in the health care system to further improve the delivery of care.

Success factors were:

• Transparency of medicines selection,
• Reduction of cost,
• Reinvestment of cost savings in the health care system

### 10.16.3 Adopter's needs and ambitions

A combination of more transparency and efficiency in selecting medicines for the formulary in combination with a reduction of cost is a major need in the NHS West context.

Medicines procurement constitutes an important segment of the overall cost of healthcare in our region and we are interested indeed to reduce these costs while maintaining or even improving the level of quality of prescribing.

The main objective of the project is to introduce the STEPSelect platform developed in NI in NHS North West as a tool for the optimized selection and procurement of medicines for the elderly and other persons and to assess and validate that the adoption of this web-based program supports and strengthens local decision making capacity about medicines selection with economic and social benefits for the healthcare delivery system in particular for the elderly, while reducing inequalities in relation to access to relevant cost-effective medicines. Finally, the project will identify both potential facilitators and barriers to scaling-up STEPSelect in NHS North West.

Medicines selection and procurement in the NHS in the UK is often a bureaucratic and not transparent process. This means that often products are available to patients which may not be of enough value for money patients spend. Thus, the selection process of medicines is not always based on what is best for the patient from a clinical perspective and too often medicines are selected on the basis of only their cost. In NHS North West, a new methodology is needed to improve the procurement of medicines on clinical grounds in such a way that the selection process is transparent.

### 10.16.4 Adoption and investment plan

The project contains the following activities:

• To organize a study tour of NHS North West Coast of England officials involved in medicines selection and policies especially for the elderly to NI,
• To carry out a landscape analysis of key stakeholders and end users involved in medicines selection in NHS North West Coast of England,
• To evaluate the potential benefits of adapting the STEPSelect platform to the Olomouc medicines selection and procurement environment constraints,
• To train healthcare professionals on the appropriate use of STEPSelect,
• To run a pilot project in focussing on the introduction of STEPSelect,
• To evaluate the impact of the project (data, personnel, financing) required for sustainable implementation of the STEPSelect methodology in NHS North West Coast of England.

At this stage, it is difficult to specify on the budget that has already been spent. The pilot will have a time frame of about 12 months and will involve a team of 2 persons as well as a clinical team of about 10 clinicians and pharmacists.

So far, no other funding instruments have been enacted, but Horizon 2020 has been considered to support the twinning and implementation of the innovative practice. However, these funds are very difficult to access. Other funding options may exist, but this needs to be scoped further.

We are exploring local funding as well, but most of the time this funding is used for research rather than for implementation of innovative practices.

No barriers to the adoption whatsoever have been identified.

We are in the process of setting up a pilot in the adopter region following a study visit of the adopter to our originator region.

We have designed an evaluation format which will evaluate the degree of success looking at process and outcome variables of selection and procurement of medicines.

## 10.16.5 Benefits and outcomes (adopter)

The STEPSelect methodology will contribute in North West England to a more rational and transparent selection and procurement of medicines for the elderly and others based on disease management, local use of medicines and cost constraints.

Know how transferred will be in several different fields such as: (1) How to use the ICT based STEPSelect methodology (2) Organization of a transparent medicines selection and procurement system for the elderly, (3) How to assess the budget impact of medicines, (4) Expansion of the knowledge base on medicines and disease management especially for the elderly

Benefits and opportunities will come about when savings will be realised as a result of implementation of the STEPSelect system. These savings will be reinvested to improve health care delivery i.e. the development of a patient registry, the employment of extra nursing staff or the implementation of a new IT system.

In principle, the entire local population of the adopter region will benefit from the availability of a good range of medicines at affordable cost. The planned pilot will take place at hospital level. The reference population for a hospital is approximately 100.000 persons with a staff in excess of 100 specialists.

## 10.16.6 Recommendations

Identified barriers may be that some stakeholders are not interested in full transparency of medicines selection. These stakeholders could be clinicians, who are interested to not always prescribe the best value for money medicines. Introduction of STEPSelect in, for instance, Northern Ireland, however, has shown that comprehensive use of this methodology will eventually win over even the sturdiest proponents.

## 10.17    Pays de la Loire – Porto (ALOHA)

## 10.17.1 Twinning overview

| Originator: Gerontopôle Autonomie Longevite des Pays de la Loire, Pays de la Loire | Adopter: University of Porto, Porto Metropolitan Area | Innovative Practice: ALOHA |
|---|---|---|
| **Innovative Practice Description** | | |

The transferred innovative practice is based on the adaptation of a successful French good practice of the Metropolitan Region of Porto. This platform integrates an innovative e-Health expert system for the prevention of infectious diseases in seniors over 50 with or without non-communicable chronic diseases, thus reducing the burden of such diseases. This initiative aims to provide a web portal to inform, educate and engage seniors and healthcare professionals on prevention (vaccination, nutrition, physical activity, controlled used of antibiotics) providing tools for personal and tailored recommendations, in order to empower users and enable them to make correct and good preventive choices. Under this Twinning Scheme, we propose to implement this platform, following the same abovementioned principles.

This platform is linked to an European umbrella web platform: www.aloha-academy.eu. All national platforms, included the Portuguese one, will be linked.

This activity will encompass its translation and cultural adaptation into Portuguese and its dissemination (www.academia-bem-envelhecer.up.pt).

| **Link to the EIP on AHA Repository of innovative practices:** |
|---|
| https://ec.europa.eu/eip/ageing/repository/aloha-active-and-healthy-ageing-academy_en |
| **Innovation Scope:** |

- ICT tools supporting adherence to care plans
- ICT-supported integration of health and social care services
- Online health portals

| **Innovation Type:** |
|---|
| The innovation is being implemented in its **full scope** (Level 4) by using local infrastructure. |
| **AHA Action Group:** |

✓    A1. Prescription and adherence action at regional level

| **Twinning Objectives:** |
|---|

This twinning activity aims to act as a step stone to other future endeavours between Porto4Ageing and Gerontopôle Autonomie Longevite des Pays de la Loire and it is an objective that both institutions are fully committed to.

As for the implementation of the solution, both Reference Sites are already working together in the development of common contents for e-books and they intended to continue doing so after the completion of this twinning activity. Training, adaptation and customisation of the solution and help to overcome barriers are also envisaged, being indeed the core of this project.

Furthermore, it will act as the first step to dissemination in other countries. The experience of this first twinning project could lead to others partnerships with interested institutions in different countries.

| **Twinning end result:** |
|---|

The web platform is online: www.academia-bem-envelhecer.up.pt

## 10.17.2 Background on ALOHA

**Description**

The transferred innovative practice is based on the adaptation of a successful French good practice of the Metropolitan Region of Porto. This platform integrates an innovative e-Health expert system for the prevention of infectious diseases in seniors over 50 with or without non-communicable chronic diseases, thus reducing the burden of such diseases. This initiative aims to provide a web portal to inform, educate and engage seniors and healthcare professionals on prevention (vaccination, nutrition, physical activity, controlled used of antibiotics) providing tools for personal and tailored recommendations, in order to empower users and enable them to make correct and good preventive choices. Under this Twinning Scheme, we propose to implement this platform, following the same abovementioned principles.

This platform is linked to an European umbrella web platform. All national platforms, included the Portuguese one, will be linked.

This activity will encompass its translation and cultural adaptation into Portuguese and its dissemination.

**Evolution in the originator's region**

In the context of the European and national demographic challenges and the sustainability of well-being and healthcare systems, the ultimate goal of the platform is to reduce the burden of morbidity, disability, functional decline and premature mortality related to infectious disease in seniors aged 55 and over.

Choosing a healthy lifestyle, knowing how to seek medical advices and taking advantages of preventive measures require that people understand and use health information. Furthermore, improving health literacy and adherence to healthy lifestyle requires working with both senior citizens and healthcare professionals.

The main motivations for the creation of this web-educational platform are to fill the gap that exists in terms of reliable information on and for people aged 55 and over and to create tailored tools to support health workers in their decisions.

The twinning of the French platform (development part) was simplified, as the French platform was already in use. The project was organised as follows:

- January 2017: Face-to-face meetings with specific training on how to approach the adaptation of the platform,
- March 2017: Twinning of the platform and translation of contents,
- March to April 2017: Design of communication elements and social networks. Social networks allowed us to create a teasing effect prior to the official launch,
- February to April 2017: Translation and implementation of contents (e-books, articles, etc.),
- 7 July 2017: Official launch and press releases.

After these activities are completed, Adopter and Originator will share original contents and iconography. This implementation in the two countries will enable an increase of contents and therefore an increase of visitors on both platforms, without a particular increase of man-hours or costs for the production of new contents. A joint e-book during the European immunization week is already planned.

Planned costs for platform development can be split into different 5 parts, evaluated on the basis of the French prior knowledge:

- Registration and intellectual property (brand protection): 300€ + 20€ a year for domain name,

- Technical issues (hosting, maintenance, etc.): No costs planned for 2017. Portuguese platform will be hosted by the same subcontractor as the French platform. In 2018, costs could be shared: 1500€ per year,
- Communication and marketing: Portuguese platform will have the same communication elements as the French one. Costs will only be linked to printing and subscriptions to congresses,
- Platform adaptation: The Originator will transfer all the prior knowledge and documents to the Adapter. Because of cultural differences, only a semantic analysis of web-users might be done: 2000€.

Human Resources: 1FTE could be planned at the beginning (ca. 22 000€ per year).

**Barriers and success factors experienced by the originator**

The main barriers were the following:

- To address the seniors as the final target of the platform: all the age groups are not equal in their digital habits and concerns. It is not a hindrance to address the senior aged from 60 to 75, but the age group of seniors aged 80 + is not so well connected. We can address them through younger seniors as their corresponding potential caregivers. Seniors aged 50 to 60 are connected but not so concerned by the preventive messages. They are addressed by the same way: they are potential caregivers. So if the information is used for their parents, it appears that it can spread the words also to this age group.
- To finance the platform. Indeed, our business plan is based on partnership and sponsoring. The aim of the platform is to be perfectly transparent and ethical. No advertisement or product placement is allowed. Our main problem is that sponsoring is not so usual in France, especially at the beginning of a project. Indeed, we have not a great traffic because of our short existence, the small financial resources for investment and a "niche market". All is based on SEO and communication, so it takes some time and requires an important investment on human resources.

The main success factors were the following:

- Use of a popularized wording and at the same time keeping high-level content quality
- Setting up thematic weeks, with provision of free downloadable e-books
- Large use of social networks, especially twitter
- The choice of iconography: colourful de-dramatization of seniors visions and a funny, quirky spirit
- An intensive presence on congresses, forums, exhibitions, etc.

### 10.17.3 Adopter's needs and ambitions

The interest, first and foremost, stemmed from the fact that the platform was a proved success. Taking and twinning a successful practice was of large importance for Porto4Ageing, as on one hand it was a great opportunity to serve the ageing population and an ageing society, and on the other hand, to establish Porto4Ageing as a leading infrastructure, which cares for the well-being of the elderly.

In the northern region of Portugal, and indeed in the whole country, there is not a similar platform which is fully dedicated to ageing issues and that acts as an information and prevention repository for the elderly. This fact shows that there was a gap to fill. We are thus convinced that the implementation of this solution is responding to a very specific need, which will be overcome through this twinning process.

Ageing issues are a priority at a regional and national level. They are clearly mentioned on the smart specialisation strategies of both North of Portugal and Portugal. Institutionally-wise, (at University of Porto, where Porto4Ageing is currently based) ageing issues have also been

made a priority by the management bodies, which means that this project and indeed Porto4Ageing activities are totally in line with the regional needs and priorities.

Since it is part of the regional priorities, there will be some external funds available to implement ageing solutions, of which Porto4Ageing is totally committed to raise.

This twinning activity aimed to act as a step stone to other future endeavours between Porto4Ageing and Gerontopôle Autonomie Longevite des Pays de la Loire and it is an objective that both institutions are fully committed to.

As for the implementation of the solution, both Reference Sites are already working together in the development of common contents for e-books and they intended to continue doing so after the completion of this twinning activity. Training, adaptation and customisation of the solution and help overcoming barriers are also envisaged, being indeed the core of this project.

Furthermore, it will act as the first step to dissemination in others countries. The experience of this first twinning project could lead to others partnerships with interested institutions in different countries.

## 10.17.4 Adoption and investment plan

The first months of twinning activities were dedicated to the acquaintance with the platform through meetings with the originator (face-to-face and by Skype). Moreover, internal meetings to present and display the platform to different stockholders that are part of Porto4ageing consortium were also performed.

During March, the cloning of the French platform was performed (M1 – end of March: cloning of platform). Until the end of May the content of French platform was translated into Portuguese and culturally adapted. Moreover, new contents were created by the different stakeholders of the Porto4ageing consortium (M2 – end of May: Finishing adaptation of platform content). During June, dissemination of the platform across the metropolitan region of Porto and at national level was performed, finishing with the launch of platform at the end on the month (M3 – end of June – launch of platform in Portugal), being its official public launch at the 1st week of July, in Porto, with the presence of the originators and adopters.

From the Twinning project budget only 2,387.50€ were spent. We only spent this amount given that very little time was given for the twinning activities. We spent 7,300€ for implementation and development of the Portuguese web platform.

The project was mainly supported by funds of the University of Porto, as well as by funds of private companies.

The main identified barrier was the lack of digital literacy of the senior population. This barrier will be countered with the development of training to improve digital literacy in this population.

Google Analytics was the most important provider of metrics, which allowed us to observe the impact of contents and specific actions (communication, thematic weeks, etc.) on the platform traffic.

Following the launch of Portuguese platform, a quantitative and qualitative evaluation of the impact of this solution is being considered, and the development of financial partnerships is also envisaged, in order to implement that.

## 10.17.5 Benefits and outcomes (adopter)

This Twinning Scheme will greatly benefit seniors, as this web portal will inform, educate and engage seniors and healthcare professionals on prevention (vaccination, nutrition, physical

activity, controlled used of antibiotics), providing tools for personal and tailored recommendations, in order to empower users and enable them to make correct and good preventive choices. The empowerment of patients is important to improve adherence to medical plans, particularly to vaccination, physical activity, and healthy diet and correct use of antibiotics. Moreover, this initiative is also expected to improve health literacy via web and behaviour changes in senior population. Prevention of infectious diseases in senior, reduce hospitalizations and improve healthcare sustainability are also expected outcomes. Moreover, the fact that two Reference Sites are working together and are exchanging practices will strengthen their relationship, which may lead to further joint ventures and collaborations. Thus, under this scheme, we aim to enable patients to have a more active and healthy life, through the implementation of an innovative ICT-based solution.

It is expected that approximately 300.000 seniors could benefit from this twinning activity in our region.

The web platform was launched on 7th July. Several Portuguese media bodies covered the event[63] [64] [65] [66] [67] [68]. The media coverage was important, in order to publicise the platform for the local population. Since the platform has only been recently launched, there is no data or evidence about the number of accesses or page views. The development of the Portuguese platform involved 15 health care professionals, as well as some representatives of civil society.

## 10.17.6 Recommendations

The adoption of policies promoting digital literacy in the senior population as well as in health professionals is highly recommended.

Furthermore, the participating institutions are grateful for the opportunity to use the available funds to implement an innovative practice. However, we believe that the funds could cover more types of expenses, for example, evening meals of staff participating in meetings and the development and implementation of ICT solutions. Also, the option to submit more regular applications, maybe twice a year, could improve the chances of directly collaborating with other Reference Sites in Europe.

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[63] http://www.dn.pt/lusa/interior/plataforma-online-desenvolvida-no-porto-visa-aumentar-adesao-de-idosos-a-vacinacao-8617222.html

[64] http://lifestyle.sapo.pt/saude/noticias-saude/artigos/criada-plataforma-online-para-aumentar-adesao-de-idosos-a-vacinacao

[65] http://24.sapo.pt/tecnologia/artigos/academia-do-bem-envelhecer-a-plataforma-que-promove-a-saude-e-vacinacao-na-terceira-idade

[66] http://www.atlasdasaude.pt/publico/content/plataforma-online-visa-aumentar-adesao-de-idosos-vacinacao

[67] https://www.noticiasaominuto.com/tech/826844/plataforma-online-visa-aumentar-adesao-de-idosos-a-vacinacao

[68] https://www.youtube.com/watch?v=Zwg6ske6Tqw

## 10.18    Northern Ireland – Olomouc (STEPSelect)

## 10.18.1 Twinning overview

| Originator:<br>Medicines Optimisation Innovation Centre, Northern Ireland | Adopter:<br>Czech National eHealth Centre, Olomouc | Innovative Practice:<br>STEPSelect |
| --- | --- | --- |
| **Innovative Practice Description** | | |

| **Innovative Practice Description** |
| --- |
| The STEPSelect system is a web-based program, which allows the selection of medicines by formulary committees in hospitals and other health care institutions on a transparent and bias free basis. It is a comprehensive and well-researched web-based ICT application designed to optimize the selection and procurement of medicines. Developed in NHI since 2006, STEPSelect is now used for selection and procurement of almost €800 million of medicines in NI annually. STEPSelect is associated with improvements in the quality of prescribing, while reducing the cost of medicines by 20-25% for selected therapeutic groups. Since 2006, STEPSelect has been the focus of around 200 publications in peer reviewed journals on its main methods and outcomes.<br><br>This initiative delivers a clinician driven procurement process that ensures that they have a comprehensive input into the process. The process is predicated on the basis of safety and quality driving health gain and economy. It is evidence-based and also takes account of risk assessment of products It also enables the needs of specific patient groups to be taken into account, especially older people and ensuring that recommendations in this population are based on evidence relating to that age group, i.e. patient centred. |
| **Link to the EIP on AHA Repository of innovative practices:** |
| https://ec.europa.eu/eip/ageing/repository/safe-therapeutic-economic-pharmaceutical-selection_en |
| **Innovation Scope:** |
| •    Integrated medicines management |
| **Innovation Type:** |
| The twinning raised a considerable amount of interest in implementing the STEPSelect system at a local level. At the present time, a pilot project is being considered at operational level in a healthcare setting. The degree of innovation of the twinning includes **step 1** (Knowledge exchange & training) as well as **step 2** (adoption). |
| **AHA Action Group:** |
| ✓    A1. Prescription and adherence action at regional level |
| **Twinning Objectives:** |
| The main objective of the project is to introduce the STEPSelect platform developed in NI in Olomouc as a tool for the optimized selection and procurement of medicines for the elderly and other persons and to assess and validate that the adoption of this web-based programme supports and strengthens local decision making capacity in regards to medicine selection with economic and social benefits for the healthcare delivery system, in particular for the elderly while reducing inequalities in relation to access to relevant cost-effective medicines. Finally, the project will identify both potential facilitators and barriers to scaling-up STEPSelect in Olomouc. |
| **Twinning end result:** |
| A pilot project is planned so it is too early days to assess whether the innovative practice will be adopted all over Olomouc. |

## 10.18.2 Background on STEPSelect

**Description**

The STEPSelect system is a web-based program, which allows the selection of medicines by formulary committees in hospitals and other health care institutions on a transparent and bias free basis. It is a comprehensive and well-researched web-based ICT application designed to optimize the selection and procurement of medicines. Developed in NHI since 2006, STEPSelect is now used for selection and procurement of almost 800M€ of medicines in NI annually. STEPSelect is associated with improvements in the quality of prescribing, while reducing the cost of medicines by 20-25% for selected therapeutic groups. Since 2006, STEPSelect has been the focus of around 200 publications in peer reviewed journals on its main methods and outcomes.

This initiative delivers a clinician driven procurement process that ensures that they have a comprehensive input into the process. The process is predicated on the basis of safety and quality driving health gain and economy. It is evidence-based and also takes account of risk assessment of products. It also enables the needs of specific patient groups to be taken into account, especially older people and ensuring that recommendations in this population are based on evidence relating to that age group, i.e. patient centred.

## Evolution in the originator's region

STEPSelect was developed since 2006 and is fully operational in Northern Ireland. It was developed in a joint collaboration with Digitalis Mm Ltd, a Dutch/Irish based company specialised in the development of knowledge products for health professionals. A major weakness of many formulary committee proceedings is that they lack transparency and are often too much concerned with reducing the cost of medicines rather than a clinical approach. STEPSelect is overcoming these problems and essentially is a method for clinical procurement of medicines.

The plan is to set up a pilot project involving the selection of medicines for a particular therapeutic group and then to apply the STEPSelect method on a broader basis. Time involvement is six months for the pilot and another six months for wider application.

Activities foreseen will take place during the time slot indicated by the EIP Twinning Instrument: between October 19th and January 31st 2017. The following activities are foreseen during this period; (1) Study visit to NI, (2) Landscape analysis, (3) Training of local staff in STEPSelect methodology, (4) Set up of pilot selection of drugs in various therapeutic fields, (5) Evaluation, impact assessment and wider applicability and (6) End report.

STEPSelect in Northern Ireland forms the backbone of medicines procurement in this part of the UK. On a total budget of 800M € (for a population of 1.8 million) the business case is that for therapeutic fields where STEPSelect is applied, savings in the region of 20-25% can be generated. In Northern Ireland these savings are then ploughed back into the system in order to induce additional improvements in health care delivery.

## Barriers and success factors experienced by the originator

There was initial resistance from clinicians, who feared about their clinical freedom. However, they quickly saw that STEPSelect in fact increases their clinical freedom as it adds to transparency in medicines selection in a major way. A major mitigating factor was that resource savings due to the implementation of STEPSelect were reinvested in the health care system to further improve the delivery of care.

Success factors were:

- Transparency of medicines selection,
- Reduction of cost,
- Reinvestment of cost savings in the health care system

### 10.18.3 Adopter's needs and ambitions

A combination of more transparency and efficiency in selecting medicines for the formulary in combination with a reduction of cost is a major need in the Czech context.

Medicines procurement constitutes an important segment of the overall cost of healthcare in our region and we are interested to reduce these costs while maintaining or even improving the level of quality of prescribing.

Medicines selection and procurement in the Czech Republic is an intransparent and often not rational process. This means that often products are reimbursed which may be irrational or too expensive. In addition, the selection process of medicines is not always based on what is best for the patient from a clinical perspective and too often medicines are selected on the basis of only their cost. We need a new methodology in the Czech Republic to improve the procurement of medicines on clinical grounds in such a way that the selection process is transparent.

The main objective of the project is to introduce the STEPSelect platform developed in NI in Olomouc as a tool for the optimized selection and procurement of medicines for the elderly and other persons and to assess and validate that the adoption of this web-based program that supports and strengthens local decision making capacity about medicines selection with economic and social benefits for the healthcare delivery system in particular for the elderly, while reducing inequalities in relation to access to relevant cost-effective medicines. Finally, the project will identify both potential facilitators and barriers to scaling-up STEPSelect in Olomouc.

### 10.18.4 Adoption and investment plan

The project contains the following activities:

*   To organize a study tour of Olomouc officials involved in medicines selection and policies especially for the elderly to NI;
*   To carry out a landscape analysis of key stakeholders and end users involved in medicines selection in Olomouc;
*   To evaluate the potential benefits of adapting the STEPSelect platform to the Olomouc medicines selection and procurement environment constraints;
*   To train healthcare professionals on the appropriate use of STEPSelect;
*   To run a pilot project in focussing on the introduction of STEPSelect;
*   To evaluate the impact of the project (data, personnel, financing) required for sustainable implementation of the STEPSelect methodology in Olomouc

At this stage, it is difficult to specify on the budget that has already been spent. The pilot will have a time frame of about 12 months and will involve a team of 2 persons as well as a clinical team of about 10 clinicians and pharmacists.

So far, no other funding instruments have been enacted, but Horizon 2020 has been considered to support the twinning and implementation of the innovative practice. However, these funds are very difficult to access. Other funding options may exist, but this needs to be scoped further.

We are exploring local funding as well, but most of the time this funding is used for research rather than for implementation of innovative practices.

No barriers to the adoption whatsoever have been identified.

We are in the process of setting up a pilot in the adopter region following a study visit of the adopter to our originator region

We have designed an evaluation format which will evaluate the degree of success looking at process and outcome variables of selection and procurement of medicines.

## 10.18.5 Benefits and outcomes (adopter)

The STEPSelect methodology will contribute in Olomouc to a more rational and transparent selection and procurement of medicines for the elderly and others based on disease management, local use of medicines and cost constraints.

Know how transferred will be in several different fields such as: (1) How to use the ICT based STEPSelect methodology (2) Organization of a transparent medicines selection and procurement system for the elderly, (3) How to assess the budget impact of medicines and (4) Expansion of the knowledge base on medicines and disease management especially for the elderly.

Benefits and opportunities will come about when savings will be realised as a result of implementation of the STEPSelect system. These savings will be reinvested to further improve healthcare delivery, i.e. the development of a patient registry, the employment of extra nursing staff or the implementation of a new IT system.

In principle, the entire local population of the adopter region will benefit from the availability of a good range of medicines at affordable cost. The planned pilot will take place at hospital level. The reference population for the university hospital in Olomouc is approximately 300.000 persons with a staff in excess of 500 specialists.

## 10.18.6 Recommendations

Identified barriers may be that some stakeholders are not interested in full transparency of medicines selection. These stakeholders could be clinicians, who are interested to not always prescribe the best value for money medicines. Introduction of STEPSelect in for instance Northern Ireland, however, have shown that comprehensive use of this methodology will eventually win over even the sturdiest proponents.

## 10.19   Northern Ireland – Catalonia (STEPSelect)

## 10.19.1 Twinning overview

| Originator: Medicines Optimisation Innovation Centre, Northern Ireland | Adopter: Institut Catala de Salut, Catalonia | Innovative Practice: STEPSelect |
|---|---|---|
| **Innovative Practice Description** | | |
| The digital solution is the STEPSelect system. This is a web-based program, which allows the selection of medicines by formulary committees in hospitals and other health care institutions on a transparent and bias free basis. This twinning project seeks to scale-up STEPSelect, a comprehensive and well-researched framework methodology developed in NI designed to optimize the selection and procurement of medicines for the elderly and others. Developed since 2006 by the NHS in NI, STEPSelect is a web-based ICT application, which is now used for selection and procurement of almost 800M€ of medicines in NI annually. STEPSelect is associated with improvements in the quality of prescribing, while reducing the cost of medicines by 20-25% for selected therapeutic groups. Since 2006, STEPSelect has been the focus of around 200 publications in peer reviewed journals on its main methods and outcomes. STEPSelect is one of the cornerstones of the quality policy for pharmaceuticals developed by the NI Ministry of Health. This initiative delivers a clinician driven procurement process that ensures that they have a comprehensive input into the process. The process is predicated on the basis of safety and quality driving health gain and economy. It is evidence-based and also takes account of risk assessment of products. It also enables the needs of specific patient groups to be taken into account especially older people and ensuring that recommendations in this population are based on evidence relating to that age group, i.e. patient centred. | | |
| **Link to the EIP on AHA Repository of innovative practices:** | | |
| https://ec.europa.eu/eip/ageing/repository/safe-therapeutic-economic-pharmaceutical-selection_en | | |
| **Innovation Scope:** | | |
| • Integrated medicines management | | |
| **Innovation Type:** | | |
| The twinning raised a considerable amount of interest in implementing the STEPSelect system at a local level. At the present time, a pilot project is being considered at operational level in a healthcare setting. The degree of innovation of the twinning includes **step 1** (knowledge exchange & training) as well as **step 2** (adoption). | | |
| **AHA Action Group:** | | |
| ✓ A1. Prescription and adherence action at regional level | | |
| **Twinning Objectives:** | | |
| The main objective of the project is to introduce the STEPSelect platform developed in NI in Catalonia as a tool for the optimized selection and procurement of medicines for the elderly and other persons and to assess and validate that the adoption of this web-based program supports and strengthens local decision making capacity about medicines selection with economic and social benefits for the healthcare delivery system in particular for the elderly, while reducing inequalities in relation to access to relevant cost-effective medicines. Finally, the project will identify both potential facilitators and barriers to scaling-up in Catalonia. | | |
| **Twinning end result:** | | |
| The twinning resulted in implementation. A pilot project is planned to structure the medicines formulary used in primary care in Catalonia. It is too early to assess if the innovative practice will be adopted all over Catalonia. | | |

## 10.19.2 Background on STEPSelect

**Description**

The digital solution is the STEPSelect system. This is a web-based program, which allows the selection of medicines by formulary committees in hospitals and other health care institutions on a transparent and bias free basis.

This twinning project seeks to scale-up STEPSelect, a comprehensive and well-researched framework methodology developed in NI designed to optimize the selection and procurement of medicines for the elderly and others. Developed since 2006 by the NHS in NI, STEPSelect is a web-based ICT application, which is now used for selection and procurement of almost 800M€ of medicines in NI annually. STEPSelect is associated with improvements in the quality of prescribing, while reducing the cost of medicines by 20-25% for selected therapeutic groups. Since 2006, STEPSelect has been the focus of around 200 publications in peer reviewed journals on its main methods and outcomes. STEPSelect is one of the cornerstones of the quality policy for pharmaceuticals developed by the NI Ministry of Health.

This initiative delivers a clinician driven procurement process that ensures that they have a comprehensive input into the process. The process is predicated on the basis of safety and quality driving health gain and economy. It is evidence-based and also takes account of risk assessment of products. It also enables the needs of specific patient groups to be taken into account especially older people and ensuring that recommendations in this population are based on evidence relating to that age group, i.e. patient centred.

**Evolution in the originator's region**

STEPSelect was developed since 2006 and is fully operational in Northern Ireland. It was developed in a joint collaboration with Digitalis Mm Ltd, a Dutch/Irish based company specialised in the development of knowledge products for health professionals. A major weakness of many formulary committee proceedings is that they lack transparency and are often too much concerned with reducing the cost of medicines rather than a clinical approach. STEPSelect is overcoming these problems and essentially is a method for clinical procurement of medicines.

The strategy is to set up a pilot project involving the selection of medicines for a particular therapeutic group and then to apply the STEPSelect method on a broader basis. Time involvement is six months for the pilot and another six months for wider application.

Activities foreseen will take place during the time slot indicated by the EIP Twinning Instrument: between October 19th and January 31st 2017. The following activities are foreseen during this period; (1) Study visit to NI, (2) Landscape analysis, (3) Training of local staff in STEPSelect methodology, (4) Set up of pilot selection of drugs in various therapeutic fields, (5) Evaluation, impact assessment and wider applicability and (6) End report.

Estimated costs for the investment procurement/implementation of innovative solutions 2016-2018 (Adopter):

Estimated budget is 5,000€ for carrying out a study tour of a team from Catalonia to NI and to set up a pilot project introducing STEPSelect in the Catalonian context.

Our partner in this project is the Catalan Public Health Institute, which as one of its spearhead activities for this and next year features eHealth activities in hospitals and primary care. Several projects are planned with a cumulative budget for this and next year of around 240.000€.

Outcomes:

The use of the STEPSelect generally results in savings up to 25% on the cost of selected medicines. The system therefore pays itself.

STEPSelect in Northern Ireland forms the backbone of medicines procurement in this part of the UK. On a total budget of 800M€ (for a population of 1.8 million) the business case is that for therapeutic fields where STEPSelect is applied savings in the region of 20-25% can be generated. In Northern Ireland these savings are then ploughed back into the system in order to induce additional improvements in health care delivery.

**Barriers and success factors experienced by the originator**

There was initial resistance from clinicians, who feared about their clinical freedom. However, they quickly saw that STEPSelect in fact increases their clinical freedom as it adds to transparency in medicines selection in a major way. A major mitigating factor was that resource savings due to the implementation of STEPSelect were reinvested in the health care system to further improve the delivery of care.

Success factors were:

- Transparency of medicines selection,
- Reduction of cost,
- Reinvestment of cost savings in the health care system

## 10.19.3 Adopter's needs and ambitions

A combination of more transparency and efficiency in selecting medicines for the formulary in combination with a reduction of cost is a major need in the Catalonian context.

Medicines procurement constitutes an important segment of the overall cost of healthcare in our region and we are interested to reduce these costs while maintaining or even improving the level of quality of prescribing. Along the process of selecting medicines, transparency is a key point. Showing all items that you take into account for selection, it allows family physicians to better understand why one drug should be used instead of another drug from the same therapeutic group.

We have all organizational support and now we are exploring funding support in order to implement it in our institution.

The main objective of the project is to introduce the STEPSelect platform developed in NI in Catalonia as a tool for the optimized selection and procurement of medicines for the elderly and other persons and to assess and validate that the adoption of this web-based program supports and strengthens local decision making capacity about medicines selection with economic and social benefits for the healthcare delivery system in particular for the elderly, while reducing inequalities in relation to access to relevant cost-effective medicines. Finally, the project will identify both potential facilitators and barriers to scaling-up in Catalonia.

## 10.19.4 Adoption and investment plan

The project has the following activities:

- To organize a study tour of Catalonian officials involved in medicines selection and policies especially for the elderly to NI,
- To carry out a landscape analysis of key stakeholders and end users involved in medicines selection in Catalonia,
- To evaluate the potential benefits of adapting the STEPSelect platform to the Catalonian medicines selection and procurement environment constraints,
- To train healthcare professionals on the appropriate use of STEPSelect,
- To run a pilot project in focussing on the introduction of STEPSelect,
- To evaluate the impact of the project (data, personnel, financing) required for sustainable implementation of the STEPSelect methodology in Catalonia.

At this stage it is difficult to specify the budget that has already been spent. The pilot will have a time frame of about 12 months and will involve a team of three persons as well as a clinical team of about 12 clinicians and pharmacists. To improve transferability of standards of care and ensure equity along all Catalan Institute of Heath (provides healthcare to nearly six million users across the whole of its territory), it was very important to include this tool in our electronic clinical records that helped family physician in decision-making process, in order to improve patients care along all their life.

So far, no other funding instruments have been enacted, but Horizon 2020 has been considered to support the twinning and implementation of the innovative practice. However, these funds are very difficult in terms of accessing. Other funding options may exist, but this needs to be scoped further.

We are exploring local funding as well, but most of the time this funding is used for research rather than for implementation of innovative practices.

No barriers to the adoption whatsoever have been identified.

We have designed an evaluation format which will evaluate the degree of success looking at process and outcome variables of selection and procurement of medicines.

## 10.19.5 Benefits and outcomes (adopter)

Benefits and opportunities will come about when savings will be realized as a result of implementation of the STEPSelect system (direct cost of medicines and indirect cost of having more efficient system). As public health care provider, all savings are going to contribute to the sustainability of our country. This represents an opportunity to include the patients' and the clinicians' point of view.

With increasing quality and transparency in the process of selecting medicines, we are improving quality standards of care.

In principle, the entire local population of the adopter region will benefit from the availability of a good range of medicines at affordable costs. We provide services about 5.8M of citizens.

The planned pilot will take place at the primary care level. The reference population is the entire population of Catalonia (5.8M) and all workers in the primary care sector (42 pharmacists of primary care and around 2.000 family physicians).

The STEPSelect methodology will contribute in Catalonia to a more rational and transparent selection and procurement of medicines for the elderly and others based on disease management, local use of medicines and cost constraints.

Know-how transferred will be in several different fields such as: (1) How to use the ICT based STEPSelect methodology (2) Organization of a transparent medicines selection and procurement system for the elderly, (3) How to assess the budget impact of medicines and (4) Expansion of the knowledge base on medicines and disease management especially for the elderly population.

Benefits and opportunities will come about when savings will be realised as a result of implementation of the STEPSelect system. These savings will be reinvested to improve health care delivery i.e. the development of a patient registry, the employment of extra nursing staff or the implementation of a new IT system.

### 10.19.6 Policy recommendations

Identified barriers may be that some stakeholders are not interested in full transparency of medicines selection. These stakeholders could be clinicians, who are interested to not always prescribe the best value for money medicines. Introduction of STEPSelect in for instance Northern Ireland, however, have shown that comprehensive use of this methodology will eventually win over even the sturdiest proponents.

## 10.20    MACVIA-France – 10 adopters (Mask Allergy Diary)

### 10.20.1 Twinning overview

| Originator:<br>MACVIA-France Network | Adopters:<br>Campania, Catalonia, Porto, Olomouc, Lodz 4 Generations, Medical Delta, Northern Ireland, Piemonte, Southern Denmark, GARD Regional Network Turkey | Innovative Practice:<br>MASK Allergy Diary |
|---|---|---|
| **Innovative Practice Description** | | |
| MASK Allergy Diary is an app developed by MACVIA-France to compare phenotypic characteristics of rhinitis and asthma multi-morbidity in adults and old age people using validated ICT tools (Allergy Diary and CARAT: Control of Allergic Rhinitis and Asthma Test). Specific objectives (i) will assess the percentage of adults and old age people who are able to use the Allergy Diary. (ii) A cross-sectional study will include all users recruited by Reference Sites over a period of one year. All baseline characteristics will be analysed. Phenotypic characteristics and treatment of rhinitis and asthma multimorbidity in old age people will be compared with those of adults. (iii) A longitudinal study will include all users recruited by Reference Sites over a period of one year who have reported more than one day of visual analogue scale (VAS). VAS scores will be analysed. This part of the study may give some insight on differences between old age people and adults in terms of response to treatment and practice. Finally (iv) work productivity will be examined. | | |
| **Link to the EIP on AHA Repository of innovative practices** | | |
| https://ec.europa.eu/eip/ageing/repository/macvia-aria-sentinel-network-rhinitis_en | | |
| **Innovation Type** | | |
| ✓  ICT tools supporting adherence to care plans<br>✓  ICT-supported integration of health and social care services<br>✓  Tele-mentoring and virtual consultations | | |
| **AHA Action Group** | | |
| ✓  B3. Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level | | |
| **Other Relevant Project Involvement** | | |
| -- | | |
| **Twinning Objectives:** | | |
| The twinning aims at enrolling old age adults across Europe to better understand, diagnose and manage this very common condition in this age group.<br>The overall aim is to provide care pathways for individualised and predictive medicine for a very common chronic disease. The twinning is essential since it allows Reference Sites from different areas of Europe to interact, increasing knowledge and know-how transferred. | | |

## 10.20.2 Background on the MASK Allergy Diary

Rhinitis, the most common chronic disease in Europe, often starts early in life, persists across the life cycle and causes a high burden in all age groups. Rhinitis and asthma multi-morbidity is common and the two diseases should be considered jointly. The symptoms of allergic rhinitis (AR) can cause considerable morbidity in terms of physical and emotional comfort and functional capacity. Work productivity is one of the major societal impacts of AR. Sleep impairment is common in AR  and associated to severe nasal symptoms.

By 2020, rhinitis will affect at least 20% of the old age population. Rhinitis in this age group has phenotypic specificities and treatment modalities including poly-medication. The effects of polymedication may contribute to congestion and dryness. Sex may also be a confounding factor. Phenotypic characteristics and treatment of rhinitis in old age people depend on ageing (physiology, immunology), socio-cultural barriers, environmental factors (urban versus rural environment), allergic and non-allergic multi-morbidities, drug availability and affordability, specific side effects to drugs in this age group, health systems and type of care. However, rhinitis burden in old age people is an under-recognized and under-treated problem. Important differences are expected in the European population and so it is crucial to study the phenotype and treatment of rhinitis-asthma multi-morbidity in this age group in different European regions to bring new concepts and hypotheses and offer new diagnosis and management strategies to reduce health and social inequalities.

Measures of AR control include symptom scores, control scores or patients' self administered Visual Analogue Scales (VAS). VAS, a psychometric response scale for subjective characteristics or attitudes, has been successfully used in many diseases including AR. Severe Chronic Upper Airway Disease (SCUAD) defines uncontrolled AR patients despite optimal pharmacotherapy. The Control of Allergic Rhinitis and Asthma Test (CARAT) is the only self-administered questionnaire to quantify the control of both AR and asthma concurrently. It consists of 10 questions on upper and lower airway symptoms, sleep interference, activity limitation, and the need to increase medication over a four-week period. CARAT meets all items of the COSMIN (COnsensus-based Standards for the selection of health Measurement INstruments) checklist. CARAT developed and validated in Portugal has been translated and culturally adapted into over 25 languages in 9 countries (The Netherlands, Belgium, Germany, Greece, Ukraine, Italy, France, Brazil and India). Web and smartphone versions have been developed, and an open model of distribution contributes to its dissemination. The expected outcomes of the twinning include:

- **Phenotypic characteristics**: The Allergy Diary collects information on AR symptoms and allergic multi-morbidities experienced (nasal and ocular, asthma), how symptoms impact users' lives, and type(s) of AR and asthma treatments used. The study has a unique opportunity (i) to investigate the phenotype of rhinitis and asthma multi-morbidity in old age people in Europe, (ii) to study differences with other age groups using data in file and (iii) to make comparisons across countries.
- **Treatment of rhinitis and asthma multi-morbidity and disease control**: Control of rhinitis appears to differ depending on the age group. The study will show differences (i) with other age groups using data in file and (ii) between regions allowing optimisation of care pathways.
- **Use of the EQ-5D** allows assessment of quality-of-life and utilities data - part of  MAFEIP
- **Comparison between regions** (or countries depending on the health system)
- **Comparison between rural and urban environment**
- **Care pathways:** the results of the study will be used to develop region-specific care pathways (AIRWAYS ICPs) using a personalised medicine approach. Self-management strategies will be of great importance.
- **Knowledge and know-how transferred**. The epidemic wave of rhinitis in adults (over 25% of the European population) is now reaching old age people. It is essential to better characterize, understand and manage this disease that affects social life and causes

serious discomfort for sufferers. Only a pan-European view of the problem will allow a cost-effective and socially acceptable management of this disease. The Allergy Diary developed by the MACVIA France Reference Site is freely available for subjects in most European countries. The app will be deployed by the Reference Site Collaborative Network for transfer of knowledge.

- Rhinitis and asthma multi-morbidity exemplify why a life course approach to AHA is the key to effective interventions that are sustainable for the public health systems.

# 11     Final ScaleAHA study recommendations

Recommendations regarding different aspects of scaling up digitally-enabled innovations have been compiled by the study team based on study results and exchanges with the relevant stakeholders (Reference Sites, twinning partners, other EIP on AHA stakeholders from government, industry, research, service providers).

> **Further promotion of the Reference Sites and their work will facilitate the achievement of the EIP on AHA objectives and the Digital Single Market priorities**
>
> **Facilitate efforts of EIP on AHA stakeholders to collaborate at different levels and tap into regional, national, international and EU support**
>
> **The Twinning Support Scheme is aligned with the priorities of the Digital Single Market Strategy and should be used to support its agenda**
>
> **More effort should be put into promoting different funding opportunities the EIP on AHA stakeholders can utilise to achieve the Partnership's goals**
>
> **Facilitate further the assessment of the impact of digitally -enabled innovations in a uniform way**

**Figure 27. Overview of the final ScaleAHA study recommendations**

**Further promotion of the Reference Sites and their work will facilitate the achievement of the EIP on AHA objectives and the Digital Single Market priorities**

The 2016 Call for Reference Sites of the EIP on AHA has demonstrated that it is an excellent instrument to motivate regions and cities across Europe to actively contribute to the objectives of the EIP on AHA; namely to improve health and quality of life of Europeans with a focus on older people with chronic diseases, to support the long-term sustainability and efficiency of health and social care systems, and to enhance the competitiveness of EU industry through business and expansion in new markets.

The Reference Sites have organised themselves within their regions by involving stakeholders from industry, civil society, academia and government authorities at a regional and local level based on a *"Quadruple Helix" model*. Together these regions represent a **commitment of over four billion € (2016-2019 period)** to invest in innovative solutions that will lead to improvements in the quality of life of the ageing population, support efficiencies and sustainability of health and social care delivery and finally, stimulate economic growth and competitiveness. These investments will **benefit an expected five million people** in the next years.

The 2016 call enjoyed participation from around Europe, with particular success in attracting eight Reference Sites from Eastern Europe. New regions should be motivated to participate through new calls in the upcoming years, thus increasing the impact of the EIP on AHA and contributing to the Digital Single Market (DSM) Strategy's priority for large-scale deployment of digital solutions that can support chronic disease management.

**Facilitate efforts of EIP on AHA stakeholders to collaborate at different levels and tap into regional, national, international and EU support**

The EIP on AHA community boasts an impressive progress thanks to the way stakeholders engage with one another at different levels – *local, regional, national, international and EU.*

Reference Sites unite local/regional government agencies, industrial companies incl. SMEs, academia and civil society organisations into local ecosystems. At the same time, many Reference Sites are working together under the umbrella of national strategies and priorities. The *ProMIS network* of Italian Reference Sites (Campania, Emilia Romagna, Liguria, Friuli Venezia Giulia, Piemonte, Veneto) was brought together and financed through the "Mattone Internazionale Salute Programme" initiated by the Italian Ministry of Health.

Regions from countries with geographical proximity, similar languages, healthcare systems and priorities can also foster strong collaboration, such as the *Nordic Reference Site Community* (Norrbotten, Skane, South Norway, Stavanger, South Denmark, Zealand, Oulu, Pirkanmaa, Helsinki), which has identified common focus areas for further mutual co-operation: patient/person-centeredness, eHealth/mHealth, connected health, and testbeds.

With the growing number of Reference Sites (74 in 2016 compared to 32 in 2012) the opportunity of working and receiving support from national, international and EU sources should be used at its fullest. For example, there are 13 Spanish, 5 German, 5 Dutch and 5 French Reference Sites that could work on national priorities and promote the Reference Site work and mission also in other parts of their countries.

Through their recognition as Reference Sites and Twinning partners, the regions and involved organisations gain immense visibility at national and European level which in turn stimulates local developments and motivates participation in further collaborative activities. The utilisation of different instruments and opportunities for participation in joint initiatives, including research and innovation projects and twinnings, reinforces further cross-fertilisation and helps to de-risk investments in innovative digital health solutions.

**The Twinning Support Scheme is aligned with the priorities of the Digital Single Market Strategy and should be used to support its agenda**

Most twinning organisations have conducted physical meetings and are in the process of exploring the best approach to scaling up the solutions of the originators. The feedback is very positive and the first reported results promising.

In terms of scaling-up scope, the twinnings can be grouped into:

- Knowledge exchange & training, & digital skills: a central aspect of the innovation are the knowledge (know-how) transfer, required staff skills, and related training
- Adaptation: a mature innovation is being adopted by adjusting it to local conditions (e.g. translation into local language)
- Partial adoption: elements of the innovation (product, service, methodology) are being implemented using locally available infrastructure
- Full adoption: the innovation (product, service, methodology) is being implemented in its full scope by using local infrastructure
- Acquisition: the innovation is being implemented in its full scope by paying for it and using it without significant adaptation effort

In terms of digital health technology focus, the twinnings can be grouped into:

- Health data analytics
- Health data exchange and re-use
- Advanced platforms and infrastructure
- Citizen and patient empowerment and access to their data
- Digital skills and staff training solutions

Analysis of these two typologies in connection with the final twinning reports will help to elaborate strategies for future twinning activities. Based on the scope variety, the budget for the twinnings and the priority of interactions can be optimised. Possibilities include the use of a two-phase model (similar to the SME instrument in H2020), whereas phase one represents the twinnings as occurred in the 2016 pilot, and phase two provides further support to full

adoption or acquisition and related business plan development, training and change management in support of large scale deployment. Dedicated support should be provided to also addressing current Digital Single Market priorities (e.g. the DSM priorities for access to health data, big data analytics and data exchange). In fact, the majority of the twinnings are tackling a well-known barriers addressed in the DSM Strategy - insufficient connectivity, lack of coherent data exchange, poor access to health data for patients and therefore insufficient patient empowerment. The Twinning Support Scheme is an excellent, cost-effective instrument for targeting barriers in line with current priorities, building up further a digital health infrastructure and providing solutions that can be applied across Europe.

**More effort should be put into promoting different funding opportunities the EIP on AHA stakeholders can utilise to achieve the Partnership's goals**

A survey among the 43 twinning organisations indicated that there is a general lack of awareness regarding funding opportunities to support regional developments in the area of active and healthy ageing. While some of them utilise the European Structural and Investment Funds (ESIF), higher awareness is needed to achieve better funding absorption. Within ESIF, mainly the European Regional Development Fund (ERDF) is being used, whereas only one twinning partner reported the use of the European Social Fund (ESF).

In addition to the ESIF; other funding opportunities include the Investment Plan for Europe with its European Fund for Strategic Investments (EFSI), also supported by the European Investment Bank (EIB). ESIF and EFSI can be also used in combination. Appropriate supporting information about the different possibilities together with guidance on application and use of the funds is essential especially to newcomers, which the EIP on AHA has enjoyed recently with new commitments being submitted and new stakeholders becoming active at EU level.

It is recommended to develop such guidance in close contact with the twinning organisations and to highlight success stories in order to motivate all stakeholders to exploit the different opportunities.

**Facilitate further the assessment of the impact of digitally-enabled innovations in a uniform way**

The EIP on AHA stakeholders are in a unique position to benefit from a number of tools and methodologies both developed within the community and adapted from other disciplines to help the EIP on AHA with planning products and services, assessing health outcomes, and making decisions to invest or buy digital healthcare solutions. ScaleAHA has taken stock and analysed them in order to help stakeholders identify what methodology and tool they can use for different scenarios. MAFEIP, the Monitoring and Assessment Framework for the EIP on Active and Healthy Ageing, was created against the backdrop that EIP on AHA data is generally scarce and scattered. Nevertheless, the tool allows for adaptation to different interventions, populations, and care contexts, especially as a support to evidence-based decision-making processes. Following a relatively quick development, the tool now has a web interface and is being actively promoted for use within EIP on AHA. MAFEIP's development is not meant to replace other tools and methodologies, as it builds on existing practices and approaches (such as the Markov model and Eurostat indicators) to provide an agreed way of measuring impact.

MAFEIP appears suitable for the assessment of any kind of innovation in health and care, and even beyond. In fact, the tool is actively being promoted and already first use cases from EU projects have been reported. A number of the twinning partners are currently exploring the use of the tool for assessing their twinning innovations.

The use of other tools such as the Maturity Model should also be further promoted, in particular for AG B3 specific innovations.

**Further policy recommendations from twinning organisations and Reference Sites**

Several Reference Sites emphasised that low digital literacy among the older generations posed a barrier to the introduction of new technologies. The twinning partners Porto and Pays de la Loire therefore suggested adopting policies that **promote digital literacy**.

Other twinning organisations, including Università di Salerno (RS Campania) and CTIC Centro Tecnológico (RS Asturias) also pointed out that the lack of health professionals should also be countered by **policies to ensure enough human resources** in the area of ICT & active ageing in the respective regions.

Latter organisations also refer to the need to **ensure data privacy through legislation** in order to prompt measures that promote the interoperability of electronic devices and access to data systems. The Reference Sites City of Kraljevo and City of Zagreb also recommended that policy makers should **facilitate the integration of health and social care by adopting legal frameworks** for the implementation of innovative solutions in the area of health regarding issues such as **ownership of medical data** and **security** of the data.

# 12    Further recommendations and lessons learnt

In addition to the ScaleAHA study recommendations, the following lessons learnt and observations should be considered.

- **Communicate, communicate, communicate – and reward - success**
  Continuous communication to all relevant stakeholders is crucial for scaling up of innovation; consider also different options for rewarding the most successful twinnings.

  In particular:

- **The twinning scheme should have a dedicated online presence**
  The ScaleAHA team has been receiving continuously requests for information about the twinnings and any future planned twinning calls. A dedicated web presence will help to establish the twinning scheme as an instrument that tackles the Digital Single Market's priority of scaling up and deploying innovations in Active and Healthy Ageing. The web presence should include a list of ongoing twinnings and regular news about their progress, as well as information about any upcoming calls (this is related to performing regular follow-ups to collect dissemination materials). Possibilities for a platform include the ScaleAHA website, the WE4AHA and the EIP on AHA website.
  The same recommendation holds for the Reference Sites, with summary information about each RS and its progress.

- **Carry out regular follow-ups to keep initiatives such as the twinning scheme relevant and to provide evidence of impact**
  It is important to regularly collect information about ongoing initiatives such as the Reference Sites and the twinnings, and promote them online. This will encourage new stakeholders to take part in the initiatives, and will help keep track of the progress of already engaged stakeholders and their success stories. Communicating success as driver to reaching new stakeholders should not be underestimated, and having regular updates on ongoing activities posted on a dedicated website will help in this regard.

- **Communicate the mutual benefits from twinning activities**

Example: Basque Country identified benefits for both the originator and the adopter region (Basque Country RS participated in four twinning activities, three times as originator and once as an adopter region):

| Originator benefits | Adopter benefits |
|---|---|
| ✓ Underlines good practice locally<br>✓ Updates good practice knowledge and documentation<br>✓ Refreshes commitments<br>✓ Improves internal communication<br>✓ Enhances local coordination/"networking"<br>✓ External positive feedback incentive | ✓ Awareness raising among stakeholders<br>✓ Knowledge exchange how to address gaps<br>✓ Evaluation of transferability: adequacy, implementation barriers, changes needed<br>✓ Collaboration in research to gather expertise and competences<br>✓ Improves internal communication and builds trust |

- **Launch calls for twinnings based on current and upcoming EC priorities**
  Upcoming twinning calls may be used strategically to stimulate areas which are of priority to the EC or areas which are underfunded but promise high impact. Such selective funding will allow to target digital innovations in Active and Healthy Ageing more effectively and to close existing gaps.

- **Consider for future calls different budgets and timelines**

Different budgets and timelines for the identified types of twinnings depending on the adoption level of the transferred innovation should be introduced.

- **Place twinnings in the H2020 work programme**
  Consider different options for future twinning schemes such as using a two-stage model with different expectations and budget, similar to the SME instrument.
  Furthermore, by placing particular requirements in the calls related to twinning activities, the EC can further stimulate the scheme. Twinnings could become part of the workprogramme of a project, ensuring a wider and more efficient knowledge and practical exchange compared to pure dissemination. Twinnings could be carried out with interested regions outside of the consortium towards the end of a project, in order to use the gathered knowledge and approach which has been defined and used in the project beforehand.
  Consider the use of the twinning instrument also for completed or running H2020 innovation projects.

- **Capture impact of twinnings in a uniform way, incl. spill-over and other effects**
  The first wave of twinnings has delivered evidence of what works well and can provide high impact. This includes the establishment of a clear commitment between the twinning organisations backed up by political support. The support is also seen in the additional budget that the twinning partners can secure from local funds. The ScaleAHA team recommends applying – in an appropriate, easier and efficient way - the uniform tool MAFEIP (Monitoring and Assessment Framework for the EIP on Active and Healthy Ageing) to assess the impact of the twinnings. However, it is important to also capture impact which is not directly connected to the twinning initial objectives. Such spill-over effects could be seen in Kraljevo, which used the knowledge provided in the twinning to develop a local call centre which was not in the scope of the twinning.

# Annex 1: List of innovative practices of the Reference Sites

| RS name | Innovative practice | Short description |
|---------|---------------------|------------------|
| Styria | Electronic Health File (ELGA) | The "elektronische Gesundheitsakte" or ELGA (ongoing) is an information system that provides references to health data of ELGA participants that can be accessed by authorised health service providers (general practitioners, hospitals, laboratories etc.) to enable optimum treatment. ELGA also supports e-medication whereas prescribed and obtained medicine is recorded in order to detect and prevent contraindications as well as double prescriptions. |
| Styria | Therapie Aktiv | „Therapie Aktiv" ("therapy active") is a systematic treatment programme that organizes long term, better-structured and high-quality medical care for type 2 diabetic patients through trainings on life management and other forms of guidance. About 350 physicians with more than 10.000 patients are part of the program in Styria, where the programme was developed and about 50.000 patients nationwide. |
| Styria | the eRöntgenpass (e-X-ray-log) | A portal that was developed so that patients of the KAGes hospital in Styria have access to their X-ray examination results e.g. radiation exposure levels. |
| Styria | GlucoTab | GlucoTab® is a software based system that improves blood sugar management in hospitalized type 2 diabetes patients. It consists of a central server and mobile tablet computers with a user interface, making it possible to treat the patient directly at bedside. |
| Styria | RegionAAL | This project (ongoing) aims to utilise already available technologies which have been developed for a general population and implement them in such a way that a potentially higher quality of life and the potential for remaining longer at home are made possible. Around 100 households will be equipped with several assistive technologies and systems. A scientific evaluation within these test households, running for one year, will assess the effectiveness of ICT in meeting state-of-the-art systems. |
| Flanders | Care Living Labs | Care Living Labs offers a set of services to facilitate active user involvement in the innovation process of new elderly care concepts, services, processes and products. A test community of approximately 4,000 end users (older people, professional caregivers, informal caregivers, etc.) are testing and validating these innovations in daily practice. They are monitored, motivated and actively participating in more than 40 Care Living Lab projects. |
| Limburg | CareVille Limburg | CareVille Limburg (ongoing) is an experimental living lab with a specific focus on innovations in the elderly. CareVille Limburg focuses on strengthening the 'care mobility' to older people allowing them a safe, affordable, and better quality of life at home. Under this focus, companies are invited to test their products or innovative solutions in the Living Lab. |
| West Flanders Province | Nutrition Platform for Chronic Care (prevention of malnutrition of elderly) | The 'Nutrition Platform for Chronic Care' project (ongoing) aims to develop an integrated program for healthy food from the screening to the intake of food to prevent malnutrition in the home, residential care and hospital environment. |
| City of Sofia | Telemonitoring of vital signs | Provision of integrated social and health services and tele monitoring of vital signs to elderly people. Users receive prompt reminders to take the medication on their smartphones. The GP monitors vital signs of the patient on daily basis and if necessary intervenes remotely to change the treatment. The telemedicine tool saves time and effort of the medical professionals and the patients. |
| City of Sofia | Integrated health and social care models | No description available. |
| City of Zagreb | Chronic patient panels | "Chronic Patient Panels" is a software implemented in EHRs for primary and secondary prevention of chronic diseases (diabetes mellitus, hypertension, COPD, obesity, and rational prescribing for the elderly). It has enabled the physician to monitor his work in the long-term and to assess the risk factors for chronic diseases, as well as to analyse treatment efficiency of patients suffering from chronic diseases. Physicians may also evaluate the patients themselves regarding their adherence to recommended measures and using prescribed medication in order to prevent their occurrence and progression of disease. |
| City of Zagreb | Continuous Medical Education courses | Health Center Zagreb organizes continuous medical education courses (CME) each month for GPs in terms of improving care. An example of such course |

| RS name | Innovative practice | Short description |
|---|---|---|
| | | was one that taught the importance of regularly reviewing the prescription list for people older than 65. |
| City of Zagreb | Pharmacy questionnaire and assessment tool | A standard EQ-SDQ questionnaire and a questionnaire about the adherence to drug, using General Level Framework (GLF) as a tool for competence assessment was established among community pharmacists. Introduction of pharmacist intervention and structured interviews and counselling led to increased patient adherence to medication. |
| Olomouc | AHA Repository of Good Practices | These are good practices designed in 2013 in the context of Reference site certification. |
| Southern Denmark | Video-interpretation | Video remote interpreting (VRI) is a service that uses web cameras/video conference to provide sign- or spoken language interpreting services through a remote interpreter. Instead of having the interpreter come to the health service, it is possible to connect via video conferencing system to an interpreter situated remotely. Today the service is used in 90 % of all interpretations in the region and has been rolled out as a national project. |
| Southern Denmark | Patient Briefcase (Telemedicine and COPD patients) | Patient Briefcase makes it possible to discharge patients e.g. COPD (emphysema) patients earlier in the process and move a part of the treatment at home for themselves. This also releases hospital beds and patient avoids prolonged hospitalization. |
| Southern Denmark | Guided cCBT for treatment of depression (and the Mastermind Project) | Computerised Cognitive Behavioural Therapy (cCBT) is a computerised treatment program (ongoing) that has been implemented in the region and allows citizens affected by depression to remotely (in their homes) complete a depression test, be diagnosed and be referred to a health professional. More than 500 patients have received the service so far (10% of target population). |
| Zealand | "Shared Medication" system | The electronic communications "Shared Medication" (original name: Fælles Medicinkort) system allows information sharing and collaboration between stakeholders. The fist measures of the effort show evidence of reduced errors in the patient pathways between multiple service providers with direct involvement of all relevant stakeholders. |
| Zealand | Standard cure and care packages for patients with complex conditions | The developed standard cure and care packages for patients with complex conditions ensure well-designed cure processes including all examinations and treatment. The packages ensure quick access to results from tests and examinations and thus fast access to treatment options. |
| Zealand | Cooperation on patient education to strengthen patient empowerment | The cooperation (ongoing) ensures that patients with chronic diseases are offered patient education of high academic quality with focus on empowering them to self-manage e.g. medications, physical training, and the impact lifestyle has on their health conditions. |
| City of Oulu | Oulu Self Care - service | Oulu Self-Care Services is a personal online welfare service for residents of Oulu. It is Finland's most extensive online service that provides residents of a municipality with access to health and social services – at any time and any place. Users can access their laboratory test results, enter measurements taken at home (e.g. blood pressure measurements), and ask questions online to which health professionals would respond within 3 days. |
| City of Oulu | OuluHealth Labs product testing development services | OuluHealth Labs is a living lab that provides health products a unique, integrated health test and development environment – including professionals' feedback – for every phase of the product research and development process. Currently, testing operations have been extended to cover also other social and health services in the city, including private homes. |
| City of Oulu | Human Impact Assessment methods and tools development | Human Impact Assessment (HuIA) is a form of prospective (ex ante) assessment and is a tool for anticipating the effect of a program, a project, or a decision on human health and welfare. It clarifies the impacts of different options and alternative solutions, provides information for decision-making, and helps deal with conflicts. |
| City of Kuopio | Living Lab Mänty campus | A Living Lab is being built in the city's university hospital. It would allow companies to test their products and solutions in an authentic hospital environment, together with the city, home care workers and clients. |
| City of Kuopio | Health and wellness rental centre | The Health and Wellness Rental Centre provides citizens with the opportunity to familiarize themselves with health technology products before making a purchase decision. |
| City of Kuopio | The Kuopio health ecosystem (Health Kuopio) | The Kuopio health ecosystem (Health Kuopio) enables companies, researchers and other operators working together to create new technology, services and prosperity in the region. |
| Pirkanmaa | Tays Eye Care Model | The Tays Eye Care Model has improved access to eye care and reduced waiting time and costs. There has been 19% reduction in costs per visit in |

| RS name | Innovative practice | Short description |
|---|---|---|
| | | 2015 compared to 2011 with an increase in visits by 57% and in patients by 35%. The model's success factors include integrating clinical criteria in policy for resource allocation, standardisin care processes and streamlining decision-making processes, and empowering the patient for self-management among others. |
| City of Helsinki | Comprehensive Service Center – concept | The Comprehensive Service Concept was developed to provide one place for the elderly where they can benefit from different types of services: social and leisure activities or local work for the elderly, informal care, assessment and rehabilitation services (physiotherapy, occupational and speech therapy) as well as short-term, part-time or around-the clock care (e.g. outpatient health care), and mental health- and substance abuse-related services. This concept has so far been scaled up in different districts of Helsinki. |
| City of Helsinki | Internet of things (IoT) enabled virtual home care service | The IoT-enabled virtual home care service solution is about providing virtual care and rehabilitation through a videotelephone connection with customers. This service allows patients to contact a nurse 24/7, enables nurses to advance the care plan of the patient,  and replaces hospital visits by a videophone connection in home careThe IoT-enabled virtual home care service has already been benchmarked by other European cities. The virtual home care includes the use of the following technical innovations:<br>• Menumat – an automated and robotic food service system that includes an appliance for the preparation of food for senior citizens living independently (Menumat Ltd)<br>• SmartWalker – a concept based on retro-fit wireless sensors attached to the wheels and handles of a walker. They can measure the walking distance, speed and location, and monitor the physical state and condition like balance and hand pressing force. The walker can be used for fall detection and calling for help in emergency situations (developed by VTT Ltd).<br>• IoT data analytics and tablet-based video visits of nurses and physiotherapists (VideoVisit Ltd) |
| City of Helsinki | Integrating culture and arts in elderly care services | The City of Helsinki has integrated culture and arts in its elderly care services (ongoing). This led to the creation of a position of a Cultural Advisor of the elderly care services, and a permanent employee was hired to build a network of cultural elderly care (which currently has more than 500 members), provide cultural training for care professionals and create links with art professionals. As a result, elderly care professionals of the city were trained through workshops and art methods were integrated into their daily routines of elderly care. |
| Pays De La Loire | Technicotheque du Centich | The Technicotheque du Centich (ongoing) is a mutual care and support service that offers the elderly a platform that enables them to easily access technical aids/assistance (ICT tools that would help them live more autonomously). This is done by establishing more customized payment method policies, which resulted to a shorter time frame until the patient has acquired the needed assistance. |
| Pays De La Loire | REPERAGE | REPERAGE is a practice (2012-2016) that has been implemented to predict the onset of a complicated course of healthcare. It is done through a short standardized geriatric assessment that is carried out by GPs. The goal is to incorporate a simple rating scale that is fast and suitable for the GP that can e.g. predict frailty. So far 400 GPs have included nearly 900 patients in their assessment and these patients were followed up for 6 months. |
| Pays De La Loire | PRADO 49 | PRADO 49 (ongoing / being evaluated) is a nationally implemented "return home" support program that includes tele-surveillance after hospitalization for elderly patients in the Pays de la Loire Region.  An accompanying program is also offered to patients hospitalized for heart failure. The platform is based on the Internet of Things (IoT) and intelligent processing of health data. |
| Nouvelle-Aquitaine | HomeAssist and DiaSuite | The HomeAssist project proposes a systemic approach for introducing an assistive living platform to the homes of older adults. The project is based on the DiaSuiteBox platform, which includes a dedicated integrated development environment that enables applications to be developed quickly and safely. Technological tools include motion detectors, internet, tablets, and contact sensors among others. |
| Nouvelle-Aquitaine | Evaluation of the Link Care Services® (LCS) system | The evaluation study aimed to assess the impact of the Link Care Services® (LCS) system, an automated telemonitoring system, on the fall risks of elderly people. The evidence gained in this study persuaded the regional health agency to invest in a falls system and to scale up, deploying the system in a |

| RS name | Innovative practice | Short description |
|---|---|---|
| | | greater number of nursing homes ready to accept this technology. |
| Nouvelle-Aquitaine | Santé Landes Project | Santé Landes Project (ongoing pilot until march 2017) provides high quality and safety care services to patients at home. This program aims to modernize the health care system by e1perimenting in pilot areas, services and the most innovative technologies for e-health. The e1pected result it is a more effective care delivered to patients and quicker responses for interventions at home (nurse, home helper, meals delivery…) through services that include telephone support, digital health tools or portals, and educational mobile applications. The active list comprises 300 patients including: 30% aged <75, 35% aged between 84-75, 35% aged 85+. |
| Île-de-France | HAPPI Project | The HAPPI project (ended August 2016) worked to establish long-term collaboration between healthcare purchasing organisations across Europe to identify "ageing well" and innovative health products, services and solutions and put in place procurement contracts for the benefit of healthcare organisations. Identified solutions include a Fall detection and alert system, a treadmill for rehabilitation and for the analysis of walking disorders, and a walking course for preventing falls and maintaining independence. |
| MACVIA France Network | MACVIA-Falls | MACVIA-Falls (ongoing) is a Falls Prevention Living Lab that was established in the region. Under this initiative, a Falls Prevention Clinic is operating in which subjects at risk of fall benefit from a comprehensive geriatric assessment. It also serves as a teaching centre that helps to coordinate research, education and knowledge-transfer on falls prevention. |
| MACVIA France Network | Le Gérontopôle | Le Gérontopôle (ongoing) is a project that provides medical care for frail elderly patients or geriatric patients in general. It also develops research on the possible contributions of services based on innovative technologies. |
| MACVIA France Network | AIRWAYS ICP | AIRWAYS Interated Care Pathways (ICP) (ongoing) is an initiative for patients with asthma and rhinitis co-morbidities. Innovative solutions include a cell phone application, an integrated ICT-based service that includes all stakeholders, and a clinical decision support system for early detection of symptoms. |
| MACVIA France Network | AHA Questionnaire | The AHA questionnaire is being used daily to improve frailty prevention by targeting individuals who, although still in good health, might be at risk of frailty. In order to identify the real needs of the person entering the concerted window service and guide them to the appropriate services, the prevention case manager conducts a 45 min interview (42-questions grid). Over 1,000 people have already been studied in Montpellier. |
| East of France | The MAIA system | The MAIA system is about "Homes for the Integration and Autonomy of people suffering from Alzheimer's or associated disorders" and is a care model that aims to facilitate an integrated, multi-dimensional response to patient needs. Today 5 MAIAs are operational in the Upper Rhine and handle almost 750 requests per year in the whole RS territory. |
| East of France | SICODOM project | The SICODOM project aims for the deployment of a shared ICT coordination and information system for active and healthy ageing professionals. Its testing phase concerns 200 elderly dependent people living at home and needing at least 2 home care providers (besides usual doctor and pharmacist). |
| East of France | call for projects in 2012 on multi-generational housing | The Lower Rhine Council has launched a call for projects in 2012 on multi-generational housing. Each project is unique and crosscutting, concerning construction, local and social animation and new technologies. Before the projects start, an advisory committee gives its opinion about how they imagine the action plan. |
| East of France | Collaboration for better / new social housing solutions. | The Moselle Council leads a working group composed of different stakeholders: local authorities, public funding agencies, providers of social housing, health and care experts and specialized start-ups (ICT solutions, smart home ...) in order to develop a new kind of collaborative work that identifies all kinds of targets. 2 experiments based on new care solutions for social housing have been done in 2 cities and have been used to model the evolution of the Innovation and Solidarity in Habitat project. |
| Kinzigtal | Starke Muskeln, fest Knochen (strong muscles, dense bones) programme | This programme (ongoing) aims to prevent osteoporosis and to deliver more adequate treatment and exercises for osteoporotic patients, and thus to reduce the incidence of fractures. This is done by engaging patients in a multimodal program that involves an intensive medical examination, physiotherapy, and constant follow-ups among others. 668 and then 853 patients were enrolled in the programme by 2012 and 2014 respectively. |
| Kinzigtal | Starkes Herz | This is an intervention programme (ongoing) for patients with chronic heart |

| RS name | Innovative practice | Short description |
|---|---|---|
| | | failure. Specialised teams, mainly consisting of doctor's assistants or practice nurses, are in charge of managing patients' health by regular personal contact (case management by house visits or phone calls. |
| Saxony | The Carus Consilium eHealth platform (Integrated Care) | This is large scale telemedicine project (ongoing) that intends to improve the medical care of the inhabitants of the region by providing telemedicine services - more specifically, by setting up an open infrastructure which allows different providers of electronic health services to provide all patients with secure access to their products and services since the existing systems are usually not compatible with applications from other providers. |
| Saxony | The GeriNet Leipzig (Integrated Care) | The Geriatric Network Leipzig ('GeriNet Leipzig') provides elderly patients with access to high-quality and efficient care, diagnosis, treatment and rehabilitation that are located close to their living spaces. The network centre also ensures coordination and quality assurance of all network processes. Other established services include a geriatric assessment for a personalized treatment plan for each patient, a night café for dementia patients suffering from a day-night-change, and the implementation of a common platform for medical and social services (under the ATMoSPHÄRE project). |
| Saxony | The electronic case record (Elektronische Fallakte (EFA) ) | The EFA (ongoing) consists of basic patterns and interfaces using existing profiles and standards in order to establish one digital format in the health area that is secure, easy to use, and affordable. The format supports cross-sector care without additional workload and paper work for the health care providers. |
| Baden-Württemberg | The integrated care pilot "Healthy Kinzigtal" (Gesundes Kinzigtal) | Gesundes Kinzigtal ("Healthy Kinzigtal") is a joint venture (currently operating) that has held long-term contracts with two German non-profit sickness funds to integrate health and care services for their insured populations. It has developed targeted care management and prevention programmes, and has collaborated with some community groups including gyms, sports clubs, education centres, self-help groups and local government agencies. Through these collaborations, Gesundes Kinzigtal is able to offer out gym vouchers to encourage people to stay active (offered as well are dance classes and aqua-aerobics courses). |
| Oberbergischer Kreis | Telemedicine initiative | The telemedicine initiative (on the process of expanding) uses a multi-stakeholder approach, whereas players are highly engaged and willing to share their knowledge. It aims to improve interated care to minimize the problem of the lack of GPs in rural areas. |
| Oberbergischer Kreis | PROVIVA | The PROVIVA project (2013-2015) enabled the construction and testing of a multi-sectoral, local, technology-assisted health and neighborhood management model and has shown a high success rate in improving lives for the elderly in the region. A coordination and consultation center was developed to support the target group. After the funding period, the initiative has been continued by the consortium partners. |
| Regional Network Long Lasting Memories | Study of the role of training dosage and severity of neurocognitive disorder | This study (Published 2015) aimed at investigating the benefits of combined training on global cognition while assessing the effect of training dosage on patients with Neurocognitive Disorder (NCD). Their results indicate that combined physical and cognitive training improves global cognition in a dose-responsive manner but these benefits may be less pronounced in older adults with more severe NCD. |
| Regional Network Long Lasting Memories | Study of comparing patterns of detecting functional disorganization in MCI relative to Mild Dementia (MD) | The study (Published 2014) used electroencephalographic (EEG) data acquisition and data analysis through the Orthogonal Discrete Wavelet Transform (ODWT) to compare patterns of the detection of functional disorganization in MCI relative to Mild Dementia. |
| Republic of Ireland Regional Network | Age Friendly Cities and Counties Programme | An ongoing programme that facilitates multi-agency cooperation in finding new, innovative low or no cost ways to make their communities better places for people to grow old in. The developed model (currently being evaluated) is replicable in any City and County in Ireland and scalable and adaptable to the wider European context. |
| Republic of Ireland Regional Network | Community Assessment of Risk and Treatment Strategies (CARTS) Programme | CARTS is a  risk intervention strategy (ongoing) that aims to identify, quantify, stratify and manage risk of adverse outcomes, frailty and functional decline among community dwelling, older adults. Tools inclde The Risk Instrument for Screening in the Community (RISC), a quick  'pre-screen', which stratifies patients from minimal to higher levels of risk according to three core domains: Mental State, Activities of Daily Living and Medical State; and The Community |

| RS name | Innovative practice | Short description |
|---|---|---|
| | | Assessment of Risk Instrument (CARI), a short Comprehensive Geriatric Assessment completed on patients who screen positive on the RISC. The programme so far screened 801 of the 6,229 adults aged >65 in the area (13%). |
| Republic of Ireland Regional Network | 'Let Me Decide' Program | The 'Let Me Decide' (LMD) project (ongoing) studies how well health care plans are used and adhered to by health care professionals at the end of life. The program uses a systematic implementation with reliable and valid tools together with apps, accredited workshops, accredited online training and standardized evaluation of the program. The program has increased satisfaction, reduced hospitalizations and improved compliance with patients and families wishes. |
| Provincia Autonoma di Trento | TreC platform | The TreC platform (ongoing) is a tool that allows citizens that have an activated health card to consult their online health reports anytime; to keep a diary of their health, to consult the pharmaceutical and / or specialist prescription records; to pay for health services online (by credit card); and to manage the data files of their children. Over 50% of the region's population has been benefitting from this tool (as of 2016). |
| Lazio | Programma Regionale di Valutazione degli Esiti degli interventi sanitari (P.Re.Val.E.) | P.Re.Val.E. (ongoing) is an evaluation of the outcomes of health interventions/treatments that is performed every year based on a standardised methodology and a well-structured dissemination strategy. Its results have so far influenced e.g. local laws on particular health situations. |
| Lazio | Diagnostic and Therapeutic Pathways of Care | The Diagnostic and Therapeutic Pathways of care has recently been implemented to reduce avoidable hospitalizations and waiting times, to improve adherence to standardised evidence-based diagnostic and therapeutic services, and to modulate health care according to disease severity, among others. So far, only 10% of the target population (patients affected by COPD and diabetes) has been reached, but 100% coverage is expected within the next 3 years. |
| Lazio | Regional Heat Plan | The Regional Heat Plan (ongoing) is an integrated approach for prevention of adverse health effects of heat waves in frail elderly people and has been adopted nationally. Preventive activities have spread over the entire regional territory, active participation of GPs has increased, awareness in the population has risen, and the refinement of the related methodologies and programs has made the system much more cost-effective. |
| Puglia | Smart Health 2.0 | santé Landes Project (ongoing pilot until march 2017) provides high quality and safety care services to patients at home. This program aims to modernize the health care system by e1perimenting in pilot areas, services and the most innovative technologies |
| Puglia | FREEDOM Far-Reaching Enterprise for Efficient Diagnostic Operative Management | The study has made it possible to determine the quantity of Non-Ceruloplasmin in patients, in order to evaluate the extent of the copper dysfunction (Non-Cp) associated with Alzheimer's disease. This test, called the C4D test, measures the quantity of Non-Cp copper in serum through simple blood sampling and is thus simple as well as sensitive, and reliable. |
| Puglia | The hospital at home (H@H) system | The H@H (hospital at home system) (ongoing) is composed of one or more mobile devices and a central monitoring station, through which the operator can monitor the patient's health remotely. These two instruments are interconnected by internet, that allows the exchange of data safely and in real time. The system uses a cloud-based server to make data available and accessible on all connected devices, allows video-calls, and includes a therapy management service (o1ygen therapy, vacuum therapy) |
| Liguria | Memory Training | These evidence-based interventions aim at maintaining and improving fundamental neuro-psychological functions such as attention, information processing, mnemonic strategies, etc., as well as fostering social participation, self-confidence and motivation. |
| Liguria | Adapted Physical Activity (APA) Programme | The elderly people living within the region are provided with free services under the Adapted Physical Activity (APA) Programme. |
| Liguria | Integrated Care Model for Geriatric Patients | Patients of Galliera Hospital are offered tailored services that span the care continuum and are integrated among the different levels and sites of care (e.g. long-term care). |
| Campania | PERSSILAA | PERSSILAA (which stands for Personalised ICT Supported Service for |

| RS name | Innovative practice | Short description |
|---|---|---|
| | | Independent Living and Active Ageing) is a project (ongoing) for screening for and preventing frailty. This multimodal service model, which focuses on nutrition, physical, cognitive and social domains, is supported by an interoperable and intelligent ICT infrastructure that utilises gamification. |
| Campania | Health Campus | Health Campus (ongoing) is a non-profit organization that carries out disease prevention and dissemination through clinical and educational initiatives. Patients may choose to be visited by specialists, may receive ultrasounds and x-rays (mammography in particular for the prevention of breast cancer), and be informed about the health risks and good practices to facilitate any appearing symptoms of diseases. |
| Campania | Stimulating Innovation in the Management of Polypharmacy Adherence in THe elderlY (SIMPATHY) | The SIMPATHY project (ongoing) is working towards identifying best practice across the EU to stimulate, promote and support innovation in the management of appropriate polypharmacy and adherence in the elderly. As a consortium, they have so far conducted desk reviews, interviews, focus groups and a systematic review to achieve this purpose. |
| Campania | FRIENDD (Farmaci Rivisti Insieme: Empowerment nelle Diverse Discipline) | FRIENDD is a pilot study (ongoing) under the SIMPATHY project that has been set up by a multidisciplinary focus group (clinical specialists, GPs, pharmacologists, pharmacists, ICT experts) to design and implement an innovative approach to optimize drug therapy in multimorbid elderly patients. Patients with chronic diseases from different hospital wards are involved by revising their prescription regimens in collaboration with a Pharmacosurveillance Unit in order to evaluate the polypharmacy regimen and improve the appropriateness of future prescriptions. |
| Campania | Nutritional Approach | A nutritional approach is being developed, based on the sociocultural value of food and designed from local food chains as a sustainable way of addressing healthy lifestyles. |
| Campania | Campania small Municipalities Collaborative Network (CosMiC-Net) | Campania small Municipalities Collaborative Network (CosMiC-Net), is a loco-regional open network (ongoing) that aims to support the development and implementation of effective local policy approaches to respond to demographic ageing. The network identifies all relevant stakeholders that might prove relevant to the network, including local associations who involve the elderly that might join the network and contribute to develop collaborative work and joint activity plans. |
| Milan Metropolitan - Bergamo Province | BuongiornoCReG Organization model | The BuongiornoCReG Organizational Model involves "CReG providers" or a cooperative of family doctors (GPs) that must guarantee: the definition of a personalized care pathway for each chronic patient and the adherence of the patient to it; a service centre available for 12h/365 days, operated by trained personnel; the presence of a medical coordinator; telemonitoring services at home; health data management and indicators evaluation; patient education; evaluation of the customer satisfaction and of the quality of life of the enrolled patients |
| Milan Metropolitan - Bergamo Province | Chronic Disease Care model | A new model of care is being tested for chronic diseases, to provide real comprehensive care of chronic patients that are outside of the hospital. By June 2013 the test site has involved 300 General Practitioners and 37.000 recruited patients. The services included in this model are: care coordination, telemonitoring, and patient education (and empowerment). |
| Lombardy | CreG Project | CreG Project (Chronic Related Groups) (ongoing) is a new pilot model of care established for managing chronic diseases such as COPD, hypertension, cardiovascular diseases, type 2 diabetes and comorbidities. It combines technological infrastructure to identify and stratify patients, care plans (ICPs) and medical guidelines and a new reimbursement system in order to create an individualized patient care plan. So far, more than 80,000 patients have been enrolled and followed up in three years, and up to 1,000 GPs participated in the CReG study. |
| Lombardy | Presidi Ospedalieri Territoriali (POT) | Presidi Ospedalieri Territoriali or "POTs" (ongoing) are similar to 'community hospitals' for integrated care targeting chronically-ill patients requiring multiple complex interventions and specialized care. The approach includes a Personalised Care Plan, proactive care, and a health-based risk adjusted payment system. |
| Lombardy | New Healthcare Networks (NRS) | NRS is a Home Based Program that offers tele-surveillance for chronic heart failure patients and Chronic Obstructive Pulmonary Disease patients as well as home-based hospitalisation for post-cardio surgery patients and cancer |

| RS name | Innovative practice | Short description |
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| | | patients. |
| Lombardy | Nostalgia Bits Project | The project (2010-2013) designed, implemented and evaluated a web platform for the elderly and their families. The web platform was created for capturing, digitally archiving, and sharing memories encapsulated in letters, newspaper clippings, postcards, photos, and other artifacts. The goals had been to mitigate feelings of loneliness and low self-esteem of the elderly, to increase social interaction between elderly people and their families, and to improve intergenerational communication. |
| Tuscany | Chronic Care Model | Chronic Care Model is a proactive integrated care model (ongoing and under revision) for chronic disease management. It consists of 6 elements: assessment of community needs, a clear policy and the commitment to invest resources, interventions based on defined care pathways and patient risk profiles, decision support and a capable informations system. |
| Tuscany | FAll Repository for the design of Smart and sElf-adaptive Environments prolonging INdependent living (FARSEEING) | The FARSEEING project (2012-2015) aimed to provide information on fall prediction, prevention and support for better research and development by building the world's largest fall repository. The data was collected using smartphones, and wearable and environmental sensors providing self-adaptive responses, while the database facilitated the collection and analysis of behavioural and physiological data related to falls, daily activity and physiological factors. The data was applied for the design of a self-adapted intervention program for functioning older persons that have recently e1perienced a functional loss as well as for people at a high risk of falling. |
| Emilia-Romagna | Sole (Sanità on line) telematics network | The SOLE telematics network is an IT infrastructure that connects GPs and paediatricians to other professionals and Health Service facilities to exchange medical documents, such as prescriptions and reports, while respecting privacy laws. Each professional is provided with a PC, printer, safe internet connection, and medical records software to communicate with Health Trust services. At present more than 3700 GPs and paediatricians are connected within the SOLE network (98% of all contracting GPs and paediatricians). |
| Emilia-Romagna | Fascicolo Sanitario Elettronico or Personal Electronic Health Record | The Personal Electronic Health Record (ongoing) is the collection of digital medical and social-health data and documents generated by past and present clinical events relating to each patient. It allows all patients in the region to consult and gather their clinical documentation online. |
| Emilia-Romagna | Model for chronic disease management and prevention | A population-based model has been developed (currently in the process of being implemented) that identifies the risk of hospitalisation for residents through an existing longitudinal administrative database. The results of this model, along with profiles of patients identified as high risk are being provided to the physicians and other healthcare professionals associated with the Patient-Centred Medical Homes to help in planning care management and interventions in order to reduce the likelihood of high-cost hospitalisation. |
| Emilia-Romagna | Elderly Opera (under the Community Lab Project) | The Elderly Opera was an initiative (2011, end date unknown) under the Community Lab Project that involved interviewing / interacting with over 1,000 people aged 65+ in order to understand their main needs in terms of health and social opportunities. The Elderly Opera meant to provide a Social Center open to people of any age, a Day-time Center for older people, living solutions for self-sufficient elderly such as outpatient and physical therapy services as well as home entertainment. |
| Friuli Venezia Giulia | ICT-supported services developed within the "SmartCare Project | The services built on advanced ICT under the SmartCare project (ongoing) include high penetrations of telecare and telemonitoring home platforms. The region has so far enrolled 200 patients with chronic conditions and has already involved many regional stakeholders. SmartCare services will provide full support to cooperative delivery of care including essential coordination tools such as shared data access, care pathway design and execution as well as real time communication support to care teams and multi-organisation access to home platforms. |
| Friuli Venezia Giulia | Pilot actions developed within the "Helps" Project | The pilot actions developed within the "Helps" Project (2011-2014) and the lessons learnt have fed the new regional initiatives for housing and independent living. The main goals of the project were co-housing experimentation and the development of advanced homecare services for the elderly. The region is now supporting the exploitation and scaling up of such initiatives. |
| Friuli Venezia Giulia | Funding for relevant projects and pilots | The region has promoted and funded several projects and pilots on domotics, accessibility and independent living (innovative social housing solutions, integrating social and health care and innovation, promoting community-based |

| RS name | Innovative practice | Short description |
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| | | care, de-institutionalisation and social innovation processes). |
| Arsenàl.IT - Veneto's Research Centre for eHealth Innovation | Telehealth service | The Telehealth Service (ongoing) so far benefits 26,000 frail citizens as users. They have an emergency button that they can use for the critical situations occurring at home, which enables an improved management of emergency situations. Trained staff of the Telehealth Centre perform scheduled phone calls in agreement with the family, the patient and the GP in order to periodically assess the patient's situation. |
| Arsenàl.IT - Veneto's Research Centre for eHealth Innovation | Telemonitoring for patients with congestive Heart Failure | Based on A 2:1 Randomized Control Trial has been carried out following the Health Technology Assessment (HTA) guidelines, results show that the telemonitoring service allowed clinicians to spend only 97 minutes per patient per year (to manage alarms). Patients have e1pressed satisfaction as they feel safer and they are given more privacy. |
| Arsenàl.IT - Veneto's Research Centre for eHealth Innovation | Discrete Event Simulation Modelling | A Discrete Event Simulation (DES) modelling for telemedicine services is currently being developed by the RS. DES is a form of computer-based modeling that carries out a flexible and economically-sustainable approach to represent complex systems. A Region may use the modelling in order to understand what type of benefit is foreseen in the next years should the given service /tool be implemented. |
| Arsenàl.IT - Veneto's Research Centre for eHealth Innovation | Telemonitoring for Cardiac Implantable Electronic Device (CIED) | Based on an observational study (2010 to 2013) on the benefits of remote monitoring (with 2,100 patients), using HTA guidelines, the number of hospitalizations and the number of in-clinic follow-ups decreased after remote monitoring of patients with the CIED was implemented. The study also demonstrated that the remote monitoring allowed the early detection of atrial fibrillation (AF). |
| Arsenàl.IT - Veneto's Research Centre for eHealth Innovation | ePrescription under Arsenal.IT | ePrescription (ongoing) has been enabled in the region by introducing a digital network that connects GPs, pharmacies, Local Health Authorities, the Region, and the Ministry of Finance. The objective is to protect the patient, making it available a tool to monitor and control the cost of pharmaceuticals and healthcare specialized services. At present, 100% of the pharmacies, 98% of GPs, and 72% of specialists in the region have switched to electronic prescription. |
| Piedmont | Videodialysis service | The Video-dialysis service (ongoing) is an advanced tool that allows older patients or their partners to perform peritoneal dialysis while being monitored by a virtual assistant. The technology used for this service is now being tested in other fields (vulnology, psychotherapy etc.). |
| Piedmont | Telediabetology/ Teleradiology | The Teleradiology innovative service (ongoing) provides the possibility of radiography performed at home or in the hospital for those suspected of suspected e1acerbation of congestive heart failure, e1acerbation of chronic obstructive pulmonary disease, or pneumonia. The radiographs had been able to confirm the clinical suspicion in appro1imately 70% of cases. Around 268 patients from the region have so far benefitted from this service. |
| Piedmont | E-health patients' reports Local Delivery Service | This is an initiative that provides e-delivery of clinical reports to patients living within a wide area, including remote mountain locations. From June 2013, 210 chemists and 20 access points have been active. |
| Piedmont | Telemonitoring of heart failure patients | A telemedicine project has been implemented in a local hospital for the telemonitoring of heart failure patients in the urban area and for the integrated management of their care pathway. |
| Aust-Agder County and Vest-Agder County | United4Health project | Under the United4Health project (2013-2015), telemedicine services were implemented and reached 25 of the 30 municipalities. More than 125 COPD patients have used the telemedicine services by April 2016, and the services is up and running on permanent basis with patients continuously being included. |
| Aust-Agder County and Vest-Agder County | Region readiness for telemedicine deployment | The region achieved a high score on readiness for telemedicine deployment, based on the MOMENTUM-TREAT toolkit for self-assessment. |
| Aust-Agder County and Vest-Agder County | Digital solutions for Telecare/welfare technologies | Preventive home visits to elderly to find out how they can initiate activities to prevent people from being institutionalized and to be able to stay in their own home. The local regions have deployed and implemented a variety of new digital solutions for Telecare/welfare technologies, including projects to catalyze health innovation (I4HL), scale digital health solutions among various stakeholders (I4H), create new organisational models for patients and practices (3P) and research on interoperability issues regarding telemedicine |

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| | | (TELMA). |
| Lodz Province | HARC and telemonitoring | Healthy Ageing Research Centre (HARC) (2013-2016) is a consortium of internationally recognized researchers of the local region that are dedicated to further develop research focusing on major areas relevant to active and healthy ageing. Through them, telemetric methods will be applied for COPD management in the elderly. |
| Lodz Province | Generation Tree under EIT Health MUL | Generation Tree is a contest (ongoing) addressed to businesses, institutions and students implementing AHA-related projects and aims at honouring leaders in this area. It has played a role in advocating the exchange of good practices and in helping entities deliver their products, services and solutions. |
| Lodz Province | Multi-generation house | Multi-generation house is a project (currently under construction) which will provide housing for representatives of different generations in accordance with principles of synergy, assistance and cooperation. Coupled to this project are newly established related professional trainings and courses offered in the university, such as the postgraduate course on "Management of Coordinated Elderly Care". |
| Lodz Province | Let's live longer! Cluster | The Lets Live Longer! Cluster is a collaboration (ongoing), which facilitates joint activities that foster technological development and services for active living and healthy ageing. Among the cluster's foci are: promoting healthy food from regional producers, certifying healthy local products, discussing issues related to functional foods, and creating initiatives related to leading a healthy and active lifestyle (including education, research and innovation). |
| Lodz Province | Projects under the Nofer Institute of Occupational Medicine | The Nofer Institute of Occupational Medicine carried out two important projects (2008-2011): developing prophylactic programmes and "return-to-work" programmes. These aimed for improving the health and status of those with occupational diseases and disorders as well as those affected by pneumoconiosis, diseases of the voice organ and allergic diseases. A range of educational materials were developed and made freely available online, and a computer programme for assessment of risk of damage to the hearing organ was implemented. |
| Centro | ageing@coimbra Organization model | Ageing@Coimbra is a consortium (ongoing) that aims to enhance the role of the elderly within society and to strengthen projects and programs offering innovative best practices in healthcare and social support, scientific research, and technological applications which promote overall well-being and active and healthy ageing. It is composed of different clusters that focus on diagnosis and management of brain ageing, mobility of the elderly, ICT technological transfer in health and wellbeing, and falls prevention among others. |
| Centro | EUROHealthy project | The Euro-Healthy project (ongoing) is implementing a population health index that will be used to promote health and health equity across Europe. It replicates GeoHealthS/UC concept and tools to all areas profiting from a web-based geographic information system, and it provides key strategic data to inform policy makers and help them make decisions that would reduce health disparities across Europe. |
| Centro | pão.come | The pão.come project (ongoing) was launched with the ambition to reduce the content of salt in the bakery (from 1.4g to 0.8g of salt/100g of bread). The project started with 322 bakeries and has now expanded to > 950 bakeries, reaching 1.5 million people or 64.4% of the total population in the region. The main goal is to reduce mortality due to brain and cardiovascular diseases. |
| Centro | Evaluation of Patient Satisfaction Levels | Currently, all public hospitals and health centres of the region evaluate the satisfaction levels of their users through questionnaires. This helps health providers to identify, update and improve the current organization, quality and safety of their services, thus providing their users with a more inclusive, specialized, personalized, safe and valuable service. |
| Metropolitan Area of Porto (Porto4Ageing) | Fatal fall risk assessment | Currently, all admitted patients over 65 go through a fatal fall risk assessment in hospitals and health centres, so that patients, their families and their health carers would be completely aware of their risks and immediately act accordingly to their specific needs. After the assessment, the patients are educated and advised on how to recover, improve and treat their condition, in order to achieve a better active and healthy ageing. |
| Metropolitan Area of Porto (Porto4Ageing) | Evaluation of Patient Satisfaction Levels | Currently, all public hospitals and health centres of the region evaluate the satisfaction levels of their users through questionnaires. This helps health providers to identify, update and improve the current organization, quality and safety of their services, thus providing their users with a more inclusive, specialized, personalized, safe and valuable service. |

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| Metropolitan Area of Porto (Porto4Ageing) | Accessible route system for the elderly | The Accessible Route System (deployed-ongoing) is an application allowing users to query the accessibility of streets, public spaces and facilities that are supported by public transport routes. A pilot computer program evaluates the urban quality requirements in light of the requirements associated with the ageing process. A web platform is also used to promote accessibility and mobility in the city. |
| Metropolitan Area of Porto (Porto4Ageing) | Aconchego | The Aconchego ("Cosiness") project enables university students to be accommodated in the residences of the elderly. This venture is already being applied in other Portuguese regions. |
| Metropolitan Area of Porto (Porto4Ageing) | Memorias com Sabor | The Mémorias com Sabor ("Flavourful Memories") project connects the elderly and children by giving them a possible space to share activities and experiences. The project thus promotes intergenerational relationships. |
| Valencian Community | Gechronic | The Integrated Chronic Disease Management Model (GECHRONIC) (ongoing) aims to improve the care and management of complex chronic patients with the support of an organizational change and remote monitoring technologies (telemedicine, and platform NOMHAD). These technologies integrate information on case management and serve as a guide for different patient situations. |
| Valencian Community | Hospital at Home (HaH) | Hospital at Home (HaH) (ongoing) provides hospital-specialized care to patients where the "best therapeutic place" defined according to the state of their disease is at their homes (e.g. high comple1ity chronic patients, palliative or pediatric patients). HaH units include ICT technologies to enhance coordination of team work and ensure an adequate electronic continuity within different agents. In 2013, there were 39.680 discharges in HaH, a 9% increase compared to 2012. The cost per stay in HaH is 100€/day, appro1imately 1/3 of a medical stay in a conventional hospital. Currently all hospitals of the region have a HaH unit. |
| Valencian Community | Chronic Ailment Reduction after Menopause (CARMEN) cohort | The CARMEN Cohort (ongoing) is an intervention that uses changes in lifestyle to improve frailty, mood, cognitive decline and quality of life in women surviving cancer or having diabetes. CARMEN integrates 1400 postmenopausal women followed for up to 10 years. A database with clinical and analytical data plus a biobank of serum and DNA has been created. The initiative covers around 8% of the total population of elderly women within the University Hospital Health Department (total 219.000 inhabitants). The program has a maximum capacity of 79 patients/day, providing 14 hours of normal support and 24x7 emergency support. |
| Murcia | The expansion of the Electronic prescription in Murcia | During an interoperability project of the region whereas electronic prescription had been consolidated, 1,015,428 prescriptions were dispensed electronically, which accounts for 41.35% of the total number of prescriptions. Specifically, a total of 248,030 new electronic prescriptions were prescribed in the consolidation period of 8 months. |
| Murcia | The Electronic Health Record in sanitary centers in Murcia | The implementation of EHRs in the region allowed the integration of all the information available to the health system on each patient and facilitated professionals with the ability to query data from patients in different locations: primary care centers, health clinics, hospital care, etc. |
| Murcia | Online Medical Consultation and the Patient's Portal | The online consultation system (ongoing and currently being expanded) is being used in 14 of the 84 health centers in Murcia and enables each user to consult their doctor online. The patient portal registered 3,810 hits for online consultation during the first months of 2016. This internet tool also facilitates access to patient recordsand information on medicines as well as access to online appointments. |
| City of Badalona | BSA Comunica | BSA Comunica is a mobile application for Android smartphones offered to citizens to promote healthy habits. It is also able to remind the user about important events such as health related appointments, leisure and cultural appointments or events given by their health professionals. |
| City of Badalona | Care coordination experience between an intermediate care hospital and an | The coordinating unit provides care services to geriatric patients and redistributes hospital admissions to acute care hospitals. Due to this practice, the hospital stay has been reduced to an averaged 9.1 days from the initial 10.68 days. |

| RS name | Innovative practice | Short description |
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| | emergency service | |
| City of Badalona | Multidisciplinary information and monitoring system | This monitoring system was implemented to monitor the treatment effectiveness or response of patients with hepatitis C virus (HCV). After this implementation, the average time invested in patient counseling has reduced to 60 minutes/patient, and adherence rate to new HCV therapy has increased to almost 100%. |
| City of Terrassa | The Interdepartmental Attention and Social and Healthcare Interaction Plan (PIAISS) | The Interdepartmental Attention and Social and Healthcare Interaction Plan (PIAISS) (ongoing) is an initiative whose aim is to encourage change in healthcare and social policies by ensuring an integrated healthcare model focused on people. It uses the following strategies: integrating regional government structures of the social and healthcare systems; developing a single Information System for healthcare andsocial care services; integrating healthcare and wellbeing policies; and strengthening and guaranteeing accessibility of social services, among others. |
| Asturias | Platform for early diagnosis, prevention and care of vision impairment for healthy ageing | The Platform for early diagnosis, prevention and care of vision impairment for healthy ageing (within the next year) is being developed to enable (1) the discovery of biomarkers for early detection and diagnosis, and (2) the design of innovative therapeutic strategies related to ageing eyes. |
| Andalusia | Diraya | Due to the RS' participation in the PALANTE project, it has been able to develop Diraya (the ongoing integrated regional health information system) for patients with diabetes. Information is stored in an electronic system that allows patients to manage their disease, add information themselves and communicate with their health team. |
| Andalusia | Regional Electronic Social Single Record (RESISOR) | The Regional Electronic Social Single Record (RESISOR) (being implemented) is built upon the Diraya health information system (see previous). The information system will unify social and health data in order to create a more comprehensive case record. |
| Andalusia | Andalusia Junta65 Card and Telecare Service | This service (ongoing) entails the use of an easy-to-use smart card that gives access to discounts, offers and benefits in products and services considered essential for the self-care (i.e. podology), autonomy (i.e. optical products, hearing aid, Telecare) and leisure (i.e. thematic parks, cinemas). The card holders can access free legal counsel on important topics for those aged 65 (e.g. inheritance laws) as well as access to a canteen services that serve balance and age-adapted diets. So far, the whole population over 65 is covered. |
| Balearic Islands | Rutas Saludable (Healthy Routes) | The Rutas Saludable project ("Healthy Walking Routes"; launched) allows citizens to participate in designing healthy and "walkable" routes around Primary Health Centres (PHC) in order 1) to promote physical activity in patients attending consultations and citizens in general 2) to teach the citizens how to use their own resources to take charge of their lives and their communities 3) to increase the collaboration between health practitioners, transport specialists and urban planners to help to introduce the health perspective in other non health sectors. The outcomes of this project for 2000 patients have so far been recorded in their EHRs. |
| Galicia | Innova-Saúde and H2050 | The innovation programmes Innova-Saúde and H2050 has brought forth a scaling-up strategy that has strengths such as funds allocation for innovative projects, an innovation policy tool that would allow competition on an international level, development of business models, and the bringing together of complementary companies from different fields to allow the opening of new business lines and the entry into new market. |
| Galicia | Digital home (DH) assistance | The Digital Home (DH) Assistance concept involves using innovative products and services to improve the citizens' quality of life at home as well as in other social environments. Patients can obtain information on health and disease prevention as well as access health services through the intelligent information devices and systems implanted in their homes. They may also be monitored. |
| Galicia | e-Saúde platform | The e-Saúde platform (implemented) is along with the SERGAS website allows patients to have access to personal services such as their electronic health record, their health card, pharacotherapeutic history, etc. Other online services include appointment-making and e-consulting, distance calls, blogs and social networks for information-sharing, accredited health apps and an online medical library. |
| Catalonia | ECHORD++ | The ECHORD++ project (ongoing, after the ECHORD project) allows the |

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| | | manufacture and marketing of new robots in healthcare to progress further by facilitating the cooperation of different key players (academia, industry, users). |
| Catalonia | The Cookbook for large scale coordinated care and telehealth deployment | The Cookbook for large scale coordinated care and telehealth deployment is a documentation (currently available) that illustrates how care coordination addresses healthcare needs and supports long term health sustainability as well as social care delivery. The cookbook is the result of a 2 ½ year scientific data evaluation of different connected health problems from five European regions:  Basque Country, Catalonia, Groningen, Lombardy and Scotland. |
| Catalonia | Sustainable Technology for Older People – Get Organised (STOPandGO) | The STOPandGO project (ongoing) uses a procurement approach that will concretely show how incorporating telehealth and telecare technology into care and cure services can lead to reductions in the need for people to access services, as well as improving their ability to live better lives in their own homes (e.g., quality of life). A focus would be patients that have an automated Implantable Cardioverter Defibrillator (ICD). |
| Catalonia | HubC's NEXTCARE project | HubC's NEXTCARE project (just started) aims for the co-design, development, deployment and evaluation of a novel integrated care model for the adaptive case management of complex chronic patients. The new model would facilitate interactions among healthcare professionals and citizens whilst ICT support would provide intelligent tools for early diagnosis, health risk assessment and stratification, monitoring, patient self-management and shared decision making. |
| Catalonia | GeriatrICS project | The GeriatriCS project (ongoing) ensures comprehensive, quality health care for users in elderly residential care facilities and adapts treatment based on efficacy, safety and efficiency. In the first six months of the project, 800 new residents were registered and one-in-four medications prescribed were deprescribed. The measures also resulted in a 20% reduction in diaper costs and 41.17% in bandages and dressings. |
| Catalonia | Tarragona Mental Health Platform | The Mental Health Platform aims at adding value to the electronic clinical record data by monitoring the activity indicators in order to help management, research, and population mental health. |
| Catalonia | TICSALUT's AppSalut website | TICSALUT's AppSalut website is a showroom of mobile applications related to health and social care sector, which have passed an accreditation process that TicSalut Foundation had defined |
| Catalonia | TICSALUT IS3 | TICSALUT IS3 is a continuity of care and integrated care processes project that provides interoperability scenarios to facilitate the integration between different information systems of healthcare providers and social services. |
| Catalonia | Guttmann NeuroPersonalTrainer® (GNPT) | The Guttmann NeuroPersonalTrainer® (GNPT) is an electronic tool for health professionals that  helps them provide their patients with a more intensive and personal intervention. |
| Barcelona Province | Functional Home Adaptation Program | Results of this program are: an average annual yield of 3.94 EUR for action and, therefore, for a return of 4 euros for every euro invested; an average term of repayment of the interventions of 1.35 months; moreover, most actions are aimed at offering support products with an average cost of 771 EUR. |
| Barcelona Province | Training Program for professionals and students in the field of Health and Social | Description not available |
| Barcelona Province | Environment Control and Mobile Application (CECOM) | The e1tension of this project (ended) allowed for the control of many house equipments (e.g. control or access the router through mobile phone). Design requirements included an easy-to-use graphical interface, infrared / WiFi access, among others. |
| Barcelona Province | Wireless voice recognition platform integrated in a wheelchair | This project (ended) allows people with disabilities, like electric chair users with great manipulative difficulties to use their voice to control multimedia devices on their house. Requirements are a mobile device and WiFi connection. |
| Barcelona Province | Device drivers for speech recognition (CDRV) | This project (ended) aimed to create a small low cost device that is able to recognize certain keywords in Catalan or Spanish spoken by the user and transform them in a sequence of digital output signals in order to control any actuator functions . For e1ample, the device docked in a chair with the functionality to help raise user who uses the lift. Instead of operating with a function to raise control buttons, the device must be capable of controlling the chair via the user's own voice. Requirements are a mobile device and WiFi |

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| | | connection. |
| Barcelona Province | New Jobs' Impact of Quality in Offices and Clean Technologies | Description not available |
| Barcelona Province | Easy Control Home for Everyone | This application (also called See-Home) allows home automation. It allows full control of lights, climate, blinds engines, gas or water valves, etc. It is also customizable and can suit different user profiles and homes. This visualization and control to adapt can be carried out from the house or via remote connection via mobile networks. |
| Barcelona Province | Social Agenda for Older People | The Social Agenda is a tool that helps elderly people manage their important major events. It has been designed taking their needs into account (in terms of visibility, size of the buttons, simplicity, sync with google Calendar etc.) |
| Madrid | Acute Care Units (ACU) | Acute Care Units were established so that older people that acquire an acute illness may be attended to. ACUs have been shown to provide the best evidence supporting a reduced functional deterioration during admission, reduced length of stay in the hospital, and reduced amount of re-admissions, among others. They are now implemented in 5 out of the 8 biggest hospitals in the RS. |
| Madrid | Orthogeriatric Unit/Program | The Orthogeriatrics Unit/Program (ongoing), sometimes also complemented with a Falls Unit, is a management system wherein certain patients (hip fracture, had fall injuries...) are assessed to detect the intrinsic and/or extrinsic cause of falls in order to help them avoid new falls and their consequences. This program is available in 12 hospitals in the RS. |
| Madrid | Coordination between Primary care and social services | Coordination between Primary care and social services has been established as a core component of an integrated, continued and coordinated care model to ensure better patient monitoring. In some areas, TIC-based monitoring and follow-up is provided. |
| Madrid | Day Hospital | Day Hospitals cater to older adults that live at home but need certain activities (such as physical training, cognitive training, training in the management of insulin, etc) due to an acute or subacute episode of functional decline. These elderly people are evaluated, placed into an appropriate program (usually 16-20 session), and given transportation between their homes and the hospitals for better attendance. Their progress during the program is carefully assessed. |
| Basque Country | The Integrated Care Plan (ICP) | The Integrated Care Plan (ICP) within Osakidetza Strategic Lines (2013-2016) is a model with that focused on preventive interventions, patient empowerment and personalized medical care. Some of its elements are: creating Integrated Care Organizations (OSI) including primary care and hospitals with joint governance; creating an integrated communication systems; and making risk stratification and care plans for complex patients (multimorbidity, diabetes mellitus, heart failure, COPD...), among others. |
| Basque Country | Integrasarea project | Integrasarea is a collaborative network that facilitates, explores, conceptualizes, identifies, proposes and scales up good practices amongst health professionals and other stakeholders in order to improve the establishment of an integrated care system. |
| Basque Country | Osarean | The Osarean program provides non-face-to-face care that is focused on disease prevention, health monitoring and health counselling through an integrated informations system. |
| Basque Country | Osabide Global | Osabide Global is a unified Electronic Health Record system. |
| Basque Country | Osanaia | Osanaia is a program that facilitates the management of nurse care and allow for care plans that are customized to the needs of each patient. |
| Basque Country | Presbide | Presbide is an e-Prescription service that provides e-Health services such as health advice that is managed through a protocol supported algorithm; performing activities embedded in integral clinical pathways; telehealth that facilitates patient follow up, care adherence and enhancing patient-professional communication; prevention programs; and a personal health folder system. |
| Basque Country | Euskadi Lagunkoia | Euskadi Lagunkoia is a proactive strategy to make living spaces more age-friendly, without physical obstacles and barriers. |
| Aragon | Screening programs | The RS conducts several screening programs that allow for early diagnoses and prevention of certain diseases such as cervical cancer, colorectal cancer and breast cancer, among others. These mostly target elderly patients and all programs have a coverage of more than 70%. |

| RS name | Innovative practice | Short description |
|---|---|---|
| Aragon | SmartCare | The SmartCare Project (ongoing) aims for a wide deployment of ICT services (health and social) to the RS population.  The project has so far constructed a wide knowledge transfer framework through online tools, and through close relationships as well as activities with other regions that have implemented integrated care in their regions. |
| Aragon | SUSTAINS (Support USers To Access INformation and Services) | The SUSTAINS project (ongoing) comprises an array of services based on giving citizens online access to their Electronic Health Records (EHR). The services proposed have been distilled from the experience of regions which have already pioneered such access. |
| Aragon | SALUD online tool | THe RS offers an online tool to give its citizens access to administrative and clinical e-services, to promote access of medical information, and to encourage patient empowerment in good practices and on the management of their own health. This web currently has heavy traffic and more than 6% of the total consultations are booked through this tool. |
| Scania | The certification of allergy-, asthma- and COPD-clinics in primary care in Skåne | In 2013 the region council certified all asthma/COPD-clinics in primary health care that operated according to the Swedish national criteria for asthma/COPD clinics in order to ensure the quality of healthcare given to these patients. Results of this include an increased number of patients who are receiving proper diagnosis and who are better informed about their disease, as well as a reduced number of patients with COPD exacerbations from the certified clinics compared to the uncertified clinics. |
| Scania | ÄMMA-team (Emergency Team for the Elderly in Malmo) | The ÄMMA-team (Emergency Team for the Elderly in Malmo) and Hälsostaden are examples of local cooperation that has developed between the municipalities and Region Skåne from the needs of coordinating care for the elderly frail. At each visit of the ÄMMA-team, a doctor, nurse, occupational therapists and care managers meet the patient. |
| Scania | The LIMM-model (Lund Integrated Medicines Management) | The LIMM-model (Lund Integrated Medicines Management) which is an integrated part of the Skåne model, is a medicines management model that improves both the care process and clinical outcomes as well as saves money. Due to this model, the number of visits to healthcare centres and the number of re-admissions due to drug-related problems has decreased by at least 50%. |
| Norrbotten | Patient Monitoring System | A new patient monitoring system (running) has been implemented and built over the existing networks of all hospitals in the region using Wi-Fi. Through this system, patients are allowed to freely move around the hospital without compromising their health or any needed attention from clinicians. |
| Healthy Ageing Network Northern Netherlands | Embrace Project | The Region Twente builds on the integrated neighbourhood approach to combine social innovation with supportive technology for healthy ageing. The objective of Embrace is to use a new and personalized care delivery system to provide integrated care and support for adults over 75 living at home. The Region Twente established the TZA, a living lab infrastructure, where a simulated home environment acts a second phase living lab to test technology and offers an educational infrastructure. |
| Healthy Ageing Network Northern Netherlands | EurSafety Health-Net | EurSafety Health-Net (project concluded, but members active) aimed to increase the protection of hospital patients against infections that are directly related to the ageing process and the growing ageing population. This was done by establishing a cross-border quality network for as many participants as possible in the healthcare sector (patients, hospitals, doctors' offices, health offices, nursing homes, laboratories, etc.) At the start, 12 partner institutions and 15 hospitals were involved. By 2015, 492 institutions(from 12) were involved, comprising 472 (from 15) healthcare institutions. The occurrence of MRSA infections has been significantly brought down by 41%. The project has now become a foundation that supplies quality certificates to hospitals. |
| Healthy Ageing Network Northern Netherlands | Health-i-care | Health-i-Care is a follow-up project (ongoing) including over 100 partners. It builds on the results of EurSafety Health-Net and expands the focus to the development of innovative products, technologies and services in collaboration with SMEs from the Netherlands and Germany. |
| Healthy Ageing Network Northern Netherland | SPRINT@Work | SPRINT@Work  is a project (ongoing) wherein knowledge institutions and businesses work together to deliver products and solutions that support the sustainable employability of older employees (over 45) and increase their participation levels by monitoring  physical movement at work and providing interventions. The partners develop and test products that measure changes |

| RS name | Innovative practice | Short description |
|---|---|---|
| s | | in the employability of employees as a result of ageing (TRL7). A number of prototypes and products has been developed, and is tested by 100 employees from five large organizations. Results show that this new approach of monitoring older employees and offering interventions for those at risk contributes to better health. |
| Twente | PERSSILAA/Langgezond.nl | PERSSILAA/langgezond.nl is a project that focuses on development, evaluation and implementation of a new service model, to screen for and prevent frailty in community dwelling older adults, integrating nutrition, physical and cognitive function. They currently work with remote service modules for screening, monitoring and training, and are currently working on a smartphone app for home monitoring and exercise programs. PERSSILAA/Langgezond.nl is currently implemented in 4 municipalities in the region (44.000 older adults). More than 10.000 of these older adults are being reached and 4000 older adults are currently active in using the services. |
| Amsterdam Metropolitan Area | Geri Medica | Geri Medica is an initiative (ongoing) that adopted an electronic patient records system and integrated professional measuring devices and protocols into the records platform. Within the region, four large nursing homes use the system, corresponding to 70% of the nursing home resident population. The system has been adopted in over 50 institutions nationwide. |
| Amsterdam Metropolitan Area | Meeting Centres Support Programme | The Meeting Centres Support Programme supports community dwelling people with mild dementia and their informal carers by providing support, activities and advice. The development process involved interviewing people with mild to moderate dementia, their carers and GPs about what they missed in support. Effect studies have revealed high user satisfaction, reduced behavioural and mood problems, higher carer sense of competence, delayed admission to residential care, and improved collaboration between care and welfare organizations. In a seven month period, 4% of meeting centre users were admitted to residential care compared with 30% of people receiving normal care. Delays in admissions resulted in savings of 270 euros a day. To date, 135 centres have been established nationwide. |
| Amsterdam Metropolitan Area | Transitional Care Bridge Programme | The Transitional Care Bridge Programme (ongoing) involves personalized handover, care and treatment plans, patient and carer discussions and follow-up care, and has lead to a reduction in mortality amongst elderly patients (according to a randomized control trial). 6 month costs were also 2500 euros less in the intervention group compared with normal care. The programme is now implemented in 25 hospitals in the Netherlands – corresponding to 25% of all Dutch hospitals. |
| Medical Delta | The Virtual Med School | The Virtual Med School (ongoing) deploys an educational digital simulator for training of medical professionals. It has been active since 2012 and has trained more than 5,000 professionals belonging to 40% of hospitals and academic centres in the Netherlands. They are currently active at large scale in the UK, Dubai, France and other countries |
| Medical Delta | Sleep Position Trainer from the Nightbalance Company | Nightbalance is a company that deploys a Sleep Position Trainer to overcome sleep apnea which is reimbursed in si1 European countries by the health insurance companies and which is a clinically proven technology (tested in 35.000 nights). |
| Medical Delta | The Dutch website from Erasmus MC www.huidhuis.nl | The Dutch website (operating) from a.o. Erasmus MC www.huidhuis.nl provides relevant information to people regarding their skin related questions and get a first self-diagnosis. It is also possible to create your own personal record, and more than 100.000 people already did. |
| Medical Delta | The Health Coach programme | The Health Coach programme is a succesful programme (ongoing) that provides support for healthy living and vitality. It is a combination of training, personal coaching and advanced tools fore e-health and monitoring. |
| North Brabant Province | Circles of Care | The Circles of Care programme has established a smart, shared way in which healthcare providers work together in a specific geographical area to deliver types of care which otherwise are difficult to provide in a cost-effective way, like night care in the extramural setting. After an initial small setup, a toolkit was made to describe the approach that was used and this toolkit has been used to set-up 21 additional 'Circles of Care' covering more than 30% of the area in the region and including more than 20 healthcare organizations. |
| North Brabant Province | The Central24 Monitoring Centre | Central24 is a monitoring centre that require 7.4 FTE for 1 person available in the monitoring center 24/7 and was created to facilitate new types of integration in the Circles of Care. It also has an ambitious innovation program to use the shared monitoring center for the deployment of new innovative |

| RS name | Innovative practice | Short description |
|---------|---------------------|------------------|
| | | services. Currently there are 12 healthcare organizations who are customers of the monitoring center which is now delivering care to approximately 10.000 individuals. |
| North Brabant Province | Home of Tomorrow | The Home of Tomorrow platform works actively to solve one the problem of the inability of innovative health solutions to enter the consumer market. The platform is unique as it allows for personal choice and preference on behalf of the individual/user/patient themselves searching for a healthcare solution to their problem allowing them to take control of their own health and healthcare. The Home of Tomorrow has so far welcomed well over 1.600 individuals. |
| North Brabant Province | Brainport Healthy Living Lab (BHLL) | The Brainport Healthy Living Lab (ongoing) was created to allow the large scale deployment of eHealth in the region not only by stimulating as many as possible pilot projects but also by offering concrete facilities, tools and platforms to ensure barriers (e.g. difficulties with data-integration and regulation, the need to have financial redistribution..) to upscaling can be successfully addressed. The number of users involved in BHLL is expected to increase from 5.000 currently to 100.000 people in our region by 2020. |
| Global Alliance Chronic Respiratory Diseases Regional Network | Turkey Chronic Airway Disease Control Programme | The signing ceremony of the Turkey Chronic Airway Disease Control Programme took place in May 2009 with the participation of the Minister of Health,  with representatives of all 62 stakeholders signing on behalf of their organizations.  This process is the first of this nature involving the MoH and an NGO (the TTS) in the joint management of a major national programme. |
| Global Alliance Chronic Respiratory Diseases Regional Network | Program for preventing and controlling chronic airway diseases (Asthma-COPD) action plan | The action plan (2009-2013) and (2014-2017) of Turkey's Program for Preventing and Controlling Chronic Airway Diseases (Asthma-COPD) has been shown as an example by WHO to other countries. |
| Kiev-Zhitomir | growth of medical social services and physiotherapeutic procedures for active and healthy ageing | as shown in reports from Ukrainian medical institutions to the Ukrainian Ministry of Health as well as in the "Social Entrepreneurship" publication |
| North East England | All together better Sunderland | All Together Better Sunderland (ongoing) is an initiative and partnership hat brings together health and social care professionals with a range of local support organisations to help some of the frailest people in the society get back on their feet as quickly as possible and yet also be surrounded by care from e.g. their family members. The initiative focuses on much improved communication and collaboration between elements of the care community to deliver as much care as possible in the community and to avoid unnecessary hospital admissions. |
| North East England | Gateshead Care Homes Project and Provider Alliance Network (PAN) organisation | This organisation aims to provide holistic care and seamless support across the traditional health and social care boundaries. PAN will also oversee and connect healthcare for a population who are cared for and supported in long and short term stay community beds as well as helping those individuals in their family home undertaking reablement, rehabilitation and recovery services at home. |
| North East England | Northumberland accountable Care Organisation | This vanguard will help communities to live long and healthy lives at home. This will be supported through the opening of the Northumbria Specialist Emergency Care Hospital, an extension of primary care to create 'hubs' of primary care provision across the county seven days a week. Following implementation, patients will be able to access their GP over the weekend, preventing the need to go to the Emergency Department when symptoms worsen. |
| Greater Manchester | Greater Manchester (GM) Ageing Hub | The GM Ageing Hub is a network that has been created so that GM partners can coordinate and implement a strategic response to the opportunities and challenges of an ageing population. GM's ambition is to develop a new model of sustainable economic growth where all residents can contribute to and benefit from sustained prosperity and enjoy a good quality of life. |
| Greater Manchester | Working Well | The Working Well programme (ongoing) has been proven effective at supporting long-term workless residents into work or closer to the labour |

| RS name | Innovative practice | Short description |
|---|---|---|
| r | | market, and improving confidence and abilities to manage health conditions and improve well-being. An agreement was also signed to co-produce research and implement, at scale, initiatives to support active and healthy ageing. |
| Greater Manchester | Ambition for Ageing | Ambition For Ageing (ongoing) currently operates in 24 Greated Manchester neighbourhoods to improve health by reducing isolation and building age-friendly neighbourhoods. They aim for communities to be more connected and for there to be more opportunities and activities for older people in the places they live. |
| Yorkshire and the Humber | Airedale Telehealth Hub | The Airedale NHS Foundation Trust Telehealth Hub (ongoing) provides remote support to patients and carers via a video link, with the aim of reducing admissions into the hospital. The service provides remote support and advice to patients, and coordinates referral to other services where required. Today the service has been scaled up to cover over 10,000 nursing and care home residents living in 283 homes across many regions of England. The service is provided to over 50% of the target population within the Trust's locality, 5,071 patients out of a target of 7,867. |
| Yorkshire and the Humber | Altogether Better | Altogether Better organization (currently operating) has developed an award-winning model that has engaged over 18,000 volunteers as community health champions across 3 regions who have in turn reached over 104,000 others. Its approach includes engaging citizens in the community (called health champions) by hearing and thus strengthening their voices, co-producing solutions which support health and well-being, growing a transformational network, adn influencing policy and practice. This has demonstrated effectiveness in supporting positive behaviour change, improving health, more appropriate use of health care services and decreasing hospital admissions. |
| Yorkshire and the Humber | Electronic Frailty Index | The eFI (ongoing) is a risk stratification tool developed and validated with data from over 900,000 patients to identify severity grade frailty using routinely available primary care data. It is available in over 2,500 GP practices across England. |
| Northern Ireland | Northern Ireland Electronic Care Record (NIECR) | The NIECR is a portal system (ongoing) which draws information from many disparate systems across health and social care, providing care professionals with a single, comprehensive care record for every service user and aiding better, faster, safer decision-making. The NIECR operates at regional level and to date has been accessed in the provision of care to 972,000 people – 53% of the NI population. |
| Northern Ireland | Northern Ireland Single Assessment Tool (eNISAT) | The eNISAT is a standardised, multi-professional assessment tool providing a framework for holistic, person-centred assessment. It has provided for the standardisation and streamlining of assessment and care planning processes, improving information sharing and collaborative working, and simplifying access to community care services. It is operational regionally and has been used to date in the assessment of over 82,000 people. |
| Northern Ireland | Medicines Optimisation Model for Older People in Intermediate Care and Nursing Homes | A Medicines Optimisation Quality Framework has been produced to support quality improvement and the consistent delivery of best practice. Recent initiatives in this area have included a Medicines Optimisation Model for Older People in Intermediate Care and Nursing Homes which has demonstrated added value and benefits over existing models through improvements in patient outcomes, reduction in demand for health services and reduced medicines costs. The model was available to 40% of the Northern Ireland population during 2015/16. |
| North West Coast of England | Connected Health Cities Programme | Connected Health Cities (CHC), (ongoing) is a project that unites local health data and advanced technology to improve health services for patients in Northern England by making sure that all data and services are more joined-up or better linked. |
| North West Coast of England | Healthy New Towns Vanguard Programme | The Healthy New Towns Vanguard programme aims to inform thinking and planning of every day environments to improve health for generations to come. Options to be tested at some of these sites include fast food-free zones near schools, designing safe and appealing green spaces, building dementia-friendly streets and ensuring people can access new GP services using digital technology. |
| North West Coast of England | Evaluation of the Lancashire and Cumbria Innovation Alliance Test Bed | The programme (recently started) will test new approaches to identifying frail elderly patients that can benefit from additional support and help them to self-care at home through improved education and telehealth technologies. It will hence support frail elderly people with dementia and other long term |

| RS name | Innovative practice | Short description |
|---------|---------------------|------------------|
| | programme | conditions to remain well in the community and avoid unnecessary hospital admissions. The RS will be evaluating its success / appropriateness. |
| North West Coast of England | Innovation Exchange Network (the Academic Health Science Network for the North West Coast covering Cheshire, Merseyside, Lancashire and South Cumbria) | The Innovation Exchange Network is a developed network with the core purpose to spread innovation, improve health, and generate economic growth. The network was established in order to enable the sharing of best practice across the North West Coast of England. |
| Scotland | Technology Enabled Care (TEC) Programme | The Technology-Enabled Care Programme (ongoing) is nationwide and is about significantly up-scaling tried and tested approaches across the following interlinked workstreams: expanding home health monitoring as part of integrated care plans, expanding the use of video conferencing and the take-up of telecare, creating a national digital platform network, and exploring the scope and benefits of switching current provision of Telecare from analogue to digital telecare. |
| Scotland | Living it Up, SmartCare and United4Health projects | These are 3 at-scale programmes of ICT-enabled integrated care (ongoing) that aim to supplement telemonitoring tools to support care assessment and community inclusion for older people and those living with long-term conditions. To date, Scotland's "at-scale" approach has delivered choice and improvements in lifestyles/assisted living for 165,000 people with long term health and care issues living at home (among others. Full list in RS application) |
| City of Liverpool | Liverpool Telehealth Service | The Telehealth services consist of two systems: a tailored Motiva teleheath system and the Florence (Flo) simple telehealth service. These services are a te1t message system that assists in the management of long-term conditions including COPD, Chronic Heart Failure and diabetes (Motiva) or hypertension and BP level monitoring (Flo). |
| City of Liverpool | Liverpool Telecare on Prescription Service | The Telecare on Prescription Service (ongoing) enables prescribing by GPs and other primary care clinicians of fall detection equipment as part of a telecare package. |
| City of Liverpool | House of Memories app and Dementia training programme | The programme includes a dementia awareness training for health, social care and housing providers, as well as a digital memory resource app containing more than 100 object images, music, film and social history references from 1920 to 1980... to serve as a memory aid for dementia patients. |
| City of Liverpool | First online identity verification system | The UK's first online identity verification for health data for individuals (ongoing) will enable citizen-generated data to be integrated with the clinical records of health and care professionals. It will support people to self-care and live actively and independently for longer. |
| Wales | Beacon Digital Health Project | The Beacon Digital Health Project was established to address the significant challenges associated with the safety, quality and accountability of medicines administration and predominantly paper-record keeping in care homes.  A new online tool accessed through a smartphone gives pharmacists complete access to the medicine records of people living in care homes and enables them to remotely connect with the care professionals to provide ongoing advice and ensure optimum prescribing, administration and recording of medicines.  The tool has already been rolled out in 30 care homes across South Wales. |
| Wales | SPICE: Active Ageing | SPICE: Active Ageing time banking scheme (ongoing) focuses on the role of time banks to provide new and alternative sources of support for people as they age. For example, a "time currency" was invented called "Time Credits". Time Credits are a Complementary Currency that encourages people to give their time to help their communities, e.g. giving time to help run social activities, providing peer support, etc. Individuals gain one Time Credit for each hour that they give and these Time Credits can be used to access other activities such as leisure, sporting, or visits to cultural and historical venues. |
| Wales | Choose Pharmacy National Roll Out | The Choose Pharmacy is a newly established service that involves the assessment of a patient by an authorised pharmacist and the selection and supply of treatment from a list of medicines covering a defined range of common ailments. Patients are referred to another health service when appropriate, and treatment is supplied free of charge. |

# Annex 2: Presentations at the workshop on Reference Sites investment plans 2017-18, 7 December 2016, Brussels

## 1. Asturias

The presentation was given by *Melania Álvarez, DG Citizen Participation* (Government of Principality of Asturias).

**Figure 28: Overview: Asturias Reference Site**

**Programme of work in 2017:**

Defining an Asturian Strategy of Active Ageing.

Forming innovative pilot actions based on the assistance of regional administration and the Red Cross.

Implementing efficient transfer processes, technology and knowledge scales

**Future proposals:**

Improve twinning activities

Call for proposals

Funding opportunities

**Twinning activities with:**

Campania

**Description of Twinning activities:**

*PERsonalised ICT Supported Service for Independent Living and Active Ageing (PERSILAA)*

In cooperation with Campania, the Asturias region in Spain is introducing the PERSILAA model for screening and preventing frailty among community dwelling older adults, integrating nutrition, physical and cognitive function. The budget is set at 120.000 € for 2 years. There are 5 projects in the Asturias in the Active Ageing Research Area where the transferred knowledge acquired from the Campania Best Practice will be applied. The main project in this field is the nationally funded project 'Stratistix' aimed at developing new algorithms and tools for multimorbidity stratification and risk prediction. Within this framework, the Reference Site will adopt important parts of the Campania's Best Practice, in order to include the 'Stratistix' project results cardiology predictors and ICT tools, learned from Campania, as well as their model in the field of patient relationship management in this area. Twinning action is set to start in January 2017. The objectives are to enhance the CTIC ICT platform for multimorbidity risk stratification and prevention with cardiovascular data and analytics, based on the Campania use case, to adapt the adopter ICT platform for personalized health care to integrate protection modules for care pathway and telemonitoring

tools, to familiarize healthcare professionals, in collaboration with adopter, with utilizing eHealth technology for risk stratification and finally to involve patients in personalized health campaigns to increase adherence to treatments. Expected outcomes involve ICT stratification and enrichment of the personalized medicine platform, the use of the stratification tool in one hospital or more in Asturias and others. The described actions will strongly improve the innovation ecosystem in the adopter country with respect to the use of ICT services for stratified management of patients with chronic diseases and older adults.

**Discussion**

*Suggestions for the twinning/coaching in the future:*

To avoid holiday dates for calls
To do Calls in consecutive steps (as in other projects)
To offer a web platform where the form-filling can be updated
To put people at the centre of the action

# 2. Basque Country

The presentation was given by *Esteban de Manuel Keenoy*.

**Twinning actions with:**

Scotland
Liguria
Nouvelle-Aquitaine

Basque country is lending its knowledge in risk stratification to Scotland, Nouvelle-Aquitaine and Liguria, and is learning from Scotland about a self-management collaborative platform to enable access to information and training for patients, citizens, caregivers and health and care professionals.

**Description of twinning activities:**

*Population Risk Stratification (Originator)*

The Basque country in Spain is the originator of the population risk stratification practice; a procedure by which the entire population of the Basque Country is being stratified by next year's healthcare cost. The population is then classified into four groups according to the presence of a chronic disease, with a special focus on the 95th percentile of chronic population. To stratify by use of healthcare resources allows identifying and selecting target populations that may benefit from specific programs of action. The RS model is based on diagnoses, socio-demographic data, pharmacy data, prior health care utilization, and socio-economic data. Currently, work is being carried out to develop mechanisms to perform a periodic evaluation and optimization of the RS model, and to improve the tool enabling data collection in a more regular basis.

The Reference Site has set up cooperation with the Nouvelle-Aquitaine region in France and the regions have set up a time schedule and meetings to complement the implementation of twinning activities. Risk stratification is a topic of high interest. Scotland and Liguria are also applying to establish twinning activities on this field with the Basque Country. If funding allows it, a four Region network could be established.

*Living it Up (Adopter)*

Basque country and Scotland twinning activity "Living it Up" (LiU) is in the area of home and mobile health monitoring (See **3.3 Scotland** for more information). A key objective of the Basque Country–Scotland cooperation is "Empowering citizens to have choice and control in the management of their care by exploring new virtual models to facilitate user participation

and promotion of interaction between citizens and providers". Collaborating to empower citizens to become true deliverers of their care supported by their informal carer, peer and/or community networks.

The budget lies at around €20.000. Twinning visits between the regions have been held in November 2016 with meetings on the subjects of citizen empowerment, self-management and digital health. Objectives of the cooperation involve learning about the Living it Up self-management collaborative platform, the involvement of stakeholders, implementing methodologies and the change management performed within health and care systems to enable access to information and training for patients, citizens, caregivers and health and care professionals. The goal is to promote health and wellbeing and to encourage citizens to become expert patients. The anticipated outcomes of the twinning activities include an increased number of citizens and professionals involved in co-production and co-creation activities, an enhanced contribution of professionals and citizens incorporating content and/or testimonials of their experience in the field of empowerment, promoted involvement and partnerships within and beyond the health system (associations, institutions, etc.) and increased levels of health literacy and satisfaction of citizens about their health. The impacts are expected to be established knowledge flows about patient empowerment between both organizations and increased know-how on how Patient/Citizen Empowerment/Activation approaches in different contexts contribute to the design and development of more efficient projects and initiatives.

# 3. Scotland

The presentation was given by *Donna Henderson.*

**Technology Enabled Care Programme – Launched in 2014:**

Aims to extend the number of people benefiting from technology enabled care and support in Scotland
An additional €10.5 million a year invested since 2015 with requirement on health and care partnerships to evidence positive, cost effective outcomes
Demonstrates how technology enabled care can support people to live well at home, avoid unnecessary hospital admissions, reduce length of stay and support timely hospital discharge
5 Key Workstreams identified for funding and national support

This measure of progress allowed us to present a case for funding specifically a design **expanding and embedding** the use of technology-enabled care across Scotland.



**Figure 29: Living it Up, Scotland**

**Scottish Centre for Telehealth & Telecare – Key objective of twinning actions:**

The key objective of twinning actions is to organise study visits that aim at fostering co-operation, collaboration and knowledge exchange between the Basque Country, Andalusia, and Scotland on topics related to technology enabled, integrated health and care delivery – with particular focus on:

The development of digital, connected health solutions
Citizen empowerment, big data and stratified / personalised medicine

**Twinning actions with:**

Andalusia
Basque Country

**Description of Twinning activities:**

*Living it Up (Originator)*

Scotland is the originator region of the Living it Up (LiU) platform that empowers people with one or more long-term health condition aged 50 and over, to use technology to manage their health and wellbeing, and be better connected to their communities. LiU's person-centred platform supports the management of the high-costs of caring for an ageing demographic and a growing population living with long term conditions, through a series of prevention and early intervention initiatives. Cooperation has been set up with the Basque country to share the experience of co-designing an online self-management hub designed with and for people aged 50+. LiU aims to be a digitally enabled community that provides holistic opportunities to support improved health, wellbeing and active lifestyles.

The functions of LiU include: connecting to support circle; to motivate to use technology to improve health and wellbeing; and to empower to be confident contributors to the LiU community, sharing experiences and knowledge. Twinning action of this practice has been launched with the Basque country and Andalusia.

*Population Risk Stratification (Adopter)*

Risk stratification is used to determine a person's risk for suffering a particular condition and need -or lack thereof- for preventive intervention. In this highly demanded field of action, Scotland has set up Twinning activities with the Basque Country. The budget has been set at €50,000 for the cost of staff supporting the twinning activities. Risk prediction tools, used as a part of clinical decision-making, have shown to improve the quality of care, prevent adverse events, and decrease costs. With the formation of Integrated Joint Boards in Scotland, the rich individual level datasets that are available, the established expertise in modelling techniques and linkage of health and care information, there is an opportunity to strengthen collaboration and stimulate further knowledge transfer between Scotland and the Basque Country in the use of predictive analytics to inform and improve how we design and deliver person-centred integrated care services and support in Scotland.

Taking advantage of the existing Scotland and the Basque Country Memorandum of Understanding (MoU), twinning visits between the two regions are complementing the implementation actions of the MoU. The visits will be held during November 2016 and will involve a schedule of working meetings between relevant experts from each country in the fields of risk stratification and health and social care integration. After the visits, a follow-up of the implementation would be proposed via virtual (e.g. web conferences) working sessions. Expected outcomes include: Improved knowledge of healthcare professionals (including statisticians) in risk stratification approaches; an increased number of population stratified in both regions; increased use of risk stratification tools in a routine care in both regions; and increased and detailed understanding of both regions' risk stratification systems and processes, including the use of innovative tools and techniques. The expected impact is that increased knowledge on risk stratification approaches for both population-level and

individual-disease-level is created and that improved risk stratification tools and processes are introduced in both regions.

**Discussion**

The EIP - has been invaluable in terms of seeing other regions having similar strategic plans and ambitions. Regarding our twinning actions, we had only a small budget, e.g., to support what we are doing anyway (e.g., to visit/talk with the Basque Country and Andalusia).

Question: *How can we orient ourselves faster? Do you have any advice for newcomers?*

Answer:

    *(1) The repository of good practices is good but it is difficult to navigate*

    *(2) The best way of orientation has been through conferences and meetings, networking, conversations*

    *(3) In the future, the B3 coordinators will have conversations with new members. It is crucial for new members to establish these connections. Come to the meetings and network, network, network!*

# 4. Olomouc

The presentation was given by Zdenek Gütter, NTMC Project Manager.
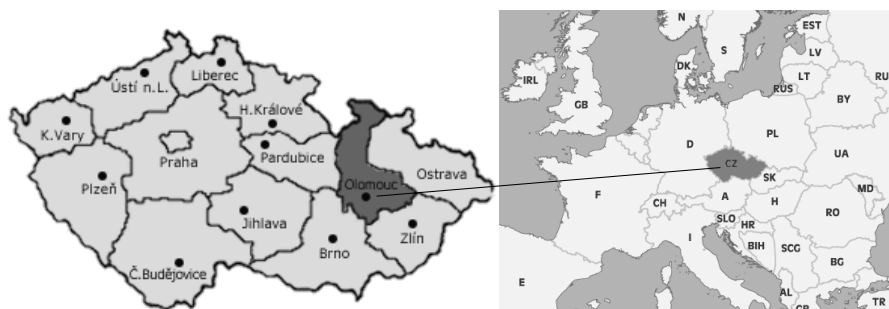
**AHA investment in the Olomouc region**



**Figure 30: Geographical situation of Olomouc**

The Czech National eHealth Center (NTMC) in the University Hospital Olomouc is coordinator and co-operator with regard to innovations in the Czech Republic.

An investment of approx. €40 million is planned for the following years

mainly from ESIF
partly as industry grants
as well as the own hospital investment

**Twinnings to scale up GPs:**

Most will be invested in ICT-supported healthcare of a chronically ill ageing population

Telemedicine in clinical practice and integration of participating healthcare providers (Campania)
Improvement of allergic rhinitis care in older patients by using validated ICT tools (France - Languedoc Roussillon; with 13 other adopters)
Medicine selection and procurement for hospital, pilot in Geriatric department (Northern Ireland)
Optional table template

**Cooperation of NTMC:**

The NTMC is predominantly a bottom–up approach regarding AHA innovations and cooperates with partners from advanced EU regions.

Since 2016, a positive development on the key national stakeholder level can be registered:

The Czech National eHealth Strategy approved in November 2016
A New WHO Call for action on Integrated People-Centred Health Services

The region and the city of Olomouc are involved in common NTMC-initiated projects, including regional hospitals and social care providers.

**Twinning actions with:**

Campania
MACVIA-France Network
Northern Ireland

**Description of Twinning activities:**

*ADD Protection*

Twinning activity has been set up between the Reference Sites at University Hospital Olomouc (with its unit Czech National eHealth Center, NTMC) and the Department of Medicine, Surgery and Odontoiatrics, Salerno University in the region of Campania. The practice has been developed for the early discharge from hospitals of older patients to avoid multimorbidity conditions using ICT to monitor the patients at home (see **3.5 Campania region** for more details).

The budget is estimated at €20.000 with actions to start by January 2017. In the first four months, it will be decided which ADD Protection modules will be adopted at Olomouc. Then, ADD Protection will be adapted towards its implementation in the adopter's context in the months May 2017 to October 2017. In November and December 2017, healthcare professionals will be trained in using ADD protection modules and they will be taught on how to instruct patients on how to use the platform. Finally, throughout 2018, ADD Protection is expected to be used by care professionals and patients in the adopter country context.

Objectives include the adaptation of the UHO ICT platform for health care to enable more diseases to monitor and support; the familiarisation of healthcare professionals with utilizing eHealth technology that enhances self-management; getting acquainted with care management pathways that include telemonitoring of patients with various diseases so that the healthcare professionals will be able to design suitable pathways in UHO; to progress in empowering patients in adopter country in taking control over their own physical health, with a focus on chronic diseases; to scale-up a unique best practices using ICT for improving the physical condition of patients with chronic cardiovascular diseases on a EU level and to understand essential aspects of integrated management of chronic diseases in the view of design similar programs in the context of the CR.

Implementation at Olomouc foresees the identification of high-potential use cases; mapping the role of eHealth in the identified use cases and care paths; analyse conditions and possible technical solution for interworking of eHealth platform with electronic health record in UHO, also considering solutions implemented in Campania Reference Site; design of training of care staff in adopter country in working with data collected in eHealth based interventions; identification of barriers and development of methods for elimination in implementation of eHealth based interventions and pathways in regular operation in care; introduction in integrated management of chronic diseases and its essential elements for University hospital Olomouc targeted patients.

Expected outcomes from the measures include new and more effective eHealth interventions and methods, integrated in specific carepaths in adopter country. An upgraded ICT platform

will be used by care professionals and patients of adopter country Hospital (UHO) before the end of 2018. Dissemination of the implementation of new ICT platform in adopter country as a showcase for using eHealth to support self-management by means of a symposium around the topic, organized by the Reference site in adopter country and Campania, and held in adopter country, adequate dissemination of the information about the Twinning results will take place also in Originator country. UHO is also supposed to be able to design integrated care pathways for selected chronic diseases and effectively negotiate benefits of eHealth interventions with national authorities so that they can be implemented in larger scale and also other regions in the CR.

The expected impact will be that twinning action strongly improves the innovation ecosystem in the adopter country with respect to the use of ICT services for self-management of patients with chronic diseases and older adults. More specifically, knowledge transfer should occur on how to enrich current care with ICT innovations; how to improve self-management capabilities of patients with airways diseases and older adults via ICT; how healthcare professionals can use ICT innovations in daily care practice; and how patients and older adults can use ICT innovations to self-manage their health.

*AIRWAYS ICPs*

This twinning activity led by the MACVIA-France Reference Site develops multisectoral care pathways (ICPs) for rhinitis and its multimorbidities in old age people, implementing emerging technologies for individualised and predictive medicine. A patient-centred app (for apple and android smartphones) has been developed by MACVIA-ARIA to integrate with the Airways ICP. This app (Allergy Diary) allows the assessment of rhinitis control by patients themselves using a clinical decision support system (CDSS) Twinning action has been set up for 2017-2018 with the Reference Site in in Olomouc (see **3.9 MACVIA France** for more details).

*STEPSelect*

The Reference Site in Olomouc region has set up Twinning cooperation with the Reference Site in Northern Ireland (NI), with the aim to introduce the practice STEPSelect, a comprehensive and well-researched web-based ICT application designed to optimize the selection and procurement of medicines. Developed since 2006, STEPSelect is used for selection and procurement of almost €800 million of medicines in NI annually. STEPSelect is associated with improvements in the quality of prescribing, while reducing the cost of medicines by 20-25% for selected therapeutic groups. Since 2006, STEPSelect has been the focus of around 200 publications in peer reviewed journals on its main methods and outcomes.

The budget lies at €10.000, with an additional grant of €5.000 by EIP to set up a pilot in Olomouc. Activities will take place during the time slot indicated by the EIP Twinning Instrument: between October 19th 2016 and January 31st 2017 with the following activities foreseen in this period: (1) a study visit to NI, (2) landscape analysis, (3) training of local staff in STEPSelect methodology, (4) Set up of pilot selection of drugs in various therapeutic fields, (5) evaluation, impact assessment and wider applicability and (6) an end report.

The objective of the project is to introduce the STEPSTEPSelect platform in Olomouc as a tool for the optimized selection and procurement of medicines for the elderly and other persons. The expected outcome for the STEPSelect programme in Olomouc are that the methodology will contribute to more rational and transparent selection and procurement of medicines for the elderly and others based on disease management, local use of medicines and cost constraints. The impact will be that know-how transferred will be in several different fields such as: (1) the use of the ICT based STEPSelect methodology (2) organization of a transparent medicines selection and procurement system for the elderly, (3) how to assess the budget impact of medicines, (4) expansion of the knowledge base on medicines and disease management especially for the elderly.

# 5. Campania

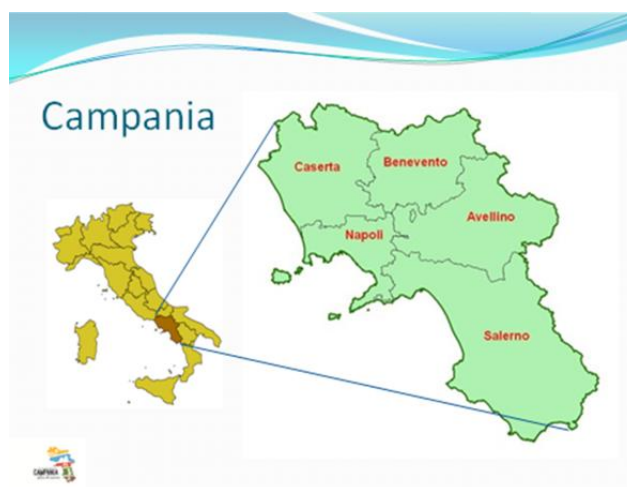The presentation was given by Vincenzo De Luca, Federico II University Hospital.



**Figure 31: Geographical situation of Campania**

**About Campania:**

Population:

5,869 million residents
Third most populated region in Italy
Highest density of residents in Italy: 432 inhabitants/km²

Health:
Ageing index: 117 (2016, 77.2 in 2002)
Mortality rate: 9.7 (2015, 8.2 in 2002)
Older adults dependency index: 26.7 (2016, 21.2 in 2002)
Older adults (>65): 17.9 (2016, 12.3 in 2002)
Life expectancy (F, 2015): 82.9 (national: 84.7)
Life expectancy (M, 2015): 78.3 (national: 80.1)

**Transfer of Innovation Scheme:**

Campania's point of view:

Instrument for coordinated and targeted scale-up of good practices for AHA
Helps to set out short, medium and long-term investments
Stimulates multilevel collaboration between action groups and local focus groups in the assessment of contextual needs and priorities
Identifies innovative and effective solutions, tailored to the regional context
Assesses the level of transferability and scale up of the good practices

**Twinning actions with:**

Asturias
MACVIA-France Network
Medical Delta Rotterdam
Olomouc
Republic of Ireland
Twente

**Description of Twinning activities:**

*AIRWAYS ICPs*

This twinning activity led by the MACVIA-France Reference Site develops multisectoral care pathways (ICPs) for rhinitis and its multimorbidities in old age people, implementing emerging technologies for individualised and predictive medicine (See **3.10 MACVIA France** for more details). Twinning action has been set up for 2017-2018 with the Reference Site in Olomouc.

*Home Care for Early and Protected Hospital Discharge (Assistenza Domiciliare per Dimissioni Protette)*

This practice has been developed in the Campania region to discharge older patients from hospitals to avoid the exacerbation of multimorbidity conditions using ICT monitoring systems. Early discharge represents an important target in the management of hospitalized patients. The ICT based home monitoring developed for this purpose allows the hospital staff to follow the patient at home, as if still in the hospital. The data collected at the place of the patient are made available to the staff of the hospital through a web based platform that feeds the hospital eHR of the patient. Twinning activities of this successful practice have been set up with the Olomouc region.

*PERsonalised ICT Supported Service for Independent Living and Active Ageing (PERSSILAA)*

The Campania region is the originator of the PERSSILAA innovation, a FP7 funded European project that develops and validates a new service model, to screen for and prevent frailty in community dwelling older adults, integrating nutrition, physical and cognitive function. PERSSILAA develops remote service modules for screening, monitoring and training. Monitoring involves the unobtrusive monitoring of everyday functioning and training foresees remotely available health promotion programs. PERSSILAA innovates the way our care services are organized from fragmented reactive disease management into preventive personalized services offered through local community services, supported by a proactive team of caregivers and health professionals and integrated into existing healthcare services. PERSSILAA realizes a technical service infrastructure to support these multiple services and users in an efficient, reliable, easy to use way and therefore works on gamification, interoperability and clinical decision support. PERSSILAA builds on activities within the European Innovation Partnership on Active and Healthy Aging and on results of various earlier European projects.

In the project, there is continuous end- user involvement and evaluation with 350 older adults in real implementation environments in Enschede (the Netherlands) and Campania region (Italy) to ensure increasing system efficiency and easy end-user acceptance. Outcomes focus on daily activities, quality of life and risk of hospitalization. PERSSILAA builds business models for sustainable implementation and develops recommendations for European guidelines. Twinning has been set up with the Asturias region in Spain and is set to take place between January 2017 and December 2018.

*Cognitive screening app: RAPid Community COGnitive screening (RAPCOG)*

This project is developing screening instruments using information technology (IT) software for use in a community wide screening initiative for MCI and dementia. RAPCOG is coordinated by the centre for gerontology and rehabilitation (CGR) in University College Cork as part of the Collaboration on Ageing (COLLAGE), Irelands two star reference site for active and healthy ageing under the EIP on AHA. Twinning activity has been set up with the Federico II University Hospital, as well as with the sites in Campania, Italy and Catalonia, Spain.

The budget of the activities is estimated at €10,000 to implement the translation of the instruments, the validation of the instruments in the local languages (in this case Italian) and

to update the IT application into the local language for use as part of the RAPCOG screening programme. The capital outlay will also contribute to the printing of materials and the gathering of data (tablet technology and email of the online version of the screen), akin to the model outlined in the FP7 funded PERSSILAA project.

The application has already been developed and can readily be converted into the adopter countries languages once translated, back-translated and validated in these new language versions. This will take time and expertise. Trainers from the originator site will travel to train local staff on how to do this reliably and accurately. It is expected that the process will take up to 2 years. Translation-back translation will take 2 months. Study site initiation up to 4 months. One year for validation and a further 6 months to analyse data, confirm validation, convert the IT application and commence the screening process outlines in RAPCOG and trialed in the PERSSILAA and CARTS studies. Twinning objectives to translate, validate and adjust the Qmci computerised cognitive screening application for use within the community screening and the propagation of this quick, novel approach to community based screening of older adults, following the model used in two ongoing studies in Europe, the FP7 funded PERSSILAA study and the EIP on AHA developed CARTS study. The adopters and originators of the project have previously worked together through the EIP on AHA (Action group A3) and have a proven track record of collaboration.

Twinning will provide the resources needed to provide travel to train and support the adopter sites. The expected outcome will be three translated and validated versions of the Qmci computerised cognitive screening application that can be used as part of a new approach to cognitive screening as developed within CARTS and PERSSILAA. It is expected that this will result in the increased identification of MCI and early dementia to allow better mapping and treatment of these conditions in the communities adopting the innovation (Short cognitive screen, computerised version to allow quick and novel approaches to data collection and screening).

The impact of this twinning will see increased cooperation between reference sites that have met and worked together since the beginning of the EIP on AHA, supporting the process from its inception. The sites involved have limited funding and face to face meetings have been limited to meetings in Brussels as part of the EIP on AHA. It is expected that site visits will increase knowledge about the screening process and the validation and allow adopter sites to gain from the experience of experienced clinicians who have developed an application and IT system that could be readily upscaled for local use once translated and validated. It is expected that visiting the adopter sites will also benefit the orginator and seed and cross-pollinate new ideas between all four sites that will stretch beyond the upscaling of this innovative practice.

*Telerevalidatie.nl (PERSSILAA)*

*Telerevalidatie.nl* is an online platform for promoting self-management of patients with chronic diseases and older adults. The platform allows remote supervised physical training by means of videos configured by care professionals as a personalized training schedule, physical activity monitoring and coaching, and online communication. In the Netherlands this platform is used in various rehabilitation centres and hospitals. Within the PERSSILAA project, the content was further developed into a self-management program and this module is used and evaluated in the Twente and Campania region for training physical function of pre-frail older adults. Campania region envisions a stronger focus on self-management and life style interventions for their patients. For this, they aim for broadening the use of online platforms by their patients. As such, this twinning action focuses on transferring *Telerevalidatie.nl* for use within hospitals from the Twente reference site to Campania.

The budget of the twinning action will comprise of €550.000 in the timeframe of 2017-2018. The action plan is to 1) identify high-potential diagnosis groups in Italy starting from the available content within Telerevalidatie.nl; 2) define the clinical protocols using the ICT technology for the defined diagnosis groups; 3) customise *Telerevalidatie.nl* towards the

designated context of use; 4) train care staff in Campania in working with *Telerevalidatie.nl* and instructing care staff on how to train patients on how to use it; 5) using *Telerevalidatie.nl* in daily practice. The Objectives of the Twinning programme are to implement a platform for promoting self-management among patients with chronic diseases treated in hospitals, to familiarize healthcare professionals in Campania with utilizing eHealth technology that enhances self-management; to empower the patients in Campania in taking control over their own physical health; and to scale-up a unique online platform for improving the physical condition of patients with a chronic disease and older adults on a European level.

The outcomes expected to emerge include the integration in three care paths of the Federico II University Hospital; the utilisation of telerevalidatie by 25 care professionals and 200 patients before the end of 2018; the dissemination of the implementation of Telerevalidatie in the Federico II University Hospital as a showcase for using eHealth to support self-management by means of a symposium around the topic, organized by the reference sites Twente and Campania, and held in Naples; a fully translated Italian version, geared towards the specifics of the Italian hospital system; Telerevalidatie will have a foothold in the Italian market, which can be used to spread the platform and other eHealth applications that promote self-management in the region of Campania. The impact of the twinning action is expected to strongly improve the innovation climate in Campania with respect to the use of ICT services for self-management of patients with chronic diseases and older adults. More specifically, we will transfer knowledge on how to enrich current care with ICT innovations; how to improve self-management capabilities of patients with a chronic disease and older adults via ICT; and know-how on the use of ICT innovations by practitioners in daily care practice; on how patients and older adults can use ICT innovations to self-manage their health; and how to scale up and ICT solution across Europe.

**Discussion**

There is no real knowledge of the business model. If we liked to test a new tool coming from another region, we would need to know how much it costs (because we do have the impact data). This is an important aspect that needs to be included in the next Call.

# 6. Medical Delta Rotterdam

The presentation was given by Edwig Goosens



**Figure 32: Medical Delta Rotterdam – gastrological approach to malnutrition with Campania**

*Gastrological approach to malnutrition*

The Reference Site at Azienda Ospedaliera Universitaria Federico II has initiated Twinning with the Medical Delta in Rotterdam, NL to prevent or treat undernutrition in non-frail, pre-frail or frail elderly in all healthcare settings. The practice has developed a common, integrated vision on the nutritional approach to frailty, taking into account also the impact of social integration and psychosocial behaviour of the elderly. The focus on the gastrological approach is to carry out personalised interventions that take advantage of validated screening, assessment and monitoring tools, recognizing a coherent set of work packages all aimed at improving food intake in elderly persons. Inter-professional collaborating gastro-teams manage selective taste control and optimize meal contexts. A digital Modular Gastrological Platform (MGP) is built to facilitate these inter-professional efforts. MGP focuses on supporting workflows in the Primary and Secondary Care Level. MGP fits into the idea of integrating nutritional data in the medical/nursing/dietetic records. Authorized professionals also have access to nutritional data in the platform, to satisfy taste and choice of meals of elderly.

A budget EUR 350.000 has been set up, to test and implement the platform locally. Twinning action is to start in January 2017. The objective of the actions is to prevent malnutrition via ICT supported programs trough early detection (screening, assessment, monitoring) of risk factors; appropriate triaging and intervention and follow-up examination.

The implementation of the plan implies linking of Primary SAM to Primary Food Care. Patients and their relatives are the key stakeholders. They have to deliver basic data to the digital MGP on food and nutrition, like body weight and height, food preferences and dislikes. Therefore, the gastrological approach will be implemented in the kitchens of healthcare institutions and catering companies. This includes education of kitchen staff, patients and relatives on the use of the digital MGP, in particular patient authorized data acquisition and the use of the recipe module. This will be combined with the practice of cooking processes like taste steering and selective taste steering. In this way all patients might benefit from the right to healthy, delicious meals. Medical staff, nurses and nurse aids on the other hand will be educated on the use of the digital MGP, in particular on data acquisition and the use of recommended screening tools.

Expected outcomes of the Twinning include the integration of the ICT supported food record with hospital record the interoperability with GPs records and the empowerment of patients and relatives on primary culinary interventions. The foreseen impact is the identification of emerging training needs for new professional figures (post-graduate training for chefs); for professionals (multidisciplinary training) and new jobs to contribute to sustainable improvement of health outcomes. Also a valorization of local food chains in terms of healthy diets is anticipated.

# 7. Zagreb

The presentation was given by *Assist. Prof. Antonija Balenović, MD, PhD* (Director, Health Care Center Zagreb).

**About Croatia – Population, demography and health:**

Croatia: 4.3 million inhabitants (18.6% > 65y; Life Exp. < 78y)
Zagreb: 790.000 (18.1% > 65y; 23% of all elderly in Croatia)

**RS investment plans – Goals for 2017-2018:**

Digitization and networking of Rtg. Department in PHC (10 Dept./3 PHC) €1.2 million
Setting up a counselling Centre for nutrition (malnutrition and sarcopenia)
Better integration of City Health institutions – IT solutions (Twinning Andalusia)

Increasing awareness (stakeholders) of the large variations in the Croatioan health care system - prevention and health outcomes are very poor (high cardiac/cancer mortality) vs. some excellent parts (access to GP, transplantation medicine)

Raising creativity, curiosity and education among young (doctors) to motivate their older (patients) to keep on working and creating ("Smart jewellery")

**Twinning actions with:**

Andalusia

**Description of Twinning activities**

*Diraya*

Twinning activity with Andalusia foresees the implementation of the Andalusian eHealth Strategy Diraya which involves single shared eHealth records, ePresciption, centralised appointment and online patients access (see 3.8 Andalusia for more details). The cumulative budget for investments in deployment and implementation of innovative solutions for health and active and healthy ageing in the period of 2016-2019 spans a total of 1.600.000€.  The city of Zagreb has already put in action different ICT solutions including single EHR on primary care level, nationwide e-prescription, nationwide e-lab on primary care level, partially implemented centralised appointment systems, partially implemented x-ray module and pilot schemes regarding decision support tools. There is a single e-health strategy carried out on national level in Croatia, but no no regional e-health strategy. The City of Zagreb therefore has an important role in development and testing e-health solutions in pilot-phase before scaling-up nationwide, and the Zagreb can therefore influence the quality and level of services to be implemented nationwide. The Croatian Reference Site will benefit from information and knowledge about the Andalusian regional coordination and cooperation strategies in order to be able to cooperate with partners on regional and national level more effectively in setting Croatian e-heath strategy in motion. A part of national e-health programme is planned to be implemented in 2017, including access to patient EHR on all levels of health care and some aspects of patients' access to EHR. During 2017, a series of sessions will be held with important national level stakeholders (Croatian Health Insurance Fund, Ministry of Health, Croatian Institute for Public Health) with the goal to share knowledge and provide framework for coordination of implementation of national e-health strategy. Objectives of Twinning activities include eHealth strategy implementation at all levels of care and to draw on the vast experience of the Reference Site in Andalusia on the definition, appropriation, maintenance, sustainability and scaling-up of its eHealth Strategy. The knowledge and best procedures to accomplish the main interests from City of Zagreb will be transferred. Particularly, all the elements needed in the full deployment of the Diraya System will be shared as well as the technological aspect of it. The outcomes of the programme will see exchange of knowledge between both sides on how to implement and scale-up new eHealth services within the existing solutions already in place.

A report will emerge on the study visit and the workshop highlighting the elements to take into account when implementing new eHealth services. The impact of the study will facilitate the incorporation of the needed services in the adopting RS (City of Zagreb). The City of Zagreb will have access to firsthand knowledge and know-how from one of the Regions with a long-term eHealth Strategy in place in a region with 8.5 million inhabitants.

# 8. Andalusia

The presentation was given by David de Mena, Innovation Project Manager.

**About Andalusia:**

87,597 km2                                           1.3 million > 65y

8.4 million inhabitants                    >25 million tourists

**RS investment plans for 2017-2018:**



| ACTION GROUP (AG) | NAME OF COMMITMENT |
|---|---|
| **A1** Adherence to prescription | ePrescription System: 'Receta XXI' |
| | Educational intervention to improve treatment adherence in COPD patients |
| **A3** Prevention of functional decline and frailty | Health exam +65 |
| | Fostering AHA – Platform |
| | CUIDAR-CUIDAR-SE |
| **B3** Replicating and tutoring integrated care for chronic diseases | ATLAN-TIC |
| | OPIMEC |
| | RESISOR |
| | Patients' School |
| | ClicSalud - PALANTE |
| | Integratedcare4people Platform for integrated care People-centred |
| **C2** Independent living solutions | Telecare Service |
| **D4** Age friendly environment | Andalusia 'Junta65' Card |
| | For a Million Steps |

**Figure 33: A list of the commitments of the Reference Site and their corresponding Action Groups.**

Andalusian eHealth Strategy (Diraya):

Single shared eHealth record, ePrescription, centralised appointment, online patients access (ClicSalud), and more…

Andalusian Telecare Service (ATS):

The ATS is an excellent model of the Public Telecare Service for the care of a large number of users, in a large territory, with low costs and a high effectiveness, efficiency and quality assessment by users.

**Twinning actions with:**

Scotland
Zagreb

**Description of Twinning actions:**

*Diraya*

Andalusia is the originator region of the Andalusian eHealth Strategy, called Diraya that involved single shared eHealth Record of patients, an ePresciption system, centralised appointment and online patients access. The Andalusian Public Healthcare System has adopted corporate information systems, accessible to all health professionals, as a strategy

to cater for citizens' mobility and the participation of many multidisciplinary teams of professionals involved in healthcare processes. The AeHS helps health professionals in their daily work, integrating all health information for each patient in one single record. It includes the eprescription module, as well as the e-lab and the x-ray ones. Patients also benefit from the AeHS, thanks to the use of the centralised appointment, the use of electronic prescription, avoiding unnecessary visits to the health centre just to ask for repeated medication, as well as personal access to their healthcare information through ClicSalud. Various health apps are also being connected. Twinning activities are advancing in cooperation with the City of Zagreb in order to advance knowledge in the eHealth sector in Croatia.

*Living it Up*

Adopting the practice from the originator region in Scotland, Andalusia is introducing the LiU platform to empower people with one or more long-term health condition aged 50 and over, to use technology to manage their health and wellbeing, and be better connected to their communities (see **3.3 Scotland** for more details). The total budget for the design, development and implementation of the AHA promotion platform and portal is 1050000 € until the end of 2020 (ERDF).

Part of the 'Promoting active and healthy aging through digital solutions' project for the period 2016-2020 (ERDF), the main objectives of the programme are to design, implement and maintain a virtual platform to allow interaction among health professionals, social service professionals, professionals from other areas, public and private companies related to the sector, elderly associations and the general public.

The tentative action plan will involve a series of webinars with relevant experts to provide presentations of the innovative practice (functionality and implementation methodology) in order to explore the enablers and barriers encountered, a study visit to the Scotland Reference Site by a delegation from Andalusia, during 2-3 days to get to know in-depth aspects of the Living it Up platform.

An analysis of lessons learned to determine how this will impact the design of the Andalusian platform will emerged as well as a dissemination of the outcomes/results of the twinning activities within both regions and within the EIP on AHA community, via a report on the Study Visit and subsequent outcomes.

The expected outcomes of the Twinning activities include enhanced knowledge and competencies of relevant experts in both regions, new partnerships emerging in the field of digital innovation in health care delivery and the adaptation of relevant elements of Living it Up platform design to the Andalusian platform and system design.

The impacts of the collaboration will see a new and strengthened partnership between the regions of Andalusia and Scotland an identification of further opportunities for collaboration and the improved exchange of knowledge on how to implement a new AHA platform throughout the EIP on AHA community.

# 9. Porto4ageing (Metropolitan area of Porto)

The presentation was given by *Elísio Costa,* Professor at the Faculty of Pharmacy and Scientific Coordinator of Porto4ageing, University of Porto, Portugal.

**About Porto4ageing**

Porto4ageing is a partnership based on a quadruple helix of innovation involving different stakeholders (regional governments, health and care providers, academia and research, industry and the civil society).

6 higher education institutions

15 research centers

5 health care institutions (the biggest institutions in Porto area)

16 enterprises (most of them start-ups)

7 professional orders/associations

We are a consortium comprising 92 institutions, the large majority of them being established within the Porto Metropolitan Area (Norte Region, Portugal).
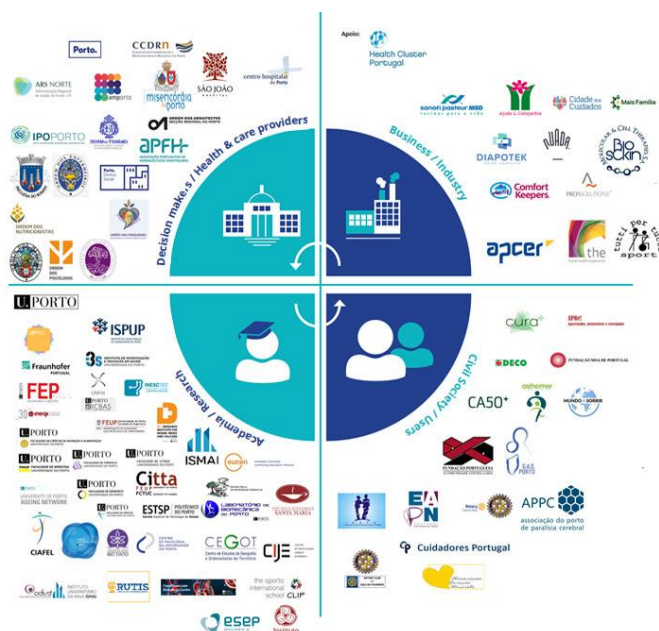


**Figure 34: Porto4ageing and its 92 institutions involved**

**Investment plan**

Our investment plan for the next years includes public and private funds.

The public investment includes regional and national structural funds, European funds and national research or innovation funds. Private investment will be provided by our own funds (coming from different institutions being part of the porto4ageing consortium), and by sponsors and investors we try to bring on board. As a Reference Site we believe to be able to obtain more public and private funds for ageing issues.

The network established within the porto4ageing consortium will be important, too. Promoting cooperation, identifying opportunities, sharing experiences and structures could lead to the development of new and innovative products and services, contributing to new economic opportunities, the creation of new jobs and investments (mainly at regional level).

Moreover, being part of a Reference Site collaboration network will give us access to European partners, promoting cooperation, twinning events, partnerships for join projects and the exchange of experiences.
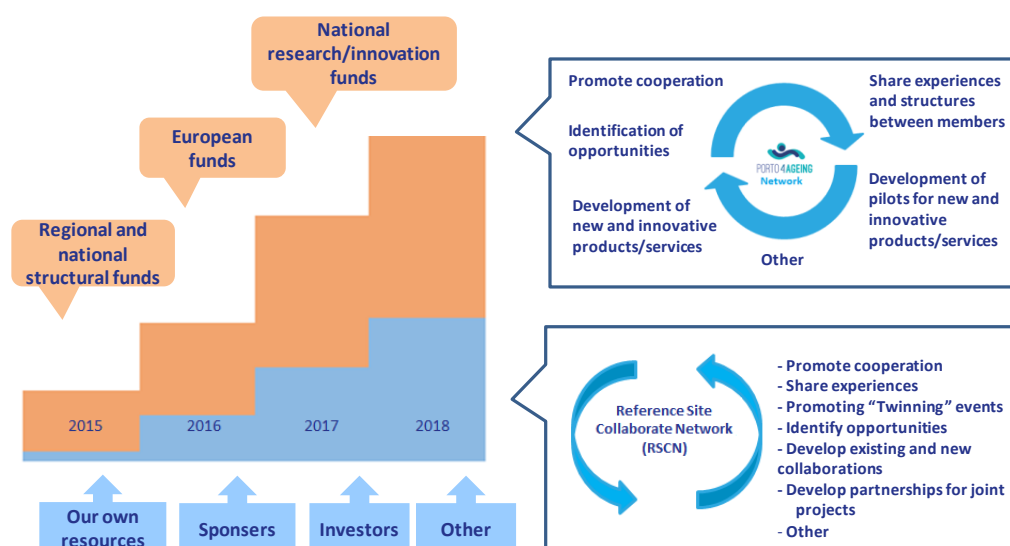
**Figure 35: Illustration of the investment plan**

## Twinning actions with:

Pays de la Loire

Lazio

Republic of Ireland Regional Network

MACVIA France Network

Porto4Ageing sees the role of the Reference Site Collaborative Network (RSCN) as a great opportunity to meet European partners, promote cooperation, attend twinning events, join EU projects and exchange experience

## Despription of Twinning actions:

*ALOHA initiative: ageing well Academy*

The Metropolitan area of Porto has engaged in collaboration in adopting the ALOHA initiative together with the Reference Site at Gerontopôle Autonomie Longevite des Pays de la Loire. The goal is to develop a platform (web portal) aiming at informing, educating and engaging the older generation and healthcare professionals in different forms of prevention: vaccination, nutrition, physical activity and controlled use of antibiotics. This platform integrates an innovative e-health expert system for the prevention of infectious diseases in seniors over 50 with or without non-communicable chronic diseases, thus reducing the burden of such diseases. This initiative aims to provide a web portal to inform, educate and engage seniors and healthcare professionals on prevention (vaccination, nutrition, physical activity, controlled used of antibiotics), providing tools for personal and tailored recommendations, in order to empower users and enable them to make correct and good preventive choices.

Under this Twinning Scheme, it is here proposed to implement this platform, following the same abovementioned principles. This activity will encompass its translation and cultural adaptation into Portuguese and its dissemination (ALOHA.PT). A budget of €10.000 is foreseen with an additional €5.000 expected as grant from the EIP for the adoption of ALOHA and the frailty app practices. It is expected that within 12 months the platform will be fully translated, culturally validated into Portuguese and fully available to patients and healthcare providers. In this period, the display and dissemination of this platform will be performed, as well as the development of key indicators of knowledge and behaviour changes.

The main outcome under this scheme is the successful deployment and implementation of the ALOHA initiative in another region (ALOHA.PT). It is expected that the platform will be

adopted by the different healthcare providers of Porto4Ageing and therefore reach a broad population, also improving adherence to medical plans, particularly to vaccination. Prevention of infectious diseases in senior, reduce hospitalizations and improve healthcare sustainability are also expected outcomes. Moreover, this initiative is also expected to improve health literacy via web and behaviour changes in senior population. On top of that, the scheme is also expected to strengthen the relationship between the Reference Sites and act as a stepping-stone for future and impactful collaborations.

*Frailty app: screening in community-dwelling older adults*

In partnership with the Lazio Regional Health Service in Rome, Italy, the Porto4Ageing Reference Site aims to introduce the Frailty application into its regional context. The App screens frailty in the community and can be used on different devices (tablet, laptop and mobile phone) enabling the storage of data, which can be analyzed later on. Baseline Assessment is made up by two instruments: Risk Instrument for Screening in the Community (RISC) and Short Functional Geriatric Evaluation (SFGE). RISC stratifies risk of adverse healthcare outcomes by measuring the magnitude of functional, physical, state mental concern and ability of caregiver to cope with these concerns. It then summarises the perceived risk using a subjective, global score of risk. In case there are no concerns in these three domains, the SFGE assesses the risk of negative outcomes in individuals with minimal physical or cognitive impairment by exploring socio-economic domains. The SFGE score classifies citizens in 3 strata according to the risk of negative outcomes. Both instruments stratify the patients at greatest risk of institutionalisation, hospitalisation and death. A shared budget together with the ALOHA initiative allows for €10.000 and an additional €5.000 in grants for the adaptation of the programme.

The practice is supposed to be up and running within 12 months by 2018. The main objective of this Twinning Scheme is to adopt and implement a successful good practice to the Metropolitan Region of Porto and at national level, which will greatly benefit seniors. It is also aimed to enable patients to have a more active and healthy life, through the implementation of an innovative ICT-based solution. It is also expected that the successful implementation of the questionnaires will lead to a better understanding of frailty, thus leading to a stratification of frailty levels of patients, which will enable caregivers to shape care according to patients' needs. The knowledge and know-how transferred under this scheme will be extremely impactful in the region as it will enable the use of an innovative initiative that will greatly benefit its target population.

*Cognitive screening app: RAPid Community COGnitive screening (RAPCOG)*

Adopting the practice from the Republic of Ireland Regional Network, the Reference Site in Porto will work to launch this project to develop screening instruments using information technology (IT) software for use in a community wide screening initiative for MCI and dementia in the Porto region. RAPCOG is coordinated by the centre for gerontology and rehabilitation (CGR) in University College Cork as part of the Collaboration on Ageing (COLLAGE), Irelands two star reference site for active and healthy ageing under the EIP on AHA. Twinning activity has also been set up with the Sites in Campania, Italy and Catalonia, Spain.

The budget of the activities is estimated at €10,000 to implement the translation of the instruments, the validation of the instruments in the local language (in this case Portuguese) and to update the IT application into the local language for use as part of the RAPCOG screening programme. The capital outlay will also contribute to the printing of materials and the gathering of data (tablet technology and email of the online version of the screen), akin to the model outlined in the FP7 funded PERSSILAA project. The time frame The application has already been developed and can readily be converted into the adopter countries languages once translated, back-translated and validated in these new language versions. This will take time and expertise. Trainers from the originator site will travel to train local staff on how to do this reliably and accurately. It is expected that the process will

take up to 2 years. Translation-back translation will take 2 months. Study site initiation up to 4 months. One year for validation and a further 6 months to analyse data, confirm validation, convert the IT application and commence the screening process outlines in RAPCOG and trialed in the PERSSILAA and CARTS studies.

The Twinning objectives include to translate, validate and adjust the Qmci computerised cognitive screening application for use within the community screening and the propagation of this quick, novel approach to community based screening of older adults, following the model used in two ongoing studies in Europe, the FP7 funded PERSSILAA study and the EIP on AHA developed CARTS study. The adopters and originators of the project have previously worked together through the EIP on AHA (Action group A3) and have a proven track record of collaboration.

Twinning will provide the resources needed to provide travel to train and support the adopter sites. The expected outcome will be three translated and validated version of the Qmci computerised cognitive screening application that can be used as part of a new approach to cognitive screening as developed within CARTS and PERSSILAA. It is expected that this will result in the increased identification of MCI and early dementia to allow better mapping and treatment of these conditions in the communities adopting the innovation (Short cognitive screen, computerised version to allow quick and novel approaches to data collection and screening).

The impact of this twinning will see increased cooperation between reference sites that have met and worked together since the beginning of the EIP on AHA, supporting the process from its inception. The sites involved have limited funding and face to face meetings have been limited to meetings in Brussels as part of the EIP on AHA. It is expected that site visits will increase knowledge about the screening process and the validation and allow adopter sites to gain from the experience of experienced clinicians who have developed an application and IT system that could be readily upscaled for local use once translated and validated. It is expected that visiting the adopter sites will also benefit the originator and seed and cross pollinate new ideas between all four sites that will stretch beyond the upscaling of this innovative practice.

*AIRWAYS ICPs*

(MACVIA France Network)

**Adopters:** Campania, Italy; Catalonia, Spain; Coimbra, Portugal; Lodz, Poland; Medical Delta, Netherlands; Northern Ireland, Ireland; Region of Piemonte, Italy; Southern Denmark, Denmark; Global Alliance Chronic Respiratory Diseases Regional Network, Turkey; Porto4ageing, Portugal.

This twinning activity led by the MACVIA-France Reference Site develops multisectoral care pathways (ICPs) for rhinitis and its multimorbidities in old age people, implementing emerging technologies for individualised and predictive medicine. A patient-centred app (for apple and android smartphones) has been developed by MACVIA-ARIA to integrate with the Airways ICP. This app (Allergy Diary) allows the assessment of rhinitis control by patients themselves using a clinical decision support system (CDSS) Twinning action has been set up for 2017-2018 with the Reference Site in Porto (see **3.9 MACVIA France** more details).

**Figure 36: Illustration of the 4 twinning projects**

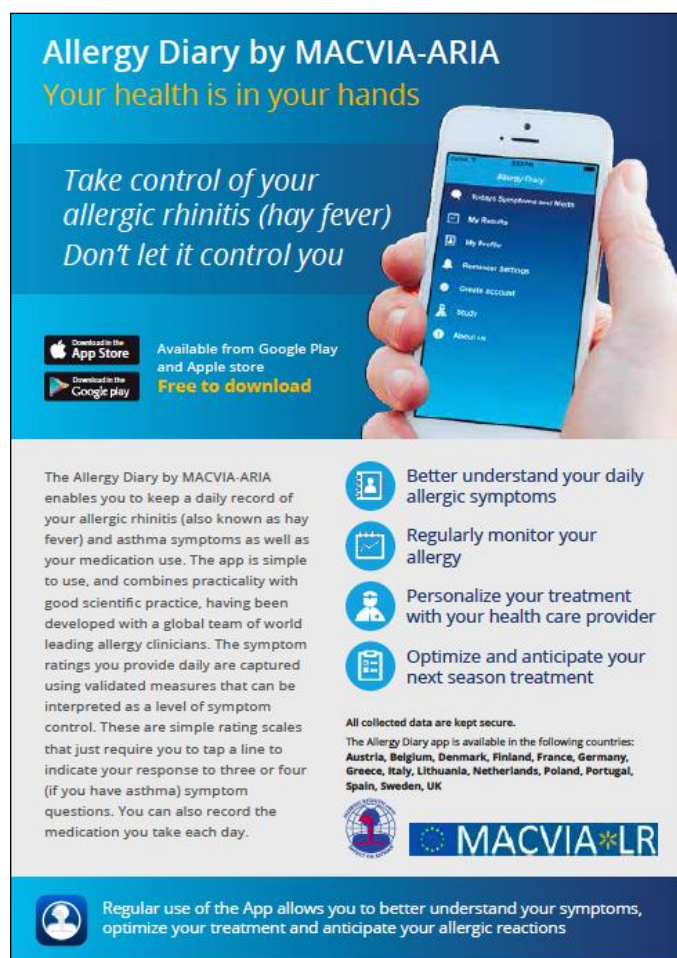**Integrated care pathways for airway diseases (Airways-ICPs):**

European Innovation Partnership on Active and Healthy Ageing, Action Plan B3 (DG Sanco and DG Connect)

Mechanisms of the Development of Allergy (MeDALL, DG Research and Development) GARD (Global Alliance against Chronic Respiratory Deseases, WHO= research demonstration project.

# 10.    MACVIA France

The Reference Site of the European Innovation Partnership on Active and Healthy Ageing "MACVIA-LR": Against chronic diseases supporting active and healthy ageing in the Languedoc-Roussillon region

**Figure 37: The ARIA Allergy Diary App**

**The Twinning concept:**

Rhinitis affects >25% adults in the EU
The epidemic wave is reaching the older population
Rhinitis affects people's social life
Rhinitis in the elderly is poorly understood with regard to the...

> ...prevalence

> ...severity

> ...control

> ...treatment

> ...polypharmacy

The ARIA Allergy App...

> ...is available across Europe

> ...can be used by the older people (6% or users)

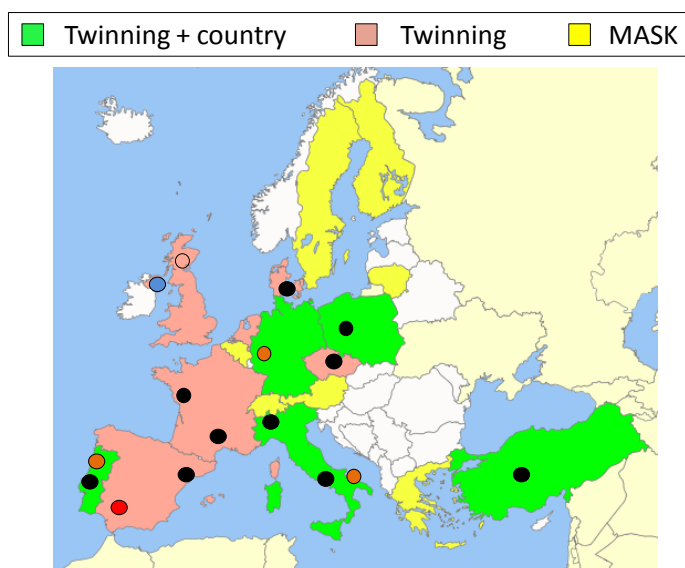> ...can assess phenotype, control and treatment of users with rhinitis

**Figure 38: MASK: Twinning Actions**

## Twinning actions with:

- Campania
- Catalonia
- Centro Portugal (Ageing@Coimbra)
- Lodz4Generations
- Medical Delta
- Northern Ireland
- Regione Piemonte
- Region of Southern Denmark
- Global Alliance Chronic Respiratory Diseases Regional Network
- Turkey
- Olomouc

## Description of Twinning activities:

*AIRWAYS ICPs*

This twinning activity led by the MACVIA-France Reference Site develops multisectoral care pathways (ICPs) for rhinitis and its multimorbidities in old age people, implementing emerging technologies for individualised and predictive medicine. ICPs are developed on a smartphone-based tool that allows the assessment of rhinitis control and uses a clinical decision support system (CDSS). This ICT tool is available in 15 EU countries and already tested in 5,000 users of all ages (ARIA Allergy diary). Real time data from the smartphones can be stored and retrieved in a functional database. It is an EIP on AHA Synergy 8 project. The aim is to transfer the ICT tool freely available in Android and App stores to the different Reference Sites and to compare information across Europe to develop care pathways.

Budget ranges for each country between €50.000 to 150.000 (including ICT development in the local language and lawyer's fees for country adaptation). These costs have been covered by the Reference Site MACVIA-France (2016). Some countries such as Turkey are in process to be involved. Funding for new countries will be independent of the Twinning activity. There is a total of 10 adopters at Reference Sites in various countries in Europe and Turkey. An app will be deployed in the adopted countries at the different Reference Sites with immediate and free access (App Stores and Android) for the 15 available countries. About 300 users are to be enrolled in the study per Reference Site for at least 12 months (to account for the seasonal variability of rhinitis). The recruitment of users will include persons with rhinitis from clinics and nursing homes.

The overall aim is to provide care pathways for individualised and predictive medicine for a very common chronic disease. The twinning is essential since it allows Reference Sites from different areas of Europe to interact, increasing knowledge and know-how transferred.

The expected impact is to understand why the epidemic wave of rhinitis in adults (over 25% of the European population) is now reaching old age adults. It is essential to better characterize, understand and manage this disease which affects social life and causes serious discomfort among the affected. Only a pan-European view of the problem will allow a cost-effective and socially-acceptable management of this disease. The ICT tools developed by the MACVIA France Reference Site are freely available for subjects in most European countries. An app will be deployed by the Reference Site Collaborative Network for transfer of knowledge. The Twinning is essential to implement collaboration for practical knowledge transfer in the ageing population between 9 Reference Sites.

The app is available in 15 languages and already used in many countries including e.g., Australia, Brazil, and soon also the US. We hope to have 10,000 users by the end of the year (then, we will know the phenotype of older people).

The scaling-up is outstanding and really fast!

European Commission

**Study on support to scaling-up of innovations in Active and Healthy Ageing**

Luxembourg, Publications Office of the European Union

2017