



EUROPEAN INNOVATION PARTNERSHIP ON ACTIVE AND HEALTHY AGEING

Action Group A3 on Prevention and early diagnosis of frailty and functional decline, both physically and cognitive, in older people

A COMPILATION OF GOOD PRACTICES



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Introduction



Frailty in general



The elderly medical patient

1. Location

Country: Denmark

Region: Denmark

Total population: 5.600.000

2. Description

Target: Older people in general population - population: the elderly medical patient

Target population: approximately 20% of the population is older than 65 years

Main topic: Frailty in general

Description: the elderly medical patient has often needs that goes between primary and secondary sector, and has often more than one chronic diseases, and therefore contact with different doctors/ hospitals/departments, taking care of different medication. The aim is to reduce number of medications, make sure, the patient gets the right medication every time, and bring down adverse side effects, to make sure, the patients get the rehabilitation, they need, and to make sure, the patients comes to all the appointments they have.

Deliverables: There are a lot of different local programmes related to th.8 main topics, and the nationwide electronic list of medicine was due this year, but is delayed.

Outcomes: Fewer acute admissions to hospital, lesser need of help from primary care

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact:

Resources available: the budget is 26.720.000 euros for the period 2012-2015

3. Innovation element

- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Brings together a big group of stakeholders



4. Further information

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Healthy and Active Ageing in Rural Areas (HAARA)

1. Location

Country: Greece

Region: Crete

Total population: 623.065

2. Description

Target population: Older people in general population - Ageing people in rural and remote areas

Target population: The permanent population of the areas that are served by 10 rural primary care practices in the county of Heraklion on the island of Crete (24,611 inhabitants according to the 2001 national census) and more specifically the people aged 55 years and over (more than 6,000).

Main topic: Frailty in general

Description: Living disease-free as long as possible may be the only solution to ensure the sustainability of social security and pensions systems while improving the quality of life at the same time (European Foresight Platform 2011).

Via screening we examine the healthy ageing or, more precisely, the reduction of the amount of unhealthy life years, independent of one's life expectancy.

This project aims to develop a health and social services network that is sensitive to individual capacities and culturally adapt it to the health care needs of the community. To serve this goal, this project is based on the experiences gained from the Life Long Learning (LLL) program in which over 1,200 individuals have already been screened within the framework of a currently running EU program for early detection of Alzheimer's and related dementias. This program is on implementation in rural Crete with the support of the Practice-Based Research Network on Rural Crete. A health needs assessment tool that can offer an instrumental overview of the individuals' health care status and needs has been designed. To that direction and based on the experiences gained from that particular and similar project, this network jointly with the Clinic of Social and Family at the School of Medicine, University of Crete (CSFM) will develop a tool (questionnaire) in screening near retirement people for cognitive and physical decline and risks for chronic illness and frailty. This tool will be implemented in the population served by the practices of the Cretan network, with the aim to provide an illustrative picture of the burden and assess to what extent its utilization can reduce the burden related to cognitive decline and frailty, improve their satisfaction and quality of life and at what cost. The expertise



of the CSFM in developing, translating and validating health assessment tools is the backbone of this effort.

The CSFM operates a Primary Care Cretan Practice–Based Research Network (CPRN), which has been officially accredited by the Regional Health Care Authorities.

The research activities of our institution, in the area of healthy aging, include the following published results:

1. Training primary care physicians and implementations screening programmes among elderly people to assess cognitive impairments (relevant publications: Argyriadou S. et al, Family Practice 2001; Papadakaki M. et al., Evaluation and the Health Professions 2012; Iatraki E. et al, Am J Geriatr Psychiatry 2001; Iatraki E. et al., Dementia and Geriatric Cognitive Disorders 2013 (in press) and a relevant EC research programme).
2. Develop, translate and validate tools/questionnaires measuring the burden/impact of a disease/health problem (Vivilaki V. et al., Women Health 2012; Sapouna V. et al., Annals of General Psychiatry 2013; Grammatikopoulos I. et al. Annals of General Psychiatry 2010) (Tools relevant to the post natal depression, burden to mental health caregivers and anxiety in elderly).
3. Assessing musculoskeletal disorders in primary care, developing assessment tools and designing interventions (relevant publications: Antonopoulou M. et al, Family Practice 2007; Antonopoulou M. et al, Eur J Gen Pract 2004 and a successfully implemented PhD study).
4. Assessing health assets among rural older populations on Crete including those of spirituality and religiosity and as well as sense of coherence (internal locus of control) (relevant publications: Lionis C. et al, BMC Res Notes 2010; Anyfantakis D. et al, Hormones 2013, Faresjo T. et al, Eur J Gen Pract 2009 and two PhD studies).

Deliverables

1. Mapping of national old-age and ageing policies (Desk Research).
2. Development of the Tool (Questionnaire).
3. Focus Groups of Experts, concerning the Questionnaire.
4. Comparative Report on Elderly People in rural areas screening for cognitive decline.
5. Screening tools for primary care physicians office screening of near retirement persons for risks on chronic illness and frailty antecedent.
6. Summary policy implications regarding the healthy ageing.

Outcomes:

1. Reduce the burden to family and patients due to cognitive and physical decline and frailty among rural inhabitants of Crete.
 2. Policy development for rural initiative to prevent cognitive and physical decline and frailty.
 3. Increase awareness and training of primary care physicians and nurses in rural areas for frailty prevention
- Has an impact on health status and quality of life for your local population



- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has an impact on the expansion of market and growth
- Has an impact on the competitiveness of industry
- Enhances employment and job creation
- Has been adopted, tailored and validated in at least 2 other settings

Evidence of the impact :

1. Our efforts will impact on the effectiveness of screening tools to prevent cognitive and physical decline in rural populations through primary care physicians and nurses. Thus help resolve existing controversies as to who should be screened, when, where, by whom, and with what instruments.

2. We will be able to generate a cost benefit analysis of the screening program in rural areas allowing the development of effective health-social policies at the regional and the national levels of how to best address the prevention of physical and cognitive decline of rural inhabitants.

3. The broad rural precinct screening will allow us to develop important diagnostic variables on the sensitivity, specificity, positive predictive value, and negative predictive value of available screening instruments for the prevention of frailty.

Resources available : Funding is provided by the University of Crete, NGO and other funded programmes such as LLL EU national program. On-going activities are financially supported by health government and other local social authorities.

3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Advocates for rural populations
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices
- This programme finds new ways in supporting older people their careers to the traditional ways of working.

4. Further information

The Clinic of Social and Family Medicine (CSFM), University of Crete Faculty of Medicine () has already established a pioneering, and unique for Greece, PHC educational and teaching centre, currently providing undergraduate to medical students, but also specialised training to clinical and non-clinical researchers seeking to expand their research abilities on various PHC fields. The CSFM has raised the



profile of PHC at national and international levels through its strong leadership and active involvement in numerous initiatives and various interventions, as well as state- and EU-funded research projects, as documented by over 200 Medline indexed publications. It remains the only academic institution with such activity in the field of primary care in Greece. CSFM is currently engaged in conducting research in a number of fields of direct relevance to the provision of clinical care in rural settings. A number of research projects dealing with the assessment and management of common diseases in such settings have been approved by the University Hospital Bioethical Committee. In addition, another capacity of the CSFM is focused on the translation and validation of certain tools/ questionnaires into the Greek context and their implementation into research and clinical practice. Many postgraduate research students are currently registered at the Faculty of Medicine, under the support and guidance of the CSFM. Furthermore, CSFM coordinates a Primary Health Care Unit at the city of Heraklion and operates a Primary Care Cretan Practice–Based Research Network (CPRN), which has been officially accredited by the Regional of Health Care Authorities and contributes to the design and implementation of several primary care based research projects. This network aims to increase the research capacity and research culture in integrated primary care provision in Crete, but also, the whole of Greece. CSFM runs a program of rural practice placements for medical students on their final year of studies (<http://pfy-epeaek.med.uoc.gr>). CSFM runs a new Masters program on General Practice/Family Medicine and PHC (the website of which is <http://www.mastergeneralpractice.gr>). Modules lasting 24 months and as no other postgraduate training opportunity exists in Greece for general practitioners, this program aims to assist in creating a pool of academically-trained general practitioners and independent future researchers that will transfer and implement evidence-based knowledge into their practices in an effective manner.

5. Contact details

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Mediterranean Islands Study (MEDIS)

1. Location

Country: Greece

Region: Athens

Total population: 3,5 million

2. Description

Target population: Older people in general population - older people without any history of chronic disease, living in the community, in Mediterranean islands

Target population: 600.000 persons

Main topic: Frailty in General

Description: The aim of the MEDIS study is to evaluate the relationships between socio-demographic, clinical, lifestyle (physical activities and dietary habits) and psychological characteristics and the presence of various cardiovascular disease risk factors, among elderly individuals without history of chronic disease, living in Mediterranean Islands. Subsequently, to identify people at high risk for cardiovascular disease and to promote good health practices.

Deliverables

Training programmes to share information on physical exercise and nutrition counselling aim at care-givers and old people

- A large data-base with info about elder's people health status and behaviours in Mediterranean Europe
- Training programmes for care-givers and old people are planned to run

Outcomes: Prevention of cardiovascular disease and related cardiometabolic disorders in older people living in the Mediterranean islands region. A previous evaluation of the study in May 2013 demonstrated that the study presented the health status of the older people of the referent population, for the first time, and may help in preventing over 400 events out of 10000 people.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has been adopted, tailored and validated in at least 2 other settings
- More than 10% of the local target population receives the innovative practice

Evidence of the impact : The response rate was about 80%.

Resources available : Funding for the phase I of the MEDIS study was provided by the Harokopio University and the Hellenic Heart Foundation. On-going activities are financially supported by health government and local social authorities.



3. Innovation element

- Has a gender perspective approach
- Has a multidisciplinary approach
- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence

4. Further information

A full range of supporting documentation and materials which may be of interest to other partners can be found in the website: <http://www.medis-study.eu/>

5. Contact Details

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Harokopio University in Athens is committed to MISTRAL – Multimodal Interventions Supported by information and communications Technologies building Resilience for frAilTy prevention

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The Irish Longitudinal Study on Ageing (TILDA)

1. Location

Country: Ireland

Region: Ireland

Total population : 4,5 million

2. Description

Target population (group): older people in general population (8,175 community dwelling population representative adults aged 50 and older)

Target population (figure): 8,175 adults aged 50 and older

Main topic: Frailty in general

Description: TILDA is a rich dataset of 8,175 community dwelling older adults living in Ireland. The dataset captures the five primary components of the frailty phenotype: slowness, weakness, weight loss, exhaustion and physical activity. There are currently 2 complete waves of data. Beyond the five core components of frailty, the datasets also include additional objective (i.e., locomotive (timed up and go), grip strength (dynamometer), cognition (Mini Mental State Exam) and subjective components of frailty (i.e., exhaustion, physical activity, depression).

Currently wave 3 is in planning, and additional objective measures will be included (i.e., physical activity (pedometer), sarcopenia (ultra-sound)) as well as continuing to capture the components from waves 1 and 2.

Investigating the ability of the measure to predict mortality, disability and falls will validate our frailty measure. Advanced psychometric methods will be used to develop and test the validity of our measure of frailty. The primary aim of this work is to explore combining the unique elements of 3 different tools to create a combination measure and explore the dimensionality of frailty as a construct.

Deliverables: A validated measure for screening of frailty. This measure will be validated for use in large population studies and expand on the original work of Kenneth Rock and Linda Fried and the frailty phenotype.

Outcomes and evidence of the impact : Frailty is often conceptualized as a single dimension, and this was the first model tested. However, preliminary analysis suggests that a two-dimensional model was more appropriate; one factor represented physical components of frailty and the second represented emotional components. Elements from each traditional frailty scale contributed to the model.



This alternative combination frailty model has sufficient construct and predictive validity. When age, sex and mortality were included, the risk for 2-year mortality increased for those with both greater physical (OR = 1.03, $p < 0.001$) and emotional (OR = 1.02, $p = 0.001$) frailty.

Further work will explore a third dimension, that of cognition and investigate other longitudinal outcomes.

- Has an impact on health status and quality of life for your local population.
- Has been adopted, tailored and validated in at least 2 other settings.

Resources available: This work was supported by an Irish Health Research Board grant (HRA_PHS/2011/26).

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

- King-Kallimanis, B.L., Using structural equation modelling to detect measurement invariance in a measure of frailty. (Under review).
- King-Kallimanis, B.L., Kenny, R.A., Savva, G. Testing an Alternative Model of Frailty in the Irish Longitudinal Study of Ageing. To be presented at The Irish Gerontological Society Annual and Scientific Meeting, 2013.

5. Contact details

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ANT Psychological and Social Service (APSS)

1. Location

Country: Italy

Region: Lombardy, Veneto, Emilia Romagna, Tuscany, Marche, Lazio, Puglia, Campania, Basilicata

Total population : 36.194.971 (amount of the Italian population of 9 regions in which we operate)

2. Description

Target population : Dependent Patient - Oncological elderly patients and family members (the average age of our patients is 75 years)

Target population: 1.447.799 (According to FAVO Report 2013 the 4% of Italian population has a cancer diagnosis)

Main topic: Frailty in general

Description: The ANT Psychological Service was born in 1985 to assist cancer patients and their relatives suffering from psychological distress. The caregivers' psychosocial problems are assessed through a socio-psychological questionnaire that caregiver fills at the start of the home assistance. The activation of psychological and social services might occur by the physician or by direct request of the family in order to prevent high risk of frailty due to coping with cancer. The psychologist takes care of family members with psycho-educational interventions, psychotherapies and psychological advice depending on their needs. The ANT psychologist can visit caregivers both at home and at some dedicated surgeries of ANT Institute. If the patient cannot stay at home, ANT is always in contact with most of long-stay wards and structures where they are admitted. In some cases physician and psychologist continue to follow patients also when they are in these structures. Furthermore the relatives of the patients temporary admitted in hospital continue to be supported by the ANT psychologists.

In 2012, the percentage of beneficiaries followed by our Psychology Service was 10% of the total number of ANT patients. The ANT psychologists conducted 3.394 psychological consults with the family members in order to support them in self-management of their dear's health and to promote for both of them a good daily life. Moreover, we have helped caregivers during bereavement: last year we assisted 413 relatives for grieving process. In all, the psychologists conducted 1.703 psychological consults with the family members after the death of the patient.

A selected group of volunteers supports patients and care-givers to reduce social isolation of the family through the proposal of different activities to patients such as reading, walking, watching movies; at the same time they incite care-giver into taking time for themselves. In 2012, for example in Bologna these volunteers were activated more than 600 times. ANT psychological and social service provides several support interventions in order to:

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



- help the family to cope with cancer
- Empowered old people for better quality of life

Deliverables:

- We perform care-giver training courses about practical and psychosocial aspects.
- Training programmes for volunteers are run twice or third a year

In some area of Italy, over the years, several free-of-charge health/social activities have been developed. This thanks to the help of lots of volunteers. For example in Bologna we have ANT "Family Service". This is composed by six employees and fourteen volunteers, who work hand-in-hand with the health professionals. The service include:

- Door-to-door service: it's based on transport of patients from their homes to Hospital for routine check-ups, hospital admittance and outpatient treatments. In 2012 the service has been activated 994 times.
- Medical devices at-home supply service: in 2012 ANT delivered 1,918 devices (beds, wheelchair, ecc.)
- "Solidarity Package" Program: the service provides for food for the families with economic problems. In 2012 ANT delivered 309 Solidarity Package in Bologna.
- clean bed service: sheets and towels are delivered to the families with social and economic difficulties.
- Personal cleaning of the patient: in 2012 ANT carried out 3,043 interventions of personal hygiene care
- Kit-comfort programme for patients admitted to the Centre's inpatients' ward. It contains various kinds of simple comforts (e.g. soap, toothpaste, toilet paper, a bottle of mineral water).
- Library and DVD at home service

Outcomes: Access to APSS to 10% of ANT cancer patients. In 2012 we assisted almost 2400 people (patients and care-givers) who were, in a lot of cases, more than 60 years. They need to be helped with a psychological support and with an access to social activities.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has been adopted, tailored and validated in at least 2 other settings

Evidence of the impact:



A satisfaction evaluation with people who utilize the APSS was performed. Results show 72% of excellent or very high perception of these services.

Resources available:

Funds for these services were provided for 85% by private citizens, companies and banks, the remaining 15% comes from public funding.

3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

We introduce a concept of humanization of public health;

- Our work is based on a strong principle of solidarity;

5. Contact details

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Old town, new elders.

Social and health frailty of older residents in Genoa

1. Location

Country: Italy

Region: Liguria

Total population: 428.120 (total of over 65 residents in Liguria)

2. Description

Target population: Older people in general population - over 65 residents in Genoa, Italy

Target population: 160.784 (total of over 65 residents in Genoa)

Main topic: Frailty in general

Description: The research, developed since 2010 by the Observatory of Inequalities of the Department of Educational Sciences of the University of Genoa, in agreement with SPI CGIL (one of the main national trade unions for retired workers), Auser (leading national representative association for elderly activities) and Genoa ASL3 (the local health department), aims to explore the condition of older people in Genoa, Italy. The localization in Genoa is particularly significant, being the town itself the regional capital of Liguria, which is historically one of the region of Europe with the higher rate of older people inhabitants (Eurostat, 2010). The particular demographic characterization of Genoa underlines its role of case study not only at national, but also at international level. Genoa represents indeed a very important laboratory for exploration of elderly dimensions, from persistence of ageism (Butler, 1969) to new identity processes in older age (Birren & Schroots, 1996), from social transformation and welfare implications (Bertin, 2009) to effective solutions toward the realization of successful ageing policies (Baltes & Baltes, 1991). Indeed, it has to be underlined that the research is not simply aimed to explore the living conditions of older people, but to specifically combine their value systems and attitudes to behaviors, consumes, habits and lifestyles and status. The careful attention to value systems (Inglehart, 1997), consequent attitudes, daily practices and behaviors is aimed to overpass older people's stereotypic social representations (Poli, 2012) and to explore the real complexity of older age showing all the multifaceted forms of ageing process. Indeed, such attention to ageing heterogeneity realize a capability approach (Sen, 1999) dedicated to recognition and expansion of opportunities for elderly people conceived as a main starting point for any effective successful ageing policy.

A key aspect of the project resides in the realization of a good practice of intergenerational cooperation, by the fact that every years the research involves older people volunteers in local associations and the students following courses of Methodology in social research at the University of Genoa. Such mutual exchange and cooperation promotes the confrontation and



interaction between generations, which represent the main added value of the project. According to such premises, the project is structured by a repeated pattern, focusing each year in different administrative districts of the town, analyzing the conditions of elderly people in selected residential quarters. The research always realizes a sequential-explorative approach (Creswell, 2003), combining quali-quantitative techniques, with a preliminary step conducted through focus groups and interviews to older people stakeholders, followed by a quantitative survey to a statistically representative sample of older respondents. The first round in first half of 2011 has explored the northern metropolitan area of Genoa, observing the conditions of older people in a typical post industrial setting, characterized by the contrast between a traditional working class identity with contemporary socio-economic depression and rising immigration settlement. The 2012 round has been focused on the conditions of older people in a middle class area, characterized by better services and major proximity to the town centre, even if, also here, preliminary results shows evidences of specific difficulties for older people especially in front of the contemporary economic crisis. The 2013 edition has been dedicated to the exploration of elderly conditions in an upper class area in order to indentify comparative peculiarities in terms elderly lifestyles that could not exclude eventual forms of exclusion and/or isolation deriving from difficulties in maintaining higher status conditions. The final objective of the project is to cover all the town's administrative districts in a few years in order to finally obtain a detailed map of ageing processes in Genoa. Realization and implementation of activities are ensured by insertion of the project within a PRA (Athenaeum Research Project) financed by the University of Genoa and carried on by the participation of university students and elderly stakeholders coordinated by a team of academic researchers.

Deliverables: Design development and validation of a specific questionnaire

Large databases, development of social and health frailty scaling measures, scientific publications.

Outcomes: Observing and describing elderly people condition in Genoa from the health and socioeconomic perspectives.

Prevention of frailty in older people in Genoa.

Promoting intergenerational cooperation

Has an impact on the sustainability and efficiency of the health or social care system of your local population

Enhances employment and job creation with specific regard to training of students involved in social assistant university degree

Evidence of the impact : In the three round 2011-2012-2013 over 300 students have been involved and over 1500 elders have been interviewed and every yards new associations take part in the project.

One research monograph and an article on class "A" scientific review has been published. Two papers presented in international conferences.



Resources available (*budget, funding instruments, programmes, human resources*):

University of Genoa has provided a funding of around 10.000 Euros for the research approved through an Academic Research project (PRA), which involves 7 senior researchers and 1 full professor.

3. Innovation element

- Develops "living labs"
- Has a gender perspective approach
- Has a multidisciplinary approach
- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information

Di.S.For - Department of Educational Sciences, University of Genoa is a member of SI4LIFE srl - "Science and enterprise together to improve quality of life", a Regional Consortium (SME - Small Medium Enterprise) who manages and coordinates a new scientific-technological Innovation Hub in Italy, financed by Liguria Region with the aim of improving the quality of life of elderly and disabled people.

SI4Life includes big RTD (University of Genoa, Italian Institute of Technology, National Research Council), big enterprises (such as Fondazione Don Carlo Gnocchi Onlus, an important Institute for Hospitalization with more than 20 centers in Italy and a wide research activity), SME and associations active in rehabilitation of people with disability, SME active in the ICT field and Electronics Industry.

Di.S.For – University of Genoa, together with Regione Liguria (European Affairs Department and Health and Social Affairs Department –<http://www.regione.liguria.it>), Galliera Hospital, Auser Onlus – Liguria, David Chiossone Onlus Institute and Social Cooperative Televita Agapé, under the coordination of SI4LIFE srl –(<http://www.si4life.com>) set up the new Commitment "FRAGILE" under the EIP-AHAA3 Action Group.

5. Contact Details

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Marco Polo Initiative

1. Location

Country: Italy

Region: Veneto

Total population: 5.000.000

2. Description

Target population: Dependent patients - Older persons living in assisted living or in nursing homes cared by the regional programme for assisting older and disabled persons

Target population: 27.000

Main topic: Frailty in general

Description: Use and dissemination of a Multidimensional Prognostic Index to measure frailty and produce prognostic indicators for health related outcomes. The Regione Veneto is actively collecting data on MPI and MPI-SvaMA distribution on more than 20.000 older persons, living in community or in nursing homes. The screening instrument will be made available also in a portable APP that could be used at bedside, in home care or other non-residential settings (assisted living) for screening older adults in a more efficient way. The results will be shared exploiting the already active European networks of the Regione Veneto. The network of MPI researchers with EUMGS will be used and exploited to booster results dissemination and to gain consensus on a recommendation document on the use of MPI in different health care settings.

Deliverables : Availability to all the partnership members of a free screening tool for frailty called MPI that has been extensively validated in several populations in cross-sectional and longitudinal settings.

Outcomes:

- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has been adopted, tailored and validated in at least 2 other settings

Prediction not only of health related outcomes but also of resource use and needs associating the use of MPI with the use of a risk adjustment (case-mix) tool called (ACG Adjusted Clinical Groups) piloted in Veneto in collaboration with Johns Hopkins University, USA.

Linking of health care services with health resource planning, rationing and management. The Regione Veneto is already applying this case-mix tool (ACG) in 2 million lives within a



collaborative project since 2012. The project will continue in the next two years and will include all the Veneto region inhabitants (5 million lives)

Evidence of the impact (*evaluation results*): The association of a valid, accurate and well calibrated prognostic screening tool like MPI with a case-mix/cost analysis tool (like ACG) will contribute to better understand the impact of frailty on health and social care costs.

Resources available(*budget, funding instruments, programmes, human resources*): The collection, analysis and elaboration of data will be carried out with the resources of the Planning Section of the Health Care Service Direction of the Regione Veneto. The MPI tool can be used using a free App for smartphones that is downloadable from Appstore as an Application for iPhone and iPad : iMPI© , iMPI-SvaMA© and that can be used at bedside or in home care settings.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Prognostic index
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

- Alberto Pilotto, MD, Francesco Panza, MD, PhD , Luigi Ferrucci, MD, PhD. **A Multidimensional Prognostic Index in Common Conditions Leading to Death in Older Patients** Arch Intern Med. 2012;172(7):594-595-
- Alberto Pilotto MD,* , Pietro Gallina MD, Andrea Fontana MSc et al **Development and Validation of a Multidimensional Prognostic Index for Mortality Based on a Standardized Multidimensional Assessment Schedule (MPI-SVaMA)in Community-Dwelling Older Subjects..** JAMDA 14 (2013) 287 e 292
- Also listed in <http://www.eprognosis.org>



5. Contact details

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PHYSICAL TRAINING and/or rehabilitation in the frail elderly in hospital and at home (PHYTFRAIL)

1. Location

Country: Italy

Region: Lombardia

Total population: 59,000,000 persons (12,000,000 aged 65+; 6,000,000 aged 75+)

2. Description

Target population: Older people in general population

Target population: 1,200,000 persons (300,000 aged 65+; 160,000 aged 75+)

Main topic: Frailty in general

Description: The percentage of inactive adults over 60 years is nearly 50% in Europe. The patients targeted by the PHYTFRAIL project are elderly subjects, i.e., a group with very peculiar needs and characteristics.

It is important to personalize and monitor the physical activity in the frail elderly in the hospital and at home. Aim of the study: to project and use a computing platform designed for the control and management of the physical activity and rehabilitation process of frail and pre-frail patients. It is designed to be totally independent of the physical location of the patient. The whole process is implemented within a user friendly web portal, allowing for the permanent elimination of the constraints imposed by the geographical location of the patient and operator. The patient can therefore benefit from the prescribed therapy from home, without giving up the constant supervision of his doctor. The platform is adaptable to any type of machines already present in the hospital or at home. Access is simple and available to all those involved with a short training period. The project can be transferred to other Italian and European reality, after the results of the trial have been published. The dissemination will be pursued through the planning of training courses.

Specifically trained staff, after obtaining the informed consent, will administer a standard questionnaire to collect information regarding the health status, drug use, clinical history and life-style. Moreover, tests to assess cognitive ability (MMSE), self-sufficiency and autonomy (ADL, IADL), physical ability (Handgrip test, Chair Stand test) will be administered; arterial blood pressure measurement, weight and height measurement for the Body Mass Index (BMI), walking ability.

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We plan to reach the following objectives:

- 1 Support action encouraging older pre frail and frail people to participate in exercise protocols
- 2 Design and develop on-line decision support services for personal health forecasting and sustaining reversion from frail to pre-frail condition.
- 3 -Determine strategies to reduce functional impairment due to acute-disease, during hospitalization periods and favour the continuity of tailored care of frail patient between hospital and home. The target population is older people in risk of dependency, frailty and patients > 75 years old during hospitalisation periods due to acute diseases.
- 4 -Promote training courses for health professionals' doctor and nurses, physiotherapists and no-profit organisation, also using use motivational interviewing techniques to give advice on physical activity.

Deliverables :

ICT SOLUTIONS

Internet portal and an ErgoMonitor software, to create physical exercise training protocols to be applied in both hospitals and patient's houses under the supervision of a multidisciplinary care team.

LARGEDATA-BASE

REPOSI Registry, with a unique data base of 3500 Italians elderly patients (aged 65 years or older), designed with the purpose of setting up a network of geriatric and internal medicine wards to investigate the prevalence and correlates of polymorbidity and polypharmacy in hospitalized frail elderly patients.

TRAINING PROGRAMMES (Professionals, Care-givers, Patients):

Methodology on frailty

Training courses for health professionals (including physicians, nurses, physiotherapists)

Outcomes: Prevention of frailty in older people in the Lombardia region. A formal evaluation of the programme in March 2013, demonstrated that the programme had helped prevent 160 unplanned hospital admissions.

Access to exercise protocol to 10% of target population.

Has an impact on health status and quality of life for your local population

Evidence of the impact

- Improving the appropriateness of the prescribing drugs, reducing adverse events, mortality and hospitalization. in elderly
- Providing optimal intervention at the house of patients



- Promoting accessibility to health services for those who are home-bound or live in isolated areas (7 million of Italians live in mountain areas)
- Expanding the project to different Italian and European realities (including provincial district, island and mountain areas).

Resources available: To reach the aim of the PHYTFRAIL project it is constituted a consortium of 5 Units. 4 Units have been collaborating from more than 5 years and have shared Italian project on elderly people, as shown by many publications. The human resources of the consortium will be able to use are the know-how of any single unit, the financial resources from research grants. The consortium will offer access to the day-hospital and friendly admission to the computing platform designed for the control and management of the physical activity and rehabilitation process of frail and pre-frail patients.

A.N.T.E.A.S., National Association of senior citizens for Active solidarity, a NO-PROFIT, voluntary association based in Milan, will provide free transfer of old frail patient from home to hospital and back, will take part to an educational programme and will express the point of view of the users. A.N.T.E.A.S. participates in the Platform Age Europe

IRCCS Ca- Granda together with Istituto di Ricerche Farmacologiche "Mario Negri" has created REPOSI Registry, with a unique data base of 3500 Italians elderly patients (aged 65 years or older), designed with the purpose of setting up a network of geriatric and internal medicine wards to investigate the prevalence and correlates of polymorbidity and polypharmacy in hospitalized frail elderly patients.

Milano Ricerche is a no-profit organisation established to facilitate a permanent link between the academic world and industrial research;

SparkBIO (Spark Srl, Bologna – Italy) is a SME, medical technology company. The company started to develop a new product REHAL software designed for the control and management of the physical activity and rehabilitation process of frail and pre-frail patients.

Two member of Consortium: IRCCS CA' GRANDA and Milano Ricerche have received a grant from Regione Lombardia (art 12 DM593/2000 ICT Lombardia: H-CIM (Health Care through Intelligent Monitoring)

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care
- Has relative advantages or brings benefits over existing practices



4. Further information

5. Contact details

Organisation name: IRCCS CA' GRANDA FOUNDATION, MILANO ITALY

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ARCHER

1. Location

Country: Italy

Region: Campania

Total population: 5.834.000

2. Description

Target population: In Campania, Apulia and Basilicata, at least 150 physicians and at least 20.000 patients will be involved. In Campania the population >65 is 945.000.

Main Topic: Frailty in general

Description: The project, called "70% target" entails measures aimed to modify lifestyles, and measure blood pressure at home and in pharmacy, at the same time providing information, communication, co-operation with all the clinical and health care professionals.

Communications on the relevance of good blood pressure control will be printed on the patient report letter of the SIIA (Italian Society for Hypertension, Campania Section), SIC (Italian Society of Cardiology, Campania Section) and ISBEM (Medicine Molise Institute), and will be provided to the patients by their specialists. **When:** 2013 and 2014.

Called the "silent killer" of the third millennium, hypertension currently affects about 30% of Italians especially in the age group 40 to 80 years, but only half are aware of having hypertension. Among those receiving a treatment, only 1 out of 3 reaches an appropriate control of blood pressure values, therefore vanishing the prevention effect of therapy.

Deliverables:

Guidelines and adequate treatment will be generated.

Outcomes and evidence of the impact:

- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Improving the achievement of the blood pressure therapeutic goal will reduce the emergence of acute events, and influence the overall health outcomes. Questionnaires for patients and general practitioners and SIIA, ISBEM, and SIC web sites links to informative webpages will be provided, to assess their feedback. Meetings will be organized with general practitioners and patients to disseminate the initiative and discuss the results

Resources available: 50% of the specialists of Campania sections of SIIA and SIC adhered to the initiative. Additional 10000 Euro have been provided by SIIA for horizontal activities.



3. Innovation element

- Uses new methodology
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact details

Organization name: The EIP-AHA Reference Site of Campania

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The Abilities Passport and Network for forensic medicine-PABI

1. Location

Country: Italy

Region: Piemonte.

Total population: 4.457.000

2. Description

Target population: In Piemonte the population >65 is 1.016.196. The target is 10% of >65: 101.620.

Main Topic: Frailty in general

Description: The Abilities Passport and Network of Forensic Medicine (PABI) is an Information System acting as a centralized collection point of the disabilities certifications in the Piedmont Region, intending:

- to be a support to the collegial, single judge, administrative and necroscopic activity of the Regional Services of Forensic Medicine;
- to facilitate the access to the certification and acts of disability for disabled people who are in percentage mainly elderly people

The subjects involved in the Abilities Passport and Network of Forensic Medicine at regional level are the following:

- disabled citizens, who take steadily advantage of a reduced time for obtaining benefits and certifications;
- the forensic services, that are shrinking the time and cost associated with the activity of verification and certification of disability;
- the bodies to which citizens with disabilities are addressed, which can provide definite answers at lower times and lower costs, at the same time increasing control over the adequacy of the benefits granted.

Thanks to the Abilities Passport and Network of Forensic Medicine, it becomes possible:

- to simplify the access of disabled people to the services, by reducing the certificates to be produced;
- to standardize the administrative procedures at regional level, that are related to the acknowledgment of disability;
- to provide support to the Local Health Providers Services of Legal Medicine, for the establishment of an integrated database of acknowledgments of disability at regional level.

Deliverables: Setting up and management of the PABI Information System as a centralized collection point of the certifications of disabilities in the Piedmont Region.

Monitoring and management of the three main areas of the forensic service: the collegial component (i.e. decision of a panel of doctors to issue an acknowledgment), the component



single- judge (which provides for the issue of certificates by a single physician), the necroscopic and administrative component.

Data warehouse activities: PABI system allows the Region to obtain an overview of the activities by the forensic medicine, the Local Health Providers to generate statistical reports and data analysis with respect to their activities, and thus permitting to perform data analysis of the disability phenomenon from the epidemiological point of view and to enable other bodies to analyze the regional data regarding disability.

Outcomes:

PABI, in compliance with applicable privacy laws, makes it easier to access the services by disabled citizens, in order to simplify the administrative paths within the Local Health Providers and among the providers themselves and other competent bodies (Regional Tributes Office, National Institute for Social Security - INPS, bodies managing the social welfare functions).

Thanks to the Abilities Passport & Network of Forensic Medicine, in fact, it's possible:

- to simplify the access of disabled people to the services, by reducing the certificates to be produced;
- to standardize the administrative procedures at regional level, that are related to the acknowledgment of disability;
- to provide support to the Local Health Providers Services of Legal Medicine, for the establishment of an integrated database of acknowledgments of disability at regional level.
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: PABI system is a very valuable source of statistical data about the disabled population, for the purpose of epidemiological studies and for the definition of policies about disability. Moreover, it provides a wealth of useful information for the usage by the National Institute of Statistics in Italy.

To date, more than 315.000 records have been registered in PABI.

Every year, in addition, from 80.000 to 100.000 new acknowledgements of disability are carried out by all the 13 Local Health Providers in the Piedmont Region.

Resources available: Funding for the project was provided by Piedmont Region.

3. Innovation element

- Has a vision on integrated care
- Adds to the existing large body of evidence

4. Further information

5. Contact Details

Organisation name: The EIP-AHA Reference Sites of Piemonte

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Telemedicine for management people with chronic diseases

1. Location

Country: Italy

Region: Piemonte.

Total population: 4.457.000

2. Description

Target population: In Piemonte the population >65 is 1.016.196. The target is 10% of >65: 101.620.

Main Topic: Frailty in general

Description: The Telemedicine project in VCO (Verbano-Cusio-Ossola, north west mountain area in Piedmont) represents one of the first experimentation in Italy focused on innovative tele-health service for chronic diseases management, started in 2009: it is an innovative model of service with a strong integration between hospital and territory.

It guarantees the distance monitoring of patients with the following chronic stabilized diseases:

- heart failure;
- diabetes (type I, II and diabetes in pregnancy);
- chronic obstructive pulmonary disease (COPD);
- oncological diseases.

CSI-Piemonte played the role of the implementing and coordinating body. The project experimentation phase was carried on from year 2009 to 2011, on behalf of the Piedmont Region, launched by the Local Health Provider ASL VCO (Verbania Cusio Ossola Province). Since year 2012, Telemedicine became a fully operational service managed by CSI-Piemonte on behalf of the Piedmont Region. Today, this service represents a multi-pathologies case management and a success story. It was selected among the innovation projects presented on year 2010 at the Shanghai Expo (exhibition "Italy of Innovators") and at the "International eHealth, Telemedicine, and eHealth ICT Forum 2011" in Luxembourg.

Structure and Technology

The service implies a continuous, scrupulous methodological definition in terms of clinical and specialized responsibility during patient monitoring, charged to the medical staff, by personalized monitoring protocol and threshold values for every physiological parameter, to manage alarms upon need; by periodical monitoring of patient and by evaluation of their answers, if compared with measured data, while elaborating therapeutic suggestions and indications about a suitable lifestyle.

The easy-to-use is a success factor, reached through a strong coordination at process level (actions carried out by single players) and the integration of different technology components, eg.: easy medical devices for data take-over (different according to the pathology); a mobile



phone to send and receive data by the broadband with the possibility for video-conferencing; an information system that adopts updated and consolidated architectural and technology standard, permitting data transmission, archiving and reporting; a system that assures the maximum security for sensitive data.

Deliverables: Patients cared by these services may:

- being followed and assisted on-line in real-time directly from home, through an Internet connection and by the home installation of some specific medical devices;
- perform from home the monitoring prescribed by the protocols for the diseases from which patients are suffering;
- rely on a dedicated technical support service for the reporting of malfunctions of medical devices.

Introduction of monitoring devices → Detection devices in current use are the following:

- detection of blood pressure,
- measurement of the heart rate,
- detection of the weight,
- measuring the oxygen saturation in the blood,
- detection of the respiratory rate,
- single-lead ECG,
- detection of the capillary blood glucose.

Service Center Role → The Telemedicine Service Center is a dedicated structure that deals with:

- the management of the service platform for the collection and monitoring of clinical data of patients;
- starting the service for new patients at home;
- capturing data transmitted by home devices at patients' and verify their compliance with the parameters set in the corresponding clinical protocols;
- organizing and storing data, subject to their certification and validation, in a repository accessible by the responsible and credited parties;
- activating emergency/urgency procedures, when needed (in complementarity with the activities provided by the Healthcare Provider structures);
- providing a dedicated helpline for receipt of reports about system failures/malfunctions and ensure the maintenance of the installed devices.

Outcomes: The originality and innovation of this model is the overcoming of the simple telemedicine concept towards on-demand or emergency tele-health. It is an alternative to traditional daily services offered by health providers (surgery, hospitalization, emergency care), permitting better recovery of autonomy and independence in patients' daily life; the health providers obtains decongestion of spaces and services in favour of acute cases.

Since year 2009, overall, 400 patients have been cared. This initiative allowed to register tangible benefits in terms of social impact. Patients, for example, have seen minimized unnecessary hardships related to their condition.



It brings the whole system a “green impact”: it reduces the share of transfers, assuming having avoided a single transfer per month from home to clinic per patient (so leading to an estimated value of 50.000 km less to drive), patients gained in time-saving, while obtaining less inconvenience.

The efficiency in resource allocation is obtained with the reduction of accesses to secondary level of care. This means resources as personnel, structures can be devoted to acute cases, lowering costs and waiting time. Higher efficiency in resources allocation can be further obtained with a large scale approach: service costs lower with the increase of patients number.

- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: Only in the first year of service, the patients reduced of about 80% their requests to the Emergency Departments and of about 63% their requests to Surgeries. Favouring the de-hospitalization, finally, the Telemedicine service in VCO allows a saving of about 80% on costs, if compared to the cost of a traditional hospitalization.

Resources available: Funding for the project was provided by Piedmont Region.

3. Innovation element

- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

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LIGHT DOMICILIARITY

1. Location

Country: Italy

Region: Liguria

Total population: Genoese over-75 residents in 2012 about 84.712.

2. Description

Target population: Older people in general population - The initiative targets Genoese over-75 people in the community, resident in their own homes and characterized by an insufficient or missing parenting network.

Target population: In 2012, the program involved 124 Genoese over-75 residents.

Main topic: Frailty in general

Description: The initiative aims to fit relational and participation needs of elderly people in the community in risk of frailty. The main objective is to preserve the right of elderly people to live in their own homes, providing them the necessary aid to maintain a respectable lifestyle and setting the conditions for a steady social interaction.

Light Domiciliarity programme envisages prevention, supervision and monitoring paths which include accompanying elderly to perform daily tasks (such as shopping, going to the bank, etc.), walks, meetings in recreational centers, newspaper or book reading, etc.

Normally potential users are identified and managed by a LAAN volunteer. The support guarantees at least 2 weekly visits and one weekly telephonic monitoring.

Deliverables: A set of evidence-based interventions that prevent or postpone onset of frailty.

Outcomes: In 2012, the program involved 124 Genoese over-75 residents. All of them are currently living independently at their own homes. Considering that Italian over-65 institutionalization rate is 3,5% and that this rate grows up to 18% focusing specifically on frail elderly, these data demonstrates the efficacy of *Light Domiciliarity* programme in supporting independent living and reducing institutionalization.

Has an impact on health status and quality of life for your local population

Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact:

With a null institutionalization rate between its users, the *Light Domiciliarity* programme demonstrates its efficacy in supporting independent living and reducing institutionalization, with a meaningful impact on the reduction of public health expenditure (in Liguria institutionalization costs 27€ per day to the National Health System and 48€ per day to the user



or his/her administrative district). It also have an important impact on the quality of life of the users, who can live independently in their own homes for a longer period.

Resources available: The programme is entirely financed by CARIGE Foundation, a private bank foundation participating in Ligurian Active Ageing Network (LAAN). The 2013 envisaged founding is EUR 36.000. The programme can also count on AUSER and other LAAN associations volunteers.

3. Innovation element

- Incorporates incentives for change to stakeholders
- Has a vision on integrated care
- The initiative fits relational and participation needs of elderly people, preserving their right of to live in their own homes maintaining a respectable lifestyle and a steady social interaction.

4. Further information

Liguria is one of the eldest regions in Europe. Regione Liguria, in the last years, to make regional law 48/2009 on active ageing operative, set up a network including private foundations, public institutions, the third sector and the University, named **Ligurian Active Ageing Network – LAAN**. All together, these actors have realized integrated social policies through activities of promotion/protection, not only as a support for fragile elderly people, but also as participative paths of social prevention, with the development of a new concept of “being elderly” and inter-generational dialogue.

The AUSER Association works through 1,412 local associations around the country and has 260,000 members as well as 40,000 active volunteers organized on a national, regional and local level. AUSER mission is to support the right of older people to continue to play an active role in society.

Regione Liguria (European Affairs Department and Health and Social Affairs Department – <http://www.regione.liguria.it>), together with Galliera Hospital, University of Genoa (Department of Educational Sciences), Auser Onlus – Liguria, David Chiossone Onlus Institute and Social Cooperative Televita Agapé, under the coordination of SI4LIFE srl – (<http://www.si4life.com>) "Science and enterprise together to improve quality of life", a new scientific-technological Regional Innovation Hub, set up the new Commitment “FRAGILE” under the EIP-AHA A3 Action Group.

5. Contact Details

Organisation name: AUSER Association in collaboration with CARIGE Foundation and Ligurian Active Ageing Network – LAAN

Contact person: Dott. Umberto Marciasini (AUSER Association)

Email:



Optimizing nutrition, physical and cognitive performance in elderly people after a major osteoporotic fracture

1. Location

Country: Italy

Region: Tuscany

Total population : 3.667.780

2. Description

Target population: Independent patients in high risk of frailty (elderly frail, dependent or independent osteoporotic patients aged >65 years having suffered a major osteoporotic fracture (namely hip fracture)

Target population: 5.350 patients with severe osteoporosis (hip fracture)

Main topic: frailty in general

Description: Low-trauma fractures increase morbidity and mortality in the elderly and greatly reduce Healthy Life Years (HLYs), increasing costs, both for the individual, the community and public health systems. People with osteoporosis usually meet multiple criteria defining the frail syndrome.

Elderly patients of both sexes having suffered a major osteoporotic fracture (e.g. hip fracture) display a compromised neurocognitive and functional status. These features pose these subjects at increased risk of subsequent falls and fractures, with expected increased morbidity and additional impairment of quality of life. Moreover, patients do not often pose into relation fragility fractures with osteoporosis and or the frailty syndrome.

So far, neurocognitive symptoms and physical performance have not been properly addressed in parallel after a hip fracture. After the first-line orthopaedic treatment, therapeutic procedures and recommendations are related to generally short-term rehabilitation programs. Anti-osteoporotic treatments, which have been proved to reduce the risk of further fragility fractures, are frequently not or under-prescribed.

In the region of Tuscany (Italy) about 6,000 hip fractures in patients over 65 occur each year, with approximately 18% of patients dying within the first year. Over 50% of patients do not recover the ability to move and self-sufficiency. Approximately 6.5% undergoes a re-fracture of the femur within 4 years.

The total direct costs for the public health system are more than 100 million euros. Less than



1000 elderly people with hip fracture were prescribed osteoporosis drugs and 60% of the ones put under anti-osteoporotic therapy will interrupt the treatment almost immediately. The estimated total waste of money for Tuscany is 250.000 € per year.

These data prompted the Tuscany Region to initiate a program of integrated care for the prevention of hip fractures in over 65 years old. The Tuscany Region was indeed the first in Italy to implement a specific project with the aim of reducing hip fractures in the elderly. The scope of the on-going T.A.R.GeT. project (**T**attamento **A**ppropriato delle **R**ifratture **G**eriatriche in **T**oscana, i.e. *“Appropriate treatment of geriatric refractures in Tuscany”*), funded by the Tuscany Region, has been to recognise the bone fragility in the hip fractured patient and to activate the recognized intervention to prevent re-fractures.

The design of the project comprises a 4-year prospective phase (2011-2014), preceded by a preliminary phase (2009-2010) dedicated to basal data analysis and education of the participating centers with ad a retrospective control period (2006-2009). It is led by a “central Coordinating Unit” (composed of MDs, Nurses, Analists, Epidemiologists – A true “Fracture Unit”) and 32 “Operating Units”.

The on-going T.A.R.GeT. project is closely connected with the C.O.D.E. program, which assess the short- and long-term impairment of neurocognitive and physical performance in patients after a major osteoporotic fracture by means of questionnaires, visual scales and semi-quantitative validated physical performance tests. Further assessment of muscle mass, muscular performance and its related decay and recovery is going to be evaluated in years 2014-2016 by means of radiologic techniques (DEXA, pQCT), newly developed robotic platforms (Senly platform), for a full analysis of gait and balance, and complex systems of movement analysis.

Thus, specific evaluation tools will be developed to better categorize the patients and establish targeted intervention strategies. Specific therapeutic intervention (pharmacological, nutritional and [physical]) will be pursued in order to decrease the risk of subsequent falls, both favouring functional recovery and preventing neurocognitive decline. In this view, the biomechanical assessment will serve to assess the compromised functional capacity and the improvement after the specific intervention.

This example of integrated care model is expected to yield results both in the short and in the long term. We anticipate that the development of specific targeted therapeutic concerted strategies addressed to decrease the risk of further falls and fractures is directed towards decreasing morbidity and mortality in frail subjects, increase HLYs and, ultimately, decrease the costs for the individual and the community.

This model, once fully validated, can be exported and applied in other countries, always at a regional level, but in a multinational setting to enlarge and empower the methodology and outcomes. Even if the subjects are being evaluated and followed up directly in tertiary referral centres, this will be pursued in close connection with the General Practitioners and Advocacy Organizations (both for health professionals and patients) in order to directly assess persistence



and compliance to the anti-osteoporotic therapy, the benefits and the potential adverse effects of the treatment and minor/major complaints.

Deliverables: (expected)

- Subjects with severe osteoporosis after a major fracture by means of a nutritional, physical and neurocognitive assessment screened.
- Specific assessment protocols (questionnaires on nutrition, physical activity, quality of life, biomechanical analyses, myographic recordings to test muscle performance evaluation, analysis of muscle mass) validated.
- Specific databases for multicentric data collection and analysis of patients with severe osteoporosis prepared.
- Unique unify protocol of evaluation for initial assessment and monitoring to be used in different settings/countries set up.
- A shared protocol of intervention (supplementation, physical activity program) in frail elderly subjects after a major osteoporotic fracture set up, validated and disseminated.

Outcomes:

- Has an impact on health status and quality of life for our local population.
- Has an impact on the sustainability and efficiency of the health or social care system of our local population.

More than 10% of the local target. A reduction of further osteoporotic fractures and an overall decrease in morbidity and mortality, with increase in HLYs are expected, thus decreasing frailty scores in subjects with severe osteoporosis.

Evidence of the impact: Data are collected continuously, with a major statistical analysis taking place every six months. The major expected result, which corresponds to the major endpoint of the program, is a significant reduction in the risk for further fractures after the first major osteoporotic fractures by means of an integrated approach including nutritional and physical (re)education and a contention of neurocognitive symptoms. As secondary objective, a reduction in morbidity and mortality, and an increase in quality of life in patients with severe osteoporosis are expected.

At the end of the programme a cost-effectiveness analysis is planned.

Resources available: The project has been sustained thoroughly and is being receiving funding from Tuscany Region.

The medical personnel responsible for clinical evaluation is currently employed in the Unit of Bone and Mineral Metabolism of the Careggi University Hospital. This Unit is closely connected with the Orthopaedic Unit and, for this reason, it is relatively easy to recruit patients after a major osteoporotic fracture (i.e. hip fracture), which requires hospitalization.

The biomechanical evaluation is possible through the collaboration with physiatrists and biomedical engineers involved in the project. Bone and muscle mass assessment is usually performed by radiology technicians.



3. Innovation element

- Has a cost analysis approach
- Incorporates incentives for change to stakeholders
- Has a multidisciplinary approach
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact details

Organisation name: University of Florence, University Hospital Careggi

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Influence of muscle power and nutritional status on functional activities and well-being in the elderly

1. Location

Country: Poland

Region: Lodz

Total population: 1 million

2. Description

Target population: Older people in general population - Elderly subjects from Lodz region, especially at risk of cognitive and functional decline (pre-frail)

Target population: 200.000 persons

Main topic: Frailty in general

Description: Research Task 1 of the HARC "Influence of muscle power and nutritional status on functional activities and well-being in the elderly" combines two research groups: Department of Geriatrics (Prof. Tomasz Kostka; Research area Leader) and Department of Old Age Psychiatry & Psychotic Disorders (prof. Iwona Kłoszewska, prof. Tomasz Sobów).

Both nutritional status and muscular fitness are predictors of functional capacity in advanced age. Functional status, and, more particularly, capacity to perform basic and instrumental activities of daily living are the most important determinants of quality of life and well-being in the elderly. Comparison of different methods of estimating power of the most important muscle groups and its contribution to preserve function in the elderly would give novel important insights into more preventive and rehabilitative strategies in this population. Taking into account nutritional status and considering different subgroups of older population (e.g. patients with cardiovascular disorders, respiratory disorders, musculoskeletal disorders, dementia) would enable better treatment and rehabilitation planning. Therefore, the final goal of enhanced nutritional state and functional status is the improvement of quality of life and well-being in the elderly population.

Deliverables:

1. Preparing Guidelines for the general practitioners.
2. Training programs for the elderly in the region in collaboration with local authorities (Third Age University)
3. HARC web platform with information and training for the elderly

Outcomes: To contribute to the solution of the problems of age-related frailty in the Lodz region (Central Poland) by problem-focused research, exchanging of knowledge with international experts and cooperating with regional authorities.

- Has an impact on health status and quality of life for your local population



- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact : Preliminary data from previous pilot programmes (especially POLKARD Senior programme) indicate that great potential exists for preventive and rehabilitative activities among older subjects in Central Poland region. Better physical function, an increase knowledge concerning common health hazards in older age and noticeable satisfaction with the programme are main outcomes.

Resources available: HARC FP7 Regpot was officially started on June, 1 and founded by the European Commission amount of: 4 400 000 euro.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence

4. Further information

Healthy Ageing Research Centre (HARC) , which res been EU founded as the RegPot project (2013-2016) , brings together a group of 14 internationally recognized researchers of the Medical University of Lodz (most of them heading the University departments) and dedicated to further develop research focusing on major areas relevant to active and healthy ageing. The aim of this proposal is to jointly enhance the development of the Centre's scientific excellence and unlock its innovation potential in order for HARC to become a top-level, distinguished medical research centre in the field of ageing-associated diseases, as well as to increase participation in international research and develop innovation in the area of age-related diseases.

HARC goals:

- 1) to reinforce and consolidate already existing cooperation between HARC and 25 European partners;
- 2) to stimulate innovation with properly protected intellectual rights by exchange of know-how and creating new links with industry (SMEs);
- 3) to develop state- of- the- art research infrastructure in synergy with the structural funds intervention;
- 4) to attract researchers with international experience to work in our centre;
- 5) to promote international knowledge exchange through workshops and conferences;
- 6) to promote HARC and raise the awareness of healthy ageing within the scientific community, industry and the general public.

5. Contact Details

Organisation name: HEALTHY AGEING RESEARCH CENTRE

Contact person: Prof. Tomasz Kostka

Coordinator: Marek L. Kowalski M.D.Ph.D

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The attitude, perceptions and acceptance of e-Health services and factors affecting their use among elderly

1. Location

Country: Poland

Region: Lower Silesia

Total population: 3 millions

2. Description

Target population: Older people in general population - elder people 60+

Target population: 20.000

Main topic: Frailty in general

Description: The rapidly aging world population implies a significant increase in demand for health care and social services. This will require innovative solutions that support greater efficiency in care delivery for the elderly. Hence, it is important to learn about the opinions, perspectives and concerns of the elderly regarding e-Health services as a basis for designing appropriate interventions to promote the use of e-Health technology to the extent feasible, appropriate and acceptable.

The study is aimed at assessing the views, perspectives and opinions of the elderly population vis-à-vis potential acceptance and use of ICT tools (computer, Internet, mobile phone) in selected dimensions of their health and medical care.

The study is conducted since 2011 among patients over 60 years of age being served by general practitioners (GPs) in southwest Poland's Lower Silesia Province. Patients are selected from a recent list of registered patients at the GPs' clinics in the region. The assessment of the needs, views and perceptions pertaining to e-Health is based on a specially designed questionnaire. At the same time, for each subject a comprehensive geriatric assessment is performed, including: a detailed medical history and physical examination; an assessment of a mental status (memory, counting, orientation, concentration, attention, language functions) and an emotional state, level of functional efficiency, nutritional habits and others.

Deliverables:

- Assessment of the size of interest of use of ICT tools and e-Health services among elderly
- Assessment of factors affecting the use of ICT tools for health related purposes
- Knowledge factors and incentives that increase acceptance and use of e-Health applications in the near future
- Comprehensive geriatric assessment of elderly in the region (creation of a large data-base)
- Empower older people for better quality of life



Outcomes: The preliminary findings reported in the study showed that 19% of the elderly have and can use a computer and much more as 63 % can use their mobile phone. The Internet is used from time to time by 22% of the elderly. Approximately 41% of the elderly supported e-Health services and were willing to use it when offered an opportunity to do so in the near future. A variable level of commitment in e-Health services was observed and the types of services that have been declared most were receiving from the doctor simple medical recommendations on a mobile phone or a computer, receiving the results of tests by e-mail as well as Short Message Service (SMS) reminders for scheduled visits or prescribed medications and requesting appointments on-line. More advanced forms of interactions as teleconsultation with the doctor and telemonitoring of important health parameters had the lowest level of acceptance. Among the more important factors associated with interest in use of eHealth services were residence in urban areas, higher education, good mental status as well as computer, Internet and mobile phone use.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: work in progress

- Increasing interest in e-Health solutions among elderly in the region
- Growing number of trainings/educational sessions for older people about the use of Internet and other ICT tools for health related purposes
- High satisfaction/better quality of life of elderly attending the educational meetings

Resources available : Funding for the study was provided by the Wroclaw Medical University.

3. Innovation element

- Incorporates incentives for change to stakeholders
- Has a multidisciplinary approach
- Adds to the existing large body of evidence
- Assess the acceptance and use of ICT tools among elderly population and show them new ways of health related behaviours

4. Further information

5. Contact Details

Organisation name: Department of Family Medicine Wroclaw Medical University - The Wroclaw Medical University is committed to MISTRAL – Multimodal Interventions Supported by information and communications Technologies building Resilience for frAilTy prevention

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Dependent patients - Geriatric Clinic Division with Rehabilitation focus (in partnership including at University level with the Physical neural-muscular and Rehabilitation Medicine Clinic Division of the Teaching Emergency Hospital “Bagdasar-Arseni” in Bucharest

1. Location

Country: Romania

Region: Bucharest and environment

Total population: 2.500.000

2. Core activities

Target population: Dependent Patients - older people from community with frailty, cognitive or functional decline

Target population: 8000

Main topic: frailty in general

Description: Our clinic has 80 beds of geriatric rehabilitation, addressing patients with post-acute cardio-vascular, osteoarticular, neurological pathology, or chronic diseases in various stages of organ dysfunctions; is made cognitive geriatric assessment; it shall prepare a rehabilitation program consisting treatment and care specific; our geriatric team work on the basis of guidelines for good practice in order to increase the quality of life of elderly patients. During that hospitalization -about 14 days is done a program of medical education for elderly and their families in the management of health problems, of daily activity, to preserve the autonomy and prevent falls, to maintain a healthy lifestyle. Patient's admission is based on the transfer of acute care hospitals or family doctors. Patients have a directed discharge which is the responsibility of social worker who checks before the social security of the patient and take action in this regard. Objectives, and continuously evaluated annually are:

1. decrease the number of readmissions in acute hospitals
2. decrease in the number of patients with femoral neck fracture
3. effective home care
4. quality of life of elderly patients
5. social insertion of patients with cognitive deficits

Deliverables:

- Computer medical database records of patients admitted to hospital
- Computer database of patients on diseases
- Cognitive impairment screening methods and diagnostic
- Training program for careers



Outcomes:

- Detection of 22% patients with cognitive impairment screening methods, who initiated treatment with favorable developments 6 months
- Increasing addressability in geriatrics Rehabilitation clinic with many 600 patients / year
- Has an impact on health status and quality of life for your local population
- More than 10% of the local target population receives the innovative practice

Evidence of the impact:

Satisfaction rating of patients hospitalized in the clinic. Results = 92% satisfaction.

Geriatric rehabilitation clinic efficiency rating:

- % of Inpatient complications = 12% / year
- % of readmissions clinic in the next 30 days = 2%
- % of patients with high-cost clinic = 10%

Resources available:

On-going activities are financially supported by health government and local authorities.

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care including skilled home care
- Study cases on pathology and integrated/ comprehensive care
- Has relative advantages or brings benefits over existing practices

4. Further information

A full range of supporting documentation and materials which may be of interest to other partners can be found in the website: www.spitalulstluca.ro

5. Contact Details

Organisation name: Geriatric Clinic Division of The Hospital for Chronic Diseases St.Luca

Contact person: Ana Capisizu

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Integral Approach to the Transition between Frailty and Dependency in Older Adults: patterns of occurrence, identification tools and models of care (INTAFRADE)

1. Location

Country: Spain

Region: Aragon

Total population: 1,3 million inhabitants

2. Description

Target population: High risk independent people - older individuals undergoing health transition from multimorbidity, frailty, disability, to the occurrence of adverse events, such as dependency, institutionalization or death.

Target population: frail older individuals attended at the Socio-Medical Geriatric Assessment Unit of the Miguel Servet University Hospital of Aragon (\approx 1,500 patients per year)

Main topic: Frailty in general

Description: This recently launched project is conceived as a collaborative process between four research groups pertaining to different health systems in Spain and France (EpiChron Research Group from Aragon, Frailty Day Hospital in Toulouse, Gipuzkoa Primary Care Research Unit in the Basque Country and the Geriatric Research Group from Navarra). All along this project, three different main issues regarding the transition between frailty to dependence are being tackled: a) the description of patterns of occurrence and interaction between frailty, disability, dependence and multimorbidity, b) the identification of a strategy of early identification of frail individuals in primary care settings, based on functional capacity evaluation tests, and c) the assessment of a model of care based on the Comprehensive Geriatric Assessment (CGA).

The EpiChron Research Group from Aragon leads the research line focused on evaluating the impact of the CGA in frail patients admitted to hospital, in terms of postponing the onset of dependency and avoiding the occurrence of associated adverse events, and factors that determine the effectiveness of the intervention.

The collaboration between the four partners participating in this project is essential since it will ensure, on the one hand, the establishment of a multidisciplinary team of professionals with complementary expertise and perspectives from different levels of care (i.e. primary care, tertiary hospital, outpatient clinic, nursing, epidemiology and public health) in order to comprehensively address the before-mentioned research questions around geriatric patient care.

Deliverables: Data collected in this project will enable building an **integrated longitudinal database** that will help to understand the factors related to the natural progression from frailty



to dependence. It will also provide validated **screening tools** for early and adequate identification in primary care. Last, it will offer sufficient evidence for the establishment of socio-medical models of **integrated healthcare**, as is the CGA, which best respond to the needs of frail older individuals.

Outcomes: The coordinated analysis of the gathered data will lead to the design of specific protocols for early identification of frail subjects in primary care before referring them to a geriatric unit where a comprehensive geriatric assessment could be implemented. The economic evaluation of the costs associated with frailty will complement the comprehensive analysis of this challenging phenomenon.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health social care system of your local population
- More than 10% of the local target population receives the innovative practice

Evidence of the impact: We expect to gather high quality evidence regarding the before-mentioned research areas during the period 2014-2016.

Resources available: The present project has been recently submitted to the Biomedical and Healthcare Research Funds of the Carlos III Health Institute (Spanish Ministry of Economy and Competitiveness), and the REF BIO Pyrenees Biomedical Network's Call for Collaborative Projects (European Regional Development Fund).

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: Bio-Med Aragon/ EpiChron Research Group on Chronic Diseases

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Coordinated Use of Municipal health resources by Primary care team. The CUMPcare programme

1. Location

Country: Spain

Region: Madrid

Total population: 19.000

2. Description

Target population: Older people in general population - People \geq 70 years old from Villanueva de la Cañada

Target population: 1000 PERSONS

Main topic: Frailty in general

Description: Villanueva de la Cañada is a WHO Healthy City and is part of the Spanish healthy cities Network. It has different municipal health promotion resources where the citizen pays a fraction. Some of these resources are specific to the elderly (as memory workshop programmes, hiking, painting, etc. and carried out by the council's Senior), but others like Sport or Culture are for all ages where seniors can participate if they wish. In a previous cross-sectional survey (The Villanueva Older Health Study), it was observed that the use of the various municipal health resources was arbitrary. These resources have been used for the healthy people, instead of the patient with risk functional decline. The Primary Care Team (doctor or nurse) couldn't make prescription of these resources, they only could encourage their patients to do it.

Through the Old People Health Observatory, it has developed the CUMPcare programme. The protocol to follow is:

- The primary care team identifies the population at risk defined as those aged 70 years and with one or more of these factors: cardiovascular risk, falls, frailty (defined as up and go 10-20 seconds, or gait speed $> 0,6$ m/s), or sedentary habits, living alone, with depressive disorder and/or cognitively impaired.
- With the results, the primary care team will prescribe a program, filling out a prescription indicating the program recommended.
- With this prescription, the patient will go to the "Older people Health Observatory" and will be included in the municipality program.

Through the Old People Health Observatory, it has developed **the project** aimed in facilitate the organization of health and care systems to deliver a comprehensive, coordinated and integrated approach to secondary and tertiary prevention strategies for functional decline.



Deliverables:

- web-platafom with information on prevention functional decline by the THE OLD PEOPLE HEALTH OBSERVATORY.

- The Older People Health Observatory holds regular meetings with the Primary Care Team and the technicians of the different municipal councils with the aim of evaluate the program mainly on what Primary Care considers to modify.

- Differents programs from The Older People Heath Observatory, to prevent several geriatric syndromes.

Outcomes:

In the people aged ≥ 70 years old of Villanueva de la Cañada:

- Improved use of promotional health municipality programs
- Improved function of people aged 70 years old or more
- Reduce visits to primary care and acute hospital

Has an impact on health status and quality of life for your local population

Evidence of the impact:

The program will begin in September and every 3 months to collect the data:

- Functional improvement.
- Reduced use of resources (primary care and hospital visits).

Resources available: All found are supported by the Villanueva municipal Health council.

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care
- The CUMPcare program is about services integration (municipally health promotion resources and primary care)

4. Further information

5. Contact Details

Organisation name: THE OLD PEOPLE HEALTH OBSERVATORY. Ayuntamiento de Villanueva de la Cañada. SPAIN

Contact person: JAVIER GOMEZ PAVON and JOSE MANUEL AVILA TORRES

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Multifactorial interventions aimed to modify frailty progression in elderly population

1. Location

Country: Spain

Region: Catalonia

Total population: 5,6 million

2. Description

Target population (group): Older people in the community in risk of frailty, functional decline or cognitive decline.

Target population (figure): 987.000 inhabitants 65 years or older

Main topic: Frailty in general

Description: Frailty is a common geriatric syndrome that places older adults at high risk for major adverse health outcomes, including disability, falls, institutionalization, hospitalization, and mortality. Frailty includes and interacts with many prevalent geriatric conditions and therefore must be approached in a multifactorial way.

Several research projects involving multifactorial interventions to modify frailty progression are being conducted.

- a. **Effectiveness of a multifactorial intervention to modify frailty parameters in elderly population.** Aims to evaluate the effectiveness of a multifactorial intervention program based on physical activity groups and nutrition advice, memory workshops and review of medication, to modify frailty parameters, muscle strength and physical and cognitive performance in people 65 years or older with a positive screening for frailty. Secondly, aims to assess yearly improvements in quality of life, nutritional risk, the reduction in falls incidence, disability, hospital readmissions, home-care inclusion or institutionalization. Evidence of the impact will be provided by 2014.
- b. **Multifactorial intervention and targeted assessment to reduce falls among the oldest old living in the community. A randomized controlled trial.** Aims to determine the effectiveness of an individualized multifactorial intervention to reduce falls and malnutrition in community-dwelling persons aged 85 years old. A specifically-designed algorithm to detect risk factors for falls and malnutrition is used to provide recommendations and specific, standardized interventions for risk reduction, along with 3 In-home visits made annually by a trained nurse or physician complemented by two biannual analytical studies. Participants are followed-up for hospitalizations, falls and weight using a monthly calendar. Two face-to-face interventions are carried out and



telephone calls are made to reinforce adherence. Evidence of the impact will be provided in 2013.

- c. **Effectiveness of an intervention using the Nintendo Wii to improve balance and reduce falls in older people in Primary Care.** Aims to evaluate the effectiveness of a low cost console like the Wii to improve balance in the elderly, with a personalized treatment that works the balance, giving positive feedback and reducing the fear of falling and increasing the sense of efficacy. Previously, they developed a pilot study that found that older people accept new technologies as a means of treatment. Evidence of the impact will be provided by 2014.
- d. **Effectiveness of a multifactorial community intervention for the prevention of falls in the elderly.** Evaluated the effectiveness of Community Activities involving health care professionals and other community figures, such as: Drawing competition for schools "*Caring for the elderly*", Interventions in the media (radio, local magazines), Editing leaflets and posters. Informative conferences in institutions and centers for the elderly, Exercise programs for seniors who had fallen, Popular walks organized annually, Publication and dissemination of a specific video, Collaboration with local councils to reduce barriers, Regular contacts with community representatives (council of elders).

Deliverables : Guideline on frailty detection and effective interventions for the professionals of the primary health care centers.

Training and education programmes on physical exercise, nutrition and risk of falls for elderly people.

Specifically-designed algorithm to detect risk factors for falls and malnutrition to provide recommendations and specific, standardized interventions for risk reduction.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has an impact on the sustainability and efficiency of the health or social care system of our local population.

Physical performance measures, muscle strength, cognitive performance, health related quality of life, nutritional risk reduction, falls incidence reduction, hospital readmissions, long term disability reduction, institutionalization.

The programmes (a,b,c) are still developing, no evidence results can be provided yet. However, satisfaction with the interventions conducted is high in more than 90% of the participants.

In the community intervention for the prevention of falls (d): A multifactorial community intervention programme in people ≥ 70 years did not reduce the number of falls at 2 years, but a tendency to reduce their consequences was observed, and could be integrated within routine care activities (see references below).

Resources available:



Supported by funding from health government and local authorities.

3. Innovation element

- Has a multidisciplinary approach.
- Has a vision on integrated care.
- Adds to the existing large body of evidence.
- Has relative advantages or brings benefits over existing practices.

4. Further information

Pujiula Blanch M; APOC ABS Salt. Effectiveness of a multifactorial intervention to prevent falls among elderly people in a community. Aten Primaria. 2001 Oct 15;28(6):431-6. PMID: 11602125;

Pujiula Blanch M; APOC ABS Salt .Final results of a multifactorial and community intervention study for the prevention of falls in the elderly. Aten Primaria. 2010 Apr;42(4):211-7. PMID: 19819593

5. Contact details

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Prognostic factors of frailty in different elderly community-dwelling cohorts

1. Location

Country: Spain

Region: Catalonia

Total population: 5,6 million

2. Description

Target population (group): High risk independent people (Septuagenarian, Octogenarian and Nonagenarian people in the community in risk of frailty, functional decline or cognitive decline).

Target population (figure): 710.000 inhabitants 70 years or older, 308.000 inhabitants 80 years or older

Main topic: Frailty in general

Description: Community-dwelling elderly cohorts are needed to ascertain prognostic factors of frailty, as well as cognitive and functional decline. Our Primary Health Care organization provides services to over 700,000 elderly patients. Several cohorts are being followed (70 years or older, 85 years or older, 90 years or older), and include comprehensive geriatric assessments (CGA), health and social services utilization and health related quality of life.

The aim is to evaluate the health status evolution (frailty parameters, functional and cognitive capacity, vision and hearing, mobility, continence, nutrition, affect, home environment, social support) of selected and non selected elderly populations which include community dwellers and non institutionalized patients.

Specific objectives are:

- To analyze the variables that contribute to functional and cognitive impairment and to morbidity and mortality; to identify subgroups of patients that would benefit from individualized geriatric interventions (immunization campaigns, anticoagulant therapy, ulcer prevention, nutritional risk, orthostatic hypotension, risk of falls and caregivers support groups) aimed at delaying loss of autonomy.
- To analyze the association between malnutrition, muscle strength and frailty.
- To identify variables that are associated with deterioration in the quality of life, functional capacity, the cognitive status, inclusion in home care program, hospitalization, institutionalization and death.

Deliverables :

Large data-bases for the follow-up of elderly cohorts are already available.



List of prognostic factors of frailty and disability to provide evidence for screening tools and interventions. To be delivered in 2013.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for your local population.

Physical performance measures (timed get up & go, SPPB), muscle strength (handgrip dynamometer), functional capacity (Barthel Index, Lawton Index), cognitive performance (Spanish version of the Mini-Mental State Examination (MEC)), nutritional risk (Mini-Nutritional Assessment), falls incidence, hospital readmissions, disability, home-care programmes, institucionalization, mortality, health related quality of life (EuroQol; SF-12)

In the 85y+ cohort, at the beginning of the study 65.5% patients had an adequate nutritional status, 34% were at risk of malnutrition and 28 % had at least one fall during the previous year. Relevant published papers are detailed in further information section.

In the 70y+ cohort, 8.4% rated their health as poor at baseline, 33.1% reported vision problems, hearing problems 30.8%, 53.2% incontinence, 12.2% hospital admissions, 25.4 % of falls, 17.7% instrumental ADL impairment, 19.3% poor mobility, 5.3% cognitive impairment (56.3% mild impairment), 46.3% depression, 1.2% risk of malnutrition, 53% polypharmacy, 16% some comorbidity, 6.7% social problems and 28.7% architectural barriers.

Resources available:

Supported by funding from health government and local authorities.

3. Innovation element

- Develops "living labs".
- Has a multidisciplinary approach.
- Adds to the existing large body of evidence by knowledge generation.
- Has relative advantages or brings benefits over existing practices.

4. Further information

With the oldest old database more than 30 research projects have been carried out. The best evidence of the impact of such database are the papers published in international scientific journals. Some of them are:

1. Formiga F, Ferrer A, Albuquerque J, Fernández-Quevedo M, Royo C, Pujol R and Octabaix Study Group. The Challenge of Maintaining Successful Aging at 87 Years Old: The Octabaix Study Two-Year Follow-Up. [Article Original]. *Rejuvenation Res.* 2012;15(6):584-589. PMID:22950426.
2. Padrós G, Ferrer A, Formiga F, Almeda J, March MA, Pujol R. Dyslipidemia and ischemic cardiopathy associated with duration of diabetes mellitus in the oldest old: the OCTABAIX study. [Carta al director]. *J Am Geriatr Soc.* 2012;60(8):1594-1596. PMID:22889033.



3. Formiga F, Ferrer A, Cruzado JM, Padros G, Fanlo M, Roson B, Pujol R. Geriatric assessment and chronic kidney disease in the oldest old: the Octabaix study. *Eur J Intern Med.* 2012 Sep;23(6):534-8. doi:10.1016/j.ejim.2012.03.009. Epub 2012 Mar 28. PubMed PMID: 22863431.
4. Formiga F, Ferrer A, Sanz H, Marengoni A, Albuquerque J, Pujol R; on behalf of the Octabaix study members. [Patterns of comorbidity and multimorbidity in the oldest old: The Octabaix study.](#) *Eur J Intern Med.* 2012 Nov 24. PMID:23186603.jim.2012.03.009. Epub 2012 Mar 28. PubMed PMID: 22863431.
5. Ferrer A, Formiga F, Plana O, Tobella M, Gil A, Pujol R, Octabaix Study Group. Risk of falls in 85-year-olds is associated with functional and cognitive status: The Octabaix study. [Article original]. *Arch Gerontol Geriatr.* 2012;54(2):352-356. PMID:21722976.
6. Formiga F, Ferrer A, Megido MJ, Chivite D, Badia T, Pujol R. Low co-morbidity, low levels of malnutrition, and low risk of falls in a community-dwelling sample of 85-year-olds are associated with successful aging: the Octabaix study. [Article original]. *Rejuvenation Res.* 2011;14(3):309-314. PMID:21548756.
7. Formiga F, Ferrer A, Molinero AR, Fraga A, Cuerpo S, Pujol R. Vital status after five-year follow-up of nonagenarians with functional and/or cognitive impairment at baseline: the NonaSantfeliu study. [Article original]. *J Nutr Health Aging.* 2011;15(2):121. PMID:21365165.
8. Formiga F, Ferrer A, Almeda J, San Jose A, Gil A, Pujol R. Utility of geriatric assessment tools to identify 85-years old subjects with vitamin D deficiency. [Article original]. *J Nutr Health Aging.* 2011;15(2):110-114. PMID:21365163

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Validation of a predictive tool for detecting frailty in primary health care

1. Location

Country: Spain

Region: Catalonia

Total population: 5,6 million

2. Description

Target population (group): Older people in general population (Older people in the community in risk of frailty).

Target population (figure): 710.000 inhabitants 70 years or older

Main topic: Frailty in general

Description: Although the definition of frailty is clearly stated, the condition presents a multifaceted aspect. This can represent a problem when screening for and or measuring frailty, as some aspects could not be considered.

This project aims to validate a multidimensional screening tool for frailty, including a single item to assess each of the following aspects: vision, hearing, nutrition, mobility, comorbidity, polypharmacy, urinary incontinence, physical disability, memory, mood, social risk, falls, and hospital admissions. It also includes a comprehensive geriatric assessment (CGA) at baseline, used as a gold standard, along with a seven year follow-up with a complete evaluation of a cohort conducted to validate longitudinally the screening tool variables that are associated with a deterioration in the quality of life, functional capacity, the cognitive status, inclusion in home care program, institutionalization and death after the seven-year follow-up.

The final configuration of the tool is yet being analyzed. Promoting the incorporation to the electronic health records of patients those evidence proved frailty assessment tests will improve the care of the elderly.

Deliverables: Screening tool for frailty and risk of disability, dependency or institutionalization. To be delivered by the end of 2013.

Outcomes and evidence of the impact:

Has an impact on health status and quality of life for our local population.

Has an impact on the sustainability and efficiency of the health or social care system of our local population.

Validation parameters of the screening tool: physical performance measures, functional capacity, cognitive performance, affective and social evaluation, health related quality of life, nutritional risk, falls incidence reduction, hospital readmissions, long term disability reduction, institutionalization, mortality.



Screening tool takes 8 minutes. 55% of the study population had three or more dimensions affected. Cross-sectional validation showed the 3 dimensions cut-point to be the most adequate. Overall rate of events at 5 years is 32.2%. Events were mainly explained by functional mobility and polypharmacy. Having one of the dimensions affected increases the risk of losing independence or death 2.35 times in 5 years. For each dimension affected the risk of events increases by 30%. These are provisional results; the final configuration of the tool is yet being analyzed with the already finished complete follow-up data collection.

Resources available:

Supported by funding from health government and local authorities.

3. Innovation element

- Has a multidisciplinary approach.
- Has a vision on integrated care.
- Adds to the existing large body of evidence.
- Has relative advantages or brings benefits over existing practices.

4. Further information

Cross-sectional Validity values of the test of frailty

Cutpoint	Sensitivity	Specificity	% Correctly Classified	LR+	LR-
(>= 0)	100.00%	0.00%	56.58%	1.0000	
(>= 1)	97.95%	9.00%	59.33%	1.0764	0.2273
(>= 2)	90.28%	36.67%	67.00%	1.4255	0.2651
(>= 3)	72.89%	58.00%	66.43%	1.7355	0.4674
(>= 4)	50.13%	77.67%	62.08%	2.2445	0.6421
(>= 5)	32.23%	87.00%	56.01%	2.4789	0.7790
(>= 6)	19.69%	93.67%	51.81%	3.1094	0.8574
(>= 7)	10.74%	96.00%	47.76%	2.6854	0.9298
(>= 8)	4.09%	97.33%	44.57%	1.5345	0.9854
(>= 9)	0.77%	99.33%	43.56%	1.1509	0.9990
(> 9)	0.00%	100.00%	43.42%		1.0000

LR=likelihood ratio

5. Contact details

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Security in elderly patients with multimorbidity and polypharmacy

1. Location

Country: Spain

Region: Catalonia

Total population: 5,6 million inhabitants

2. Description

Target population: High risk independent people - Elderly patients with multimorbidity and polypharmacy

Target population: 350,000 inhabitants

Main topic: Frailty in general

Description: The aging of population increases multimorbidity and polypharmacy, leading to poor health and safety outcomes. This gives rise to the need to design interventions that allow better medication management.

This project aims to improve security in patients aged 65 years and older with multimorbidity and polypharmacy, attending Primary Health Care Centers by preventing problems with medication. A complex intervention will be designed following Medical Research Council recommendations. 1) Phase 0, Preclinical/Theoretical Analysis, will review and synthesize evidence regarding interventions to improve medication safety in people 65+ with multimorbidity. 2) Phase 1, Modeling and operationalization, will determine the components of the intervention. Stakeholders involved in medication safety will be invited to participate in identifying barriers and facilitators in order to design a flexible and dynamic intervention tailored to the participants and the context. An algorithm based on clinical review and the conclusions of quantitative and qualitative analysis will allow implementation of a de-prescription tool. This web application allows shared decision-making by general practitioners and patients. 3) Phase 2, Pilot test, will evaluate the feasibility and acceptability of the intervention. A randomized controlled trial will be then designed to test the effectiveness in everyday practice.

Expected outcome: 1) Improved prescription security through reduced duplication, interaction, contraindicated medications, and therapeutic cascade in aging patients; 2) Increased quality of life; 3) Improved control of diseases or risk factors in patients with multimorbidity; 4) Decreased number of inappropriate drug prescriptions; and 5) Decrease in costs attributable to the intervention.



Multimorbidity is frequent in patients older than 65 years, affecting their quality of life. Its management goes beyond visits to the health clinic, constituting a social problem that requires involvement and participation by patients, health professionals, health care institutions, government agencies and patient associations.

The patient's shared responsibility for a treatment plan is a fundamental requirement. Better understanding of a health problem and the drugs prescribed can also lead to better awareness of the associated risks and benefits, and can favour healthier lifestyle choices, in areas such as diet and exercise. This in turn can help to reduce the treatment arsenal for each patient, while increasing adherence to therapy. Health professionals must preserve the *primum non nocere* principle, but when multiple medications are prescribed and the individual enters into polypharmacy there is a potential risk of unsafe situations that can cause the patient harm.

The availability of an informatics tool that allows health professionals to optimize medication, using a systematic process to evaluate the treatment plan and shared decision-making between the doctor and patient, could offer invaluable assistance in achieving prescription safety.

The active participation of patients associations is essential in designing the intervention and developing the software application. It will enable the maximum incorporation of patient perceptions, interests and needs, frequently distant from those of their health professionals. One of the key project partners, Federation of Senior Citizen of Catalonia (FATEC) is a well-recognized patients' association that will strengthen the social, cultural and political aspects of the project, due to its great experience in the field.

Deliverables: We develop an informatics support tool for health professionals that will be transferred to other organisations of primary care. The software tool available in web format application facilitates healthcare professionals optimize prescription with a focus on providing better information at the patient about the individual treatment plan and increase their ability to make decisions and share responsibility with their doctor and treatment plan (Patient Decision-Making Tools). This support toll could be interesting for other regions adapting the software application to the idiosyncrasies of countries.

Outcomes: The implementation of a complex intervention programme for people 65 and older with multimorbidity and polypharmacy attending Primary Health Care Centres (PHCC) that improve safety by preventing problems with medication is expected to obtain the following outcomes:

1. Increase overall safety for the patient with polypharmacy. In the IG participants, we anticipate:
 - a. Avoidance of duplicate medications
 - b. Decrease in medications contraindicated by a patient's age or disease profile
 - c. Prevention of adverse reactions or interactions
 - d. Avoidance of a prescribing cascade in the treatment plan



2. Increase patient quality of life. Medication reconciliation, prevention of possible secondary effects and better awareness of their prescriptions can contribute to a better quality of life for patients with polypharmacy.

3. Improve the control of multimorbidity or of risk factors presented by patients with polypharmacy.

4. Improve the appropriateness of drug treatments. An individualized approach will allow adjustment of the patient's treatment plan to variables such as age, functionality, life expectancy, and clinical conditions, as well as particular aspects of the drugs prescribed (e.g., doses, guidelines, duration of treatment).

5. Strengthen adherence to treatment. Key points in treatment adherence include health literacy, especially concerning aspects related to treatments; empowerment in medication management; patient participation in shared decision-making concerning treatments; and agreement or acceptance concerning the treatment plan.

Patient expectations concerning a prescription will facilitate shared responsibility for health and increased participation in individualized treatment planning.

6. Decrease economic costs of pharmacy in national health systems and at the personal level in European countries that do not subsidize medications. This outcome will contribute to the sustainability of publicly funded health systems.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: No results provided yet.

Resources available: The initiative has not received funding

3. Innovation element

- Has a cost analysis approach
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

5. Further information

1) Patterson SM, Hughes C, Kerse N, Cardwell CR, Bradley MC. Interventions to improve the appropriate use of polypharmacy for older people. Cochrane Database Syst Rev. 2012 May 16;5:CD008165. doi: 10.1002/14651858.CD008165.pub2.

2).Amado E. Elementos básicos del abordaje de la medicación en el paciente crónico: Información al paciente, conciliación, revisión y adherencia. Sociedad Española de Farmacéuticos de Atención Primaria (SEFAP). Madrid 2012.

3) Scott IA, Gray LC, Martin JH, Mitchell CA. Minimizing inappropriate medications in older populations: a 10-step conceptual framework. Am J Medicine. 2012;125(6): 529-37.



4) Schuling J, Gebben H, Veehof LJ, Haaijer-Ruskamp FM. Deprescribing medication in very elderly patients with multimorbidity: the view of Dutch GPs. A qualitative study. BMC Fam Pract. 2012

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Information System for the Enhancement of Research in Primary Care (SIDIAP database)

1. Location

Country: Spain

Region: Catalonia

Total population: 5,6 million

2. Description

Target population (group): Older people in general population (Elderly patients attended by the Catalan Health Institute)

Target population (figure): 987.000 inhabitants 65 years or older

Main topic: Frailty in general

Description: Catalonia, a Mediterranean region in northeastern Spain, has a public health system in which every citizen is registered with a general practitioner and a nurse in a publicly funded primary care centre. At each centre, doctors and nurses work as a team caring for the total population of a determined geographic area. The Catalan Institute of Health (ICS) is the main health care provider, with more than 274 Primary Care Centres and 3,400 GPs. All their centres use the same software, called eCAP, to record their patients' clinical information.

The SIDIAP (Information System for the Enhancement of Research in Primary Care) database was created in 2010 under the auspices of the Primary Care Research Institute Jordi Gol (IDIAP JordiGol) and the ICS with the aim to promote the development of research based on clinical data from computerized medical records and other complementary sources of data.

The SIDIAP database stores information from 274 Primary Care Centres with a total population of 5.8 million patients (80% of the Catalan population). SIDIAP contains anonymous longitudinal patient information since 2006 including the following information:

- Socio-demographic characteristics (date of birth, gender, country of origin, PHC centre)
- Clinical data: visits, life-styles, routine measurements blood pressure, BMI, spirometry, Framingham score, etc), morbidity (ICD-10), vaccines, specialist referrals, laboratory tests, prescriptions, sick leaves, etc
- Drugs dispensed in community pharmacies (ATC codes, dates of dispensing, DDD, etc)
- Hospital admissions
- Deaths: date and cause of death
- Other external databases (The Catalan Registry of Arthroplasties, Cancer Registries,...)

Deliverables : Large data-bases highly representative (see below).

Having a population database allows a better knowledge of the characteristics and use of services of the population. In this particular case of the elderly population different issues can be studied: diseases,



multimorbidity, adequacy of prescriptions, adherence to medication and adherence to clinical guidelines, etc.

In all countries there are different electronic databases that can be useful for research projects if they are adequately managed. There are many sources of bias that have to be controlled or minimized. The possibility to share experiences on how this process has been made in different European successful databases is crucial. The experience of SIDIAP may be very helpful to other countries that want to develop such kind of databases and studies.

Outcomes and evidence of the impact: The key innovative elements of the SIDIAP database are:

- To offer different sources of information 100% linked to a unique database.
- A high representativeness with a high population coverage (80% of the total population of Catalonia) with longitudinal data since 2006
- The development of important processes of quality control, validation of the data, and data analysis.
- To have different research groups at the IDIAP Jordi Gol and ICS that develop different research projects using the SIDIAP data.
- SIDIAP is member of a network of European databases called EU-ADR-Alliance. Therefore, we can offer the use of different databases from Italy, Holland, UK, Denmark and Spain.

With this database more than 50 research projects have been carried out. The best evidence of the impact of such database are papers published in international scientific journals. Some of them are:

- Bolívar B, Fina F, Morros R, Garcia MD, Hermosilla E, Ramos R, Rosell M, Rodríguez J, Medina M, Calero S, Prieto D. SIDIAP database: electronic clinical records in Primary Care as a source of information for epidemiologic research. [Article original]. *Med Clin (Barc)*. 2012 May 19;138(14):617-21.
- García-Gil Mdel M, Hermosilla E, Prieto-Alhambra D, Fina F, Rosell M, Ramos R, Rodriguez J, Williams T, Van Staa T, Bolívar B. Construction and validation of a scoring system for the selection of high-quality data in a Spanish population primary care database (SIDIAP). *Qual Prim Care*. 2012; 20(2):135-45.
- Pagès-Castellà A, Carbonell-Abella C, Fina Avilés F, Alzamora M, Baena-DíezJM, Martínez Laguna D, Nogués X, Díez-Pérez A, Prieto-Alhambra D. Burden of osteoporotic fractures in primary health care in Catalonia (Spain): a population-based study. *BMC Musculoskelet Disord*. 2012 May 28;13(1):79.
- Prieto-Alhambra D, Avilés FF, Judge A, Van Staa T, Nogués X, ArdenNK, Díez-Pérez A, Cooper C, JavaidMK. Burden of pelvis fracture: a population-based study of incidence, hospitalisation and mortality. *Osteoporos Int*. 2012 Feb 4. [Epubahead of print] PubMedPMID: 22310957
- Prieto-Alhambra D, Premaor MO, Fina Avilés F, Hermosilla E, Martinez-Laguna D, Carbonell-Abella C, Nogués X, Compston JE, Díez-Pérez A. The association between fracture and obesity is site-dependent: a population-based study in postmenopausal women. *J Bone Miner Res*. 2012 Feb;27(2):294-300.
- Ramos R, Balló E, Marrugat J, Elosua R, Sala J, Grau M, Vila J, Bolívar B, García-Gil M, Martí R, Fina F, Hermosilla E, Rosell M, Muñoz MA, Prieto-Alhambra D, Quesada M. Validity for use in research on vascular diseases of the SIDIAP (Information System for the Development of Research in Primary Care): the EMMA study. *Rev Esp Cardiol*. 2012 Jan;65(1):29-37. Epub 2011 Oct 27.



Resources available :

- The initiative has received funding from the 7th Framework Programme for Research and Innovation.
- The initiative has received funding from some European companies that request the development of different studies with SIDIAP.

3. Innovation element

- Uses new methodology.
- Adds to the existing large body of evidence.
- Has relative advantages or brings benefits over existing practices.
- More than 10% of the local target population receives the innovative practice.

4. Further information

Links to web pages, documents, etc : www.sidiap.org

5. Contact details

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Frailty detection in the outpatient clinic

1. Location

Country: Spain

Region: Madrid

Total population: 1 million

2. Description

Target population (group): Older people in general population - Patients, over 75 years, who attend our outpatient clinic.

Target population (figure): 37,000

Main topic: Frailty in general

Description: Disability is difficult to reverse once it is established, thus the best way to reduce it is avoiding its development by detecting frailty, a prior reversible status. Until now, useful interventions to avoid disability are physical exercise, nutrition and the control of chronic conditions.

In our outpatient clinic, all patients are evaluated for frailty using Fried's criteria. Frail and pre-frail patients are counselled to prevent disability (about life style, exercise and nutrition and control of their comorbidity). This action is linked to the activity developed in the Day Hospital (exercise programs to increase strength and to improve balance as well as cognitive stimulation). This program was launched in 2010, and starting in 2014 will be linked with further community programs.

The objectives are:

1. Detect frail and pre-frail people to avoid disability appearance.
2. Empower older people by supporting their self-care.

Deliverables:

1. Create a database about frailty, frailty risk factors and its consequences.
2. Training courses for primary care and other specialists on frailty detection and interventions using clinical data and technical resources.
3. Develop a lab to assess with specific techniques, the functional ability in the elderly (gait, balance, cognitive impairment, body composition, etc)
4. Protocols and guidelines to assess frailty and disability.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has an impact on the expansion of market and growth.



1. Prevention of disability (and its consequences like falls and fractures) in patients who attend our outpatient clinic.
2. Evidence collection on frailty and disability.

During 2012, more than 1,500 patients were assessed for frailty: 500 were included in specific programs of physical exercise and 500 were counselled in community facilities to improve their life-style. Comorbidity and pharmacological treatment were revised in all of them.

During 2012, three training courses were performed. More than 300 physicians were included (150 of them were geriatricians). Most of them were from other counties.

From mid-2012, geriatricians, from other communities in Spain and overseas, request specific training attachments with us for specialize training.

Resources available: Currently, it is supported by regional health government and research budget. In the near future (2014) local social authorities will be involved.

3. Innovation element

- Develops "living labs"
- Uses new methodology
- Adds to the existing large body of evidence
- Brings together a big group of stakeholders

4. Further information

5. Contact details

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Assessment of the Determinants of Frailty in European Countries (ADFE)

1. Location

Country: Spain/Poland/Finland

Total population: 73.966.753 persons (population over 18 years in Finland, Poland and Spain)

2. Description

Target population : Older people in general population

Target population: 10.800 persons (obtained from national representative samples of the total population described above)

Main topic: Frailty in general

Description: Frailty, defined as a state of vulnerability that carries an increased risk of poor outcomes in older adults, is related to concepts like functional decline, disability and well-being. Our projects may add new knowledge on the determinants of frailty and provide new insights on the mechanisms for ageing, health determinants and the progression of frailty. This generation of new evidence will help governments and other organizations to take future policy decisions and plan health policies.

Our consortium is working on a holistic concept of frailty including mental components of frailty (i.e. cognitive decline) and physical components of frailty (grip strength, walking speed, self-reported functioning, etc). Therefore, a global frailty index including both dimensions will be considered.

In addition, it will be analysed how a range of variables may impact on physical and mental frailty: health status (i.e. chronic health conditions such as depression, anxiety, diabetes...), subjective well-being variables (experiential well-being and evaluative well-being) and environmental characteristics (social support, societal attitudes, built environment and health system responsiveness). This will enable to identify frailty at earlier stages and design early intervention programs to prevent the burden of frailty.

Additionally, our proposal will get reliable information on frailty across three European countries with very different cultural, economic and demographic situations (Poland, Finland and Spain). Furthermore, this coalition has evaluated representative samples of ageing population in these three countries, obtaining high quality research data (Finland n=1976, Poland n=4071, Spain n=4753).

To generate this knowledge we count with the following resources

1. COURAGE in Europe project: COURAGE in Europe objectives are *to develop and validate ICF-based tools to measure health outcomes (both physical and mental), quality of life, and well-being in an ageing population and, thereby, to find and empirically substantiate determinants of ageing across population*. Our methodology will produce, by means of these instruments, **comparable cross-sectional data on non-fatal physical and mental health outcomes, quality of life and well-being in an ageing population**.



2. FOLLOW-UP COURAGE STUDY in Spain (longitudinal study). The general aim is to analyse the relationships over time between frailty, health (both physical and mental), well-being and ageing. Our team will analyse, among others, the associations and patterns of change between cognitive decline and cognitive reserve, as well as the relationship between frailty, disability and health.

3. ROAMER [A Roadmap for Mental Health and Well-being Research in Europe]. This project aims to develop a coordinated roadmap for the promotion and integration of research on mental health and well-being in Europe, including elderly concerns.

The tools and other results are expected by 2014-2015, as pointed in the sections below.

Deliverables:

- Comprehensive tool to assess frailty in the ageing population, focusing on the general population of three European countries (Finland, Poland Spain) (public available by June 2014).
- Validation of the tool in the three countries, making possible the comparison between different cultural backgrounds. There will be an adapted tool for the longitudinal study of the Spanish cohort of the COURAGE study (2014-2015).
- Study of the determinants of frailty, focusing on the relevant dimensions of the people's life, including social networks and built environment. A comprehensive frailty index and analysis of the results across countries (expected 2014).
- Active ageing analysis across countries (expected 2014).
- Multimorbidity patterns in Spain (expected 2014)
- Database from the COURAGE study (Finland, Poland, Spain). N = 10.000 (field work finished).
- Database from the longitudinal COURAGE study in Spain . N= 5.000 (fiend in process).

Outcomes:

- A reliable tool has been designed based on the SAGE study (WHO), but also including information regarding European studies such as the SHARE or the ELSA studies. Besides, the tool has included innovative issues related to health and ageing: social networks and built environment. Validation has been performed.
- Regarding the field work, the final sample was composed of 10800 persons: 1976 from Finland, 4071 from Poland and 4753 from Spain. Analyses of the results are being performed.
- Differences across several variables have been related to active ageing in Finland, Poland and Spain.
- Suicidal behaviour in aged people from Spain is affected by various variables.
- Multimorbidity patterns are expected to happen in the elderly population.
- Has an impact on health status and quality of life for your local population
- Evidence regarding frailty, quality of life, health-status, disability and health determinants is necessary for a better understanding of health and ageing. Besides, their relationship between external determinants and risk factors are also important factors to understand a healthy ageing. Our study deals with these and other essential factors related to ageing in the general independent population.

Evidence of the impact: The COURAGE tool is based on the review of the best evidence available (SAGE study, ELSA study, SHARE study, CIDI questionnaire, etc) with the aim to obtain a reliable tool useful in the assessment of European ageing population.



- Validation of the COURAGE Built Environment self-reported questionnaire (CBE-SR), the COURAGE Built Environment Outdoor Checklist and the COURAGE Social Network Index have been performed.
- A stratified, multistage cluster sample design was used to obtain nationally representative samples.
- The methodology (design of the tool, sample, variables, statistical procedures) of the study leads to high quality data.

Resources available:

1) Financial resources:

- COURAGE IN EUROPE PROJECT. Cross-national project. (FP7- HEALTH-2007-3.2.6). Global Funding: 2.999.992€
- Health status, quality of life and well-being in the Spanish ageing population: An epidemiological study. (Spanish funding agency: Instituto de Salud Carlos III) Funding: 163.350 €
- An age-friendly city for a successful ageing. National level (Private Funding: Fundació Recercaixa). Funding: 69.115 €
- Follow-up COURAGE STUDY. National level. (Spanish funding agency: Instituto de Salud Carlos III). Funding: 164.560 €
- ROAMER study. European level study. (FP7/2007-2013/n° 282586). Funding: 1.999.138 €

2) Human resources: Teams from PSSJD, UAM, CIBERSAM, Neurological Institute C. Besta, WHO, JUMC

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence
- The generation of high quality evidence which is useful for European countries will help governments and other organizations to guide future policy decisions and plan health policies.

4. Further information

1. A full range of supporting documentation and materials which may be of interest to other partners can be found in the website:
 - <http://www.courageproject.eu/>
 - <http://www.roamer-mh.org/>
 - <http://edadconsalud.com/>
2. For more information:
 - Josep Maria Haro: jmharo@pssid.org

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



- Beatriz Olaya Guzman: beatriz.olaya@pssjd.org
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5. Contact Details

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The Age-FIT trial – (Ambulatory Geriatric – Frailty Intervention trial) – a randomised controlled trial

1. Location

Country: Sweden

Region: Norrköping, County Council of Östergötland

Total population : Municipality of Norrköping aprox. 120 000 inh.

2. Description

Target population (group): High risk independent people - >2 admissions, >2 diagnoses and >74 years of age

Target population: Frail elderly in the municipality approx. 2000 inh.

Main topic: Frailty in general

Description: The project consists of a randomised, controlled study, which aims to compare the efficacy of caring for older people with multimorbidity and three or more hospital admissions in the previous year at a geriatric ambulatory department based on Comprehensive Geriatric Assessment (CGA) versus usual care.

A total of 400 community-dwelling old people with multimorbidity who are living in the city of Norrköping (Sweden) and one of their relatives are recruited for this trial and randomized to an intervention and a control group. Participants in the intervention group receive interdisciplinary care after a CGA at an Ambulatory Geriatric Unit with easy accessibility during working hours in addition to usual care. The control group receives usual care provided by the primary care or hospital.

Outcomes: The primary outcome is number of hospitalisation, the secondary outcomes are health-related outcomes including measures of frailty, cognition, symptom burden, feeling of security, quality of life of participants and relatives and as well as costs for health and social care. Participants will be followed for two years.

Deliverables: The patients are recruited from the DataCare Warehouse of Östergötland with information about the patients age, diagnoses and hospitalisations.

The intervention is CGA which is an interdisciplinary thorough assessment to determine medical, psychological, social and functional factors important to form the basis for diagnosis in older adults, and to enhance coordinated and integrated plans for treatment and long term follow up



Outcomes: The study is on-going until the last of December this year. Preliminary results shows unexpectedly low mortality in the interventiongroup – the data from the control-group are not known yet. There will be a report based on preliminary results in November 2013 – the final results will be presented under the year of 2014.

Evidence of the impact (evaluation results): As this is a randomised controlled trial the study will give information which could change praxis of taking care of frail elderly in Sweden where CGA is not a part of ordinary care (as in most other European countries except in geriatric care)

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Resources available:

The clinical part of the study is funded by the government through a special funding (“försöksverksamheter för de mest sjuka äldre”) 2010 (1 miljon EURO). The scientific part is funded by different grants but mainly from research grants from the The Swedish government through funding for medical training and research (ALF grants).

3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- Advocates for (*specify*): Comprehensive Geriatric assessment as the “State of the Art Care” of frail elderly
- Has relative advantages or brings benefits over existing practices

4. Further information

The study is registered in Clinical Trials nr NCT01446757

5. Contact Details

Organisation name: Department of Geriatric medicine, Vrinnevi hospital of Norrköping, Sweden

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Condition Coach (CoCo)

1. Location

Country:	The Netherlands
Region:	Twente
Total population:	Twente in total counts ca 600.000 inhabitants

2. Description

Target population: Older people in general population - Older people with functional decline, at risk for functional decline and patients with a chronic disease

Target population: Around 20% of the population is aged over 65 and this will increase to 35% in 2040. Number of adults with a chronic disease living in Twente is ca 168.000

Main topic: Frailty in general

Description: CoCo is a telemedicine service used to improve the self-management of elderly and people with a chronic disease in acquiring and maintaining an active and healthy lifestyle. It is an ICT supported care and coaching platform which offers several modules that enables monitoring in the daily environment, supports elderly in training and treatment at home and when necessary offers remote supervision of healthcare professionals. Currently four modules are being provided:

1) Web based exercise manager

This module enables elderly to perform individual adjusted exercises at home, which are selected from an exercise database, at an own preferred intensity with remote supervision of a professional.

2) Physical Activity coach

This module supports elderly in deploying an active lifestyle by monitoring daily activity patterns, using 3-D activity sensors, and providing direct motivational personalized feedback on a smartphone with tips that suggest how and motivate people to acquire and maintain an active lifestyle.

3) Monitoring and coaching of health status and disease related complaints

Empowers elderly to self manage their health status and disease related complaints by means of frequent monitoring of and receiving feedback on their disabilities and/or health status. Most often questionnaires are used for monitoring.

4) Telecommunication

This module gives elderly and professionals the opportunity to contact each other by means of messages or by video-chat.

Especially the remote monitoring of performance by professionals, the feedback given to the patient on his data as well as the personalized exercise schemes that can be implemented contribute to the adherence to treatment plans and improved treatment outcomes.

Deliverables: The following are available:

- A Continuous Care and Coaching platform which is used for CoCo

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



- Treatment protocols on how to use the CoCo modules in care pathways in different settings like home rehabilitation as follow up treatment or as partial replacement of institutional care, rehabilitation in kiosk setting to enable group training
- Generic education modules and manuals for the use of CoCo for professionals and patients/ elderly
- A generic protocol with guidelines for implementation of CoCo
- Insight in technical and financial conditions which are necessary to implement CoCo in healthcare settings
- Large database of exercise videos (n>200)
- Different remotely available questionnaires for assessing health related complaints and ADL status of various patients groups: COPD, chronic pain, Parkinson, arthritis, Hip and Knee problems
- Database with data concerning daily activity patterns of healthy persons and patients
- Database with data concerning user satisfaction and compliance to the service of many different patient groups

The CoCo platform is implemented since 2011 throughout the Netherlands and used by several diagnoses groups such as chronic pulmonary diseases, rheumatic arthritis, total hip replacement, oncology, chronic pain and Parkinson disease. In 2013, the platform has been implemented in many rehabilitation centers across whole Netherlands (project Tele-Nu). Because of the high and growing amount of exercise videos and questionnaires CoCo is currently broadly applicable.

Outcomes:

- Increase the self management of older people and chronically ill patients
- Making older people aware of their health status and risks for decline in functional status
- Improve awareness for a healthy (active) lifestyle
- Improve the physical activity patterns of elderly
- Improve the physical condition of elderly
- Supporting patients and professionals to manage chronic diseases
- Improve the quality and accessibility of care
- Supporting patients to live in their own home independently as long as possible, despite disease or disability
- Empower older people for better quality of life
- Reduce medical consumptions and hospital stays

Has an impact on the sustainability and efficiency of the health or social care system of your local population

Has been adopted, tailored and validated in at least 2 other settings

Evidence of the impact: CoCo has been implemented and tested throughout many projects. The concept of webbased exercising as one of the modules is extensively tested with elderly patients with chronic pain or COPD (Jansen et al, 2011) within the European project Clear (ICT-PSP 224985). CoCo has been implemented and evaluated in 12 health care institutions involved in 4 integrated pathways in the region Twente being hip and knee arthritis, hip fractures, pulmonary diseases and cancer in the project CoCo. In the project Telerevalidatie.nl, the CoCo platform was implemented and evaluated in 3 rehabilitation centers for patients diagnosed



with asthma, COPD, Parkinson, arm-hand problems and chronic pain. The physical activity coach has been tested and evaluated in patients with chronic low back pain and patients with chronic fatigue syndrome. In 2013, the service modules will be implemented in nearly all (18/23) rehabilitation centers across the Netherlands (project Tele-Nu!).

The large scale evaluation in Clear focused on multiple outcome parameters namely experiences (satisfaction, compliance and usability) and clinical benefit (Visual Analogue Scales; pain intensity for chronic pain patients and level of dyspnoea for COPD patient). The control group followed the traditional rehabilitation program. The intervention group followed the same program but with the web-based exercise program implemented, dependent upon patient's ability to train as addition or as replacement of one visit to the rehabilitation center per week. Results show that the overall grading of the web-based exercise module was sufficient and that the ease of use was rated good (7.2 on a scale of 0-10). The results on clinical benefit show that both implementation modalities (as addition / as partial replacement) are at least as effective as traditional care.

The evaluation in Telerevalidatie.nl showed that the user satisfaction was rated positive (8.0 on a scale of 1-10) and 95% of the patients recommended the service to other patients.

The physical activity coach has been extensively evaluated on compliance and clinical outcome in chronic low back pain (CLBP) patients and patients with chronic fatigue syndrome (CFS). In the first study in CLBP patients, patients received continuous and time-related personalized feedback and were instructed to follow the activity pattern as displayed on the PDA (norm value) for two weeks. A positive trend was seen in the activity pattern of the patient that moved towards the norm value during the feedback weeks ($F=1.932$; $p=.149$). The pain intensity levels decreased significantly in the second week of feedback compared to baseline and the first week of feedback ($F=5.401$; $p=.005$). In addition to this study, a second study was performed in patients with chronic fatigue syndrome who could use the module for four consecutive weeks. Results showed that compliance was around 90% during each of the four weeks and 50% of the patients used the system for all four weeks. Those who complied for four weeks changed their physical activity level significantly into the direction of the activity goal, especially in the morning and afternoon. Currently this module is being evaluated when implemented in first line physiotherapeutic care for patients with chronic fatigue related to cancer.

Resources available: The development and testing of the various service modules has been realized with support of various fundings; Awareness (Dutch, Freeband project), the Innovation center for pain rehabilitation of Roessingh, Zon-CVS project supported by ZONMw, the European project Clear (ICT-PSP 224985), the Dutch ZIP project CoCo (CALLOP9089), ZonMw Innovatieprogramma Revalidatie (Telerevalidatie.nl). The currently running implementation project Tele-Nu project has been financed by "Het Revalidatiefonds". CoCo is also incorporated in the good practice of the Reference site "Gemeente Enschede". In November 2013 a new European project "PERSSILAA" starts where the CoCo platform will be used as starting point (FP7, 10th ICT call). As the business cases appear to be positive the modules are currently also being implemented without external funding.



3. Innovation element

- Develops "living labs"
- Uses new methodology
- Adds to the existing large body of evidence
- Brings together a big group of stakeholders

4. Further Information

5. Contact Details

Organisation name: Centre for Care Technology Research (CCTR) / Roessingh Research and Development (RRD)

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Email: m.vollenbroek@rrd.n



Delfzijl Healthy Ageing (DELFGOUD)

1. Location

Country: the Netherlands

Region: Northern region of the Netherlands

Total population: two millions

2. Description

Target population: High-risk independent people - Deprived older adults who are physically, mental and social frail due to sedentariness, lack of resilience, loneliness and depression

Target population: 20.000 older adults

Main topic: Frailty in general

Description: The DELFGOUD started as a pilot project in 2010 as part of the regional health care network in the Northern part of the Netherlands. The aim of the network, which is one of the eight network in the Netherlands, is to improve health care for older adults by creating innovative health care services, to enhance healthy active ageing in older adults related to the needs of this population and to foster the sustainability and cost effectiveness of health care services. The University Medical Centre Groningen coordinates the regional network. DELFGOUD focus on the enhancement of health related quality of life in older adults with a low economic status by the provision of a multi-factorial intervention programme in deprived neighbourhoods. The DELFGOUD programme combines four types of interventions like a physical activity intervention, a social skill training to enhance resilience and connectedness, a diet counselling program and a training program to cope with depression. DELFGOUD primarily focus on:

- The increase of life style changes in physical activity, nutrition and resilience in deprived and frail older adults;
- The enhancement of independence and health related quality of life in deprived and frail older adults;
- To increase of sustainable lifestyle changes in deprived older adults by training self-management skills of the participants of Delfgoud and support them to organize physical activity classes, cooking circles and social participation projects in their own neighbourhood;
- Facilitating the implementation of Delfgoud by regularly organizing a training for regional physical activity, nutrition and mental health counsellors based on evaluation of local projects.



Deliverables:

- An information kit about the DELFGOUD project (what's in it for you) developed by the participants for other deprived older adults
- A manual for executing a local DELFGOUD program with detailed information about the recruitment, the program, evaluation, the sustainability and budget of the intervention.
- Training programmes for physical activity, nutrition and mental health counsellors

Outcomes: The results of the pilot project show about 30% of the target population of deprived older adults were included in the project. About 80% of the participants completed the 12 months programme and continued participation in group-based activities (sustainability programme) related to physical activity, diet circles, and social participation in their own neighbourhood.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has been adopted, tailored and validated in at least 2 other settings
- More than 10% of the local target population receives the innovative practice

Evidence of the impact: Physical activity, healthy diet habits, and resilience to cope with physical, mental and social changes improved significantly.

Over 80% of the participants evaluate participation as positive, in particular feeling fitter, getting more grip in daily life and the increase of social contacts are highly appreciated.

Two municipalities applied a variant of the Delfgoud programme. Four municipalities are interested in applying the Delfgoud program.

Resources available:

Funding for the pilot project was provided by the The Netherlands Organisation for Health Research and Development (ZonMw). The municipality of Delfzijl provided the budget for a sustainability program. Local projects can be co-financed by a local health and welfare fund (WMO) and a national health enhancement fund (the Sportimpuls).

3. Innovation element

- Develops "living labs"
- Has a multidisciplinary approach
- Has a vision on integrated care
- Focus on needs of deprived older adults
- Adds to the existing large body of evidence
- Advocates for deprived frail older adults
- Has relative advantages or brings benefits over existing practices
- Promotes sustainable healthy lifestyle changes in vulnerable older adults



4. Further information

Information about the Delfgoud project can be found on [www. Delfgoud.nl](http://www.Delfgoud.nl)

5. Contact Details

Organisation name: Hanze University of Applied Sciences Groningen

Contact person: Mathieu de Greef and Annemiek Bielderma

Email:



Evaluation of care coordination in pre-frailty and frailty in a multi-ethnic community population

1. Location

Country: UK

Region: West Midlands

Total population: 5,500,000

2. Description

Target population : Older people in general population - over 65

Target population : >750,000

Main topic: Frailty in general

Description: Identification of frail or pre-frail people registered at three local medical practices in Solihull (including a range of ethnic and socio-economic populations) using a modified frailty screening tool. Subsequent piloting of Care Navigators, generic health and social care workers, to support these patients in their own home by assessing their needs, working with them to identify priorities and outcome goals and link the patients to health care, social care or voluntary sector services which will help them maintain independence, keep healthy, safe and prevent social isolation.

Deliverables:

- Data to confirm incidence of pre-frailty/frailty in the West Midlands population.
- Data to clarify ethnic and socio-economic predictors of pre-frailty/frailty in the community.
- Analysis of the success of using care coordinators to support pre-frail/frail individuals in the community.

Outcomes and evidence of the impact

- Has an impact on health status and quality of life for our local population.
- Has an impact on the sustainability and efficiency of the health or social care system of our local population.
- Access for EIP to a large, multi-ethnic population of older adults.
- Prevention of frailty in pre-frail individuals through care coordination.

Analysis is on-going. 2,000 older adults >65 are being recruited at seasonal vaccination appointments and a FRAIL questionnaire is being used to estimate frequency of pre-frailty and frailty. Analysis will provide epidemiological data regarding both incidence and severity of pre-frailty and frailty in our community cohort, with quantitative analysis of the effect of care



coordination in frail individuals on morbidity, mortality and standardised hospital risk stratification being provided.

Resources available: Funding has been provided by a local Frail Elderly Program Board in the first instance, other applications in preparation.

3. Innovation element

- Analysis of frailty in multi-ethnic population
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices
- Has an impact on health status and quality of life for our local population
- Has an impact on the sustainability and efficiency of the health or social care system of our local population

4. Further information

No.

5. Contact details

Organisation name: Aston Research Centre for Healthy Ageing & Solihull Integrated Frailty Board

Contact person: James Brown

Email: J.E.P.BROWN@aston.ac.uk



Evaluation of health and wellbeing outcomes of supported living approach in ExtraCare senior living settings

1. Location

Country: UK

Region: Midlands

Total population : 6 million

2. Description

Target population: older people in general population (people over 60 moving into supported living environments).

Target population (figure): 4,000

Main topic: Frailty in general

Prevention benefits of integrated health and social support; active engagement; Cognitive Decline; Functional decline; Frailty prevention; mental wellbeing.

Description: ExtraCare charitable foundation runs a large number of supported independent living villages and schemes in the UK and commissioned a cross disciplinary team from ARCHA to evaluate their approach in terms of health, psychological wellbeing, cognitive function, mobility, measures of independence and functional limitations, and active engagement.

The study will follow new residents in a longitudinal manner, comparing with a control group of older adults who do not move from their original homes, to determine the preventive outcomes of the approach. Input from residents in the form of a large amount of qualitative data will support the extensive amount of quantitative data collected with participants. Health and social care needs and costs, and changes in predicted costs are evaluated alongside measures of health, frailty and cognition. The study will end in February 2015.

Deliverables

- The work will produce an in depth longitudinal data set to which we will apply statistical modelling to determine measures and characteristics that predict transitions versus stability in this population.
- A predictive costing tool
- A multi-method, cross-disciplinary appraisal of the difference made by supported and integrated health and social support, accessible activities and social interaction, and opportunities for volunteering and social responsibility in a safe environment.



Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has an impact on the sustainability and efficiency of the health or social care system of our local population .
- Has an impact on the competitiveness of industry.
- Provides evidence on the wellbeing and cost effectiveness benefits of accessible health and social support including for those not at present categorised as frail or cognitively impaired.

Evidence to support or develop intervention characteristics that have an impact on healthy ageing is developing.

Evidence to support specific investment in such prevention strategies by the use of Social Return on Investment analyses.

First phase (entry to 3 month) demonstrates improvement in self-perceived health, improvement in the memory sub-component of cognitive assessment, reduction in depression and a reduction in the association between mobility assessment and depression. Recreational and social functioning components of the functional limitations scale are also showing improvement. Reduction in hospital admissions is indicated.

Qualitative analyses report improvement in feelings of safety, reduction in social isolation related to accessible company, reduction in anxiety particularly for those needing more support.

Resources available: Funding for the research is provided by ExtraCare charitable trust. The project employs a mathematician and three psychologists with qualitative, quantitative and healthcare expertise. The research team employed by the University consists of a cross disciplinary team including psychology of ageing expertise, research methods and health psychologists, a social policy expert, a medical consultant and economic strategy and modelling expertise.

3. Innovation element

- Has a cost analysis approach.
- Has a multidisciplinary approach.
- Has a vision on integrated care.
- Adds to the existing large body of evidence.
- Advocates for independence with integrated, accessible day to day health care, activity, and social support.
- Brings together a big group of stakeholders.
- Ensures the voices of stakeholders (older adults and staff) are heard and the effect of their involvement (volunteering) on their own wellbeing factored into analysis



4. Further information

<http://www1.aston.ac.uk/lhs/research/centres-facilities/archa/>

<http://www1.aston.ac.uk/lhs/research/centres-facilities/archa/extracare-project/>

5. Contact details

Organisation name: Aston Research Centre for Healthy Ageing (ARCHA); Aston University.

Contact person: Carol Holland

Email: c.holland1@aston.ac.uk



Transforming Care for Frail Older People

1. Location

Country: UK

Region: Northern Ireland

Total population: 1,8 million

2. Description

Target population (group): Older people in general population (Over 65)

Target population (figure):

Main topic: Frailty in general

Description: Transforming Your Care (TYC), the NI strategic direction includes a focus on frail older people, preventing disease progression, self-support care, personalised health care, maximising tele-health, improving prevention, early detection and risk prediction measurement and involving older people as partners of care.

The great urgency in NI is to embed personalised care into the reality of everyday care and practice for frail older people. Many older patients have multiple co-morbidities, poly-pharmacy and complex social care needs. A new integrated pharmacy model of care has now been adopted throughout NI. Work is underway for people in nursing homes and intermediate care beds to receive essential elements of this service. A technical risk prediction model has also been developed to identify older people at risk of suffering an adverse event related to their medications

At its heart, TYC places a major emphasis on the prevention of functional decline and frailty and has clearly identified the frail older person as a priority supported by clinical tools, networks and information. The specific vision is to improve the quality of nutritional care of older people, through the prevention, identification and management of malnutrition in all health and social care settings.

The objectives of TYC which link across to this across to this strand are:

1. Manage functional decline and frailty through targeted intervention in physical fitness, nutrition status, cognitive function, chronic conditions and diseases and on the social or psychological wellbeing of older people.
2. Enhance the participation and independence of older people and their carers by empowering and enabling them to remain involved in meaningful activity and in a healthy lifestyle
3. Promote systematic routine screening for pre-frailty stages in at-risk patients and older people. Create integrated pathways of care, while encouraging a systematic and integrated approach to implementing strategies for the secondary and tertiary prevention of frailty to reduce the associated physical, functional and cognitive disability.

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4. Contribute to research and methodology on frailty and active and healthy ageing and contribute to knowledge generation concerning the mechanisms for ageing and the progression of frailty.
5. Contribute to managing demand and increasing the sustainability of health and social care by reducing the personal, systemic and societal costs associated with ageing.
6. Promote cooperation, including cross-sector international collaboration, between university research groups and companies dedicated to ageing issues in order to support competitive translational research and development

The following new interventions are at different stages of development across NI to increase the level of care for frail older people in order to avert and manage crisis, ED/hospitalisations or care home admissions.

- Risk stratification for frailty.
- Comprehensive Geriatric Assessment (CGA) of care needs provided through a community based Geriatrician (providing telephone support/ one-to-one assessments/clinic visits at PC hub/home visits/opportunity to share learning with GP colleagues). 'GP Champions' from each locality could be contracted to provide sessions/week as a pilot to assist the geriatrician for more pro-active management of acutely ill frailer older people in the community.
- Medication management schemes to avert complications of inappropriate medicines, avoid hospitalisations, reduce length of stay, readmission rates and drug costs with improved medicines appropriateness and communication with primary care.
- Seamless dementia service to facilitate assessment and management of challenging behaviours within patients own home/care home and hospital setting
- Prompt provision of care via agreed clinical protocols and care pathways by the members of the Frailty team /wider service network. Clear links to ED and discharge planners to agree seamless pathway.
- Rapid access to Primary Care / Nursing Case Management Team
- Re-ablement and rehabilitation for those greatest at predictive risk

Deliverables: Risk assessment tools to predict the risk of rehospitalisation for frail older people.

- A set of evidence based interventions that prevent or postpone onset of frailty.
- Experiences from innovative models of care provision for frail older people centring on an integrated primary care model – to include reablement, rehabilitation, learning from community and voluntary
- The PRISSM project will produce e-Learning tools and modules on prevention of frailty and functional decline that are tailored for to train health professionals on caring for frailty patients.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has been adopted, tailored and validated in at least 2 other settings.
- The future aim is that the MUST score will travel between care settings enhancing ongoing nutritional care planning for older people in and between all care settings.



- The impact of these innovations will be determined following adoption and implementation of the new resources. This will be reported at a later stage.
- Resources available:
- A Regional Resource Development Steering Group was set up with representation from all health and social care trusts, education providers and professional groups.
- The electronic resources will be available for sharing once they have been approved for implementation and can be shared with colleagues across Europe.

3. Innovation element

- Has a multidisciplinary approach.
- Has a vision on integrated care.
- Brings together a big group of stakeholders.
- Has relative advantages or brings benefits over existing practices.

4. Further information

On-going partnerships: a collaboration with Malta to support their implementation of integrated care processes between acute and community care for nurses.

The purpose of this collaboration is to provide support to the EU funded project: Promotion of Integration in the planning and provision of social services (PRISSM) within local authorities through municipal staff vocational training- A Lever for Local Development”.

5. Contact details

Organisation name: Department of Health Social Services and Public Safety (DHSSPSNI)
Northern Ireland

Contact person: Marina Lupari

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Improving Care for Older People in Acute Hospitals

1. Location

Country: UK

Region: Scotland

Total population: 5,4 Million

2. Description

Target population: high risk independent people (Older people admitted to acute hospitals)

Target population: 1 Million

Main topic: Frailty in general

Description: This is a national improvement collaborative that commenced in April 2012 and is being rolled out to every acute hospital in all 14 health boards across Scotland in parallel with a programme of announced inspections of the quality of care for older people in hospital. The programme is improving identification of frailty, early access to comprehensive geriatric assessment (CGA) and delivery of interventions such as rehabilitation, nutritional support, falls prevention and actions to reduce delirium. The learning from the programme is transferrable to residential care home settings.

There are two principal aims:

- To ensure every older person who is frail receives CGA within a day of emergency admission to hospital.
- To ensure rapid assessment and effective management of delirium.

Deliverables:

- Development and use of a *'Think Frailty Triage Tool'*.
- Development of a national Delirium Pathway, launched at the European Pathways conference in Glasgow.
- Development and use of an *'Immediate Management of Delirium'* Care Bundle.
- Regular learning events, bulletins and a Community of Practice website to share case studies, Measurement Plans and change packages.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population
- More than 10% of the local target population receives the innovative practice

16 acute hospitals across Scotland have developed local improvement action plans and completed their improvement and scrutiny cycles.



95% of patients who completed questionnaires or were interviewed by the inspection teams reported the quality of care they received was good. Steps are being taken to improve the ward/hospital environment for people with a cognitive impairment.

Improved detection of frailty and delirium are leading to more rapid access to CGA in hospital and in turn are contributing to a reduction in bed day rates achieved. Eg: **Emergency bed days in hospital for people aged 75+ are down by 7% in 2 years.**

Resources available:

The programme is funded by Healthcare Improvement Scotland and is implemented in collaboration with NHS Scotland and with academic partners from Edinburgh University and University of the West of Scotland. It works closely with national advocacy groups for older people and with Alzheimer Scotland.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Brings together a big group of stakeholders
- Brings benefits over existing practices
-

4. Further information

The Community of Practice can be accessed at:

<http://www.knowledge.scot.nhs.uk/improvingcareforolderpeople.aspx>

5. Contact details

Organisation name: NHS Scotland

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Email: anne.hendry@scotland.gsi.gov.uk



Reshaping Care and Change Fund for Older People

1. Location

Country: UK

Region: Scotland

Total population: 5,4 Million

2. Description

Target population (group): Older people in general population (Older people in all settings, particularly those at risk of functional decline)

Target population: 1 Million

Main topic: Frailty in general

Description: This is a multi-agency collaboration to support the 32 local health, social care and housing Partnerships across Scotland to work together, and with the voluntary and independent sectors, to improve health and wellbeing outcomes for older people and their carers.

The local partnerships are using a Change Fund as a catalyst to rebalance care towards interventions that prevent or delay functional decline and enable older people to stay in their own homes. The Fund is released only on receipt of plans prepared and agreed between health services, Local government, voluntary and independent sectors, and with evidence of engaging older people, carers and the public. These local Change Plans are linked to longer term joint commissioning strategies and innovative redesign of support and services.

The network supports all 32 partnerships to use their Change Fund to test and spread local improvements, share learning and to use collective resources more wisely to make greater impacts on individuals, their families and local communities.

Deliverables :

- Performance Improvement Framework and Outcomes Logic Model.
- Regular themed learning events, bulletins and website to share information and case studies.
- Integrated Resource Framework that maps patient and locality level cost and activity information for health and social care.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population



- Has an impact on the sustainability and efficiency of the health or social care system of our local population
- Over 20% of the Change Fund is providing support for carers including opportunities for short breaks, information and advice, training, income maximisation and advocacy.
- 80% of people receiving support at home now benefit from telecare.
- Emergency bed days in hospital for people aged 75+ are down by 7% in 2 years from 2009-2010 using around 550 fewer hospital beds than anticipated based on previous utilisation ; equivalent to inpatient costs avoided of at least £30 million.
- Delays to discharge from hospital reduced by 62% between April 2012 and April 2013.
- Around 6,500 fewer residents in care homes than projected based on demographic trends.

Resources available:

Change Fund of £300 Million over 4 years 2011-2015- represents around 1% of the health and social care budget for over 65 in Scotland. The use of this fund is governed by local partnership boards involving all sectors and informed by activity and costs information from the Integrated Resource framework. Overall, 48% of the Change Fund to 2012-2013 was invested in preventative, anticipatory and more responsive community based services with this estimated to shift to almost 60% by 2014-2015.

3. Innovation element

- Incorporates incentives for change to stakeholders.
- Has a multidisciplinary approach.
- Adds to the existing large body of evidence.
- Brings together a big group of stakeholders.

4. Further information

Further information is available on the Joint Improvement Team website - follow this [web link](#)

5. Contact details

Organisation name: NHS Scotland

Contact person: Anne Hendry

Email: anne.hendry@scotland.gsi.gov.uk

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



Physical decline



Therapeutic educational program to prevent functional decline, falls and risk of malnutrition in frail elder subjects

1. Location

Country: France

Region: Midi-Pyrenees

Total population: 100.000

2. Description

Target population: Dependent Patient - frail elder subjects in community dwelling

Target population: 600 subjects/year

Main topic: functional decline

Description: Our program aims to prevent functional decline, falls and risk of malnutrition in frail older adults living in the community. This multimodal therapeutic educational program will start in 2014 but the team already has an experience in patient education and notably in mild Alzheimer's disease affected patients and their caregivers.

Objectives are covered through an access to Comprehensive Geriatric Assessment in a day hospital in the Toulouse University Hospital. This day hospital is dedicated to the detection and prevention of frailty in older subjects, with the participation of the primary care department. This is supported by innovative collaboration between practitioners specifically qualified in patient's education, geriatricians and family practitioners. This program is an intervention addressing the frail elder people at high risk of functional decline, falls and malnutrition.

Population: Nine hundred subjects have been admitted in this unit since January 2011, almost six hundred patients per year will be evaluated in the next years. In the meantime, this type of unit is in development in the whole country. The Fried frailty criteria are used as inclusion criteria.

Intervention: The intervention is a therapeutic educational programme. The main objectives are prevention of functional decline, falls and risk of malnutrition.

It includes two consultations and 3 group sessions, one each month. The total intervention length is 6 months. The group sessions will enrol 8 patients.

The first consultation includes the comprehensive geriatric assessment of the patient, the 'educational diagnosis', and the assessment of our judgement criteria.

We will evaluate the efficacy of the program on the Fried frailty criteria, the Short Physical Performance Battery (SPPB), the number of falls (Short Falls Efficacy scale-International: (FES-



I)), the Lawton Instrumental Activity of daily living (IADL), and the mini nutritional assessment (MNA) and quality of life (Nottigham Health Profile (NHP)).

Indeed frailty is notably associated with functional decline and falls (Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. *Frailty in elderly people. Lancet. 2013; 381(9868):752-62.*

The patient will participate to 3 collective sessions one per month about of 3 hours length:

- 1- "Knowledge of aging and frailty", "self- management of health problems and daily living activities". This collective session will include e-learning. We are now working on the tool we will develop.
- 2- "Lifestyle intervention": how to promote physical activity, cognitive stimulation and social activities? How to improve nutritional status (including access to web-based information)?
- 3- Physical exercise and falls prevention.

In each collective session, the pedagogic method and tool are validated and currently used in therapeutic educational programs. We plan to use tools such as stories or drawings that allow us to explore the subject's representations and worries. We will also use computer based activities and brainstorming, commonly used in health education.

At 6 months the patient will undergo an assessment of the response to the educational objectives and of the judgement criteria.

Monitoring will consist of a consultation at 12 months including assessment judgment criteria.

The following objectives will be set and evaluated in a yearly basis:

- Reduce falls (FES-I)
- Reduce risk of malnutrition (MNA)
- Reduce functional decline (IADL)
- Reduce frailty (Fried)
- Empower older people for better quality of life (NHP)

Deliverables

- A screening tool has already been created and published by our team to improve the detection of frail subjects in primary care
- A large data base (900 subjects at the present time) has been created
- A Web-platform to share information with other physician is being developed
- The Educational programme will be implemented in each day hospital (14 on the French territory at the present time)

Outcome:

- Frailty assessed by the Fried frailty criteria and the Short Physical Performance Battery (SPPB)
- Number of falls (Short Falls Efficacy scale-International: (FES-I))
- Functional autonomy the Lawton Instrumental Activity of daily living (IADL),
- Nutritional status and the mini nutritional assessment (MNA)
- Quality of life (Nottingham Health Profile (NHP))
- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has been adopted, tailored and validated in at least 2 other settings

Evidence of the impact



Patient's education is used in the care of chronic disease affected patients such as diabetes, high blood pressure, and asthma. Its efficiency has been proven in many studies, on criteria such as hospitalisation rate, emergency admission rate, and quality of life. Patient's education appears as an essential tool in chronic illness. We believe that this innovative approach that aims to implement it in the condition of frailty will bring returns largely justifying the investment made.

Several studies revealed a positive impact on frailty and functional decline notably:

- Thomas M. Gill, MD, Dorothy I. Baker, PhD, RN-CS, Margaret Gottschalk, MS, PT, Evelyne A. Gahbauer, MD, MPH, Peter A. Charpentier, MPH, Paul T. de Regt, MS, PT, Sarah J. Wallace, MS, PT . A prehabilitation program for physically frail community-living older persons . Arch Phys Med Rehabil. 2003 Mar;84(3):394-404.
- Chan DC, Tsou HH, Yang RS, Tsao JY, Chen CY, Hsiung CA, Kuo KN. A pilot randomized controlled trial to improve geriatric frailty. BMC Geriatr. 2012 Sep 25;12:58. doi: 10.1186/1471-2318-12-58
- Gill TM, Baker DI, Gottschalk M, Peduzzi PN, Allore H, Byers A. A program to prevent functional decline in physically frail, elderly persons who live at home. N Engl J Med. 2002 Oct 3;347(14):1068-74.
- Smit E, Winters-Stone KM, Loprinzi PD, Tang AM, Crespo CJ. Lower nutritional status and higher food insufficiency in frail older US adults. Br J Nutr. 2013 Jul;110(1):172-8. doi: 10.1017/S000711451200459X. Epub 2012 Nov 1.

A cost analysis evaluation will be performed.

Resources available: Funding for the pilot was provided by the Toulouse University Hospital. On-going activities are financially supported by health government and local authorities. Human resources are those of the geriatric team of this hospital.

3. Innovation element

- Develops "living labs"
- Has a multidisciplinary approach
- Uses a tool, therapeutic education, that has demonstrated its efficiency in chronic disease
- Has a "comprehensive and tailored patient-centred approach"
- Has a vision on integrated care
- Lead to an improvement of care practice for all the professionals
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information



5. Contact details

Organisation name: Toulouse University Hospital, Geriatric Department

The Toulouse University Hospital, Geriatric Department is committed to MISTRAL – Multimodal Interventions Supported by information and communications Technologies building Resilience for frAilTy prevention

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Adapted Physical Activity (APA)

1. Location

Country: Italy

Region: Liguria

Total population: In 2012, in Liguria there were about 428.000 over-65 residents. In particular, LHA n°3 in 2008 counted 197.040 over-65 (total population 742.077); LHA n°4 in 2012 counted 41.794 over-65 (total population 149.718); LHA n°5 in 2011 counted 59.034 over-65 (total population 21.9320).

2. Description

Target population: Dependent patients - This service is provided to older people (over-65) in the regional community identified by the General Medicine Doctor, other Medical specialists or by Physiotherapists on the base of their health status and their risk of functional decline. The activity involves both people with "low disability" ("chronic symptoms that don't limit the basic motor skills or self-care") and people with "high disability" ("chronic conditions stabilized with limited mobility and stabilized disability").

Target population: In 2012, the programme involved 129 users in LHA n°3, 351 users in LHA n°4 and 187 users in LHA n°5.

Main topic: Functional decline

Description: Regione Liguria, together with Local Health Agencies (LHAs), Public Health Districts (PHDs) and Organizations of the Ligurian Active Ageing Network (LAAN) will provide Ligurian elderly with a service of Adapted Physical Activity (APA) Programmes.

APA is not a rehabilitative activity, but a program of exercise, a preventive and maintaining activity oriented to the easy acquisition of healthy lifestyles. It is a health-oriented (not disease-oriented) programme aimed at improving the lifestyle and quality of life of elderly. Activity is conducted in gyms, association clubs or other non-health places, in specially designed groups for people with disabilities.

There are two types of APA programmes: a) APA programmes for people with "low disability" and b) APA programmes for people with "high disability".

The aim is offering various activities among which everybody is able to choose the most suitable one, enhancing interest and motivation, which are very important to encourage people to attend lessons constantly. Activity has to become a habit and an incentive to live an active life, even out of the organized physical activity lessons.

Public Health Districts (PHDs) foster APA by PHDs Plans, which involve institutions, voluntary associations and private entities.

APA normally consists in a fortnightly program of one hour lessons, in group of a maximum of 20 people, trained by qualified teachers (physical education graduates and/or physiotherapists).

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



APA exercise programmes are based, for every typology, on the scientific literature. They are uniformly applied in every structure taking part in the activity and they are periodically validated by the local coordination on indication coming from the scientific coordination.

Deliverables: A tailored functional training programme, tested and validated in several settings and supervised by physio/ergotherapists and by sports teachers (physical education graduates) targeting older people (over 65) in the regional community.

Outcomes: Liguria Region fosters the diffusion of the APA Program as an action directly related to primary prevention, which is able to: a) provide useful advices for the planning of interventions oriented to prevent disability of high-functional risk elders; b) contribute to reduce the hospitalization expenditures; c) contrast to sedentariness.

Data gathered from LHA n. 4 concerns 19 courses in 6 municipalities with 351 participants, mostly females (88%). The most represented age group (51%) was between 60 and 69 years of age, followed by those between 70 and 79 (26%). The main reasons to attend the courses were lumbar back (42%) and neck pain (32%). The results were evaluated by specific questionnaires. Most of the participants (97%) reported pain reduction with physical improvement. They also reported they have reduced (22.2%) or abolished (14,6%) the use of anti-inflammatory drugs or painkillers. Some participants also added that they don't subject themselves to other diagnostic tests (21,2%) and that they don't turn to the doctor anymore for back pain after the program (21,2%).

Data gathered from LHA n.3 concerns 129 participants (89 F and 40 M). About 32% of participants reported a reduction in the use of anti-inflammatory drugs or painkillers, while about 80% of participants reported pain reduction or stability. TUG (Time Up and Go) Test score improved in about 88% of cases.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: The Adapted Physical Activity confirms, also in this study, its validity in the prevention of back pain and frailty in general. APA has also a meaningful impact on the reduction of public health expenditure. As a matter of fact, APA courses are self-paid by users, who turn to the programme instead of applying for physiotherapy sessions financed by the National Health System (in Liguria 10 sessions and a visit for back pain costs about 89€) and preventing institutionalization (which costs 27€ per day to the LHA and 48€ per day to the user or his/her administrative district).

A satisfaction evaluation with LHA n.3 and n.4 users underlined they evaluated very well teachers courtesy, courses settings and schedule.

Resources available: APA Programme is auto-financed since courses are self-paid by users (20€ a month, 50€ three months). For 2013 Italian Ministry of Family will provide 150.000€ for activities of APA, while Regione Liguria will integrate this funding so as to involve in the service about 400 patients/year. In particular, Regione Liguria envisage a contribution of 1.000€ for each new APA course activated, so as to partially cover organizational costs, such as the reimbursement of instructors, insurance costs, training places rent, etc.

Within 2013, Regione Liguria will set at least an APA programme for each of the 19 Liguria Public Health Districts.



3. Innovation element

- Has a multidisciplinary approach
- User-centered approach based on elderly people activation, social participation and motivation.
- Brings together a big group of stakeholders
- The programme is not disease- oriented but aimed at fostering healthy lifestyles and quality of life of elderly.

4. Further information

Liguria is one of the eldest regions in Europe, and poses problems in terms of care and social costs. Given the high concentration of elderly people, Regione Liguria has developed in the years many policies addressed to this target of population, endeavouring to create a system including all the initiatives against isolation and in favour of prevention. Besides the actions taken to assist the elderly in need, also at home, the policy makers are also convinced that keeping the population active in many fields helps to prevent many physicals and mental diseases and has a positive impact on the community.

In particular, Regione Liguria, in the last years, to make regional law 48/2009 on active ageing operative, set up a network including private foundations, public institutions, the third sector and the University, named **Ligurian Active Ageing Network – LAAN**. All together, these actors have realized integrated social policies through activities of promotion/protection, not only as a support for fragile elderly people, but also as participative paths of social prevention, with the development of a new concept of “being elderly” and inter-generational dialogue.

Regione Liguria (European Affairs Department and Health and Social Affairs Department – <http://www.regione.liguria.it>), together with Galliera Hospital (<http://galliera.it/>), University of Genoa (Department of Educational Sciences), Auser Onlus – Liguria, David Chiossone Onlus Institute and Social Cooperative Televita Agapé, under the coordination of SI4LIFE srl – (<http://www.si4life.com>) "Science and enterprise together to improve quality of life", a new scientific-technological Regional Innovation Hub, set up the new Commitment “FRAGILE” under the EIP-AHA A3 Action Group.

LHA n. 3 <http://www.asl3.liguria.it>

LHA n. 4 <http://www.asl4.liguria.it>

LHA n. 5 <http://www.asl5.liguria.it>

5. Contact Details

Organisation name: Regione Liguria in collaboration with the 5 Local Health Agencies (LHAs), Public Health Districts (PHDs) and Organizations of the Ligurian Active Ageing Network (LAAN).

Contact person: Dott. Paolo Cavagnaro (LHA n°4 Director)

Email:



“ELDERLY PERCEIVED QUALITY OF LIFE” Questionnaire

1. Location

Country: Italy

Region: Liguria and Lombardia

Total population: In 2012, Liguria counted about 428.000 over-65 residents. Lombardia counted about 2.018.000.

2. Description

Target population: Older people in general population - This questionnaire targets older people (over 65) in the community in risk of cognitive and functional decline to know the level of self-sufficiency and quality of life perceived and expected.

Target population: 525 over-65 residents in Liguria and Lombardia

Main topic: Functional decline

Description: The questionnaire, designed by SI4LIFE srl and Fondazione Don Carlo Gnocchi-ONLUS (a SI4LIFE Consortium member), aims to measure the perceived Quality of Life (QoL), to see if the elderly person has some problems with respect to certain aspects of his life. This knowledge is essential to design any type of intervention, either a support or assistance.

In addition, the questionnaire aims to identify the point of fragility to recognize elderly person with serious problems of reduced independence and QoL. In fact, it could determine a threshold beyond which the elderly can be considered fragile and therefore necessitous of assistance and support.

It identifies 9 dimensions, which consist of the same number of areas potentially problematic considered significant for the welfare of elderly: health, cognitive aspects, autonomy, religion and ethical issues, psychological welfare, social interactions, sexuality, affectivity, use of time and environmental factors. For each dimension, the questionnaire assesses how the subject feels in terms of welfare, satisfaction, and possible interference in QoL.

For each area, specific thresholds are identified to define the need state or the perceived dependency and specific indicators underline the level of the need for health care and the perceived wellbeing.

Coherently with the bio-psycho-social model and the WHO's ICF, the questionnaire analyses the influence of environmental factors on individual wellbeing.

In addition, considered the importance of subjectivity in describing the determinants dimensions for QoL, the questionnaire includes a question which asks the subject to put in order of importance (1-10), a list of factors which could be influencing the QoL. In such a way is



possible to interpret obtained scores in each dimension not only in global and analytic, but also according to the internal system of values of the subject.

The questionnaire is divided into five parts: 1) Health, cognitive aspects, perceived autonomy, autonomy (by the caregiver) = Health Related Quality of Life (HRQL); 2) Religion and spirituality; 3) Psychological welfare; 4) Sexuality and affectivity, social interaction, use of time; 5) Environmental factors.

Deliverables: Design development and validation of a specific questionnaire.

Outcomes: The efficacy of the questionnaire is well-demonstrated when assessing the impact of a disability on the health-related QoL or when evaluating the effects of rehabilitation in everyday life (for example in patients with chronic stroke)

The questionnaire has already been tested with 475 elderly with cognitive decline, Alzheimer and heart disease and a with a control group of about 80 healthy elderly.

Its reliability and validity has been measured with 50 dysarthric patients and 30 control participants.

An excellent internal consistency ($\alpha = 0.90$) and test-retest reliability (ICC = 0.98, 95% CI: 0.97-0.99) were found; the score difference between the dysarthric and control groups was significant ($p < 0.001$). The questionnaire scores correlated positively with the severity of dysarthria ($r = 0.43$).

- Has an impact on health status and quality of life for your local population
- Allows for evaluating interventions and tailoring more effective personalized support or assistance

Evidence of the impact: The “Elderly Perceived Quality of Life” Questionnaire is a screening tool able to identify between over-65 individuals in the community people in risk of frailty, cognitive and functional decline. The “Elderly Perceived Quality of Life” Questionnaire also effectively supports health professionals, caregivers and other stakeholders when assessing the impact of a specific intervention (such as rehabilitation) or the impact of a specific disease on the perceived QoL of elderly people, considering multiple problematic dimensions, the influence of environmental factors and subjective perspectives.

A cost analysis evaluation underlines how the use of the questionnaire helps to improve interventions and to identify the better ones, considering both the end-users perspective and the ones of the other stakeholders, thus having an impact on cost-effectiveness. Identifying the level of the need for health care and the risk of frailty and cognitive decline, this tool also helps to prevent institutionalization, with a meaningful impact on the reduction of public health expenditure.

Resources available:

Surveys using “Elderly Perceived Quality of Life” Questionnaire have been and will be carried out within already financed SI4LIFE and Fondazione Don Carlo Gnocchi projects.



3. Innovation element

- Has a multidisciplinary approach
- Is a user-centered, QoL-based screening tool to prevent frailty and cognitive decline.
- Advocates for formalization of the “perceived quality of life” as an important dimension to be considered in the prevention of the onset of frailty and cognitive decline
- It considers 9 potentially problematic areas considered significant for the welfare of elderly and essential to design any type of intervention, either a support or assistance.

4. Further information

The questionnaire has been designed by SI4LIFE srl (<http://www.si4life.com>) and Fondazione Don Carlo Gnocchi-ONLUS (<http://www.dongnocchi.it/>).

SI4LIFE srl -"Science and enterprise together to improve quality of life" is a Regional Consortium (SME -Small Medium Enterprise) who manages and coordinates a new scientific-technological Innovation Hub in Italy, financed by Liguria Region with the aim of improving the quality of life of elderly and disabled people.

SI4Life includes big RTD (University of Genoa, Italian Institute of Technology, National Research Council), big enterprises (such as Fondazione Don Carlo Gnocchi Onlus, an important Institute for Hospitalization with more than 20 centers in Italy and a wide research activity), SME and associations active in rehabilitation of people with disability, SME active in the ICT field and Electronics Industry.

5. Contact Details

Organisation name: SI4LIFE srl in collaboration with Fondazione Don Carlo Gnocchi Onlus (EIP-AHA Commitment “FRAGILE”)

Contact person: Prof. Angelo Bedin (Si4Life and Fondazione Don Gnocchi)

Email:



Frailty prevention with multifactorial interventions

1. Location

Country: Italy

Region: Piemonte (Piedmont)

Total population: 4,480,000

2. Description

Target population: Older people in general population - Dependent and autonomous elderly

Target population: Piemonte= 936,000 – Torino= 215,000

Main topic: Functional decline

Description: Department of Psychology includes the main psychological perspectives and disciplines and covers all the level of the university education. The Department established active collaborations with national/international academic institutions, research centers and local bodies, like health services. The research staff, as in particular the contact persons (Emanuela Rabaglietti & Mattia Roppolo), has competence in the study of psychological issues (i.e., quality of life, well-being, perception of health, preventive interventions) in different concrete contexts throughout the life cycle and specifically in older age, identifying the protective and risk factors of development.

Deliverables: Deliverables that the Department of Psychology, in association with its partners, would like to achieve, embrace a large part of the currents issues in the field of frailty. In particular is possible to identify four deliverables:

1. To expand the concept of frailty, including both psychological and social functions, with possible better explanations of negative health outcomes
2. To focus particularly on pre-frailty condition, analysing trend of functionality among elderly, with a systemic approach
3. To develop common strategies among different disciplines, in order to share methodology and to propose interventions guidelines
4. To define multifactorial intervention manuals and to test it in a sample of elderly

Outcomes:

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population



1. To assess a representative sample of elderly population in Torino and Piemonte with frailty instruments, chosen in relation to their ability to catch the whole spectrum of functionality and to detect subjects in pre-frail conditions.
2. To implement the new intervention strategy to the elderly assessed as pre-frail
3. Increase of the participants disseminating and promoting the assessment campaign and and the participation in the interventions

Evidence of the impact: The impact will be assessed using health status and quality of life instruments, as well as clinical outcomes and health care costs (for both individual and society).

Resources available: A previous regional project (ACT ON AGEING) was funded by Regione Piemonte. Actual work is financed by the University (personnel costs). In the 2014 will start the ITIF project funded by Italian Research and Education Government.

3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: Dipartimento di Psicologia, Università degli Studi di Torino (Department of Psychology, University of Torino)

Contact person: Emanuela Rabaglietti; Mattia Roppolo

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Evaluation of elderly persons' functionality and care needs

1. Location

Country: Portugal

Region: Alentejo

Total population: 757 190

2. Description

Target population: Older people in general population - population aged 65 or over, resident in Alentejo

Target population: 174 000

Main topic: Functional decline

Description: In order to classify functionality, the World Health Organization (W.H.O) created the International Classification of Functionality (ICF), which was adopted by Portugal and whose use is recognized as bringing various advantages. For this reason, it is important to develop an instrument for evaluating elderly people's functionality, based in a classification whose general objective is to permit a unified, standardized language, as well as a working structure for the description of health and states related to health. It was based in this classification that we undertook the development of the Elderly Core Set.

This process was made in collaboration with Health Centres of the Alentejo. Data collection was undertaken by health care professionals using the technique of structured interview during the year of 2011.

The propose of the creation of this Elderly Core Set, is to may be transformed into a transprofessional instrument for the evaluation of functionality and care needs for the elderly. Health care professionals daily needs to evaluate the functionality

With the results from the application of this Core Set, it will be possible to determine the functionality and care needs of the elderly, and establish programmes to prevention of frailty in older people. Know we would like to validate this tool in different countries.

Deliverables: Create a web platform were health care professionals could apply this Elderly Core Set and evaluate elderly people.

Outcomes: This study allowed the investigation of the functionality and care needs of the elderly in the Alentejo region, based on an evaluation based on the ICF. It is possible to envision an intervention directed at this population group's needs, setting out integrated measures which would allow the development of factors promoting health and reducing this population group's medicalization.



- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local

Evidence of the impact: More than half of the population aged 65 or over (55.1%) had no education at all.

Functionality classification as 'good' or 'very good' was observed in 79.8% of the individuals studied. Some type of functional limitation was observed in 44.6% of the elderly people, and total incapacity in 2.0%.

Based in the results achieved, one can understand that the elderly people's functionality is maintained at high percentages until about the age of 75. From that age onward, a progressive decline may be ascertained, with increasing percentages developing difficulties which require therapeutic help.

Resources available: Funding for the pilot was provided by University.

3. Innovation element

- Uses new methodology
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact details

Organisation name: University of Évora

Contact person: Manuel Lopes

Email:



Chronic kidney disease patients under hemodialysis and erythropoietic stimulating agent therapies

1. Location

Country: Portugal

Region: Northern region

Total population:

2. Description

Target population: High-risk independent people - Chronic kidney disease patients under hemodialysis and erythropoietic stimulating agent therapies

Target population: 200

Main topic: Functional decline

Description: Our aim is to identify new cardiovascular risk factors and predictors of morbidity and mortality in aging patients with chronic kidney disease under hemodialysis and erythropoietic stimulating agent therapies. We are able to evaluate several potential risk factors, such as dialysis adequacy, nutritional status, body mass index, dyslipidemia, endothelial dysfunction, inflammatory response, iron metabolism, anti-oxidant effect of physiological bilirubin levels, anemia and erythropoietic disturbances underlying resistance to the erythropoietic stimulating agent therapy, used to correct anemia.

Moreover, we aim to contribute, by using an appropriate animal model and innovative methodologies in this research area, the mechanisms by which erythropoietic disturbances develop with ageing, and how inflammation, kidney (dys)function and erythropoiesis are disturbed. If we will be successful, this study could be important to propose a mechanism to correct the anemia associated with ageing in worldwide people, improving health and life quality in older people.

Outcomes: The prevalence of anemia with aging is about 5% at 65 years of age, to more than 20% at age of 85 years. Patients with end-stage renal disease (ESRD) have a higher mortality rate that far exceeds the mortality rate for the non-ESRD population. In the past half-century, the widespread use of hemodialysis (HD) to prolong life of ESRD patients has been a remarkable achievement, preventing death from uremia in these patients. Nowadays this therapy has expanded widely and is being used by an increasing elderly patient population, leading to significant economic consequences to patients and to healthcare systems.

Our present knowledge of the mechanisms leading to increased death in this context is incomplete. In the last years, this medical field has known significant technological and pharmacological improvements. Although some evidence may suggest that mortality rate



among dialysis patients has decreased over the last few years, actually, patient's survival is still low.

We evaluated the global mortality in Portuguese ESRD patients under HD, by performing a follow-up study of two years, in order to identify any significant association of death with systemic parameters, including dialysis adequacy, nutritional status, hematological data, lipid profile, iron metabolism, and inflammatory and endothelial (dys)function markers, as well as the type of vascular access, presence of comorbidities, and with associated therapies. The parameters associated with mortality in this context may provide biomarkers to be used in the clinical setting.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact : In our study, during the follow-up period, 35 patients out of 189, died (18.5%). Considering dead and living patients at the end of the 2-year follow-up period, we found that several variables were significantly different for the two groups of patients. We found that patients who died during the follow period of the study, as compared to living patients, had lower HD efficacy, higher disturbances in iron metabolism and in erythropoiesis, a poor nutritional status, a higher inflammatory condition, an endothelial and hemostatic disturbance and the development of resistance to rhEPO therapy, as they needed higher rhEPO doses to achieve hemoglobin concentrations within the target range, a higher percentage of them used CVC for vascular access.

After performing a multivariate analysis, we observed that the use of CVC as the vascular access for the HD procedure, high CRP levels, and low triglycerides levels were independently associated with mortality.

In summary, our study showed that the type of vascular access for HD procedure, inflammation, and the nutritional status of the patients are important factors for the survival of these patients and that the use of CVC, CRP, and TG values may provide good biomarkers of risk in ESRD patients under HD.

Faria MS, Ribeiro S, Costa E, Mendonça D, Teixeira L, Rocha-Pereira P, Fernandes J, Nascimento H, Kohlova M, Reis F, Amado L, Bronze-da-Rocha E, Miranda V, Quintanilha A, Belo L, Santos-Silva A. "Risk factors for mortality in hemodialysis patients: two years follow-up study". *Disease Markers*, 2013, In Press.

Resources available: This project was supported by PhD grants from FCT. Our group presents know-how and infrastructures for the development of the project.

3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices



4. Further information

5. Contact Details

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Active lifestyles and predictors of risk for incapacity on senior population – RISINC2013 - Frailty

1. Location

Country: Portugal (Team Leader)

Spain
Poland

Region: Loures

Malaga
Tricity

Total population: Portugal (11 millions) – Loures

Spain (47 millions)
Poland (38 millions)

2. Description

Target population: Older people in general population - Portugal - Loures Municipality – Independent elderly aged 60 and more who live in Loures representing 10% of this Municipality (around 400 elderly assessed twice with 3 years apart). Intervention in a group of 50 elderly.

Spain – Málaga

Poland – Gdansk - assessment of 740 people, participants in program: 50 woman

Main topic: Functional decline

Description: Portugal, Spain and Poland started this project in 2013.

The project has several parts:

Stage 1 - 2013

For the purpose of RISINC2013 – Frailty , Portugal, Spain and Poland will assess the target population with a battery of tests:

- a) measuring the arterial pressure
- b) measuring the waist hip ratio (WHR)
- c) evaluation of physical fitness: Fullerton Functional Fitness Test, 6-Minute Walk Test, handgrip, questionnaires – Functional capacity (Rikli and Jones), International Physical Activity Questionnaire, Levels of physical activity, Quality of life SF-36 Questionnaire.

Stage 2 - 2014 and 2015

Implementation of a structured physical activity program with educational support (lectures and digital material) to change lifestyles and strategies of adhesion to physical activity (digital strategies and support).



Construction and Implementation of a digital platform (if possible) to enhance adherence to active lifestyles.

Nordic Walking will be introduced as a strategic intervention and at the end will be assessed about her influence on functional capacity.

Stage 3 - 2016

Analysis of research material to find the predictors of disability on target population and to verify the results of physical activity program on this target population (around 1200 to 1400 elderly on Loures, Málaga and Gdansk together).

Analyze and Compare results from three countries.

Deliverables:

We believe that a large database about the predictors of disability on our countries (Portugal, Spain and Poland) will be available on 2016.

Training programmes - Training Nordic Walking Influence of Nordic Walking and the introduction of this sport on physical activity in countries such as Portugal and Spain who do not have the Nordic Walking as a sport for elderly.

Outcomes:

Make elderly people more conscious about active lifestyles and more autonomous on her practice.

Education about programming of Nordic Walking activity and health screening

Strategies to empower the adherence to active lifestyles in an independent and safe way.

The knowledge of true factors that contribute to functional decline makes possible a more efficient strategy and more cost effectiveness on those factors in order to decrease functional disability and increase functional capacity.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- More than 10% of the local target population receives the innovative practice

Evidence of the impact:

Long-term results of intervention are difficult to predict.

Researches held in USA in Center for Diseases Control (CDC), show that every \$ invested in physical activity (time + equipment) save \$3,20 that would be spent for medical care

Efficiency of training program will be verified on the 3th stage of this project.

Predictors of disability will be found in three different European populations, and compared between them.

Resources available :

Portugal:

1. Lisbon Higher School of Health Technology – Physiotherapy students to participate in assessments and data analyzes.
2. We try to candidate to funding or grants to pay human resources in the delivery of stage 2 (fundamental) but also to help on phase 1 and 3. Not yet possible however.



Poland :

1. Gdansk University of Physical Education and Sport, Poland
2. Polish Federation of Nordic Walking

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care
- Has an integrated vision about elderly people: three different European countries and *new form of physical training -Nordic Walking Training*
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

<http://www.awf.gda.pl>

<http://www.pfnw.eu>

5. Contact details

Organisation name: Lisbon Higher School of Health Technologies (Team Leader)

Municipality of Loures

University of Malaga

Gdansk University of Physical Education and Sport

Contact person: M^a Teresa Tomás (Team Leader)

Elvis Alvarez Carnero - Spain

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Chronic Ailment Reduction after Menopause (CARMEN)

1. Location

Country: Spain

Region: Valencia

Total population : 1.100.000

2. Description

Target population (group): High risk independent people. (Older women at risk of frailty or functional and cognitive decline).

Target population (figure): 150,000

Main topic: Physical exercise

Description: The cohort CARMEN includes 1,200 elderly women from the urban area of Valencia and started in 2006. A database, organized with the support of Big Data Analysis technology, includes baseline clinical data together with an array of biological parameters (basic biochemistry, hormones, bone markers, inflammatory markers) and DNA extracted from white blood cells. Regular controls are planned every two years. This protocol allows for the accumulation of longitudinal information in a temporal range up to 6 years in some cases. Spared sera and DNA samples are being kept frozen and a considerable sample collection is already available.

Within this cohort a new initiative, launched in 2013, aims at implementing exercise to prevent frailty and the specific vulnerability to cognitive and functional decline that women experience. This specificity is illustrated in the increased risk of women for some chronic diseases, like osteoporosis or Alzheimer, or for worse quality of life (QoL) and psychological distress.

The main objective consists of exploring whether new ICT and internet technology, including electronic devices and internet tools, may increase compliance of women to exercise for one year. Additional objectives include assessments on the QoL impact, psychological distress and reduction in the resources consumption (such as pharmaceutical reduction or reduction on visits to the health centres). Additionally, a parallel basic research programme aims at increasing knowledge on the genomic and metabolomic variables determining the female pattern of bone fragility and the effects of lifestyle on bone metabolism.

Recruitment is being accomplished by advertisements in our web page (www.salusvitae.es) or by distribution of *ad hoc* flyers, direct contacts with older people organizations (including the University for the Elder, town-hall supported centres for elderly people), and by collaboration with primary care centres (GPs or midwives) from the health area covered by our University Hospital Dr Peset (UHDP). The assigned population attains 274,000 people, whose primary care is the responsibility of 260 GPs and 54 midwives. A specific network has been created for e-



referral, and a particular nested network, including 27 GPs, has been set up in order to speed up e-referrals for older women and to increase efficiency in protocols.

Three specific tuition modules have been created; The first one includes a two day-seminar, which has been followed by the 260 GPs in our health area. The programme reviews the specific traits associated with women's profile against fragility, and the most relevant chronic diseases. The second module is a one-day seminar addressed to midwives with similar purposes. The third module aims at training women in the basics of informatics and internet, in order to allow the implementation of this technology to support compliance to exercise. The content of this latter module is already complete, but has not yet been implemented.

Deliverables :

- Guideline on osteoporosis management, supported by the Spanish Menopause Society.
- ICT solutions:
 - Tuition module (twelve 1 hour units plus practical exercises) for training in plain computer and internet use for 65 + women.
 - Fitbit devices to faithfully quantify and monitor exercise.
- Large database: Baseline and successive two-year clinical and biological data of women integrated in the CARMEN cohort. More than 200 data entries are being managed using big data analysis technology.
- Web platform: a web page (www.salusvitae.es) has been created to include basic information of the cohort and to host specific social networks both for participating women and professionals.
- Educational programmes (see above).
- Flyers with programme description.

Outcomes and evidence of the impact:

- ☑ Has an impact on health status and quality of life for the local population.
- ☑ Has an impact on the sustainability and efficiency of the health or social care system of local population.

E-referral, in association with clinical protocols set up in accordance with contents of the tuition modules for GPs, achieved a modulation of the workflow between primary care and hospital. A preliminary analysis (3 months) shows a 37% reduction in the number of referrals.

Remainder outcomes have not yet been accomplished. Likely outcomes are:

1. Those associated with the power of the data-base, which is achieving a well nourished list of cross-sectional and longitudinal parameters. Thanks to the power of Big Data Analysis some valuable conclusions are to be expected. Moreover, the information may help for additional projects dealing with the specific profile of women.
2. A successful training of elderly women in basic use of the computer may set a crucial point in the strategies to help these women. Among the immediate benefits related with this specific commitment, improved compliance to exercise, but also effective, friendly use of ICT technology in other fields related with frailty or functional-cognitive decline.
3. Improvement in QoL indicators, psychological distress and social isolation.



4. Support sustainability of health services, by reducing costs related with pharmaceutical drug consumption and frequentation of health services.
5. Better knowledge on the genomic aspects related with exercise performance in elderly women as well as on the impact of exercise in metabolomic parameters.

Resources available:

Budget: A project recently funded by the Instituto de Salud Carlos III, the Spanish Agency for health research, and the ERDF (project PI12/02775) to investigate the impact of different sources of calcium and of vitamin D in bone health (2013-2015).

Human resources:

- A group of committed GPs, midwives and specialists in the health area of the UHDP.
- Basic assistant staff attached to the labs at the University Department of the School of Medicine, University of Valencia.

3. Innovation element

- Has a gender perspective approach
- Uses new methodology
- Advocates for gender-dependent disadvantages
- Brings benefits over existing practices

4. Further information

Guideline on osteoporosis management:

<http://www.aeem.es/UserFiles/Media/MENOGUIAOSTEOPOROSIS.pdf> and further commented in <http://www.ncbi.nlm.nih.gov/pubmed/23828128?report=docsum>

5. Contact details

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Frailty Improvement in Complex Patients (FICoP)

1. Location

Country: Spain

Region: Zaragoza-Aragón and Madrid

Total population: 100,000 persons admitted to general hospitals.

2. Description

Target population (group): High risk Independent people - (Frail, complex medical patients in general hospitals in risk of medical complications, dependency and functional decline)

Target population (figure): 40,000 patients in geriatric age.

Main topic: Functional decline.

Description: In collaboration with European colleagues in Biomed Programmes, we have developed an original method (INTERMED) for the early detection of complex, frail medical patients with high risk of medical and functional complications, dependency, and the potential to increase medical costs. The method has been standardized and validated in several European countries, and a series of studies have documented the considerable prevalence of frail, complex patients in general hospitals. The efficacy of INTERMED based interventions has also been documented, but the method has not been generally implemented before.

Our team has the adequate experience to train nurses and other professionals to implement the method, so that large scale, innovative interventions are now feasible, as have been planned in three large university hospitals covering a health region in Zaragoza (Region of Aragón) and Madrid. While standard medical care covers appropriately the medical side of somatic diseases, the early detection of psychological and social problems, as well as health care difficulties facilitates an early referral and appropriate intervention to minimize the risk of medical and psycho-social complications, as well as increased dependency and functional decline. Nurses and social workers, and volunteers from patient's organizations would join the medical staff to reduce the risk of complications.

The following objectives are set for the patients, and will be evaluated in yearly basis:

1. Reduce the length of hospital stay (LOS)
2. Reduce the subjective discomfort
3. Reduce the dependency and functional complications
4. Reduce the number of expensive forms of intervention
5. Reduce the readmissions to general hospitals



6. Reduce the pressure on informal carers
7. Empower the older people for better adaptation to the medical condition and for better quality of life

Deliverables :

- Guidelines for INTERMED assessment, for nurses and professionals.
- Guidelines for implementation of interventions based on INTERMED assessment.
- Training program for professionals and lay volunteers.
- Large data-bases with information on:
 - The prevalence of frail, complex medical patients
 - The outcome of frail, complex medical patients, with care as usual, receiving standard medical care
 - The outcome of frail, complex medical patients, after intervention based on the INTERMED strategy
-

Outcomes and evidence of the impact:

- Prevention of complications in frail, complex patients. A formal evaluation one year after implementation of the program is expected to support evidence coming from controlled intervention studies in small, selected samples.
 - Access to the FICoP program will be available to the whole elderly population admitted in the participating hospitals (approximately 40,000 persons).
 - Should the objectives be fulfilled, the program would be transferred to the National Health System, to be generalized as appropriate.
- Objectives will be documented at yearly intervals during the study process.

Resources available :

- Studies to develop the INTERMED system were initially funded by the BIOMED programmes of the EU. Studies in Spain were funded by the Instituto de Salud Carlos III (ISC III, equivalent to the National Institute of Health).
- Research teams are funded by the Universities of Zaragoza and Complutense in Madrid, the IIS Aragón, CIBERSAM (the national research consortium of the ISC III), and the public health system (SALUD in Aragón, the equivalent in Madrid).
- Participants in the study are researchers and clinicians with considerable research experience coming from the institutions mentioned above. Regional authorities, both in the health and the academic systems, are fully supportive of this initiative.



3. Innovation element

- Uses new methodology
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices
- Has an impact on health status and quality of life for our local population
- Has been adopted, tailored and validated in at least 2 other settings

4. Further information

A range of supporting information may be found in the following articles, and on the web of INTERMED:

Lobo E, De Jonge P, Huyse FJ, Slaets JP, Rabanaque MJ, Lobo A. Early detection of pneumology inpatients at risk of extended hospital stay and need for psychosocial treatment. *Psychosom Med.* 2007 Jan;69(1):99-105. PubMed PMID: 17244852.

Stiefel F, Zdrojewski C, Bel Hadj F, Boffa D, Dorogi Y, So A, Ruiz J, de Jonge P. Effects of a multifaceted psychiatric intervention targeted for the complex medically ill: a randomized controlled trial. *Psychother Psychosom.* 2008;77(4):247-56. Epub 2008 Apr 28. PubMed PMID: 18443391.

<http://www.intermedfoundation.org/>

<http://www.intermedfoundation.org/homepage/literature>

5. Contact details

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Detection of senescent tissues (TELAGDIS)

1. Location

Country: Spain

Region: Madrid

Total population 6,5 million

2. Description

Target population (group): Older people in general population (Old people on risk of functional decline)

Target population: 15,8% more than 65

Main topic: Functional decline

Description: Nowadays, biomedical research requires effective multidisciplinary approaches to find innovative solutions for social challenges.

In our case, our TELAGDIS consortia has set up nanoparticle devices that are able to in vivo identify senescent or aged tissues. The development of such nanoparticles has been designed and tested thanks to a productive collaboration between Technological and Biomedical institutions. The devices are mesoporous nanoparticles that can be packaged with fluorescent compounds, which are released once a molecular gate is degraded. The molecular gate is an oligosaccharide that can be degraded by acid beta galactosidase. This enzyme is present only in senescent or aged cells therefore the fluorescent compound can be released only in senescent cells which can be identified by confocal microscopy.

Our main objective is to be able to use these nanoparticles to identify those aged tissues among the younger ones. At the same time we can correlate the presence of senescent cells with a shortening of telomeres. Telomere length can be determined with an easy a fast methodology and using a very small amount of DNA. DNA can be obtained from tissues or from whole blood or even from mouth swabs. This last method is a non-invasive methodology and uses DNA extracted from mouth epithelial cells.

The key aspects of our multidisciplinary collaboration success have been the personal commitment of the involved researchers, the development of a shared vision of the social challenge and a mutual understanding from the beginning, and the establishment of simple roles and communication channels between the members.

Deliverables:

- Identification of aged/senescent tissues by using mesoporous nanoparticles by fluorescent microscopy
- Results related to measure telomere length and correlate telomere shortening with senescence



- Protocol for the management of the research collaboration from a multidisciplinary perspective

Outcomes and evidence of the impact:

- Has an impact on the expansion of market and growth.
- Has an impact on the competitiveness of industry.

This is a new and selective method to detect senescent or aged tissues in live cells and may allow to specifically delivering compounds to these cells in the future.

This innovative result has been achieved through the combination of a multidisciplinary approach between different scientific and technological experts.

The evidence that supports these outcomes has been published and the methodology covered by a patent.

Resources available: Funding for the discovery was provided by National funding agencies and private industry.

3. Innovation element

- Has a multidisciplinary approach.
- Uses new methodology.
- Brings together a big group of stakeholders.

4. Further information

Publication: Alessandro Agostini, Laura Mondragón, Andrea Bernardos, Ramón Martínez-Mañez,* M. Dolores Marcos, Félix Sancenón, Juan Soto, Ana Costero, Cristina Manguan-García, Rosario Perona,* Marta Moreno-Torres, Rafael Aparicio-Sanchis, and José Ramón Murgúia* (2012). Targeted Cargo Delivery in Senescent Cells using Capped Mesoporous Silica Nanoparticles. *Angewandte Chemie*. 2012 Oct 15;51(42):10556-60 IF: 13,455 * Corresp Authors.

Patent: Release of sustances to senescent cells. Date of presentation: September 4th, 2012. P201231370. Inventors: Ramón Martínez Mañez, José Ramón Murgúia, Rosario Perona Abellón, Alessandro Agostini, Laura Mondragón Martínez, Marta Moreno Torres, Cristina Manguán García, Maria Dolores Marcos Rodriguez, Juan Soto Camino, Felix Sacedón Galarza.

5. Contact details

Organisation name: Consejo Superior de Investigaciones Científicas (CSIC)

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ECAP (electronic medical records) programme with a collaborative module and active intelligence

1. Location

Country: Spain

Region: Catalonia

Total population: 5,6 million inhabitants

2. Description

Target population: Older people in general population: Elderly patients attended by the Catalan Health Institute

Target population: 987.000 inhabitants 65 years or older

Main topic: Functional decline

Description: The ECAP is the electronic workstation of the health centres of the Catalan Health Institute (CHI), which is the public primary health care provider for 80% of the population in Catalonia. The screen Active Intelligence (AI) is a new module added to the ECAP in February 2013. This module incorporates in chronological order the clinical information of the patient and allows access to the clinical notes, prescriptions, referrals and medical tests.

The software selects the clinical variables requiring action or follow up based on the professional (type of health care practitioner, specialty, department) who has accessed the records and the patient's characteristics (age, gender, clinical history, risk factor clusters). Based on previous clinical variables and prescriptions, reminders to measure clinical variables, request tests and referrals and prescribe treatments can appear on screen. A simple mouse right-click will request the tests and referrals related to the variables displayed,

The variables will be shared between the ECAP and the hospital electronic medical records (Argos) to allow interoperability and to facilitate the design of programmes to manage patients from both levels of care.

AI significantly modifies working practices for primary care professionals who use ECAP. In order to avoid errors, during the initial phase of implementation the new screen will incorporate elements from the previous version (monitoring data files).

Deliverables: AI is a technology that can be exported to other systems of electronic medical records with chronologically arranged information and codification systems for prescriptions and standardized medical conditions.

Outcomes: AI technology Data-bases with large valid clinical information on elder populations
More than 10% of the local target population receives the innovative practice.

Evidence of the impact: An evaluation plan of the AI is currently underway. The decrease in the number of professionals that access the former monitoring data files from the AI screen will be used as a criterion in this evaluation.



Resources available : The initiative has not received funding

3. Innovation element

- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

<http://www.youtube.com/watch?v=42TBQ8o7oRs>

The screenshot shows a medical software interface with a table of health data. The table has columns for dates: 18/07/2013, 16/05/12, 14/05/12, 20/02/12, 04/07/11, 31/05/11, 13/05/11, and 10/05/11. The rows list various health parameters such as Tabaquisme, Consum d'alcohol, Hàbits alimentaris, Activitat física, Pressió Arterial Sistòlica, Pressió Arterial Diastòlica, Freqüència Cardíaca, Pes, IMC, Glicèmia venosa dejú, Creatinina Sèrum, Filtrat glomerular, Colesterol total, HDL-Colesterol, LDL-Colesterol, Triglicèrids, Risc coronari, Potasi, Quocient albúmina/creatinina, Electrocardiograma, and Fons d'ull. The interface also includes a sidebar with a patient summary and a bottom status bar showing 'BRAÇ CTR.' and 'TALLA: 159'.

5. Contact Details

Organisation name: Jordi Gol Primary Care University Research Institute (IDIAP Jordi Gol)

Contact person: Francesc Orfila. Assumpta Ferrer.

Email:



Frailty improvement Programme (FIP). Assistance for elderly people

1 .Location

Country: Spain

Region: Basque Country

Total population: 2,5 million

2 .Description

Target population (group): high risk independent people (Patient's organisations and older people in the community in risk of functional decline).

Target population (figure): 25,000

Main topic: Functional decline.

Description: An user-friendly, minimally time consuming, sensitive and specific screening tool which enables the early diagnosis of functional decline.

IK4 has developed a large-area and low-cost pressure sensors based on flexible printing electronics for balance control monitoring. It could be used as a screening tool for the early diagnosis of functional decline and it is ready for real field validation in medical environment.

Deliverables : A screening tool for early diagnosis of functional decline.

Outcomes and evidence of the impact:

- Has an impact on the expansion of market and growth
- Has an impact on the competitiveness of industry

A new technology is ready to be used for early detection and early management of frailty in older people.

A cost analysis of the product has been performed, and the results testify that the product will have a clear market success when launched. It will offer the same performance for half the price of the tools currently in use.

Resources available: Funding for the development of the technology was provided by the MINECO-Ministerio de Economía y Competitividad. (Spanish Ministry of Economy and Competiveness)



3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- Uses new methodology
- Has relative advantages over existing practices

4. Further information

No

5. Contact details

Organisation name: IK4

Contact person: Estibalitz Ochoteco

Email: EOchoteco@cidetec.es



Prevention of inappropriate admissions in elderly patients attended in an Emergency Department.

1. Location

Country: Spain

Region: Madrid

Total population : 1 million

2. Description

Target population (*group*): High-risk independent people- Patients, over 75 years, attended in the Emergency Department

Target population (*Figures*): 37,000

Main topic: functional decline

Description: Acute care hospitals are one of the healthcare settings that pose the greatest risk of inefficiency and iatrogeny in the elderly. The term "inappropriate admission" refers to those admissions that could have been dealt with in an outpatient clinic or in a hospital with a lower level of care. Patients over 75 years, especially those with functional impairment, are the most often improperly admitted in acute care hospitals. Because of the risk of iatrogeny at hospital, our goal was to avoid inappropriate admissions in this group of patients using the comprehensive geriatric assessment (CGA) by a geriatrician in the Emergency Room.

After the emergency physician evaluates every patient over 75 years, if this doctor thinks any subject should be admitted according to the usual criteria, a geriatrician re-evaluates these admissions using the CGA. With this assessment, diagnostic and therapeutic targets are established and the best level of care is decided (community facilities, long term care, palliative care, etc). In addition, a monitoring plan to ensure continuity in medical care is established.

The objectives are:

- 1-. To avoid inappropriate admission in patients over 75 years.
- 2-. To improve the use of health care levels.
- 3-. To improve the effectiveness of medical care in the elderly.

This program was launched in 2008. Initially, just people with poor functional status was re-evaluated (results of pilot program were published in REGG, 45 (1): 19-21). The objective is, in the near future, to cover 100% of patients over 75 years attending the Emergency Department.

Deliverables:



1. Guidelines on the management of the different levels of care have been developed.
2. Training courses on Comprehensive Geriatric Assessment (CGA) and levels of care have been conducted once a year.

Outcomes and evidence of the impact

- Has an impact on health status and quality of life for the local population
- Has an impact on the sustainability and efficiency of the health or social care system of the local population

1. To reduce the number of inappropriate admissions (over the total, when we started this action: 30%; objective: less than 5%).
2. To disseminate the knowledge about the care levels for elderly people available in our area.

In the first year: 65% of re-evaluated patients were discharged instead of being admitted (possible inappropriate admissions). These patients were referred to different levels of care: Community care Unit (51%), nursing home (34%), primary care (6,7%), other hospitals with a lower level of care like palliative care or long term care unit (5%) and the outpatient clinic (3,3%). By avoiding 240 admissions, an estimated 1992 stays were prevented, representing a saving of 619, 512 €.

Resources available: For the on-going activities, one geriatrician is needed. Currently, it is supported by the regional health government. In the near future, research funding is available to increase this activity.

3. Innovation element

- Has a cost analysis approach
- Has a vision on integrated care
- Has relative advantages or brings benefits over existing practices

4. Further information

Results of the pilot program were published in REGG, 45 (1): 19-21)

5. Contact details

Organisation name: SERMAS-HOSPITAL UNIVERSITARIO DE GETAFE, Madrid.

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Cognitive decline



Long Lasting Memories

1. Location

Country: Cyprus

Region: Cyprus

Total population: 1,102.677 (Cyprus, 2010)

2. Description

Target population: Older people in general population - Elderly 64+ 13%

Main topic: Cognitive decline - EU FP7 ICT PSP Theme: ICT for ageing well with cognitive problems, combining assistive and independent living technologies

Description: The LLM platform was designed to comprise of three existing interoperable components which perform complementary and interactive tasks to provide the system's services:

1. the Physical Training Component (PTC)
2. the Cognitive Training Component (CTC)
3. the Independent Living Component (ILC)

Fit For All is a game platform that can help elderly people to exercise and maintain their physical status and well being through an innovative, low-cost ICT platform, such as Wii Balance Board.

The CTC is designed to support cognitive exercises provided by specialised software.

The ILC is based on the eHome system, which is comprised of a network of distributed wirelessly operating sensor units connected to an embedded PC. It includes features such as intelligent learning of normal and exceptional patterns of behavior (dangerous situations or indicator for emerging health problems), raising of alarms and as an option an intelligent power outlet for controlling.

LLM service has been developed and tested in Cyprus in the context of The Long Lasting Memories (LLM) project, running from June 2009 to March 2012. During the project, the LLM service was tested in real life situations in order to consolidate requirements and validate the functionality of the solution. To achieve consistency of requirements and specifications across the whole value chain, the consortium contained a multidisciplinary team of partners encompassing a broad spectrum, from technology development to service providers, and including public authorities from each country that have responsibilities in the relevant area of care or supply of services.

Four consecutive rounds of testing took place in 5 EU Member countries (Austria, France, Greece, Spain, and Cyprus) for a period of 15 months, thus aiming for a wide impact on the entire Union. Effective cooperation of public authorities and private institutions were pursued through extensive dissemination activities as an effort to promote a business model based on public-private-partnership. Testing focused upon elderly volunteers who were screened and monitored throughout the course of the trials to provide high quality data quantifying the results of the LLM solution. In addition, the testing participants provided feedback to help improve the solution. Testing was conducted in accordance with relevant regulations for the



protection of the participants; all test protocols utilized good ethical practices and complied with European and national legislation.

Deliverables :

- Hardware and software
- Serious games
- Home care monitoring application
- Web based platform, cognitive tests, physical exercises
- Training programmes and workshop
- Data bases

Outcomes: The overall results of the project, deriving from the pilot validation and the scientific and usability evaluation of the LLM solution, and the important feedback from the involved stakeholders of the LLM Network of Interest, has provided to the consortium the confidence that **LLM deployment is feasible** and the appropriate **positive influence** to proceed to its business sustainability. Consortium activities and Partners complementarity provided the opportunity to validate the LLM deployment potential in three (3) different perspectives: technological, scientific and business. The evaluation process included a clinical intervention protocol, dedicated usability and user satisfaction questionnaires, interviews, open discussions and several small scale surveys.

Affective evaluation of LLM

Training with the LLM program made 94% of the participants feel mostly positive (they felt it was fun, they liked it, they felt cheerful after training with it, they felt refreshed and calm). 95% of participants believed that exercising through LLM was beneficial for them, most felt LLM was amusing and they enjoyed their sessions with it and LLM met their expectations. The majority of participants felt quite satisfied with LLM. It is an innovative and very enriching experience that helped them also work several emotions:

- Control of fear facing new situations / Confidence
- Helps approaching failures and successes / Enthusiasm
- Safety through training / Satisfaction
- Working with computers strengthens self-esteem

Satisfaction

There was an overall satisfaction of achievement, for being part of a flexible, rigorous and entertaining programme that offers a new way to approach their problems, that it really catches users' attention. 78% of the participants felt LLM was amusing, they enjoyed their sessions with it and it met their expectations. The majority of participants felt quite satisfied with LLM. All staff members believed that the participants seemed to enjoy their training with LLM, that it is beneficial for them and that LLM is useful in training elderly people cognitively as well as physically.

Independent Living

On average, users reported that:

- training with LLM made them feel they can control their health better
- they would be able to use it at home without help
- in Home installations, some agreed that LLM made them feel more autonomous



- some of them , especially when performing physical training alone at home, felt more safe knowing that a fall down would lead to an immediately generated alarm calling for help
- the user interface was very easy to learn and handle
- The ILC's information features were seen as a very attractive goodie (e.g. RSS-feed, weather forecast)
- nearly all participants would like to have the system when it comes to a final product

Cognitive and physical benefit

The overall statistical data of measuring cognitive and physical parameters has shown that this non-pharmacological intervention to improve cognitive abilities in elderly people (healthy subjects or patients with mild cognitive deficits or early stages of dementia) had impressive results both qualitatively in certain brain functions affected by aging and psychological state of participants. Overall, we demonstrated that the full LLM training, consisting of combined physical exercise and Cognitive Training, leads to significant improvements in both episodic memory (the capacity to learn and retain new information) and working memory (the capacity to hold and cognitively manipulate new information) in elderly people. Longer training durations and more training sessions induces stronger improvements of long-term memory function. Based on this we recommend a continuous training regimen which is associated with long-lasting memory improvements.

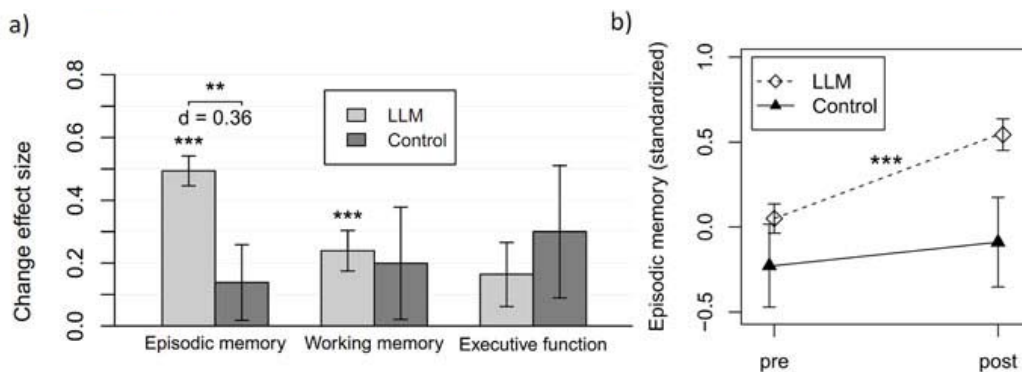


Figure 2: LLM intervention effects on latent cognitive functions. a) Bars represent change effect sizes (post-test minus pre-test, divided by the pre-test standard deviation of the total sample) for the Long Lasting Memories group (LLM) and the passive control group (Control). Net ES d is presented for statistical significant group × session interaction effects. b) LLM and Control group comparison of standardized pre- and post-scores of episodic memory performance. Arrows represent SE. Statistical effects are marked by asterisks: * p < .05; ** p < .01, *** p < .001. What scientific data show, is that if we could delay the onset in the dementia in the population by 5 years, we would reach a 50% reduction in the cases of Dementia. In this way the improvement of cognitive abilities in the elderly people is highly welcome.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has an impact on the expansion of market and growth
- Enhances employment and job creation

Evidence of the impact: The pilot evaluation has shown that:



- On average, pilot users believed that it is worth paying for LLM, that they would wish to continue using it, while the majority of them have recommended LLM to friends/relatives;
- Half of the participants of trial sites in day care centers would prefer to use it at home (to avoid mobility issues), although the other half preferred visiting the day care centers thereby enjoying socializing with other people while training with LLM.

Resources available: The LLM project was funded by the EU FP7 ICT PSP Theme: ICT for ageing well with cognitive problems, combining assistive and independent living technologies. Total budget was 4.719.999 Euros.

In order to replicate the pilot in other EU countries, additional funding would be needed to culturally adapt the content and to develop an enhanced dissemination strategy through public and private organizations.

3. Innovation element

- Has a cost analysis approach
- Has a vision on integrated care
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information

www.longlastingmemories.eu

www.cs.ucy.ac.cy/medinfo

5. Contact Details

Organisation name: University of Cyprus

Contact person: Prof. Constantinos Pattichis

Email:



In Vitro Diagnostic

1.Location

Country: France

Region: Marseille

Total population: 3 Million local inhabitants with an especially high presence of retired (old to elderly) people in all Southern France

2. Description

Target population (group): Older robust people in general population (middle-age to elderly patients with altered cognitive functions and or hypothyroidism)

Main topic: Cognitive decline

Description: It is well known that most mid-life people, especially women, develop hypothyroidism along with brain ageing. Indeed, clinicians are not able to discriminate such patients from patients suffering of (vascular) brain damage. Recent clinical investigation has suggested that on a long-term range, thyroid hormone deficiency may facilitate the development of neurodegenerative diseases like Alzheimer disease. It is therefore essential to have new blood tests which allow early diagnosis and treatment of the patients before cognitive impairment is too severe.

The company is developing such new assays to determine a therapeutic threshold to treat patients with thyroid hormones and therefore prevent brain ageing at the lowest cost.

Deliverables: The company intends to validate new TSH tests on a cohort of 60-70yr old patients and compare with existing tests. The tests may then be marketed in the next two years or so.

Outcomes and evidence of the impact

- Has an impact on the competitiveness of industry.
- Has an impact on health status of the overall European community, Diagnostic stakeholders and Food Industry.

The new testing will allow:

- Early screening of patients from the age of 50-55.
- Early treatment with thyroid hormones based on the validated threshold at a inexpensive cost.



- Follow up of the Northern Europe population who now experienced almost 50 years of iodine deficiency which has never been truly compensated.

Resources available:

The studies have been initiated by a project of the EU FP5 and more recently pilot development has been granted by the French National Research Agency (ANR BioTecS 2010-2013).

The start-up company has the human resources, the knowledge and equipment to work now on a European project as well as with Biologists and Hospitals. The CEO has extensive track records in FP6 and FP7 programs (ITN actions). Funding is necessary for comparing the existing and innovative tests.

3. Innovation element

- Uses new methodology.
- Has relative advantages or brings benefits over existing practices.

4. Further information

About 100 Millions of patients in Europe are misdiagnosed or diagnosed too late for primary hypothyroidism. As a result , these people escape treatment as long as 2-5 years during the onset of the disease: this has a substantial financial impact on all European Healthcare systems because diagnostic is finally made on thyroid imaging (scintigraphy/echography) and especially in women, nodules are often present and require surgery removal.

Thyroid cancers are increasing in the young population as well. Indeed, overall costs may be drastically reduced if a therapeutic index –to treat or not to treat-can be found and get accepted by the clinical community.

5. Contact details

Organisation name: SiaMed'Xpress

Contact person: Catherine Ronin

e-mail: aprauter@fc.ul.pt



Biomarkers in Alzheimer's disease and Parkinson's disease

1. Location

Country: Ireland

Total population : 4.5 million

2. Description

Target population (group): high risk independent people (People with possible Alzheimer's/ mild cognitive impairment or early onset neurodegeneration)

Target population (figure): 150 people

Main topic: Cognitive decline

Description: This study is being conducted as part of a large EC funded project called BIOMARKAPD involving 48 research sites worldwide with the objective of developing evidence-based guidelines for the measurement and the use of biochemical biomarkers for Alzheimer's disease (AD) and Parkinson's disease (PD) in clinical practice.

The purpose of our Irish study is to explore whether measuring biomarkers of neurodegeneration, including protein fragments and other constituents in spinal fluid and in blood of patients with cognitive impairment, is helpful in elucidating the underlying cause of their cognitive deficits and for those diagnosed with mild cognitive impairment (MCI) in predicting who will progress to dementia.

The aims of our Irish study are:

- To explore the utility of CSF biomarkers in the prediction of conversion of subjects with MCI to dementia.
- To explore the significance of CSF biomarkers levels in the early stages of possible Alzheimer's disease and if these measurements can contribute to establishing a more definitive diagnosis at an earlier stage of the disease trajectory.
- To determine the utility of CSF biomarkers as an adjunct in the delineation of the aetiopathology of early onset neurodegenerative disorders, where there is an atypical pattern of cognitive impairment and uncertainty regarding the clinical diagnosis.
- In the context of the BIOMARKAPD project research aims, to examine a range of standardization issues with respect to biomarker analysis in CSF and investigate ways to rectify inconsistencies in biomarkers measurement method between labs in different countries. To explore the utility of measuring β - amyloid protein fragments and other biomarkers in blood, in predicting and monitoring cognitive decline and progression to AD in subjects with MCI.



Deliverables:

To contribute to standardisation and optimisation of biomarkers across Europe.

To establish a reference laboratory for CSF biomarker analysis.

To collect samples for inclusion in European CSF biobank.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for your local population
- Has been adopted, tailored and validated in at least 2 other settings

Provide an additional tool for doctors to aid in the specific and timely diagnoses of different dementias.

A reference laboratory for CSF biomarker analysis will be established.

An article will be prepared for publication detailing the results of the pilot study on the conversion from MCI to AD.

An article will be prepared for publication detailing the establishment of the assay as a diagnostic aid for the Irish population.

Resources available: 449,067€ funded by the HRB through the JPND funding initiative

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

Complete name: BiomarkAPD Project (Biomarkers in Alzheimer's disease and Parkinson's disease): A pilot study on the utility of CSF and blood biomarkers in the delineation of the aetiopathology of cognitive impairment and in the prediction of conversion of mild cognitive impairment to dementia.

5. Contact details

Organisation name: Trinity College Dublin EngAGE Centre for Research on Ageing - Irish Network for Biomarkers in Neurodegeneration (INBIND)

Contact person: Ann Hever & Brian Lawlor

Email: hevera@tcd.ie



A European multicentre trial of nilvadipine in Alzheimer's disease

1. Location

Country: Ireland (Coordinator), UK, Netherlands, France, Sweden, Germany, Hungary, Greece, Italy

Region: European Union

Total population: Approximately 5 million Europeans with Alzheimer's disease

2. Description

Target population (group): High risk Independent people (over 50 years with mild to moderate Alzheimer's disease sufferers)

Target population (figures): 500 over 50 years with mild to moderate Alzheimer's disease sufferers

Main topic: Cognitive decline

Description: The aim of this study (NILVAD) is to investigate the effectiveness and safety of the drug nilvadipine in Alzheimer's disease. Nilvadipine is a licensed blood pressure medication with a proven safety record in people with high blood pressure and more recently has been shown to be well tolerated and safe in older people with Alzheimer's disease. There is preliminary evidence for clinical benefit in individuals with cognitive impairment and strong scientific evidence based on animal model studies of Alzheimer's disease.

The NILVAD project started in Jan 2012 and will run for 60 months until December 2016.

NILVAD will recruit 500 subjects with mild to moderate Alzheimer's diseases across 9 EU countries which include; Ireland, UK, Netherlands, France, Greece, Hungary, Sweden, Germany and Italy

If successful, nilvadipine would represent an advance in the treatment of AD patients and would have a major impact on the health and social care costs.

NILVAD is also conducting 3 substudies, the Blood & Genetic Biomarker substudy, Cerebral Spinal Fluid (CSF) Substudy and the Frailty Sub study. Blood and CSF sample will be taken and the samples will be analysed for Biomarkers. The Frailty substudy will be investigate indices for frailty from participants.

Deliverables :

- Granting of Ethical and Regulatory approval for NILVAD in each of the partner countries.
- Successful conduct of the NILVAD clinical trial.
- Establish European Framework for conducting Investigator led clinical trials.



- Biobanked Blood & CSF samples resulting from the NILVAD study.
- Results of the Blood & Genetic Biomarker Analysis.
- Results of the CSF substudy Analysis.
- Results of the analysis of the Frailty Substudy.

Outcomes and evidence of the impact :

- Has an impact on health status and quality of life for our local population
- Has an impact on the sustainability and efficiency of the health or social care system of our local population

The publication resulting from the NILVAD trial at the end of the study will detail the evidence of impact.

Resources available: The European Commission funds NILVAD for five years, to the amount of 6 million €. under the EC Framework 7 funding instrument.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence
- Brings together a big group of stakeholders

5. Further information

Complete name: A European multicentre double-blind placebo-controlled phase III trial of nilvadipine in mild to moderate Alzheimer’s disease (NILVAD).

5. Contact details

Organisation name: Trinity College Dublin EngAGE Centre for Research on Ageing (Coordinator), St James’s Hospital (Sponsor)

Contact person: Ann Hever & Brian Lawlor

Email: hevera@tcd.ie



Smart Aging Serious Games Software Platform for pre-symptomatic and early-symptomatic assessment of cognitive impairments.

1. Location

Country: Italy

Region: system validation in Calabria (Catanzaro District) – screening in Sicilia (Ragusa District)

Total population: 57.503 people over 65 in Ragusa District

2. Description

Target population: Older people in general population - older people under the risk of MCI

Target population: 1.000 persons for the system validation, 10.000 for the screening

Main topic: Cognitive decline

Description: Smart Aging has been planned as a 3D virtual reality based Serious Game for early assessment and training of cognitive impairments, implementing scientifically validated commonly used neuropsychological tests. The navigation in a 3D environment (loft) that simulates in a reduced space the basic elements of interaction of home living, associated with the game approach result in a powerful screening tool, more friendly and motivating with respect to the traditional paper&pencil tests. The Smart Aging Serious Game asks people to perform tasks related to daily activities, closer to real life than traditional paper&pencil tests, and, in doing so, it is able to evaluate different cognitive functions: executive functions (reasoning and planning), attention (selected and divided), memory (short and long term, perspective), orientation (visuo-spatial).

Deliverables: The Smart Aging SG platform constitutes a powerful **screening tool** for the early detection of cognitive impairments on a wide scale. It is able to replace the traditional neuropsychological paper and pencil based tests

Outcomes:

The project started in July 2012. The platform is in validation phase, since July 2013, within 1.000 persons 50-60 aged in Calabria Region (Catanzaro District) and a first large scale screening will be carried out on 10.000 persons over 65 in Sicilia Region (Ragusa district).

- Has an impact on health status and quality of life for your local population
- Gain of productivity, because of reduction of time and resources in comparison to traditional paper&pencil tests.

An **Evaluation Index** is created based on the performance at the task, taking into account the following parameters:



- *number of correct actions*
- *number of errors*
- *omissions*
- *time needed to complete the task*
- *number of clicks*
- *distance travelled with the mouse*

The score of the serious game will be compared with traditional paper&pencil neuropsychological tests in order to validate the Smart Aging platform as a large scale screening tool for pre-symptomatic and early symptomatic assessment of cognitive impairments.

Evidence of the impact: Periodic evaluation of old people satisfaction are performed through the submission of questionnaires testing the Smart Aging platform usability, friendliness and motivational aspects.

Every 6 months a report is performed on the scientific validation results in terms of Smart Aging platform capability to replace the traditional paper&pencil neuropsychological tests.

Basing on the available data, the large scale screening on 10.000 persons will allow to identify about 1.000 persons with MCI; we expect that the screening costs will be completely covered if the cognitive training will retard the disease onset for one year on 50 persons.

Resources available: The project was funded in 2012 by the Italian Ministry of Education, University and Research; the amount is 1.551 M€, the estimated budget 1.939 M€.

3. Innovation element

- Has a cost analysis approach
- Uses new methodology
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: Consorzio di Bioingegneria e Informatica Medica (CBIM)

Contact person: Stefania Pazzi

Email: s.pazzi@cbim.it



Memory Training

1. Location

Country: Italy

Region: Liguria

Total population: The initiative targets Genoese over-65 residents in 2012, about 187.000. The initiative has been currently extended to other cities in Liguria (428.000 over-65 residents in 2012).

2. Description

Target population : Older people in general population - Courses are opened to every Ligurian citizen wishful to take part, with a preferential access for over 65 people.

Target population: In the first phase, the program involved 119 Genoese over-65 residents. Other Ligurian cities are currently activating the program reaching from 300 to 400 subjects in the region.

Main topic: Cognitive decline

Description: Memory Training programme are aimed at maintaining and improving fundamental neuro-psychological functions such as attention, information processing, mnemonic strategies, allowing for preventing a number of diseases, in particular the Alzheimer disease, which is socially very relevant especially in a region like Liguria with the highest ageing rate in Europe. As secondary effects, the programme is also aimed at fostering elderly people social participation, self-confidence, motivation and their capacity to socially act and interact, reducing the risk of depression and isolation. In this sense, the initiative demonstrates an impact also on independent living.

Courses involve Ligurian people, preferably over-65, in classes of 10-15 people. They envisage 9 weekly meeting of about 90 minutes carried out by specific qualified professionals (educators, social workers, psychologists, doctors). Social and Health Districts, with the support of AUSER, an end-user association that counts around the country 260,000 members as well as 40,000 active volunteers organized at national, regional and local level, inform the elderly population about the opportunity to attend the course. AUSER also identifies the appropriate locations and manages participants' enrollment, organizing the logistics and preparing learning materials.

A Scientific Committee, managed by Galliera Hospital-geriatric department, monitors and assesses the progresses of each Memory Training course.

Deliverables: A set of evidence-based interventions that prevent or postpone onset of frailty.

Outcomes: Memory Training programme aims to prevent cognitive decline and frailty in over-65 Ligurian citizens.

In the first phase, the program involved 119 Genoese residents aged between 65 to 82.



Subjects have been involved in specific tests carried out before the beginning of the programme and at the end of the 9 weekly meetings. Results show a statistically significant improvement ($p < 0,0001$) concerning important cognitive capabilities.

- Has an impact on health status and quality of life for your local population
- Has been adopted, tailored and validated in at least 2 other settings

TEST	“IN” SCORE (median values)	“OUT” SCORE (median values)
MACQ score	11	18
Geriatric Depression Scale (4 items)	1	0
Verbal Flow Test	25	28
Word Recall (3 lists of 10 items)	13	19

Evidence of the impact:

According to the results of the tests, the cognitive training reinforces the residual cognitive capabilities and compensates the less active ones due to an insufficient use. Furthermore, strengthening the cognitive efficiency generates sensible improvements even on the mood and on individual motivations. Memory Training programmes, specifically based on the cognitive functions, improve mental performances both at medium and long term; there will be positive effects also on everyday life activities, such as walking, car driving, as well as on self-esteem and social relations.

Resources available:

Regione Liguria has allocated about 45.000 € for Memory Training Courses in 2013 and is going to set at least one course for each Ligurian Local Health Agency within 2014.

The Memory Center, belonging to Ospedale Galliera, guarantees selections, courses evaluation and trainers education. Furthermore, it guarantees the collection of data incident to the course and it provides their statistic elaboration to produce reliable papers on the project efficacy.

3. Innovation element

- Has a vision on integrated care
- Advocates for (*specify*) preventing the onset of cognitive decline and for fostering social participation and independent living by making the individual actively responsible for his/her healthy lifestyle.

4. Further information

Liguria is one of the eldest regions in Europe, and poses problems in terms of care and social costs. Given the high concentration of elderly people, Regione Liguria has developed in the



years many policies addressed to this target of population, endeavouring to create a system including all the initiatives against isolation and in favour of prevention. Besides the actions taken to assist the elderly in need, also at home, the policy makers are also convinced that keeping the population active in many fields helps to prevent many physicals and mental diseases and has a positive impact on the community.

In particular, Regione Liguria, in the last years, to make regional law 48/2009 on active ageing operative, set up a network including private foundations, public institutions, the third sector and the University, named **Ligurian Active Ageing Network – LAAN**. All together, these actors have realized integrated social policies through activities of promotion/protection, not only as a support for fragile elderly people, but also as participative paths of social prevention, with the development of a new concept of “being elderly” and inter-generational dialogue.

Galliera Hospital (<http://galliera.it/>), is one of the main hospitals in Genoa with an availability of nearly 500 beds, with D.P.C.M. 14/07/1995 Galliera has been identified as a hospital of national importance and of high specialization.

The AUSER Association works through 1,412 local associations around the country and has 260,000 members as well as 40,000 active volunteers organized on a national, regional and local level. AUSER mission is to support the right of older people to continue to play an active role in society.

Regione Liguria (European Affairs Department and Health and Social Affairs Department – <http://www.regione.liguria.it>), together with Galliera Hospital, University of Genoa (Department of Educational Sciences), Auser Onlus – Liguria, David Chiossone Onlus Institute and Social Cooperative Televita Agapé, under the coordination of SI4LIFE srl – (<http://www.si4life.com>) "Science and enterprise together to improve quality of life", a new scientific-technological Regional Innovation Hub, set up the new Commitment “FRAGILE” under the EIP-AHA A3 Action Group.

5. Contact details

Organisation name: Regione Liguria in collaboration with Local Health Agencies (LHAs), Public Health Districts (PHDs), AUSER Liguria and other Organizations of the Ligurian Active Ageing Network (LAAN), with the scientific supervision of Galliera Hospital.

Contact person: Prof. Ernesto Palummeri (Galliera Hospital)

Email:



Prevention of Functional Decline Program (from INOVAFUNAGEING)

1.Location

Country: Portugal

Region: Lisboa

Total population: 2,661.850

2. Description

Target population (figure): 410,046)

Target population (group): Older robust people in general population (65 years or more)

Main topic: Cognitive decline

Description: Prevention of functional and cognitive decline is a major issue to succeed in promoting a healthy life and active ageing. Development of functional foods or active ingredients retarding or preventing amyloid disorders in neurodegenerative diseases or diabetes, gives an important contribution to achieve this goal.

These age-related non-communicable diseases pose severe problems in modern society and also appear in younger population, causing some million deaths in the world's poorest billion. Despite advances in research and treatment, no cure is available for any of them.

The activities now described emerge from the need to create innovative products against these pathologies that improve the health status and the quality of life of the population, in particular of older people. They focus on new functional foods resulting from exploitation of natural resources, e.g. medicinal plants that support the long-term sustainability and efficiency of these health products.

- In particular *S. sclareoides*, a plant which extracts are not toxic, has anti-amyloidogenic effects and demonstrated nanomolar acetylcholinesterase inhibition, of the same order of magnitude as that of the drugs used in the treatment of the Alzheimer's disease, that are quite efficient in the early disease stages. This plant generates an active ingredient that acts through both cholinergic and amyloid approaches and is very promising for future exploitation as nutraceutical, contributing to innovative products and consequently competitiveness in this type of products in Europe.
- Another example is an anti-diabetic plant which active principle, already isolated and synthesized to facilitate its access, is able to return fasting glycaemia and post-load glucose excursions to normal, while producing amelioration of insulin secretion and increasing insulin sensitivity. In addition, the product and the plant extracts are not toxic and are capable of binding to beta-amyloid oligomers.

These two plants, amongst others, demonstrate the efficacy of exploitation of natural resources for the production of new multitarget active ingredients and the generation of potential drug candidates for these pathologies, with new mechanisms of action. The tools for their



generation rely on efficient technologies, based on isolation, structure elucidation and or synthetic procedures to access pure compounds and the results obtained encourage the further study of these and related entities aiming to innovation in control and cure of these diseases.

E-learning training courses will be organized to promote dissemination of scientific results, and, to foster the understanding of these product consumption benefits, an interactive website will be implemented, demonstrating the importance of adopting adequate food habits.

Also the replacement of single target treatment commonly used up to now by efficient multitarget agents will also contribute to the growth and expansion of new markets and to enhance the competitiveness of EU industry.

The following objectives can be underlined in this programme:

- To introduce in the market multitarget nutraceuticals to control neurodegenerative diseases (e.g. Alzheimer's disease) and or diabetes.
- To search for their active principles and evaluate their efficacy as potential multitarget drugs with new mechanisms of action.
- To disseminate the scientific knowledge through e-learning platforms that focus the relevance of glycosciences to prevent functional and cognitive decline.
- To promote the public understanding of the innovative findings through an appealing and interactive website, that also demonstrates the importance of changing food habits to a rationalized consumption of adequate foods for their health condition.

Deliverables:

- E-learning course on glycosciences to understand related biomolecular processes with focus on functional and cognitive decline.
- Interactive Web platform for the public understanding of innovative solutions for functional decline prevention including adopting new food habits.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has an impact on the sustainability and efficiency of the health or social care system of our local population.
- Has an impact on the expansion of market and growth.
- Has an impact on the competitiveness of industry.
- New multitarget nutraceuticals for diabetes and neurodegenerative diseases.
- Innovative methodologies to produce pure compounds aiming to multitarget drug candidates.
- Analytical tools for quality control.
- Extracts of *S. sclareoides* and of *G. tenera* were investigated regarding their potential and efficiency as nutraceuticals for neurodegenerative diseases, and the latter also for diabetes.
- The extracts did not exhibit any acute toxicity, and their infusion has been used in traditional medicine. Preliminary studies permitted not only to confirm their biological properties but also to access the structure of their major active principles.



- These plant secondary metabolites have proven even more efficient than the extracts and did not exhibit any acute toxicity. Similar results were obtained for synthetic molecular entities exhibiting properties relevant for these diseases.
- Their multitarget efficiency and absence of toxicity are strong indicators of their success as active ingredients and as sources of potential and innovative drug candidates against these diseases.

Resources available:

- PERsonalised ICT Supported Service for Independent Living and Active Ageing (PERSSILAA) - FP7-ICT-2013-10, project nr. 610359, with Universiteit Twente (coordinator), roessingh research and development bv, Azienda Ospedaliera Universitaria Federico II, Fundacao da Faculdade de ciencias da universidade de Lisboa, University College fundacio privada institut de neurorehabilitacio Guttman, Cork, national university of ireland, cork, Universidad Politecnica de Madrid, Nexera SCPA, approved to start in October-November 2013.
- E-learning course on Glycosciences funded by Euroglycoforum ESF network 2009-2014.
- Strategic Project CQB-FCUL, PEst-OE/QUI/UI0612/2013, funded by Fundação para a Ciência e a Tecnologia, 2013-2014.
- QREN-SI I&DT co-promotion FACIB – project nr. 21547, 2011-2014
- "Detoxification of toxic oligomers using natural products", PCBnet project, 2012-2013, University of Sheffield.
- 3 Post-Docs, 4 Ph.D. students, 2 senior researchers.

3. Innovation element

- Has a cost analysis approach.
- Incorporates incentives for change to stakeholders.
- Has a multidisciplinary approach.
- Uses new methodology.
- Adds to the existing large body of evidence.
- Study cases on neurodegenerative diseases, diabetes.
- Has relative advantages or brings benefits over existing practices.

4. Further information

5. Contact details

Organisation name: Faculdade de Ciências, Universidade de Lisboa

Contact person: Amélia Pilar Rauter

e-mail: aprauter@fc.ul.pt



Action for Frailty and Functional Decline – Initiative: Healthy ageing with innovative functional foods/leads for degenerative and metabolic diseases (INOVAFUNAGEING)

1.Location

Country: Portugal

Region: Coimbra

Total population : 10 millions

2. Description

Target population (group): Older robust people in general population (older people in the community in risk of cognitive decline)

Target population (figure) : 100, 000.

Main topic: cognitive decline

Description: Within our commitment, we aim at developing a new inhibitor of BACE-1, a key enzyme for the production of amyloid- β peptides ($A\beta$). The accumulation of $A\beta$, due to an increase in its production or an impairment in its clearance, is generally accepted to be the etiological agent of the disease. Thus, BACE-1 is a prime therapeutic target in Alzheimer's disease (AD) and pharmacologically suitable BACE-1 inhibitors have a high potential to act as a disease-modifying therapy.

The activities to be carried out include in vitro assays to select the most promising compounds, which will then be tested in a cellular model of AD. Finally, the compounds will be tested in an animal model of AD. The development of the new molecule with potential to delay the onset and progression of AD will start in Autumn 2013, and it will be mainly supported by highly qualified researchers at the Center for Neuroscience and Cell Biology.

Deliverables: A new molecule pharmacologically suitable for the treatment of AD and perform the pre-clinical studies allowing afterwards the entrance of the molecule in clinical trials.

Outcomes and evidence of the impact:

- Has an impact on the expansion of market and growth.
- Has an impact on the competitiveness of industry.

Our proposal intends to:



- Improve the quality of life and the healthy life years of older European and worldwide citizens, delaying the progression of AD.
- Reduce the costs of care with AD patients thus contributing to the long-term sustainability and efficiency of health and social care systems;
- To contribute to the improvement of the industrial business environment of the EU pharmaceutical industry, provided the compound under development proves to be beneficial in the pre-clinical phase.

Resources available:

Funding is provided by Fundação para a Ciência e Tecnologia(PTDC/NEU-SCC/1351/2012) and FEDER-COMPETE program (FCOMP-01-0124-FEDER-029676).

3. Innovation element

- Uses new methodology.
- Develops a new drug for AD treatment with the ability to become a disease-modifying therapy.
- Adds to the existing large body of evidence.
- Has relative advantages or brings benefits over existing drugs for AD treatment.

4. Further information

Complete name: Specific Action for Frailty and Functional Decline Initiative: Healthy ageing with innovative functional foods for degenerative and metabolic diseases (INOVAFUNAGEING)

A delay of five years in the progression of AD is sufficient to diminish significantly the costs associated with treatment; Alzheimer's Association estimates for the USA a reduction in 50 billions \$ (USA dollars) in five years after the introduction of a drug with the ability to delay or sustain the progression of the disease (2010).

The introduction of a drug with the ability to delay or sustain the progression of the disease will displace the number of patients in an advanced phase of the disease for a moderate phase, with a reduction in the costs of about 800 million \$ (USA dollars) in thirty-five years (Business Insights 2011, BI00040-005).

5. Contact details

Organisation name: Center for Neuroscience and Cell Biology, University of Coimbra

Contact person: Armanda Emanuela Castro e Santos

e-mail: aprauter@fc.ul.pt



Healthy ageing with innovative functional foods

1. Location

Country: Portugal

Region: Lisboa

Total population: 2,661.850

2. Description

Target population: Older people in general population (elderly in the general population; outpatients; inpatients)

Target population: 410.046

Main topic: cognitive decline

Description: FFUL group will provide advanced research on novel biomarkers and molecular entities with new mechanisms of action related with age-related diseases, such as Alzheimer's and Parkinson's diseases, as well as cancer and metabolic diseases, in collaboration with FCUL. By identification of specific targets and biomarkers in patient's biological samples at the stage of disease onset we will contribute to the early diagnosis and the screening of illness progression.

The main objectives are:

- To evaluate biomarkers to access frailty and frailty prevention in elderly selected population.
- To establish tools to recover cell function and cognition-related alterations ,by better understanding chemical mechanisms and adaptive immunity in order to develop novel therapeutics that regulate age-related diseases.

Deliverables: Application of new biomarkers as screening tools to evaluate the effects of a healthy diet, such as the Mediterranean diet, in the onset of frailty in older people.

Elucidation of the molecular mechanisms associated with brain cell senescence, susceptibility to central nervous system (CNS) disorders and relation to neuroimmune or neuroinflammation deregulation.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has an impact on the sustainability and efficiency of the healthor social care system of our local population.
- New molecular entities with new mechanisms of action for age-related diseases (in particular neurodegenerative diseases).



- New methodologies for early diagnosis for neurodegenerative diseases.
- Frailty detection, prevention and monitoring of risk target population(s).

The on-going work clearly demonstrates the impact of the expected outcomes of this program.

Resources available: Funding will be provided by the FFUL and its Research Institute (iMed.UL) for R&D equipment, together with ongoing projects and associated research teams, structural funds and PhD courses programs on Biopharmaceutical Sciences and Biomedicines.

3. Innovation element

- Biomarkers and new molecular entities
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

Complete name: Healthy Ageing with Innovative Functional Foods/Needs for Degenerative and Metabolic Diseases.

5. Contact details

Organisation name: Faculdade de Farmácia da Universidade de Lisboa

Contact person: Dora Brites

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Program of University Studies for Senior Citizens (PEUS)

1. Location

Country: Portugal

Region: Porto

Total population: 2 million

2. Description

Target population (group): older people in general population (graduated retired senior citizens)

Target population (figure): 20,000

Main topic: cognitive decline

Description : Our Program of University Studies for Senior Citizens was created in 2006 in order to offer lifelong learning opportunities to senior citizens who, although retired, wish to maintain an intellectual activity compatible with their previous academic background.

The program is organized in six semesters during which senior students are expected to attend compulsory and optional courses covering a range of topics such as Natural Sciences, Informatics, Foreign Languages, Social Sciences and Health. The core of the program is built around Oporto Region (History, Geography, Literature, and Art). Senior students also have the opportunity to elaborate and present a monograph on a topic of their choice under the supervision of a Professor of the area selected to be studied. Several editions of senior interchange programs with Spanish Universities have already taken place.

For senior students who have already concluded the three above mentioned years of the program, a group of curricular units are offered as they do not wish to abandon this kind of initiative.

Although there is a large number of the usually called Third Age Universities in Portugal, namely in Porto region, this program stands out as a different offer because of the teaching staff – all university professors – and of the students – all with a university degree.

The main aim of this program is to provide a cognitive empowerment tool to the students who attend it.

Deliverables: Certificates are supplied to the students at the end of the program.

Outcomes and evidence of the impact: Prevention of cognitive decline, as we know that lifelong learning plays an important role in intellectual activity and improves the level of literacy and social participation and awareness of the elderly.



Regular evaluation of the students' satisfaction is conducted. The importance of the course is evidenced by the fact that more than 90% of the students declare themselves satisfied with the program.

An additional evidence of this satisfaction is the fact that a significant number of students, after having finished the program, asked for alternatives to continue in touch with the program. This demand obliged the institution to offer them a complementary set of courses.

Has an impact on health status and quality of life for our local population.

Resources available: The course is hosted by the Faculty of Arts of the University of Porto (FLUP). All teachers belong to the different Schools of the University of Porto.

Students pay a fee to participate in the program.

The program is fully financed with the students' fees.

3. Innovation element

- Has a multidisciplinary approach.
- Adds to the existing large body of evidence.
- Supports cognitive impairment.

4. Further information

Full name: Program of University Studies for Senior Citizens (Programa de Estudos Universitários para Seniores – PEUS)

See:

https://sigarra.up.pt/flup/pt/cur_geral.cur_view?pv_ano_lectivo=2012&pv_origem=CUR&pv_tipo_cur_sigla=LV&pv_curso_id=511

5. Contact details

Organisation name: Faculty of Arts of the University of Porto

Contact person: Maria da Graça Lisboa Castro Pinto

Email: mgraca@letras.up.pt



Cognitive stimulation and Brain fitness

1. Location

Country: Portugal

Region: Coimbra

Total population: 1500

2. Description

Target population: High risk dependent people (Mild cognitive impaired elders, Mild to moderate demented elders)

Target population : 300 (+ 65 years – Nursing homes and Day Centers of the center region of Portugal)

Main topic: cognitive decline.

Description: The main objective of this project is to evaluate the impact of cognitive stimulation on cognition, depression and quality of life of institutionalized in nursing homes or community-dwelling elders.

Training programme: The cognitive stimulation program “Making a Difference (MD): an Evidence-based Group Programme to Offer Cognitive Stimulation Therapy to People with Dementia” (Spector et al, 2006), adapted to the Portuguese population by Apóstolo & Cardoso (2013) comprises a main 14 session program running twice a week (7 weeks) and a 16 session maintenance program.

Each MD session takes 45 minutes to one hour and incorporates the use of a 'Reality orientation (RO) board', displaying both personal and orientation information, including the group name (as chosen by participants). The guiding principles of the CS program involve using new ideas, thoughts and associations; using orientation (but sensitively and implicitly); focusing on opinions rather than facts; using reminiscence as an aid to the here-and-now; providing triggers to aid recall; creating continuity and consistency between sessions; focusing on implicit (rather than explicit) learning; stimulating language; stimulating executive functioning and being person-centered. It aims to create an environment where people have fun and learn, and where they strengthen their abilities and relationships among the group members, thus maintaining their social and cognitive skills at their optimum ability (Aguirre et al., 2010; Spector et al., 2006).

Relevance of the practice is related to:

- Decrease isolation, loneliness and depressive symptoms.
- Avoid cognitive impairment, cognitive frailty and dependence.
- Improve seniors quality of life, well-being and autonomy.
- Promotes pro activity and social interaction of elderly (CS is performed in group of 6-7 elders).



Deliverables: Training programme: The cognitive stimulation program “Making a Difference (MD): an Evidence-based Group Programme to Offer Cognitive Stimulation Therapy to People with Dementia”. The MD general themes are: Physical games; Sound; Childhood; Food; Current affairs; Faces / scenes; Word association; Being creative; Categorizing objects; Orientation; Using money; Number games; Word games and Team quiz (Spector et al., 2006; Apóstolo & Cardoso 2013).

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has been adopted, tailored and validated in at least 2 other settings.

Different studies were developed by the team of the Health Sciences Research Unit: Nursing (UICISA: E) [HESC-Center-Coimbra-742]. Despite limitations, the results with institutionalized nursing home elders showed positive impact of CS on cognition, but they are not conclusive about the effect of CS in mood (Apóstolo et al., 2011; Apóstolo, Rosa & Castro, 2011; Apóstolo, Rosa et al., 2013).

Studies with healthy (not cognitive impaired) community-dwelling elders showed positive impact of CS effective in reducing depressive symptomatology but there is no statistical evidence of CS’s efficacy in cognition (Apóstolo, Martins et al., 2013; Apóstolo, Paúl & Cardoso, in press). Other data is currently been analyzed to be submitted for publication.

Resources available: We have human resources composed by the research team of UICISA: Project [AGING, HEALTH AND CITIZENSHIP: CITIZENSHIP AND PROMOTION OF THE AUTONOMY AND INDEPENDENCE OF THE ELDERLY AND THEIR CAREGIVERS](#).

We have the Portuguese adaptation of the Cognitive stimulation program “Making a Difference (MD): an Evidence-based Group Programme to Offer Cognitive Stimulation Therapy to People with Dementia.

We have partnership with several nursing Homes and Day Centers of Coimbra and the center region of Portugal.

3. Innovation element

- Has a multidisciplinary approach.
- The use of this intervention (Cognitive stimulation program “Making a Difference) can offer contributions to make the elderly more active, brain fitness, and prevent cognitive decline and dependency and promote well-being.
- Has relative advantages or brings benefits over existing practices (structured programme; elders adherence is remarkable)
- Prevent cognitive decline and dependency and promote well-being.

4. Further information

The evidence base for the effectiveness of Cognitive Stimulation (CS) for dementia in relation to the cognitive function has been consistently demonstrated by a recent systematic review (Woods et al., 2012). In total, 15 RCTs met the inclusion criteria for the meta-analyses. Studies analyzed included 718 participants (407 receiving cognitive stimulation, 311 in control groups) with small changes reported in multiple trials on commonly used brief measures of cognitive function; adverse effects have not been reported. No differences in mood (self-report or staff-



rated), activities of daily living, general behavioural function or problem behaviour were recorded. These benefits are over and above any medication effects. Although more research is needed, results suggest that continuing involvement in CS may be beneficial.

Despite some weaknesses, several studies also demonstrated the efficacy of CS in community-dwelling healthy elders. Three reviews (Tardif & Simard, 2011; Papp, Walsh and Snyder, 2009; Valenzuela & Sachdev, 2009) of the effectiveness of cognitive intervention programs administered to healthy elders demonstrated that CS is effective in cognition. Valenzuela & Sachdev, (2009) concluded that cognitive exercise training in healthy elders produces a durable protective effect, delaying the onset of cognitive impairment in elderly people, and recommend it to older adults to preserve mental activity, particularly after retirement.

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5. Contact details

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Psychological Support Program for the Elderly (PAPI)

1. Location

Country: Portugal

Region: Coimbra - Montemor-o-Velho

Total population : 26.171 people

2. Description

Target population: 300 people

Target population: Older people in general population - (Older people, >64 years old, in retirement homes)

Main topic: Cognitive decline

Description : Based on logic of decentralization and contracting of services provided by retirement homes of Montemor-o-Velho (county of Coimbra) the Psychological Support Program for the old-age people (PAPI in Portuguese Programa de Apoio Psicológico ao Idoso) seeks to promote the bio-psycho-social balance of the elderly.

This project provided services that will go from the assessment to intervention as well as prevention programs of rehabilitation of emotional and cognitive problems targeting an implementation of psychological support in old-age people.

The implementation of PAPI has begun in January of 2013 in a retirement home, with the participation of 64 seniors and 10 health care professionals. At the beginning and end of the program seniors completed a short questionnaire constructed for this purpose with issues relating to the satisfaction of the program, the self-perception of their quality of life and services for the home.

Deliverables :

Develop strategies to promote the integration of the elderly person in various activities of physical, social, emotional and cognitive:

- Creation of an educational and training plan based on the perceived needs of these type of people for the technicians.
- Develop a manual of best practices based on users speech for the health professionals.
- Suggest alternatives consistent to contour the identified obstacles, in particular pointing out possible existing resources and or creating other contributions.
- Building a web platform in order to be able to control misinformation and or contradictory knowledge through the access to information and clarification.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.



- Has an impact on the sustainability and efficiency of the health or social care system of our local population.

The old-age people of Montemor-o-Velho have expressed their satisfaction and positive perception of the PAPI programme. The questionnaire revealed their satisfaction levels to be generally higher than average values. The results also demonstrated that there was an increase in the qualification of technical teams and the quality of life of the elderly. The increase was approximately 30% in all topics evaluated.

In the municipality of Montemor-o-Velho, district of Coimbra, a pilot study with 25% of target population was developed with pre and post-test. With reference to cut-offs and normative values for the old-age Portuguese population has verified a decrease of their depressive and anxious symptoms in about 3 points and no longer scoring this symptomatology. This project allowed increased in 20% of the cognitive domains like their attention, concentration, memory (short-term and working), executive functions and visual-spatial skills, those are strongly influenced by physiological aging process and the institutionalization.

The PAPI allowed all the elderly to have more insight into their subjective memory problems, greater socialization and face the institutionalization of a more positive way. It is estimated that 80% of their cognitive performance and psycho-emotional balance has increased.

Furthermore, emphasized the increment of technical and theoretical knowledge of human resources (in circa 7%) and the reduction of complaints associated with failures such complaints (roughly 2%). In global terms, the program potentiates the improvement of services provided by retirement homes for the elderly.

Resources available: Protocols with all institutions of retirement pensions (17) of Montemor-o-Velho and technical resources of the Peroneo-saúde e vida (1 psychologist, 2 physiotherapists, 1 nurse and 1 college professor).

The annual costs for implementation of PAPI is 40 000€ (74% for human resources, 10% for transports of team, 5% for equipment's, 2% for materials, 7% spending on psychological assessment instruments in older adults validated for the Portuguese population and 2% for conferences).

In the future, it is expected that this project will be funded by Local Authorities.

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care
- Has relative advantages or brings benefits over existing practices
- Potentiates the improvement of services



4. Further information

Complete name: Psychological Support Program for the Elderly (PAPI) in Portuguese Programa de Apoio Psicológico ao Idoso

4. Further information

Organisation name: Peroneo – saúde e vida. Ageing@Coimbra consortium

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New biomarkers to identify frail, elderly individuals with mild cognitive impairment.

1. Location

Country: Spain

Region: Aragón

Total population: Aragón (2012): 1.349.467; (M) 671.898 (W) 677.569 240,000 individuals in geriatric age

2. Description

Target population (group): Dependent patients (Elder and Dependant People)

Target population (figure): 21,000 individuals with 'Mild Cognitive Impairment' and high risk of conversion into Alzheimer's disease and other dementias.

Main topic: Cognitive decline

Description: The procedure includes, as a first step, the identification in the population cohort of n= 4,803 individuals aged 55 or more years in the ZARADEMP Project, those individuals with MCI and high risk of conversion into AD (MCI-HRDD). The ZARADEMP Project is a longitudinal study started in 1994, and is now involved in the 5th follow-up wave. Compared with clinical samples, general population samples minimize the selection bias and have special interest in this setting. Nanotechnology is proposed for the non-invasive detection based on the use of multifunctional nanoparticles. The aim is to use these particles as "intelligent vehicles" that would carry the microRNA's. Further detection of the nanoparticles will visualize and quantify the presence of AD or MCI markers

The following **objectives** are set for this research, and will be evaluated in yearly basis:

- The identification of those individuals with MCI and high risk of conversion into AD (MCI-HRDD), and the identification of the adequate markers.
- The identification and quantification among MCI individuals, by means of nanotechnology techniques (plasmatic Abeta1-40 y Abeta1-42, fosfotaurine), of those with high risk of MCI-HRDD.
- The identification among MCI individuals, by means of genetic techniques (original microRNA's), of those with high risk of MCI-HRDD. The microRNA's are mainly expressed in mature brain and predisposed to age. These microRNA's modulate different molecular parameters and some studies have shown they are in close relation to neuronal synapsis during memory processes. A preliminary identification of some microRNA's in blood, brain and cerebral spinal fluid (CSF) human samples has being carried out.



To identify among MCI individuals, by means of advanced neuroimaging techniques (morphometry), those with high risk of MCI-HRDD.

The production of multifunctional nanoparticles, which involves: the preparation of nanostructured materials, the functionalization of the surface, the binding of the microRNA's and other molecules related to the proposed particular detection system.

To document and improve the previously reported coefficients of sensitivity, specificity and predictive value of biomarkers, particularly when using the combined techniques.

Deliverables :

- Large databases, coming from the implementation of the protocols described in the cohort of the ZARADEMP Project, with a baseline wave and four follow-up waves.
- New biomarkers (original microARN's), to detect MCI-HRDD. individuals / or new, more sensitive and specific techniques to detect (nanotechnology) known biomarkers.
- New developed multifunctional nanoparticles, to support an early and more effective detection of MCI-HRDD.
- Training program for researchers in all disciplines, particularly young researchers.
- Guidelines to transfer to the NHS for the application of new knowledge into clinical practice.

Outcomes and evidence of impact:

Enhances good care in dementia by providing:

- New data of outstanding cognitive, psychopathological and biomedical importance to identify MCI-HRDD individuals.
- New and non-expensive biomarkers to identify MCI-HRDD individuals, so that an earlier diagnosis and prognosis will be possible using a non-invasive and innovative methodology.
- Data reported in the international literature, to be used by the international community of researcher and National Health Systems.
- Access to the data in the program will be available to the whole population of MCI-HRDD individuals, and, in general, to all frail individuals at risk of dementia.
- Should the objectives be fulfilled, the new knowledge program would be transferred to the National Health System, with guidelines for use when appropriate.

To be documented at yearly intervals during the study process:

- Increased number of publications and articles in peer reviewed, high impact journals, of different disciplines.
- Inclusion of new biomarkers in guidelines for clinical implementation of screening programmes.
- Inclusion of new biomarkers in guidelines for involving MCI-HRDD individuals in programs to delay/ prevent the development of dementia.



- New methodology developed, which would impact the industrial sector promoting innovation in the pharmaceutical and clinical application.
- Increased proportion of individuals in whom preventive actions are implemented following identification as MCI-HRDD individuals

Resources available:

Studies to develop the new biomarkers were initially designed and implemented by the following, national research organizations: CIBERSAM, the consortium of mental health promoted by the ISC III (equivalent to the National Institute of Health); Institute of Nanotechnology of Aragón (INA); LAGENBIO-I3A research team of the University of Zaragoza.

Studies are supported by the National Spanish Associations on: Psychiatry, Neurology, Public Health and Epidemiology, Nanotechnology, Genetics and Neurodegenerative Diseases research.

The research is funded by the National Institute of Health Carlos III (ISC III), European framework programmes, Spanish Research Agency, Regional government of Aragón.

The research teams belong to the University, of Zaragoza, the IIS Aragón, CIBERSAM (the national research consortium of the ISC III), and the public health system (SALUD in Aragón).

Participants in the study are researchers and clinicians with considerable research experience coming from the institutions mentioned above. Regional authorities, both in the health and the academic systems are fully supportive of this initiative.

3. Innovation element

- Has a multidisciplinary approach.
- Uses new technology.
- Has important potential to be generalized to the National Health System.
- Adds to the existing large body of evidence

4. Further information

Complete name: New biomarkers to identify frail, elderly individuals with 'Mild Cognitive Impairment' (MCI) and high risk of conversion into Alzheimer's disease and other dementias.

Our Institute has organized, under the umbrella of Neuroscience, a multidisciplinary consortium of the main research workgroups in the field in the Autonomous Community of Aragón (Psychiatry, Neurology, Geriatrics, Genetics, Nanotechnology, Neuroimage, Epidemiology and Biostatistics). In a context of the increasing interest and determination to fight the current epidemics of dementias, in particular Alzheimer's disease and other neurodegenerative conditions, the consortium is prepared to implement original, ambitious, multidisciplinary



research in this population with high levels of frailty, dependency, cognitive and functional decline.

The general objective now is to identify and to quantify, by means of new, innovative, original detection methods (including nanotechnology), plasmatic, genetic and neuroimage techniques, biomarkers (including new biomarkers) of Alzheimer's disease (AD) and mild cognitive impairment (MCI), and to study the predictive validity of the conversion of MCI into AD. The specific objectives include: a) the identification among MCI individuals of those with high risk of developing dementia (MCI-HRDD); b) to improve, by means of the original techniques, the sensitivity, specificity and predictive value of the following biomarkers in the identification of AD and MCI: plasmatic (Abeta1-40 y Abeta1-42, fosfotaurine), genetic (original microARN's), neuroimage (morphometry). Specific hypotheses will be tested for each specific objective. The plan includes the transfer of results to the National Health System.

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5. Contact details

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Prevention of complications in frail patients with dementia assessed with the new, original staging system based on the European EDCON/IDEAL scale.

1. Location

Country: Spain

Region: Zaragoza-Aragón (and extension to representative centers in the country, Spain)

Total population: 240,000 individuals in geriatric age (extended in the National program)

2. Description

Target population: High-risk independent people - Individuals with dementing illnesses seen in different medical and care and settings.

Target population: 14,500 individuals with dementia (extended in the National program)

Main topic: Cognitive decline

Description: Our Research Group at the Clinic Hospital (IIS Aragón) has developed, in collaboration with the European consortium EDCON, an original instrument for the staging of dementia and associated problems, the multidimensional EDCON/ IDEAL scale. This instrument is the first of this class in the international literature; it is reliable and valid, and has been translated into several languages including Spanish—it is ready to be used in different settings of dementia care. Our Group has been responsible for the Spanish version, and has the adequate experience to train professionals, including nurses and social workers, so that large scale, innovative assessment of patients to document the cognitive stage is feasible. But also the stage of associated medical, behavioural and social problems in individuals with dementia cared for in different settings becomes available. The European consortium EDCON is now in the process to operationalize adequate interventions for each stage of dementia, and has considerable experience to reach consensus using specialized methods including Delphi's. Therefore, documenting the frequency of different care needs for the corresponding dementia stages will also be possible, and it is expected to lead to appropriate interventions. Different professionals involved in dementia care, and volunteers from patient's organizations would join the medical staff both to document the size and characteristics of the care problem and to start appropriate care action. **Deliverables:** Data collected in this project will enable building an **integrated longitudinal database** that will help to understand the factors related to the natural progression from frailty to dependence. It will also provide validated **screening tools** for early and adequate identification in primary care. Last, it will offer sufficient evidence for the establishment of socio-medical models of **integrated healthcare**, as is the CGA, which best respond to the needs of frail older individuals.

The following objectives are set for the patients, and will be evaluated in yearly basis:



- Increase number and proportion of patients with dementia assessed with the EDCON/ IDEAL scale.
- Increase the number of care actions implemented following assessment (vs “care as usual”)
- Reduce the scores on behavioural and psychological symptoms in patients assessed with and recruited for the intervention following the EDCON/ IDEAL program.
- Reduce the scores on social needs in patients assessed with and recruited for the intervention following the EDCON/ IDEAL program.
- Reduce the scores on carers’ distress in patients assessed with and recruited for the intervention following the EDCON/ IDEAL program.

Deliverables: Guidelines for interventions guided by EDCON/ IDEAL scale assessment.

- Training program for professionals and lay volunteers
- Large data-bases with information on:
 - The prevalence and severity of medical, behavioural and social problems in patients with dementia assessed with the EDCON/ IDEAL scale.
 - The outcome of patients with dementia included in the program focused on the EDCON/ IDEAL assessment and care intervention, compared with care as usual.

Outcomes:

- Prevention of behavioural and social complications in frail patients with dementia assessed with the new, original method based on the EDCON/ IDEAL scale.
 - A formal evaluation one year after implementation of the program is expected to support evidence coming from large samples in different care facilities and regional environments.
 - Access to the EDCON/ IDEAL program will be available to the whole population of patients with dementia assessed and cared for in different medical services and specialities across the country
 - Should the objectives be fulfilled, the program would be transferred to the National Health System
- Has an impact on health status and quality of life for your local population
 - Has an impact on the sustainability and efficiency of the health or social care system of your local population
 - Has an impact on the expansion of market and growth
 - Has been adopted, tailored and validated in at least 2 other settings
 - More than 10% of the local target population receives the innovative practice
 - Enhances good care in dementia, a priority subject in most health systems.

Evidence of the impact: To be documented at yearly intervals during the study process:

- Increased number and proportion of patients with dementia assessed with the EDCON/ IDEAL scale
- Increased proportion of patients in whom care actions were implemented following assessment (vs “care as usual”)
- Reduced scores on behavioural and psychological symptoms in patients assessed with and recruited for the intervention following the EDCON/ IDEAL program
- Reduced scores on social needs in patients assessed with and recruited for intervention following the EDCON/ IDEAL program



-Reduced scores on carers' distress in patients assessed with and recruited for intervention following the EDCON/ IDEAL program

Resources available: -Studies to develop the EDCON/ IDEAL system were initially organized by the EDCON European Consortium and funded by the Sartorius Foundation programmes . Studies in Spain were supported and funded by the CIBERSAM programmes, of the Instituto de Salud Carlos III (ISC III, equivalent to the National Institute of Health), and were supported by the Sociedad Española de Geriatría Psiquiátrica (SEPG).

-Research teams are funded by the Universities of Zaragoza, the IIS Aragón, CIBERSAM (the national research consortium of the ISC III), and the public health system (SALUD in Aragón, the equivalent in Madrid).

-Participants in the study are researchers and clinicians with considerable research experience coming from the institutions mentioned above. Regional authorities, both in the health and the academic systems, are fully supportive of this initiative.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

-A range of supporting information may be found in the following articles, and on the web of EDCON European Consortium:

-Validity, reliability, and feasibility of clinical staging scales in dementia: a systematic review. Rikkert MG, Tona KD, Janssen L, Burns A, Lobo A, Robert P, Sartorius N, Stoppe G, Waldemar G. Am J Alzheimers Dis Other Demen. 2011 Aug;26(5):357-65. doi: 10.1177/1533317511418954. Epub 2011 Sep 13. Review.

- Reliability and validity of the EDCON staging schedule for dementia
Semrau M, Albers L, Burns A, Lobo A, Robert P, Stoppe G, Waldemar G, Olde Rikkert M, Sartorius N (Submitted)

5. Contact Details

Organisation name: Bio-Med Aragón/Hospital Clínico Universitario, Universidad de Zaragoza

Contact person: Antonio Lobo

Email:



Non Invasive Neurofunctional Evaluation facility (NINE)

1. Location

Country: Spain

Region: Madrid

Total population: 6.5 million people/ 15.8% over 65

2. Description

Target population (group): older people in general population (older people with presbycusis who will benefit from the results of research on ageing with a focus on nutrition and cognitive decline studies using animal models).

Main topic: cognitive decline

Description: Age-related hearing loss, known as presbycusis, affects half of the population over 60 years old, making it the second most common cause of disability in older people. Our sense of balance is heavily influenced by our sense of hearing and a decreased hearing ability strongly correlates to an increased risk of falling in the elderly. Moreover, there is no restorative treatment for deafness but functional replacement by means of prosthesis. Therefore, prevention and treatment of hearing loss is an unmet medical need.

Nowadays, there are diverse methods that allow fast, objective and non-invasive evaluation of sensory systems in laboratory animals. Electrophysiological diagnosis allows detailed analysis of specific aspects of functionality of the nervous system and judgement of animal's hearing capacity. Information on the functional state of sensory organs of laboratory animals requires the use of specialised and expensive equipment and a dedicated team of trained scientific personnel for its routine tasks, record of electrical signals and interpretation of electrophysiological data. NINE offers the scientific community the possibility to non-invasively evaluate the auditory function of laboratory animals.

The process involves two methods: auditory brainstem response (ABR) and otoacoustic emissions (OAE). The ABR technique provides information on the functionality of both the peripheral and central nervous system components that together constitute the auditory pathway. ABR is a neurophysiological refined technique that allows the rapid accumulation of reproducible quantitative non-invasive data without sacrificing the life of laboratory animals. It allows determination of the auditory threshold and the speed of nervous conduction between different regions within the brain stem. These parameters, auditory threshold and speed of conduction, are very often affected in severe age-related hearing loss.

In summary, the main advantages of such studies are:

- The quantitative functional information obtained *in vivo*.
- The potential for follow-up studies, by testing the same animal under different experimental conditions including: diets, noise-exposure, medical treatments or ageing.



Deliverables: The evaluation service offered for research performed in academia and private sectors includes:

- Neurofunctional evaluation in laboratory animals for biomedical research and evaluation in other scientific and social fields. Basic determination of hearing threshold and diagnosis of functional abnormalities in toxicity studies, evaluation of new medicines, genetic-environment interaction studies, identification of prognostic and diagnostic factors of potential clinical interest, among many others.
- European credit of NINE services.
- Training programmes for researchers.

Outcomes and evidence of the impact

- Has an impact on health status and quality of life for your local population.

The main outcome of NINE services is to be an innovative platform to develop non-invasive neurofunctional evaluations of experimental animals to generate preclinical results for clinical application in presbycusis patients.

We have participated in the characterization of animal models of human mutations, we have tested the toxicity of new drugs in animal models, we are participating in the identification of prognostic and diagnostic markers in human age-related hearing loss, we are studying the impact of malnutrition in hearing and we are participating in the development of new medicines for age-related hearing loss (AFHELO, FP7).

Resources available :

NINE facilities are funded by national and local authorities and by two European FP7 projects. NINE is a facility of CSIC and belongs to the national network of experts in the phenotype of animal models SEFALer (CIBER) and to the network "Network of Public Facilities" (RedLabs) of the Madrid Autonomous Community.

Human resources include a scientific supervisor, a technical supervisor and two technicians. Training courses are organized in collaboration with Veterinary School of Madrid (UCM) and with the College of Veterinarians of the Madrid Community, and within the Neurosciences Master of the Medical School (UAM), both on-going since 2010.

Regarding the technology, NINE facilities have a TDT™ Modular multi-functional evoked potential workstation, as well as the equipment required to perform the above described procedures (<http://www.iib.uam.es/portal/web/enni/funciones>).

NINE fulfils the quality management requirements ISO9001:2000. Finally, NINE contributes to two researcher-oriented web sites and one society-oriented twitter @nutretuoido



3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- uses new methodology
- Advocates for focused preclinical studies designed back to back with clinicians and drug-developing companies
- Study cases on age-related hearing loss

4. Further information

Published research by the Group (<http://www.ncbi.nlm.nih.gov/pubmed/?term=varela-nieto+i>) has fostered the collaboration with the Institute for Health Research IdiPAZ (Madrid), where a trial with 300 patients in risk of Alzheimer and control subjects is being conducted to evaluate: i) if hearing loss is related to Alzheimer Honest or progression; ii) if there are common molecular markers to both age-related conditions; and iii) if nutritional status has an impact on age-related hearing loss.

Our work has also prompted a number of other researchers to investigate the clinical application of IGF-1 treatment in hearing loss, see in example Prof. Zvi Laron (Israel) and Prof. Juichi Ito (Japan) publications.

5. Contact details

Organisation name: Agencia Estatal Consejo Superior de Investigaciones Científicas, Madrid

Contact person: Isabel Varela-Nieto

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Research on glyco & peptide-based drug leads: teaching and discovery applied to age-related diseases (GLYPAD)

1. Location

Country: Spain

Region: Galicia

Total population: 2,772.928 (Galicia population 2011)

2. Description

Target population(group): Older robust people in general population (Patient's organisations and older people in the community in risk of cognitive and functional decline)

Target population: 632.379 (Galician people over 65)

Main topic: Cognitive decline

Description: Novel approaches. Chemical and biological approaches to new molecular entities with new mechanisms of action for age-related diseases.

Project 1- Drug leads with good affinities for a group of diverse Alzheimer disease molecular targets: compounds that could bind simultaneously to most of the targets of the amyloid cascade.

Project 2- Novel iminosugars as potential medicinal agents for the treatment of a variety of diseases. They have a great potential for the treatment of diseases as type II diabetes, lysosomal storage disorders and cancer. Their biological properties include oral bioavailability, specific immune modulatory and chaperoning activity, opening opportunities for new therapeutic agents from carbohydrates.

Learning programmes. a) E-learning: intervention of glycosciences on ageing; b) Ph.D. programme on Medicinal Chemistry Addressing Frailty and Functional Decline.

The following objectives were set and are evaluate in yearly basis:

- Design of drugs leads as diverse Alzheimer disease molecular targets.
- Synthesis of drugs leads as diverse Alzheimer disease molecular targets.
- Evaluation of drugs leads as diverse Alzheimer disease molecular targets.
- Design of novel iminosugars and related compounds, as potential medicinal agents for the treatment of a variety of diseases.
- Design of novel routes for the access to iminosugars and related compounds, as potential medicinal agents for the treatment of a variety of diseases.
- Synthesis of novel iminosugars and related compounds, as potential medicinal agents for the treatment of a variety of diseases.
- Evaluation of novel iminosugars and related compounds, as potential medicinal agents for the treatment of a variety of diseases.

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



- Participation on E-learning and PhD programs on glycosciences and the Alzheimer diseases and on iminosugars and iminosugars as drugs for a diverse range of diseases.

Deliverables:

Project 1. i) Computer aided design of the pharmacophores with the desired multitarget action; ii) Synthesize a library of compounds with the proposed moieties; iii) Biological evaluation at molecular and cellular level.

Project 2. Design, synthesis, pharmacological evaluation of novel candidates at molecular and cellular level (chain-branched iminosugars, candidates for modulating glycosidase activity).

Training programmes:

- E-learning based on a training course on Glyco and Alzheimer's disease drug discovery research.
- Ph.D. programme: Course on Medicinal Chemistry of Alzheimer's disease and glycosidase inhibitors.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has an impact on the sustainability and efficiency of the health or social care system of our local population.
- Has an impact on the competitiveness of industry.

At least a candidate drug for preclinical studies regarding the Alzheimer disease.

At least an iminosugar as candidate for preclinical studies.

A satisfactory evaluation with older people attending courses on Medicinal Chemistry of Alzheimer's disease and glycosidase inhibitors.

Satisfactory results on preclinical studies open opportunities for clinical studies that should open access to new drugs for the referred diseases.

Resources available:

Human Resources: 4 staff members, 2 research assistants, 6 PhD students. The USC has 3 on-going Exchange Programs with Asian countries, mainly with India.

Financial resources: i) Funds from the Spanish and the Galician administrations; ii) Funds from on-going agreements with chemical SMEs (i.e.: Galchimia S.A.).

Know-how: This Research Group belongs to CIQUS, a part of the Singular Research Centers Network (RCSI), USC–International Campus of Excellence. The RCSI research centers (Medicine, Biological Chemistry, ICT), are working in a collaborative way, with shared strategies associated to local Health Institutes, Hospitals and Biocluster. RCSI currently comprises nearly 400 researchers (90 PI), more than 40 activities at FP7, including the leadership of 2 Large Cooperation Projects in the life sciences area.

Access to infrastructure. The CIQUS building includes 22 research labs of 90 m² and 1.000 m² of research support facilities, all of them provided with first class laboratory equipment: NMR and Radioactive facilities; High-pressure laboratory; Instrumental support laboratories; Specialized laboratories (femtochemistry, electrophysiology); Culture cell laboratories, dark room, cold rooms; Computer cluster. Additionally, the general support services of the USC (RIADT:



www.usc.es/gl/investigacion/riaidt/) include: TEM (EDAX), SEM, solid state NMR, mass spectrometry, X-ray, AC/DC Magnetization, etc. We have also access to the Supercomputing Center of Galicia (CESGA).

3. Innovation element

- Has a multidisciplinary approach.
- Uses new methodology.
- Has relative advantages or brings benefits over existing practices.
- New candidates as drugs for medical purposes and new materials for teaching purposes.

4. Further information

We support clinical and molecular research approaches to find frailty biomarkers as well as innovative molecular entities and diagnostic tools to prevent frailty and treat age associated diseases:

- New drugs for Alzheimer's disease (AD): our multitarget approach could provide novel drug leads for a therapy, with a major impact on old people. Specifically, the multitarget character of those compounds present fewer toxic risks for the patient since they may reduce the number of drugs needed to tackle this syndrome. Iminosugars: our current efforts are directed towards a greater range of structures and a wider range of biochemical targets.
- Breakthroughs in this kind of research (AD, type II diabetes, cancer...) will definitely reduce the budget burden of the European health and social care system and enhance its sustainability. Discovery of new drugs that could meet the needs of AD, type II diabetes and cancer patients would mean a large boost for the pharmaceutical industry.

We develop educational programs on active and healthy ageing.

- Preparation of material for E-learning and Ph Programs on Glycosciences and diseases can be relevant both for teaching and economical reasons.

5. Contact details

Organisation name: Universidade de Santiago de Compostela

Contact person: Ramón José Estévez Cabanas

Email: ramon.estevez@usc.es



MENTHELDER

1. Location

Country: Spain

Region: Cantabria

Total population: 593.121 inhabitants

2. Description

Target population: High-risk independent people - It will target centres in the Autonomous Community of Cantabria, and PGs, specialized nurses, social workers, and psychiatrists will get involved. The population of Cantabria is 593.121 (beginning of 2013), there are 186.000 people over 55 years old. People with severe mental illnesses will be of special interest in the design of our activities.

Main topic: Cognitive decline

Resources available:

- IFIMAV Research Group of Psychiatry that consists of 26 people involved, with access to all IFIMAV laboratories and premises, a neuroimaging lab etc. It is involved in different research projects at national and International level.
- The Psychiatry Research Unit of Cantabria, -UIPC- (Unidad de Investigación en Psiquiatría de Cantabria) is an institution integrated in the Department of Psychiatry of the University Hospital “Marqués de Valdecilla” (University of Cantabria). It has an administrative and functional dependence of the Health Service of the Autonomous Community of Cantabria, and of the University of Cantabria. The main areas of activity of the Unit are:
 1. To conduct educational programs and activities in Clinical and Social Psychiatry and Psychiatric Epidemiology.
 2. To develop, adapt and disseminate methodological designs and instruments for research in Clinical and Social Psychiatry and Psychiatric Epidemiology.
 3. To conduct research projects in the field of Clinical and Social Psychiatry and Psychiatric Epidemiology.
 4. Develop and disseminate preventive interventions in Psychiatry, with special focus on psychosis and affective/anxiety disorders
 5. To develop collaborative links with the different Social and Health related services acting in Cantabria, in the field of Psychiatry and Mental Health.
 6. To extend the research and educational activities to the rest of Spain and to Spanish Speaking Countries (since the designation of the UIPC as WHO Collaborative Centre, the extension of these activities to Spanish Speaking Countries has been regarded as a high priority).



The Unit has more than 70 people involved (doctors, nurses, social workers etc.).

1. Manage frailty and functional decline:

Description: Manage functional decline and frailty through targeted intervention in physical fitness, nutrition status, cognitive function, chronic conditions and diseases and on the social or psychological wellbeing of older people.

Deliverables: Biomarkers, Consensus, Intervention Programmes. Identification of support needs for managing medication and promoting improved individual performance and active ageing:

- Implementation of an early identification, prevention and treatment of mental health problems in elderly in coordination with primary care and mental health centres.
- Establish and disseminate a consensus definition of individuals at risk of social isolation.
- Implementation of a protocol for detecting potential drug-related problems in elderly based on the accessibility to e-prescriptions.

Outcomes: Prevention of frailty and functional decline in older people with mental illness in the Cantabria autonomous community. An accurate description of older people with severe mental health problems in the target population, most of them spread the across region and living in rural areas, may help preventing functional decline and provide a reliable framework to evaluate the course of cognitive functioning in this population.

Evidence of the impact: Well-designed identification programs and interventions can contribute to better mental health and well-being of the population. A satisfaction evaluation with older people including in educational programs and activities has been usually high.

2. Enhance participation and independence

Description: Enhance the participation and independence of older people and their carers by empowering and enabling them to remain involved in meaningful activity and in a healthy lifestyle.

Deliverables: Education, Resources and Social networks

- Implementation of social networks to promote communication between aged/frail people, their relatives, care givers and health professionals.
- Development and implementation of education programs for elderly (those 55+) to promote social interaction.
- Protocol for analysing the internal and external barriers that limit the recommended visits to care givers.
- It will target to cover as many as possible centers in the Autonomous Community of Cantabria, and PGs, specialized nurses and social workers, and psychiatrists will get involved.

Outcomes: Facilitate access to mental health care and care givers can have profound consequences on an individual's mental health and therefore in preventing decline in quality of life or suicide. A majority of older adults with mental illnesses actually live at home. Prevent



high rates of physical illnesses, substance abuse, and depression, which affect more than one-half of family caregivers.

Evidence of the impact: Outreach services, including community education and training, prevention and intervention efforts, and screening and early identification are crucial to addressing the barriers of isolation, stigma, and discrimination. Strategies that maximize the active ownership and participation of people in health promotion initiatives contribute positively to the sustainability of the programs.

3. Sustainability of health and social care

Description: Contribute to managing demand and increasing the sustainability of health and social care by reducing the personal, systemic and societal costs associated with ageing.

Deliverables: Best practices and Guidelines.

1.-Amendment to the rules for registration and commercialization of new drugs to be used by older people, which underlines the need to evaluate drugs in older populations, including the treatment of those at risk of developing functional dependence and frailty.

-Implementation of an early identification, prevention and treatment of drug-related problems in elderly in coordination with primary care and mental health centers and based on e-prescription registration in our community.

2.- Defined guidelines for multidimensional interventions including exercise and nutritional aspects (healthy eating).

-Implementation of scientifically-validated approach for monitoring psychosocial activity and identification of frailty risk factors/determinants in collaboration with the Fundación Marqués de Valdecilla and department of social services of regional government.

Outcomes: To emphasize safety and finding the right treatment for the individual as the top goal and prevent unplanned hospitalizations.

To support the notion that in older people individualized care based on individuals' unique needs, histories and other factors, and does not dictate "one-size-fits-all" treatment.

To alert clinicians to potential drug-related problems (eg, allergy, need for reduced dosage in patients with impaired renal function, drug-drug interactions). Computerized physician ordering programs can also cue clinicians to monitor certain patients closely for adverse drug effects.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health social care system of your local population

Evidence of the impact: Providing safe, effective drug therapy for the elderly is challenging for the high risk of adverse effects and ineffectiveness. Implementing comprehensive medication monitoring programs in people with severe mental illnesses might ensure transfer of information to reduce the risk of adverse drug effects and hospitalization due to them. Quality of life will increase. A cost analysis evaluation may demonstrate that a reduction of the annual



cost of patients based on a reduction of preventable causes of drug-related problems and a minor rate of hospitalizations.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact details

Organisation name: FUNDACIÓN MARQUÉS DE VALDECILLA - IFIMAV

Contact person: Benedicto Crespo Facorro

Email:



Functional Remediation Programme

1. Location

Country: Spain

Region: Cataluña

Total population: 7,500,000 and 375,000 bipolar patients (depending on the definition used)

2. Description

Target population (group): High risk independent people - (patients with Bipolar Disorder)

Target population (figure): 268 patients

Main topic: Cognitive decline

Description: Our Functional Remediation Programme (FR), on-going since launched in January 2009, prevents frailty and pre-frailty in the region, since the intervention is carried out in a tertiary hospital. Objectives are covered through access to this evidence-based intervention across 10 centres, all them taking part of the CIBER of Mental Health (CIBERSAM) in Spain.

This is supported by a neuro-cognitive-behavioural model, including the use of ecological neurocognitive techniques, to deliver an effective intervention in response to patients with bipolar disorder showing functional or cognitive decline. It supports self-management of cognitive problems and difficulties in daily life activities, promoting autonomy, stress management, improving communication and promoting functional recovery, involving their care-givers in the intervention process, with an interdisciplinary approach.

Our study is the first randomized controlled trial (RCT) to assess functional remediation versus a psycho-educative intervention and a group following treatment as usual. The primary outcome was the improvement in global psychosocial functioning. We hypothesized that the patients on the functional remediation group would improve global psychosocial functioning compared to the other two groups, psycho-education and treatment as usual.

This was a multicentre, randomized, rater-blind outpatient trial conducted between 2009 and 2011. It included 3 parallel arms (1:1:1) in order to evaluate the functional efficacy of a new intervention, functional remediation, as an add-on therapy, versus psycho-education and treatment as usual in bipolar disorder. A total of 268 outpatients were enrolled across 10 centres in Spain.

These expert centres are integrated in a well-recognized Spanish Network for research in mental disorder (Centro de Investigación Biomédica en Red de Salud Mental CIBERSAM)



In order to assure treatment adherence, the coordinating centre organized before launching the study several meetings to train therapists participating in the study in the two tested interventions.

This clinical trial was registered in www.clinicaltrials.gov with the following ID number: NCT 01370668, and received public funding from the Spanish Ministry of Science and Innovation.

Deliverables :

- Training programmes for patients and care-givers are run twice a year.
- A manual of Functional Remediation will be available early next year, edited by Cambridge University Press.
- A large data-base containing clinical, demographic, neuropsychological, biological (BDNF) data as well as functioning (FAST scale scores) before and after functional remediation or psycho-education, compared to patients with treatment as usual.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has been adopted, tailored and validated in at least 2 other settings.

Improvement of general functioning in patients with bipolar disorder and, particularly in their interpersonal and occupational functioning.

The FR program has proven effectiveness in enhancing functioning in patients with bipolar I and II disorder. Significant improvements were seen in occupational and interpersonal functioning. Hence, a combination of medication and functional remediation (for patients with relevant disabilities in daily life) may ultimately improve the outcome of patients suffering from bipolar disorder. Results are available in American Journal of Psychiatry (Torrent et al, 2013).

Resources available: Bipolar Disorders Program, headed by Prof. Eduard Vieta, belongs to the Institute of Neurosciences of the Hospital Clinic of Barcelona. The team has already successfully completed over 30 research projects and is currently carrying on 15 research projects. These projects not only provide the adequate funding, but they create the framework to be integrated in international groups.

Bipolar Disorders Program is composed of 19 researchers(9 psychiatrists, 9 psychologists, 1 Clinical Pharmacologist and 1 psychiatric nurse). BBDP receives funding from the Spanish Ministry, Spanish Research Fund (Fondo de Investigación Sanitaria, FIS), from clinical trials funded by the pharmaceutical industry as well as donations. Furthermore, as a member of IDIBAPS consortium, it will also make available its resources, in terms of human resources, to beneficiary free of charge.

The project is currently carried out thanks to the following grants:

1. Comparative efficacy of neurocognitive rehabilitation strategies in patients with bipolar I disorder following a first manic episode versus patients with multiple episodes.
Granted by: Ministry of Economy and Competitiveness, Instituto de Salud Carlos III (PI11/00637) Principal Investigator: Martinez-Aran A Years: 2012-2014



2. Effects of functional remediation on the neuroplasticity of bipolar patients. Spanish Ministry of Economy and Competitiveness, Instituto de Salud Carlos III. (PI12/01498). Principal Investigator: Torrent C. Years: 2013-2015
3. Efficacy of Functional Remediation in bipolar euthymic patients and effects on Brain Derived Neurotrophic Factor (BDNF): The Bipolar Functional Remediation study (BIFURE). Granted by: Brain & Behavior Research Foundation abans National Alliance for Research on Schizophrenia and Depression (NARSAD) (Grant number 20288). Principal Investigator: Martinez-Aran A 2012-2014

3. Innovation element

- Uses new methodology
- Has a vision on integrated care
- Has relative advantages or brings benefits over existing practices

4. Further information

CIBERSAM, was created with the mission of improving clinical care and mental health in our society through the knowledge generated by translational research in psychiatry and neuroscience) with broad experience in research and clinical management, backed up by several peer-reviewed publications in bipolar disorder. www.cibersam.es.

5. Contact details

Organisation name: Consorci Institut D'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS)

Contact person: Eduard Vieta

Email:



European Dementia Prevention Initiative

1. Location

Country: Netherlands

Region: North-Western part of the Netherlands; No strict regional boundaries have been defined for potential recruitment. In addition the regions of Helsinki (Finland) and Toulouse (France) are currently involved for patient recruitment

Total population Not defined. Several regions in the Netherlands, France and Finland

2. Description

Target population : High-risk independent people - Community-dwelling elderly at risk for cardiovascular disease and dementia

Target population: Three ongoing RCTs (PreDIVA n=3534, MAPT, n= 1680, FINGER n=1282); planned RCT to start in 2015 (HATICE) n=4600

Main topic: Cognitive decline

Description : The European Dementia Prevention Initiative (EDPI, www.edpi.org) was launched in 2011. In EDPI expertise from departments of neurology, geriatrics, general practice, epidemiology and public health from several European regions is pooled to work together towards dementia prevention. It currently covers four large, ongoing, investigator-initiated randomised controlled trials. These ongoing dementia prevention studies are compared and pooled analyses can lead to more insight into prevention strategies. Improving cardiovascular risk management, the main instrument in these ongoing dementia prevention studies, is expected to have an effect on the other main focuses of Action A3, i.e. frailty and physical functional decline. Results from ongoing studies and the recently started project 'Healthy Aging Through Internet Counselling in the Elderly, HATICE, www.hatice.eu), can contribute to the aim of Action A3.

In HATICE, an FP7-funded project, we are developing a interactive internet platform for elderly to optimise cardiovascular risk management to ultimately prevent cardiovascular disease and dementia. This platform will be tested in a new international RCT including 4600 elderly persons at risk for cardiovascular disease and dementia.

Deliverables: Joining forces in EDPI will result in a combined dataset of over 6000 elderly who participated in three RCTs investigating the effect of a multicomponent intervention targeting vascular and lifestyle-related risk factors. Data will be pooled where possible.



An innovative interactive internet platform for elderly at risk for cardiovascular disease and dementia

Cardiovascular prevention strategy which can be easily implemented throughout the EU if effective

Outcomes: Prevention of cardiovascular disease and dementia are the main outcomes

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: Results of three dementia prevention RCT's of EDPI-partners are expected in 2014-2015. Results of a new RCT using the interactive internetplatform are foreseen in 2017-2018

Resources available: EDPI is funded by the partners involved. The main EDPI project, HATICE, receives funding from the FP7-project (grant agreement 305374)

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

EDPI and the ongoing project HATICE are still in development. By joining forces with research groups in the EU actively participating in dementia prevention studies, EDPI currently sets the stage for this type of prevention studies focussing on functional and cognitive decline. More information can be found on www.edpi.org and www.hatice.eu.

5. Contact Details:

Organisation name: Academic Medical Centre on behalf of European Dementia Prevention initiative

Contact person: Edo Richard

Email: e.richard@amc.uva.nl

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



Nutrition



Gastrological approach to malnutrition

1. Location

Country: Belgium

Region: Flanders – N-Brabant (Belgium & Netherlands)

Total population: 8,5 million

2. Description

Target population : Dependent patients - elderly in care homes, hospitals and home care

Target population: 1,2 million → 120.000 risk patients

Main topic: Nutrition

Description: Our holistic nutritional approach – consisting of a gastrological practice-based and an evidence-informed nursing approach – resulting in a mutual and customized set of interventions focused on the resident, his individual needs and wishes on food, the ward and the institution has a positively influence on the seriousness and the frequency of malnutrition in the elderly.

Positive results (better weight, less food supplements, less medication, more happiness) were noticed in the first intervention in 3 care homes in Flanders in 2009-2011 with the financial support of the Flemish Minister of Innovation and Sciences.

From December 2011 till May 2012 a second intervention was carried out in 2 nursing homes in Bruges with scientific guidance of the university of Ghent (see outcomes). The intervention received the Award Best Project 2012 Food & Health on the 15th Food & Health Congress in Brussels.

A third intervention (on-going) is set up in 2 nursing homes in 2 different eating cultures in 2 different countries (Belgium/Flanders and the Netherlands/N-Brabant) with scientific guidance of 3 universities (Ghent, Antwerp, Nijmegen). The aim is to prove that the gastrological interventions have a positively influence on the weight evolution and the quality of life in two different cultures and that the interventions are copy pastable in other cultures.

We experimented(on-going) to roll out the gastrological basic knowledge in 3 hospitals in the Netherlands. The hospital in Rotterdam was honoured with the Award Best Menu 2013, the hospital in Sneek (Friesland) was honoured with the Hospital Food Safety Award 2013, and the hospital in Nijmegen got the Award Best Menu in 2010 and was nominated in for the Award in 2011.

We also will set up an intervention in innovative homecare delivery to prevent undernutrition, in Bruges for 600 elderly at home (starting in 2013).

The interventions consist of a learning programme, a systematic risk screening/monitoring, a hierarchy of actions starting with normal food driven by a gastroteam and a good communication between the different actors involved in the nutritional care.



Deliverables (guidelines, ICT solutions, large data-bases, screening tools, web platforms, training programmes)

We developed an innovative modular learning programme for chefs in health care (from teaser to bachelor) together with Brussels and Ghent-based university colleges and one university. This programme is rolled out in Flanders and the Netherlands.

We developed Parameters Undernutrition Elderly as a digital screening and monitoring tool for under- or overnutrition. The tool is validated, translated in 4 languages and downloadable for free.

We developed a food quality improving system to tackle malnutrition, based on the homeostatic mechanism.

We develop (on-going) a digital platform around nutrition that offers a number of services in the cloud, that support integration with other software and hardware, and can be consumed by various roles like chefs, dieticians, caretakers, visitors, management, suppliers, nurses, moderators and others.

Parameters UE will be integrated in the platform making the tool transmural. Weight will also be sent wireless from the balances. The system will be implemented in home care in Bruges.

We develop (on-going) a new meal delivery system for meals at home. Will be implemented in Bruges.

We developed a New Deal with dieticians allowing chefs to feel free to use the ingredients they need to make meals more palatable. The deal is based on a moving average of menu's over a period of 7 days (evidence based).

We build up a network for chefs and we stimulate interdisciplinary networking (chefs, dieticians and nursing)

We focus on sustainability, flow optimization and digitalization of administrative work in kitchens to cut operational cost which we can reinvest in food.

Outcomes:

Of the implementation in Bruges

The study was carried out in two nursing homes in Bruges. In total 112 residents and 72 health care providers (nurses: 22%, caregivers: 51.7%) participated. The study took place between December 2011 and May 2012.

The primary outcome was the reduction of the number of residents in the risk zone of malnutrition (BMI < 20kg/m² and/or recent weight loss of $\geq 5\%$ during the last 3-6 months). The secondary outcome was situated at the level of residents (meal satisfaction), care providers (attitude towards malnutrition and willingness to change) and the kitchen team (optimizing the communication process).



Evidence of the impact (*evaluation results*):

The average age of the residents was 83.9 years. Approximately 4 out of 10 residents (n=37) had (an increased risk of) malnutrition. At the end of the study it was stated that 11 residents (29.7%) had a lower risk and 3 residents (8.1%) a higher risk. For the residents reporting a lower satisfaction score on meals during the pre measurement we could note a statistical significant increase (10% on average) of the satisfaction score. The care providers perceived the intervention as a challenge at the start of the study (perception regarding challenge: 93%, perception regarding threat: 57.5%). Towards the end of the project we could state that the new method was well integrated in the care and was considered as a routine (perception regarding challenge: 75%, perception regarding threat : 57.5%).

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has an impact on the expansion of market and growth

Resources available (*budget, funding instruments, programmes, human resources*):

Till now the commitment is funded by the stakeholders.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Has relative advantages or brings benefits over existing practices
- Providing added value to the kitchen improves the quality of life and wellbeing of the elderly. This paradigm on food even seems to decrease the medical cost.

4. Further information

We work on a strategy 2020 for food in health care in Flanders and the Netherlands.

5. Contact Details

Organisation name: Center for Gastrology

Contact person: Edwig Goossens

Email:



Implementation of Nutritional Screening and follow up in Belgium

1. Location

Country: Belgium

Region: Europe

Total population: 11.035.948

2. Description

Target population: Older people in general population - Older people at risk of undernutrition, carers, health and social care professionals

Target population: Older people > 75 years of age 969,125

Main topic: Nutrition

Description: Implementation of a nutritional care plan and policy including routine nutritional screening and monitoring for undernutrition and risk of undernutrition among all those over 75 years of age.

Outcomes:

- Early detection of those at risk of undernutrition or already undernourished allowing for appropriate nutritional support to be given as soon as possible.
- Improved prognosis for those identified as undernourished.
- The prevention of undernutrition in at risk groups
- Screening and monitoring as an integral part of care in all settings.
- Integration of dietitians into multidisciplinary teams, caring for whole person and taking an integrated approach to care.
- Has an impact on health status and quality of life for your local population
- Enhances employment and job creation
- More than 10% of the local target population receives the innovative practice

Evidence of the impact: A strong, multidisciplinary stakeholder group continues to monitor the progress of the implementation of screening cross all care settings. Programmes have been established to embed nutrition in GP training, as well as a part of hospital and care home monitoring. Strong relationships have been established with policy makers and health and social care leads supporting the implementation of screening across all care settings.

In addition, in November 2013 the Flemish Minister of Health is organising a one day meeting with the Royal Academy of Medicine, for all stakeholders, focusing on undernutrition. This further demonstrates the commitment to tackle undernutrition in Belgium.



Resources available: Stakeholder group representing all care settings, NGOs, government (Flemish and French), industry, academics has been established by ENHA which continues to meet to discuss new ideas. This work was achieved through a limited budget to support meetings and the enthusiasm and commitment of a wide range of organisation making change possible. The Federal government has also allocated funds of 70, 000€ to provide hospitals with the appropriate software to register undernutrition and nutritional status in all older patients (>75 years) in all the hospitals in the country.

3. Innovation element

- Incorporates incentives for change to stakeholders
- Has a vision on integrated care
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information

The implementation of nutritional screening and monitoring in Belgium and the developing of nutritional care policies follows on from ENHA's on-going aim to support all EU member states adopt this practice. We have already had successful work in Poland where a declaration in 2011 which outlined four key actions to address disease related malnutrition.

- Screening
- Awareness
- Reimbursement
- Education

ENHA is also working with a number of other countries on the development of routine nutritional screening into their health and social care systems including: Netherlands, Denmark, Greece and the UK. A Call for Action was also signed in Ireland in 2013 (in collaboration with the European Patient Organisations). Supported by ENHA this document calls for the Irish government to honour the commitment it made to address the problem of undernutrition through a declaration signed in Prague in 2009. ENHA will now continue to work with Ireland and other EU countries to develop our implementation work into 2014 and beyond. As a part of this we have ensured that the WHO EURO Ministers of Health Vienna Declaration calls to include undernutrition in the upcoming WHO EURO Food and Nutrition Plan 2014 – 2020.

5. Contact Details

Organisation name: European Nutrition for Health Alliance

Contact person: Lisa Wilson/Frank de Man

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FP7 Project: LipiDiDiet - Therapeutic and Preventive Impact of Nutritional Lipids on Neuronal and Cognitive Performance in Aging, Alzheimer's disease and Vascular Dementia

1. Location

Country: Czech Republic, Finland, Germany, Hungary, Netherlands, Sweden, Israel

Region: n/a

Total population: Approximately 40% of the European population

2. Description

Target population: Older people in general population - 55+ years of age

Target population: Age 50+

Main topic: Nutrition

Description: It is our aim to develop a lipid based diet, epidemiological data, health and life-style advise that is able to delay or prevent onset of Alzheimer's disease and related diseases and has a stabilizing effect on cognitive performance in aging. The project generates nutrition based interventions and knowledge to prevent or reduce cognitive decline, especially dementia. This covers the complete "production chain" from basic research, epidemiological data, multicenter clinical trials, health and life-style advise to prototype product development.

Deliverables: Deliverables include screening and identification of risk reducing dietary molecules, food production, clinical trial, healthy brain index, identification of molecular mechanism for food linked dementia prevention, genetic link to increased dementia risk, link to vascular dementia, identification of life-style risk factors, result dissemination trough professional and global audience channels.

Outcomes: New (medical) food will be designed to satisfy nutritional and other diet related needs for those at risk for cognitive decline. Sound scientific data to substantiate health and nutrition claims, and that contributes to the European Commission Health and Consumer Protection Directorate General policy in this area.

Advancing the state of the art in the field of food and the ageing process. Enhancement of the cooperation and excellence in the relevant area between researchers in Europe and in other geographic regions to develop dietary recommendations for healthy ageing and well-being of the elderly based on sound knowledge.

- Has an impact on health status and quality of life for your local population



- Has an impact on the competitiveness of industry

Evidence of the impact:

Among others - To assess the effect on cognitive functioning assessed with a Neuropsychological Test Battery during 24 months intake of a medical food compared to a control product. To assess the effect on dementia incidence, cognitive performance, functional abilities, plasma biomarkers, MRI measures, the occurrence of depressive symptoms, nutritional parameters, tolerance and safety during 24 months intake of a medical food compared to a control product. Scientific publications to enhance and build the basis for diet related knowledge in dementia prevention.

Resources available:

Funding for the running LpiDiDiet project is provided by the European Union through FP7 and the partnering institutions.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence
- Advocates for (*specify*) strongly added value of sound scientific data for medical nutrition

4. Further information

5. Contact Details

Organisation name: Saarland University, the LipiDiDiet Consortium

Contact person: Tobias Hartmann

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HEALTHY AGING through personal life style changes and community support

1. Location

Country: ISRAEL

Region: Jerusalem

Total population:

2. Description

Target population: High-risk independent people - Elder people in the community in risk of sedentary life styles, cognitive and functional decline and social isolation

Target population: 1.000

Main topic: Nutrition

Description: The initiative is aimed at elders who are community dwellers with/or without caregivers, living in the Jerusalem area and its surrounding villages, including Arab and other ethnic neighbourhoods. The initiative is designed in collaboration with the Hadassah Optimal: Centre for Health & Fitness Hebrew University and Hadassah Medical Centre.

The initiative aims to demonstrate and teach elders and their care givers the importance of healthy eating, physical activity, cognitive stimulation and social networks through the use of creative arts and computer assisted devices and games. Cooking healthy techniques and demonstrations for culture specific groups are part of the intervention.

HEALTHY AGING will be included in the Jerusalem's healthy city initiative for elements pertaining to the "built environment" aspects of healthy aging, such as neighbourhood parks and walking paths and community gardens.

The following objectives were set and will be evaluated on a yearly basis in a cluster randomization design:

- To empower elders with digital skills
- To increase the options of elders for establishing social networks and avoidance of social isolation
- To teach elders how to learn new information via ICT technologies, regarding healthy eating, exercise and cognitive stimulation
- To main stream elders daily life into the community activities, such as community gardens



Deliverables: Tools for self-assessment of individual elders in the areas of physical activity, sedentary life style and social isolation

- Digital literacy of elders
- Web-platform for social networking, knowledge sharing and problem solving
- Caregivers training programmes through interactive e-learning platform
- Community composite index of age friendly environments
- Medico economic evaluation of the intervention

Outcomes

- Medico economic impact of healthy life styles based on above outcome measures
- Dissimilation and training programs in northern, central regions of Israel where MELABEV is operating Elders Community clubs.
- Healthy policy analysis for frailty prevention
- Reduction of readmissions to acute hospitals for participants in the initiative
- Decrease in the number of prescriptions for elders in the intervention communities
- Reduction of readmissions to acute hospitals for participants in the initiative
- Decrease in the number of prescriptions for elders in the intervention communities
- Decrease in sedentary life style for participants in the intervention communities
- Decrease in the number of visits to ER and visits to primary care physicians
- Higher quality of life index for both elder people and informal caregivers within the intervention communities
- Higher level of empowerment of elders and their care giver within the intervention communities
- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has an impact on the expansion of market and growth
- Enhances employment and job creation

Evidence of the impact: work in progress

Resources available: Funding for the planning of the pilot was provided by MELABEV and Pfizer Company. The continuation of the project will be supported by private donors and EU funding and administrative support from the Jerusalem municipality, Healthy Cities initiative.

3. Innovation element

- Has a cost analysis approach
- Develops "healthy living community labs"
- Incorporates incentives for change to stakeholders
- Has a multidisciplinary approach and multimodal approach
- Uses new methodology



- Has a vision on integrated care
- Incorporates multimodal, culture specific approaches to active healthy aging
- Adds to the existing large body of evidence
- Advocates for Self-empowerment, community based capacity for sustainability
- Has relative advantages or brings benefits over existing practices
- The initiative incorporates local governance through the Healthy City WHO initiative and builds local capacity for sustainability of knowhow and social support

4. Further information

5. Contact Details

Organisation name: MELABEV - COMMUNITY CLUB FOR ELDERCARE ASSOCIATION

MELABEV is committed to MISTRAL – Multimodal Interventions Supported by information and communications Technologies building Resilience for frAilTy prevention

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Interactive Lifestyle Assessment, Counselling and Education software (I-ACE)

1. Location

Country: Israel

Region: National

Total population: 7,8 million

2. Description

Target population (group): High risk independent people - ≥ 65 years community-dwelling adults, at-risk for frailty and cognitive and functional decline

Target population (figure) : 445,000 people in the 65-75 year age group

Main topic: nutrition

Description: The I-ACE software represents the third generation of a lifestyle behavioural modification program providing assessment, counselling and education about diet and physical activity. The software has multi-lingual and cultural adaptability capacities so that it can be tailored for the specific national/ethnic populations participating in the intervention. The software, which is designed for use by a dietician/trained health personnel, utilizes food frequency and physical activity questionnaires to assess the client's current nutritional and physical activity status and to provide individually-tailored feedback. The embedded counselling and educational approaches are based upon the principles of motivational interviewing, and facilitate client participation and empowerment in identifying, making, and maintaining healthy dietary and physical activity choices. In addition, the software supports the systematic assessment, tracking, and documentation of behavioural, anthropometric, and health-status changes over the course of a multi-visit consultation series. The software will be used, within the context of a multi-modal intervention among 65-75 year old adults, to assess the current nutritional (including risk of malnutrition and over-nutrition) and physical activity status of participants, and to promote behavioural modifications to achieve and maintain a healthy lifestyle and ultimately increase healthy life years.

Deliverables:

- An ICT solution that embeds/offers:
 - Dietary and physical activity assessment tools
 - Guidelines for healthy dietary and physical activity habits, tailored for elderly clients
 - Database tracking participants' health-status parameters, and reported dietary intake, physical activity, and behavioural changes
- Cultural adaptation of the software to the target population in each of the consortium countries
- Software operation training and support for dieticians/health professionals

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



- Compilation, management, and analysis of the nutritional and physical activity data sets

Outcomes:

- Increased individual understanding and knowledge of the importance of nutrition and physical activity to healthy aging.
- Behaviour change to achieve and maintain a healthy lifestyle (e.g., meeting recommended nutritional and physical activity goals).
- Improvement in anthropometric and other health status markers.

Evidence of the impact

- Has an impact on the expansion of market and growth
- Has been adopted, tailored and validated in at least 2 other settings

The first generation of the program was used in a multi-modal intervention to control hypertension through non-pharmacological means (e.g., diet, physical activity, stress reduction). The intervention, which included adults up to the age of 65, significantly increased physical activity, and reduced weight and dependence upon anti-hypertensive medications at 11 and 24 months post-intervention.

The second generation of the program was used in a randomized controlled trial of a culturally-adapted, multi-modal lifestyle intervention among overweight, pre-diabetic minority Arab women (aged 35-45 years). Women in the intervention arm using the program had significantly lower saturated fat intakes, and reduced weight, triglycerides, fasting blood glucose, and 2-hr post load oral glucose as compared to women in a moderate lifestyle intervention arm not using the program at 12 months. In addition, they were significantly more likely to reach the physical activity goal of ≥ 150 min/wk, and scored higher on most domains of the quality of life scale.

The third generation of the program fully computerizes and documents the assessment, counselling, education and behavioural modification features. It makes extensive use of the latest technologies to provide users with instant feedback and visual clues and stimuli that both teach and encourage the making of behavioural change. This generation of the program facilitates the counselling and learning processes through extensive use of pictures and graphics, also making the program content accessible to those with limited literacy/numeracy skills. The program has been culturally adapted for lifestyle assessment, counselling, and education among minority Arab adults with type 2 diabetes (aged 40-65 years). The impact of the I-ACE program on their knowledge, behaviour and health-status parameters (e.g., weight, BMI, waist circumference, fasting blood glucose, blood glucose self-monitoring, HbA1c) will be tested in a randomized controlled trial of a 6-month intervention with follow-up to 12 months, beginning in December 2013.

Resources available: Funding for the development and evaluation of the third generation of the program was provided by the European Foundation for the Study of Diabetes. The prototype program is available to be adapted for use in the MISTRAL intervention supporting healthy aging in elderly populations. The Gertner Institute will be responsible for adapting the software and facilitating its operation in the field. In addition, the Gertner Institute includes a number of units with expertise in epidemiology, biostatistics, and ICT. The Cardiovascular Epidemiology Unit includes well-known, experienced investigators from diverse backgrounds including public health, epidemiology, nutrition, and computer sciences, and is experienced in conducting



population-based nutritional epidemiological studies and community-based clinical trials. The Biostatistics Unit has extensive experience with analysing data from randomized clinical trials, and particular expertise in the analysis of nutritional data. The Information and Computerization Unit has in-house and out-sourced expertise in software development and testing, as well as data management and analysis.

3. Innovation element

- Incorporates incentives for change to stakeholders.
- Has a multidisciplinary approach.
- Advocates for: self-empowerment, motivation.
- The software is a self-contained system that can be used not only by dietitians, but also by a variety of trained health professions and health educators who would work under the supervision of a dietitian.

4. Further information

The I-ACE software provides a means for standardizing lifestyle advice, and following up its results in large organizations. The database generated by the software will serve research and evaluation purposes, as well as administrative and quality control purposes. Organizations with a commitment to improving the health of older adults, including regional, municipal and local government organizations and NGOs, can utilize the software under the oversight of dietitians in interventions designed to improve participants' eating habits and increase their physical activity, thereby reducing unhealthy behaviours that are important precursors of frailty.

5. Contact details

Organisation name: The Gertner Institute for Epidemiology and Health Policy Research - The Gertner Institute for Epidemiology and Health Policy Research is committed to MISTRAL (Multimodal Interventions Supported by information and communications Technologies building Resilience for frailty prevention)

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Food Against Frailty (FAF)

1. Location

Country: Italy

Region: Campania

Total population: 5.834.000

2. Description

Target population: The target of the present good practice is 10.000 elderly. In Campania the population >65 is 945.000.

Main Topic: Nutrition

Description: Create and market appropriate foods or diet supplements designed to reduce frailty in older people and to maintain sensory perception.

Collaborating with industries (Oleifici Mataluni: www.oleificimataluni.com)

The collaboration between Federico II University and Oleifici Mataluni started 3 years ago. R&D at Mataluni is enterprise particularly active: among the awards received, the prize "Environmentally Friendly Innovation" (2010 - Green Economy Legambiente) and the prize "Elected Product of the Year" (2011 - TNS Italy) assigned to the entire Dante product line, which currently includes 100% italian Extra Virgin Olive Oil, Condisano Oil, enriched with vitamin D, and a full range of vitamin seed Oils, enriched with vitamin E and vitamin B6.

The production chain at the Mataluni Oil plant was modified in 2011, and production of vit. D fortified extravirgin olive oil started in 2012, to arrive on the market in 2013.

Besides osteoporosis, that takes advantage of vit. D enriched oil, ageing is also associated with a number of physiological changes that can affect thyroid function. Mild variation in thyroid function, even within normal limits, can have significant consequences for cognitive and cardiac performances or muscle function. Iodine is an essential element for thyroid hormones biosynthesis; selenium is responsible for other regulatory functions within the thyroid. Since 2005 Italy enacted legislation that makes iodized table salt the default option at the point of sale. Nevertheless, elderly people with suboptimal diets and increased use of polytherapy might be at risk of iodine and selenium deficiencies because of decreased absorption and increased excretion of these oligo elements in the urine, moreover considering the possible misguided medical advice (except in those with heart failure) to avoid salt.

Provide a prevention tool for osteoporosis and thyroid dysfunctions to be easily integrated in the diet, and increase the compliance to the therapy with integrators.

Deliverables: The first deliverable is the vit. D fortified extravirgin olive oil, that is actually available at the supermarkets.



The second deliverable is biofortified vegetables, such as tomatoes and potatoes.

The third deliverable is the model of collaboration between a public organization, Federico II University Department of Clinical Medicine and Surgery, that contributed to the identification of the need, and provided the knowledge, and the Mataluni Oil enterprise, that worked on the product.

Outcomes and evidence of the impact:

- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has an impact on the competitiveness of industry

The administration of vitamin D supplement through the diet, without additional intake (with oil), will improve prevention of osteoporosis, at the same time reducing osteoporotic fractures and refractures.

Increase iodine and selenium in the food chain using the strategy of biofortification of common use vegetables, such as tomatoes and potatoes, will offer an excellent opportunity to improve the iodine and selenium nutritional status of the elderly population without risks of excess of these oligo elements.

CLINICAL TRIAL: Evaluation and assessment of 25-OH D-vitamin before and after administration of vitamin D enriched extra virgin olive oil in a population of healthy elderly subjects.

We are currently collecting preliminary data from a small sample of patients, concerning:

- Circulating levels of Vitamin D before and after the introduction of Vitamin D enriched oil;
- Polimorphisms of Vitamin D Receptor;
- Biochemical parameters of bone metabolism (Ca, P, PTH etc).

Evaluation and assessment of thyroid function, cognitive performances and motor skill before and after administration of tomatoes and potatoes fortified with iodine and selenium in a population of healthy elderly subjects.

The study of administration of tomatoes and potatoes fortified with iodine and selenium will test the efficiency a new model of combined iodine and selenium prophylaxis in elderly population at risk for the deficiency of these oligo elements.

Resources available: Federico II University Department of Clinical Medicine and Surgery is providing 4 human resources for the clinical trials, that are being supported by both Federico II University Hospital (for the assessment of biochemical parameters, such as Vit.D levels, thyroid function test and thyroid ultrasound, cognitive performances and motor skill) and Mataluni Oil (that is providing the oil). Polymorphisms of VitD receptors are being evaluated with the support of a PRIN grant.



3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Study cases on (*specify*) 25-OH D-vitamin before and after administration of vitamin D enriched extra virgin olive oil in a population of healthy elderly subjects.
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact details

Organization name: The EIP-AHA Reference Site of Campania

Contact person: Maddalena Illario

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European Project NU-AGE “New dietary strategies addressing the specific needs of elderly population for a healthy ageing in Europe”

1. Location

Country: ITALY

Region: EMILIA ROMAGNA

Total population : 61 million

2. Description

Target population: Older people in general population - European healthy elderly population over 65

Target population: 12 million

Main topic: Nutrition

Description: Our 5-years project NU-AGE started in May 2011. It is a large multidisciplinary consortium (30 partners, from 16 EU countries) involving nutritionists, biogerontologists, immunologists and molecular biologists from the most prestigious institutions in Europe, 4 large food industries, 8 traditional food companies and 1 biotech SME, the SME Food Industrial Associations of 13 European countries and the European Confederation the food and drink industry. The consortium is aimed at counteracting inflammaging, the chronic inflammatory status of elderly people through an elderly-tailored nutritional intervention conducted in 5 European countries (Italy, France, UK, The Netherlands and Poland) and involving a total of 1250 elderly people aged 65-79. The results of dietary intervention will be used to standardize a specific diet for over 65 people and develop elderly-tailored prototypes of functional foods and to improve traditional foods.

The following strategic objectives were fixed:

1. to design a new food pyramid specific for 65+ EU citizens (“NU-AGE diet”);
2. to enhance a multidisciplinary approach in unravelling the role of diet for the EU’s ageing population, elucidating molecular and cellular mechanisms of action of the diet on healthy longevity;
3. to contribute to dietary standards, recommendations and food based guidelines for the EU elderly;
4. to design industrially driven fortified foods specifically targeted to postpone ageing decline.

Deliverables:

- European guidelines for healthy nutrition for people over 65
- Biomarkers on nutritional and inflammatory status
- A large database including information on health status, nutrient intake, cognitive and physical performances and biological markers (SNPs, epigenetic profile, cytokines, metabolites among others)



Outcomes: NU-AGE main outcomes shall contribute to a better understanding of the nutritional needs for a better quality of life while ageing in the over 65 years- EU population in terms of inflammatory response and biomarkers. This will support European strategies on nutritional recommendations, by contributing, on one hand, to the substantiation of nutritional and health claims, and, on the other, to increase competitiveness of the European food industry through the development of both over 65- consumers-targeted functional food prototypes and innovative SME-driven design of advanced traditional food products.

- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has an impact on the competitiveness of industry

Evidence of the impact : The rationale of the project is based on evidence that single nutrients can impact on inflammatory parameters, and goes beyond that introducing the concept of the whole diet. If compared to the single nutrients approach, the whole diet approach allows to target not only a higher number of vulnerable processes involved in inflammation and ageing but also to study the synergy of multiple subtle effects. A limited number of robust parameters capable of providing reliable data about different domains/subsystems (health and nutritional status, physical and cognitive functions, immunological, biochemical and metabolic parameters) will be measured. A sub-group of subjects will be further characterized by advanced techniques (genetics, epigenetics) and highthroughput “omics” (transcriptomics, metagenomics, pyrosequencing, HITChip array) in order to identify cellular and molecular targets and mechanisms responsible for the effects of the whole diet intervention.

Resources available : Funding was provided by the 7th Framework programme of the European Commission. Diet and prevention of functional decline of the elderly - Call: FP7-KBBE-2010-4.

3. Innovation element

- Incorporates incentives for change to stakeholders
- Has a multidisciplinary approach
- Brings together a big group of stakeholders
- Study cases on Over 65 elderly EU population (both genders, pre-frail and non frail subjects)

4. Further information

Further information could be found on the website: www.nu-age.eu

5. Contact details

Organisation name: UNIVERSITY OF BOLOGNA (UNIBO)

Contact Person: Aurelia Santoro

Email: aurelia.santoro@unibo.it



Malnutrition prevention and early treatment and their impact on the frailty syndrome

1. Location

Country: Italy

Region: Piemonte (Piedmont)

Total population: 4.480.000

2. Description

Target population: Older people on general population (at home, in nursing homes and in hospitals)

Target population: 50.000 persons (average number of out-patients globally considered getting in touch with our network) However, 4500 is the number of elderly patients we're taking care now.

Main topic: Nutrition

Description: The PNCNUs is based on 15 units spread all around Piedmont and working on prevention, early diagnosis and treatment of malnutrition.

Our project started in 2006, gradually implemented by an increasing numbers of participating units. The three levels (home, nursing homes and hospital) are managed with different collaborations but share the same approach: use of screening tools after adequate training, first local evaluation performed by resident dietitian, counselling and/or clinical evaluation for selected high risk-cases at the clinical units of the network.

So far we have taken over 4500 elderly outpatients with nutritional problems (dysphagia is now the main cause for a nutrition evaluation in more than 65% of the patients) and a bit more than 2000 patients at risk of malnutrition or already malnourished in 100 nursing homes. An extensive training program was organized in the major hospitals in the region.

Prescribed nutrition therapy is ranging from modified or enriched diets, to oral nutritional supplements (ONS) or, in selected case,s artificial nutrition (AN), mainly enteral; very rarely parenteral nutrition is used in short bowel syndrome

This project is supported by innovative collaboration between hospital units, general practitioners, nurses, speech-therapist practitioners, but also families and volunteers are involved.

The following objectives were set and are evaluate on a yearly basis:



- Monitor malnutrition in the elderly in different situations and at different levels of frailty
- Focus on the role of dietician in nursing homes, as a promoter of nutrition culture and simple screening tools
- Reduce the need for more expensive forms of intervention (hospitalization, artificial nutrition)

Deliverables

- Guidelines on catering and food services in nursing homes and long-term care facilities, as well as malnutrition screening tools and food record instruments
- Annual report to be shared and discussed in regional, national and international audits
- Training programmes (a format was implemented as is now used) for professionals and care-givers in participating units

Outcomes: Evaluate and promote a network approach to malnutrition and its role in frailty in the elderly; promote the specific role of dieticians in this area

Monitor the use of ONS and in frail patients (also for a specific evaluation of the sustainability of AN programs in our health service)

Study prevalence and correlates of malnutrition in frail old patients in our region

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Enhances employment and job creation
- More than 10% of the local target population receives the innovative practice

Evidence of the impact: A satisfaction evaluation of the program is in progress

An analysis of the correlates of malnutrition and their impact on frailty is also in progress, with the purpose of studying an algorithm of predictors of high risk of malnutrition and integrate it in other scales of frailty

Resources available: Funding for the pilot was provided by our Regional Government and Nutricia

3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Brings together a big group of stakeholders



4. Further information

<http://www.regione.piemonte.it/sanita/cms/documentazione/category/39-report-rete-regionale-delle-strutture-di-dietetica-e-nutrizione-clinica.html>

<http://www.regione.piemonte.it/sanita/cms/documentazione/category/19-proposte-operative-per-la-ristorazione-collettiva.html> (choose: proposte-operative-per-la-ristorazione-assistenziale)

5. Contact details

Organisation name: Piedmont regional network of Clinical Nutrition units (PNCNU)

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Bioactive Natural Food Ingredients for aging-people functional diet NutriBioFun

1.Location

Country: Portugal

Region: Lisbon

Total population: 2,661.850

2. Description

Target population (group): Older robust people in general population (Elderly People)

Target population (figure): 410.046

Main topic: Nutrition

Description: Functional and cognitive decline are associated with vascular leakage, inflammation, tissue injury, and cell death caused by cellular changes such as inflammation, mitochondrial dysfunction, increased oxidative, nitrosative stress, and intracellular calcium overload. All of which affect body functioning and also contribute to long term disabilities including cognitive and functional decline. Unfortunately, there are a small number of agents that can effectively prevent or reduce these disorders.

Accordingly, considerable attention has focused on developing newer agents that can effectively reduce cognitive and functional decline with more efficacy and fewer side-effects. We search for molecular structures present in natural matrices (including food industry residues) that could be active in age-related diseases, namely with impact in mental and cardiovascular health and diabetes.

Phytochemicals present in natural matrices as vegetables, fruits and grains with antioxidant and anti-inflammatory properties and protective effects on mitochondrial dysfunction, reduction of oxidative stress and regulation of intracellular calcium levels, are being considered potential agents to prevent age-related diseases and improving cognitive function.

In this context, fractionation and recovery of natural compounds that could modulate cellular damage is of utmost importance.

We develop integrated green (no solvent or bio-solvents) fractionation technologies and eco-friendly processes to selective recovery of high-added value natural extracts/fractions rich in specific target molecules from natural and vegetable sources, accordingly to regulatory demands.

- Pressurized Liquid Extraction (using CO₂, ethanol and water mixtures).
- Supercritical Fluid Extraction (Solids and counter current liquid extraction).
- Adsorption separation Processes.



- Solid-liquid extraction using bio-solvents.

The extracts obtained are extensively characterised for their chemical composition, using spectrophotometric assays and chromatographic techniques. The isolated fractions are evaluated for their health benefit using in-vitro techniques optimized for pre-clinical research, namely chemical, enzymatic and human cell-based assays will be used.

Different biomarkers of the age related diseases are studied in order to get a better knowledge of the impact that natural food/ingredients have in aging-people diet.

Deliverables:

- Standard operation procedures for recovery of high-added value bioactive compounds from natural sources using integrated technologies like high pressure and adsorption processes.
- Standard operation procedures for chemical characterization.
- Protocols for pre-clinical evaluation, including chemical, enzymatic and human cell-based assays for antioxidant, anti-inflammatory and anti-proliferative activities.

Outcomes and evidence of the impact:

- Has a multidisciplinary approach.
- Uses new methodology .
- Adds to the existing large body of evidence.
- Has relative advantages or brings benefits over existing practices.

Relationship between composition and function and recognition of synergetic effects between the different molecular entities present in food and natural ingredients

This knowledge help in the better understanding of the role that functional food and dietary supplements could have in preventing diseases related with frailty and ageing. A solid and consistent knowledge in this area is fundamental for the industry to support health claims accordingly to regulatory demands.

Resources available:

Funding is provided by:

- On-going projects with industry
- Portuguese Foundation for Science and Technology
- European projects (KBBE and Marie curie actions)

3. Innovation element

- Has an impact on health status and quality of life for our local population.
- Has an impact on the competitiveness of industry.

The solid and consistent knowledge on the role that functional food and dietary supplements could have in preventing diseases related with frailty and ageing, contributes for quality of life and health and industrial competitiveness.



4. Further information

<http://www.itqb.unl.pt/labs/nutraceuticals-and-delivery>

The solid and consistent knowledge on the role that functional food and dietary supplements could have in preventing diseases related with frailty and ageing, contributes for quality of life and health and industrial competitiveness.

5. Contact details

Organisation name: IBET/ITQB-UNL

Contact person: Catarina Duarte

E-mail: aprauter@fc.ul.pt



Nutrition Programme

1. Location

Country: Portugal

Region: Lisboa / Santarém / Algarve/ Coimbra/ Covilhã

Total population: 5,4 Million

2. Description

Target population (group): people over 65 years old

Target population (figure): 0.8 Million

Main topic: Nutrition

Description : Our Programme is focused on Nutrition and emerges from the need to improve the health status and the quality of life of the elder population. This will be accomplished using a multidisciplinary approach:

1. Assembly of self-explanatory statistic data, through a screening module, that clearly demonstrates the importance of adopting new food habits.
2. Education of the elder and the general population with appropriate food habits.
3. Valorisation of vegetal biomass toward new active ingredients.

Deliverables :

- Screening modules, to get an overall picture of the nutritional state in older adults, through the design, development and validation of specific questionnaires.
- Interactive healthy nutrition website, offering various modules to promote healthier food habits.
- Food preparing videos, with the contribution of a known chef, scientists and students, presenting healthy recipes and e-learning modules, that comprise a round table discussion to explain what to eat, why and how. These videos will be included in the website and will be broadcasted in National TV.
- Promotion of the involvement of older adults in growing a vegetable garden, either at home or at day care center gardens, with the help of a landscape architect
- Development of new nutritional supplements tailored to meet the specific dietary requirements and desired health benefits of this population.
- The Programme will contribute with an website, engaging and supporting older people and health carers in nutrition related issues.
- Research and implementation of functional foods and food ingredients from vegetal biomass as a sustainable resource.
- Valorisation of biomass for novel and high added-value bio products.



Outcomes and eEvidence of the impact

- Has an impact on health status and quality of life for our local population.
- More than 10% of the local target population receives the innovative practice.
- Design, development and validation of specific questionnaires for the assessment of nutritional status.
- Improvement of healthier food habits in older people and general population.
- Determination of the mechanisms of action of functional food ingredients.
- Individual feedback through the moderated web log implemented in the Web site, with the aim to encourage older adults to participate with thoughts, opinions and experiences
- Feedback from health carers in day care centers.

Resources available :

Funding is provided by FP7 (FP7-ICT-2013-10 call. On-going research is also funded by the Portuguese Foundation for Science and Technology (FCT) and QREN funds.

3. Innovation element

- Incorporates incentives for change to stakeholders.
- Has a multidisciplinary approach.
- Has relative advantages or brings benefits over existing practices. (functional foods)

4. Further information

5. Contact details

Organisation name: FCUL Consortium

Contact person: Amélia Pilar Rauter

Email: aprauter@fc.ul.pt



Prevention of Cardiovascular disease incidence and improvement of other age-related conditions (functional decline, cancer, ocular diseases) with Mediterranean diet

1. Location

Country: Spain

Region: Valencia Region

Total population: 6.000.000

2. Description

Target population: Older people in general population - Subjects aged 55 and more

Target population: Elderly subjects

Main topic: Nutrition

Description: We have carried out an intervention study in order to evaluate the influence of the Mediterranean diet in the primary prevention of cardiovascular diseases. This study is named PREDIMED. In this multicenter study, we included a total of 7447 high cardiovascular risk subjects aged 67+/-7 years. Our group in the University of Valencia contributed with 1,094 participants. We demonstrated and published the results in the New England Journal of Medicine (Estruch, 2013) that an intervention with traditional Mediterranean diet supplemented either with extra virgin olive oil or nuts significantly decreased the incidence of cardiovascular disease around a 30%. In addition, we are analyzing data regarding the effects of the dietary intervention on cancer incidence, cognitive decline and other age-related diseases. We have very interesting results that will allow us to undertake intervention program at the community level to promote a more healthy aging. In addition we have isolated the DNA from all the 7000 participants and we have some interesting data regarding gene-diet and other gene-environment interactions.

Deliverables : Large data-bases, guidelines, training programs (

Outcomes: Cardiovascular, cancer and other age-related diseases

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Enhances employment and job creation
- Has been adopted, tailored and validated in at least 2 other settings
- More than 10% of the local target population receives the innovative practice

Evidence of the impact: High impact results



Resources available: We have funding instruments and programmes as well as human resources available provided by University and health government and CIBER OBN.

3. Innovation element

- Has a cost analysis approach
- Develops "living labs"
- Has a gender perspective approach
- Has a multidisciplinary approach
- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: EPIGEM-CIBEROBN, University of Valencia, Valencia Spain

Contact person: Dolores Corella

Email: dolores.corella@uv.es



Frailty improvement Programme (FIP)

1. Location

Country: Spain

Region: Andalusia

Total population: 8 million. 15.2% of Andalusian people.

2. Description

Target population (figure): 1.3 million

Target population (group): People older than 65

Main topic: nutrition

Description: Study the effect of a diet rich in polyphenols from olive oil on elder population. Search for published data on the effect of virgin olive oil and its antioxidant components on nutrition, and prevention of cognitive decline, chronic inflammation and neurological diseases.

Web page construction aimed to spread among population better knowledge about the relationship between an antioxidant-rich diet and prevention of degenerative diseases at earlier stage.

Deliverables: Supply recommendations on the optimal content of polyphenols in diet. To present the benefits of functional foods and dietary supplements.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population

Prevention of cognitive and functional decline by adequate ingestion of food rich in polyphenols.

Visits to the web site. Dissemination of good practice in nutrition education in blogs and magazines.

Resources available:

Funding by regional Government (Junta de Andalucía).

3. Innovation element

- Has a multidisciplinary approach.
- Adds to the existing large body of evidence.
- Advocates for good practice in nutrition education.



4. Further information

5. Contact details

Organisation name: University of Seville

Contact person: José G. Fernández-Bolaños

e-mail: <bolanos@us.es>



Healthy ageing with innovative functional foods/leads for degenerative and metabolic diseases (INOVAFUNAGEING)

1. Location

Country: Spain

Region: Andalucía

Total population: 8,45 Million

2. Description

Target population (group): Old people in general population - People over 65

Target population (group): 1.27 million persons only in Andalucía (15% of the population in Europe)

Main topic: Nutrition

Description: We are engaged in a programme termed “Carbohydrates for health, wellness and pleasure: prebiotic caramels” that intends to develop functional foods that could be incorporated in the normal diet of the elder to target specific needs, leading to improved life quality. Through regional, governmental and private industry collaboration, we have developed a technology that allows conducting caramelization of food carbohydrates under conditions that favour the formation of prebiotic oligosaccharides.

The final product is thus a prebiotic caramel, ready to be incorporated in a variety of food matrices. A preventive effect against infections and aggressions in the digestive track has been demonstrated in animal models (mice, chicken, pigs). Scientific evidence points to a combine beneficial action on the microbiota, favouring lactobacilli and bifidobacteria populations, and immunostimulation.

In the context of the A3 group, the challenge is to take this technology to high scale production, going through regulations, conducting studies in humans (note that as the product is a caramel, its use as food additive can proceed without health claims), optimizing formulations for the elder and developing innovative targeted foods. Analytical tools to warrant quality control during all this process have been implemented. By reaching its objectives, the programme is expected to have an impact in European economy and job generation.

The following objectives have been established and will be evaluated in a quarterly basis:

- Achieving the high scale production of a prebiotic caramel from fructose.
- Fulfilling any regulatory requirement to assure that the product can be labelled as “caramel”, indicating that it is “naturally” enriched in prebiotic oligosaccharides.



- Optimizing the incorporation of the prebiotic caramel into appropriate food matrices: development of innovative foods.
- Conducting studies directed to optimize the formulation for the elder and evaluate the real benefits in health.
- Developing a range of products to satisfy a variety of specific need (e.g., diabetes, inflammatory bowel diseases)
- Improving and adapting the analytical tools for any new product developed (e.g. from glucose or galactose).
- Providing the older people with innovative foods having a positive impact in their quality of life

Deliverables :

- A prebiotic caramel obtained under European regulations
- Analytical tools for quality control.
- Results on the benefits of diets containing prebiotic caramels in humans.
- Results on the benefits and appropriate diets in the elder.

Outcomes and evidence of the impact:

- Has an impact on the expansion of market and growth
- Has an impact on the competitiveness of industry
- Enhances employment and job creation
- Should have an impact in the quality of life of European population by the prevention of physical decline through nutrition
- A new technology allowing accessing new innovative foods with an impact in European competitiveness.
- Promoting active and healthy ageing through the incorporation of prebiotics in the diet in a “natural” manner (caramel is a common ingredient in the food industry with the GRAS – generally recognized as safe - label).
- Addressing specific needs for groups of elder, such as those suffering from diabetes or inflammatory bowel disease, by developing a range of products (e.g., from fructose, glucose, galactose).

Evidence of the protective effect of the prebiotic caramels in animals, up to pigs, has already been demonstrated. The effect in the microbiota and inflammatory markers in humans will allow an evaluation of the impact in human health, with a focus in the elder.

The product currently under development is made from fructose and, therefore, adapted to the diabetic population.

In animal models for the inflammatory bowel disease (Crohn’s disease), a diet containing the fructose prebiotic caramel mitigated the effect of aggressions and fastened recovery. The benefits in populations at risk will be evaluated.

A private company, Vitagenia Healthcare, has licensed the technology and, under collaboration, is undertaking the scale up process. The efficiency of the optimized process in terms of cost and quality control, as well as the incorporation in food matrices adapted to the elder, will be evaluated.



Resources available: Funding is provided by the Spanish Ministry of Economy and Competitiveness and from private companies.

3. Innovation element

- Has a cost analysis approach.
- Has a multidisciplinary approach.
- Uses new methodology.
- It is expected to have an impact in European competitiveness.
- Has relative advantages or brings benefits over existing practices; The proposed technology consists in the transformation of agricultural carbohydrate materials into functional foods through environmentally friendly, cost-effective and sustainable approaches, namely a caramelization process. The approach is very flexible, allowing the optimization of products targeted to specific populations. Within this action we focus on the elderly, with the aim of satisfying specific needs, preventing physical decline and satisfying specific needs.

4. Further information

The technology at the basis of this programme has been patented: "New caramels with high content in prebiotic oligosaccharides, their preparation and use". Priority numbers: ES20070000675 20070308 ; WO2008ES00129 20080307.

5. Contact details

Organisation name: Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC)

Contact person: José M. García Fernández

Email:



New Food Products enhancing the Cognitive and Physical Performance of Aging Adults (INNOVACTIVES)

1. Location

- Country/ies:** Spain, Netherlands, Germany, Hungary, Israel
- Region/s:** Murcia (Spain), Brandenburg (Germany), Niendorf (Germany), Weesp (Netherlands), Szeged (Hungary), Jerusalem (Israel)
- Total population :** 1/3 of the EU27 Population (501 million in 2010) is older than 55

2. Description

Target population (group): Older people in general population (Population older than 55)

Target population: Aging adults - Population older than 55

Main topic: Nutrition

Description: Translate science into innovative functional food products incorporating phytochemicals and bioactive compounds from vegetables sources into healthy, low caloric and nutritionally enriched foods and food products.

The goal with the phytochemical enriched food products is the chronic predisposition to the active ingredients which can act synergistically with therapeutics and nutritional interventions in pathological conditions related with aging as (undernutrition from one side and obesity from the other causing metabolic syndrome associated with dyslipidemia, type 2 diabetes mellitus (T2DM), fatty liver, coronary heart disease and stroke, hypertension, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, endometrial, breast, prostate and colon cancers, ,depression and impaired cognitive function)

Deliverables:

Tools: Food products to stimulate cognitive function and physical performance and to combat undernutrition, metabolic syndrome associated with dyslipidemia, T2DM, fatty liver, coronary heart disease and stroke, hypertension, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, endometrial, breast, prostate and colon cancers, depression and impaired cognitive function).

Protocols: Good manufacturing practices for Food Industry (R&D Performing SMEs) to produce new food products enriched in bioactive, safe and bioaccessible ingredients for the delay and treatment of the cognitive and functional decline.

Target groups: Patients and active living adults to incorporate the INNOVACTIVES products in nutritional programmes (personalized nutrition).



Dissemination: New products, functional foods to help in the management of age related diseases (i.e. according to EFSA, food does not prevent or treat any disease).

Outcomes and evidence of the impact :

Research, methodologies, industrial processing and product development for active and healthy ageing.

Knowledge generation concerning the mechanisms for ageing and the progression of physical and cognitive decline

Future: Clinical evaluation in patients with personalised nutrition programme incorporating the INNOVACTIVES products.

Near future: SMEs Competitiveness at EU27 level and beyond (new products, new market opportunities), will be improved – visibility.

Near future: Socioeconomical advantages for the EU27 and associated countries – new food products to help in the management of aging adults – reduction of public health costs.

Resources available:

Consortium (R&D performing SMEs, Research/Academia, and SMEs in food industry) capacities for multidisciplinary tasks and common objectives. No funded projects available. Human resources. The teams (from Netherlands, Germany, Spain, Hungary and Israel) incorporates researchers (Ph.D.s) biologists, chemists, medical doctors (M.D.), engineers and highly-qualified technical personnel interested in solving important medical problems translating science into innovative products.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Advocates for safe food products are ideal target vehicles to carry scientifically validated phytochemicals and other bioactive natural ingredients to the international markets to help the aging adults in Europe and worldwide.
- Has a multidisciplinary approach from discovery platform to biological and safety evaluation and industrial production

5. Further information

5. Contact details

Organisation name: Aquaporins & Ingredients SL (Consortium leader)

Contact person:Diego A. Moreno-Fernández

Email: ingredientes1@gmail.com



Prevention and treatment of malnutrition in the elderly

1. Location

Country: Sweden

Region: Stockholm

Total population: 1.8 million

2. Description

Target population: Dependent patients - Older people in the community in risk of developing malnutrition

Target population: 325 000 (≥ 65 år)

Main topic: Nutrition

Description: Among frail elderly there is relative high proportion of persons in the risk zone of becoming or with manifest malnutrition. The responsibility for detecting that a person has problems connected with nutrition and to provide adequate help if necessary, lays both within the healthcare system and social service sector and has a tendency to be forgotten by both of them. The education of both family physicians and district nurses in Sweden include very little about these problems. Thus we detected that there was a need make the care providers more aware of the problem and their responsibilities, to enhance the knowledge and the cooperation. The project, starting 2008, produced recommendations concerning how the district nurses and the family physicians can work in order to detect risk of malnutrition and the reasons behind it, together with material to support the work. The information is available from a homepage. A team of a district nurse, a dietician and a family physician visited health centres interested in working more effectively with the problem of malnutrition. They reached approximately 100 healthcare centres in different parts of the area. Later all district nurses in the area were offered the possibility to, without cost, participate in an education where they learned and practiced how to detect malnutrition, identify the reasons behind it, produce a plan for future care in the area. After the course they were allowed to prescribe nutritional support. Today approximately 600 district nurses have participated and the education continues. Today we can detect a different awareness of the responsibility of the health care, than when the project started.

In order to find ways to enhance the cooperation between the social services and the district nurses we have cooperated with representatives from the social services in some areas. Together we have developed routines and documents to support the routines. The routines concern with whom and how to communicate if the home helps in the social services detect nutritional problems. The district nurse should be alerted in order to investigate. They also concern how to create a care plan where both the patient, relatives, social services and the health care agree on how to solve the problem. We are now at the stage where recommendations concerning how to work and support document are available through a home page. However there is at present no activity to spread the information in a more active way.



Deliverables: Guidelines concerning how to work with these problems and how to cooperate, how to detect risk of malnutrition, how to detect the different reasons that can be behind it and how to handle these reasons.

Information material with nutritional recommendations for different nutritional problems, A web based support for detecting malnutrition and the reasons behind it, and for creating a care plan.

An on-going education for district nurses concerning how to work with the problem of malnutrition.

A web based interactive education concerning nutrition in palliative care.

Outcomes: Approximately 100 healthcare centres and 600 district nurses have participated in education. There is an enhanced awareness of the problem of malnutrition and the responsibilities of the healthcare centres among the district nurses in Stockholm. There is support material available through websites.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: We have not planned to measure any population based outcome. However in a small pilot study in the beginning of the project, education of district nurses in four healthcare centres resulted in a greater knowledge concerning how to handle malnutrition and the nutritional status of the patients included, was improved after the intervention.

Resources available: A district nurse, family physician and dietician are working part time with the project. Funding is applied for on yearly bases, from the local county council and has varied over the years. The project is part of Centre for Family Medicine (CeFAM) working with research, education and development within the primary care. CeFAM is cooperation between the county council in Stockholm and the Karolinska Institute.

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: Centre for Family Medicine

Contact Person: Sonja Modin

Email:



Baseline nutritional status, metabolic phenotype and interventions to improve function

1. Location

Country: UK

Region: West Midlands

Total population: 6 million

2. Description

Target population High risk independent people - (older adults with and without insulin resistance or cognitive decline)

Target population: older adults in region (approx. 750,000)

Main topic: Nutrition

Description: Intra-abdominal adipose tissue (IAAT) is accrued during the process of ageing, and when individuals reach approximately the age of 60, the ratio of IAAT to subcutaneous adipose tissue (SCAT) increases, although the mechanism(s) for fat redistribution are uncertain. This is associated with significant co-morbidities of the ageing population including diabetes, cardiovascular diseases, cognitive decline, immune dysfunction and cancer with a significantly higher predisposition amongst south Asians than Caucasians. Obesity has previously been shown to reduce lifespan by approximately ten years and to enhance the ageing process. Little is known as to why this happens, however, altered metabolism and storage of macro- and micro-nutrients is postulated to play an important role.

As the proportion of the population over pensionable age is projected to significantly increase in the future, it is essential that the drivers of accelerated ageing are defined so that targets for therapeutic/lifestyle intervention can be identified. To achieve these objectives, a cohort of healthy volunteers and type 2 diabetic/obese subjects of varying age is being recruited from clinics at Heartlands hospital in Birmingham and the ARCHA panel. Subjects will have their body fat analysed using an electronic body composition analyser, and a sample of blood will be taken for phenotyping.

The following objectives were set:

- Establish normative population data.
- Explore the effects of interventions that modulate lipid profiles on oxidative damage markers.
- Empower older people for better quality of life.



Deliverables:

- (guidelines, ICT solutions, large data-bases, screening tools, web platforms, training programmes)
- Normative data of free fatty acid changes with age.
- Normative data on measures of oxidative stress.
- Description of effects of interventions to manage metabolic disease on physiological function.
- Engagement with older adult groups and panels in the Midlands to recommend health management.

Outcomes and evidence of impact:

- Has an impact on health status and quality of life for our local population

New publications to inform policy.

Evidence-based advice available to clinical partners for improved health management in older adult groups.

Greater take-up of nutritional advice to support active and healthy ageing.

Resources available: The projects described here have been funded by Dunhill Medical Trust and BBSRC. Older adult participants are from the ARCHA panel.

3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence

4. Further information

In collaboration with Heart of England Foundation Trust

5. Contact details

Organisation name: Aston Research Centre for Healthy Ageing

Contact person: Helen Griffiths, Sri Bellary and James Brown

e-mail: c.holland1@aston.ac.uk



Development of templates for malnutrition screening and guidance for their use for the prevention of frailty and functional decline due to malnutrition that are tailored to train health professionals on caring for frailty patients.

1. Location

Country: UK

Region: Northern Ireland

Total population: 1,8 million

2. Description

Target population (group): Older robust people in general population (Patients in hospital, care homes and peoples own homes potentially at risk of malnutrition).

Target population (figure): 27,000 – 108,000

Main topic: Nutrition

Description: Promoting Good Nutrition (PGN), the NI strategy for good nutritional care for adults in all care settings in NI was launched in March 2011. The Vision of this strategy is to improve the quality of nutritional care of adults in NI in health and social care, whether delivered or commissioned, through the prevention, identification and management of malnutrition in all health and social care settings.

To achieve the promotion of systematic-routine screening for pre-frailty stages in at risk patients and older people by 2015, NI aims to have rolled out across all Health and social Care settings tools for screening for malnutrition leading to assessment and prevention of frailty through prevention of malnutrition. The tools for the acute hospital setting have been rolled out in all hospital settings.

This involves a Pre- assessment Tool being carried out on admission and weekly in hospital. The MUST Tool is used on admission and weekly if indicated by the pre-assessment tool. An independent audit of practice showed excellent implementation of malnutrition screening on admission to hospital and weekly during admission.

In line with implementation of PGN in all care settings the Chief Nursing Officer, DHSSPSNI requested the Northern Ireland Practice and Education Council for Nursing and Midwifery (NIPEC) "to lead a work programme to develop resources to support improvements of nutritional care in practice".



The focus of this project was to develop resources to support nutritional screening as the first step in the identification of malnutrition and so inform nutritional care planning. A project steering group was established to complete this work.

The objectives of the project were to:

1. Scope the range of formats currently available to support the regionally agreed screening tool (MUST).
2. Identify ongoing challenges to the effective use of MUST in the acute hospital setting and potential solutions.
3. Identify a list of validated screening tools that are currently available for use in areas of specialist practice and agree areas where gaps exist.
4. Agree relevant templates and make them available in electronic or other appropriate formats to support the effective use of the malnutrition care plan within the strategy.
5. Link agreed templates to the DHSSPS web-based strategy.
6. Develop guiding principles to support person-centred care planning in relation to nutritional screening in line with NICE guidelines.
7. Make recommendations to the Promoting Good Nutrition Regional Implementation Steering Group on how to raise awareness among practitioners of the screening tools available for use.

The project is coming to completion with resources developed and tested in practice and the final project report being submitted to the Chief Nursing Officer DHSSPSNI for adoption. It is anticipated that the resources will be launched by the end of 2013.

Deliverables : Relevant templates for malnutrition screening have been developed and will be made available in electronic or other appropriate formats to support the effective use of the malnutrition care plan within the PGN strategy.

- The templates will be linked to the DHSSPS web-based strategy so that they will be easily accessible for all health and social care professionals involved in malnutrition prevention and intervention.
- Guiding principles to support person-centred care planning in relation to nutritional screening in line with NICE guidelines have been developed.
- All of the resources developed are due to be submitted by the end of the summer (2013) to the Chief Nursing Officer DHSSPSNI for consideration for adoption.
- The NIPEC project report includes recommendations on how to raise awareness among practitioners of the screening tools available for use.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has been adopted, tailored and validated in at least 2 other settings.

As outlined in deliverables above.

The future aim is that the MUST score will travel between care settings enhancing ongoing nutritional care planning for older people in and between all care settings.



The impact of this project will be determined following adoption and implementation of the new resources. This will be reported at a later stage.

The independent audit of the implementation of nutritional screening in the acute hospitals demonstrated 83% compliance with pre-screening and 85% compliance with MUST screening within 24 hours of admission to hospital.

Resources available :

A Regional Resource Development Steering Group was set up with representation from all Health and Social Care Trusts, education providers and professional groups.

The electronic resources will be available for sharing once they have been approved for implementation and can be shared with colleagues across Europe.

3. Innovation element

- Has a multidisciplinary approach.
- Has a vision on integrated care.
- Adds to the existing large body of evidence.
- Brings together a big group of stakeholders.
- Has relative advantages or brings benefits over existing practices.

4. Further information

Complete name: Development of templates for malnutrition screening and guidance for their use for the prevention of frailty and functional decline due to malnutrition that are tailored to train health professionals on caring for frailty patients.

www.dhsspsni.gov.uk/promoting_good_nutrition-2.pdf

5. Contact details

Organisation name: Department of Health Social Services and Public Safety (DHSSPSNI) Northern Ireland and Northern Ireland Practice Education Council (NIPEC)

Contact Person: Pauline Mulholland

e-mail: pauline.mulholland@setrust.hscni.net



Malnutrition Task Force

1. Location

Country: UK

Region: all

Total population: 53 million people

2. Description

Target population : Older people in general population

Target population: people over 65 years: 10.4 million or 16%

Main topic: Nutrition

Description: Preventing malnutrition in later life

Deliverables: Have published a series of good practice guides for hospital, care homes and community settings www.malnutritiontaskforce.org.uk

Outcomes:

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: not evaluated

3. Innovation element

- Has a multidisciplinary approach
- Brings together a big group of stakeholders
- Brings together multidisciplinary group of stakeholders from all settings

4. Further information

5. Contact Details

Organisation name: Malnutrition Task Force

Contact person: Margit Physant, Project Manager

Email:



HOOP study (Hydration and Outcome in Older People) admitted to hospital as medical emergencies

1. Location

Country: UK

Region: East Midlands

Total population (*percentage or numbers*): Pilot study involving 200 subjects

2. Description

Target population: Older people in general population - 10 Million people in the UK over 65

Target population: Over 65 year olds

Main topic: Nutrition

Description: The number of people aged 65 years and over has increased significantly across the developed world, a likely result of advances in medical care. Between 1999/2000 and 2009/2010, there was a 66% rise in hospital stay across England in the over 75 year age group. The UK government estimates that the number of people aged 65 years and over will double by the year 2050, with an associated increase in public cost burden. The elderly are susceptible to dehydration and electrolyte abnormalities, causes of which are multifactorial, ranging from physical disability restricting access to adequate fluid intake to iatrogenic causes including polypharmacy and the unmonitored use of diuretics and other drugs. Fluid and electrolyte abnormalities are found in up to 42% of elderly hospital patients and can lead to significant morbidity and mortality. By raising awareness and encouraging personal management of hydration status amongst free living older people in the community and carers in care hospital settings, there may be potential to increase healthy life span and reduce morbidity and mortality, whilst also reducing the healthcare costs.

We aimed to assess the prevalence of dehydration (and malnutrition) in elderly patients admitted to hospital and to assess the effects of the hydration status on clinical outcome.

Patients 65 years of age and over were recruited to the study on admission to hospital. The hydration status using biochemical markers, including serum, urine osmolality, kidney function tests and bioelectrical impedance; on admission, 48 hours after admission and 3 months post discharge from hospital. Dehydration was defined as serum osmolality >300 mOsmol/kg in men and >295 mOsmol/kg in women as per local laboratory range.

Deliverables: Information about the relationship between dehydration, malnutrition, mortality and morbidity.

Outcomes: The study is not yet complete, preliminary results are as follows:

103 patients were recruited, 40% (n=41) were dehydrated on admission to hospital. 53% (n=55) were reviewed at 48 hours, 44% (n=24) of which were dehydrated; 42% (n=10) of these were



not dehydrated at admission to hospital. 15% (n=15) were dehydrated at admission and at 48 hours. There was an associated increase in length of hospital stay (LOS) in patients who were dehydrated on admission and at 48 hours when compared with the euhydrated group, median (range) LOS, 4 (2-48) and 2 (0-59) respectively, $p = 0.026$. There was also an association between mortality at 4 months after discharge in patients who were dehydrated on admission and at 48 hours after admission, $p = 0.025$.

- Provides evidence about the relationship between dehydration, malnutrition, morbidity and mortality. Such evidence can be used to design interventions to increase healthy life span and reduce morbidity and mortality, whilst reducing the cost of healthcare.

Evidence of the impact: Too early to assess.

Resources available: Funding for the pilot was provided by the EHI. The preliminary results appear to indicate that hydration status may have an impact on outcome. Further funding will be sought from other sources to expand the study and to consider how best to provide advice to older patients/carers so that the incidence of dehydration can be reduced.

3. Innovation element

- Has a cost analysis approach
- Adds to the existing large body of evidence

4. Further information

5. Contact Details

Organisation name: European Hydration Institute/Queens Medical Centre, Nottingham

Contact person: Dr Jane Holdsworth/Professor Dileep Lobo

Email: jholdsworth@europeanhydrationinstitute.org

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



Caregiver & Dependency



Community Assessment of Risk and Treatment Strategies - (CARTS) Programme

1. Location

Country: Republic of Ireland

Region: Cork and Kerry

Total population: total >65 in the two PHN sectors sampled in Cork City, Ireland, is 6,229.

2. Description

Target population (group): Older robust people in general population. (Older adults living in the community at risk for three adverse outcomes: institutionalisation, hospitalization and death).

Target population: The original CARTS programme pilot included 803 participants or just under 13% of the local target population. At present all 5,000 community dwelling older adults, >65, are being assessed by their PHNs in Cork and Kerry.

Main topic: Caregivers & dependency

Description: Currently we do not have effective strategies to screen community dwelling populations for risk of hospitalisation, institutionalisation, death, frailty and or functional decline. These people come to our attention after they are failing, frail, de-conditioned or have suffered an adverse event. Health systems are predominantly reactive and not proactive enough.

To address this need, we developed the CARTS programme to identify and target older adults in the community at risk of functional decline and frailty and three specific adverse outcomes (AO); hospitalisation, institutionalisation and death.

CARTS is a risk intervention strategy, which aims to identify, quantify, triage, stratify and manage risk of AOs in community dwelling older adults. It represents a paradigm shift in screening and clinical assessment. It merges rapid screening with single assessment tools and standardised, evidence based interventions for community dwelling older adults who are frail or at risk of becoming frail.

Older adults are screened using the newly developed screening tool CARST (Community Assessment of Risk Screening Tool) in four domains: (1) mental state, (2) activities of daily living (ADL) (3) medical problems (4) social/economic concerns. Cognition, behavioural change, depression, impairment in ADL, medical issues, e.g. diabetes, arthritis, falls, poor nutrition and inactivity are included. It assesses the environment, hearing, vision and current supports.



The CARST assesses the ability of the caregiver network to manage the subject's problems by scoring the ability of the whole caregiver network (professional, family and friends) and identifies gaps or deficiencies called the "care deficit "

This holistic assessment (mental state, ADL's, medical issues, environment, nutrition, activity, falls, communication, behaviour and caregiver function) allows for an overall, or global level of risk, for each AO to be assigned.

This four steps process uses the STAT (screen, triage, assessment and treat) component of the programme. Those identified at risk are fast tracked for targeted assessment by family doctors and specialists who use cost effective, evidence based interventions to target issues creating risk. Once the interventions are implemented, follow up screening will determine if risk has been reduced.

The goal is to keep older adults healthy, independent and active in their own homes.

Objectives:

- Develop and compare a risk profile of community dwelling older adults, in Cork and Kerry.
- Describe the natural history of risk in these populations.
- Describe changes in risk scores e.g. from low to moderate risk, or vice versa, and the association between these different risk categories and outcomes of interest (functional decline, frailty, institutionalisation, hospitalisation and death).
- Describe and compare the different factors and profiles that create risk, specifically for functional decline and frailty and for each of the three AO, e.g. medical issues are more likely to cause hospitalisation and death. Deficits in activities of daily living (ADL) and/or cognition lead to institutionalisation.
- Measure predictive validity of the screening tool by measuring event rates over time, to determine which individual factors, group or cluster of factors and risk profiles, are associated with increased risk of frailty, functional decline and the different AO.
- Validate the screening and triage approach against other assessment tools.
- Identify intervention pathways (care bundles, tailored to those factors that cause risk) and assess their ability to ameliorate risk and thereby prevent and/or delay frailty, functional decline, AO and/or improve functional independence.
- Assess the short-term (one year) and long term (three years) effectiveness of these interventions to improve quality of life, increase healthy life years and reduce AO and frailty.
- Perform a cost-benefit analysis of the programme.
- Collaborate with other partners to train, translate and pilot the CARTS programme in different European regions. Develop pilot data on the generalizability and effectiveness of this approach in different regions.

Deliverables: Reducing caregiver burden, through the targeted provision of limited resources (e.g. home help), will allow family members to continue to function. In 2009 there were 187,000 unpaid carers, average age of 73, in Ireland (total population 4.5 million), 13% of whom



are > 65 years Preventing functional decline and frailty, allows older adults remain active contributors to society with better quality of life, increased productivity and reduced pension payments.

Integrating services, particularly primary and secondary care, will reduce unnecessary duplication and redundancies in the system.

CARTS offers the opportunity for technology companies and developers of independent living solutions, to trial their products. The greatest challenge to this process will be to change current practice to a proactive preventive system, using targeted interventions.

Outcomes and evidence of the impact:

- Has an impact on the sustainability and efficiency of the health or social care system of our local population.
- Has been adopted, tailored and validated in at least 2 other settings.

CARTS allows citizens to actively participate in their own healthcare. Preliminary results suggest that participants have improved QOL and caregiver experience with a reduction in burden scores, compared to controls.

CARTS demonstrated that administration of home care services (home help, day care centre etc) were not based upon need or risk. There was no correlation between receipt of services and six-month outcomes, $r=0.16$ ($p<0.001$).

CARTS is the first community-screening programme for risk of frailty and functional decline, in Ireland. Previous demographic analysis demonstrated that risk factors for frailty are common among Irish, community dwelling, older adults [Ballard, Jan 2012]. By preventing AO, CARTS will maintain autonomy and independence.

Data from CARTS suggested that while 16.2% of our target population were frail and living alone, there was only medium correlation with receipt of community services, $r=0.41$, $p<0.001$. Similarly, no correlation was seen between the number of hours of home help provided by the state and AO:LTC ($r=0.08$, $p=0.15$), hospitalisation ($r=0.04$, $p=0.5$), and death ($r=0.15$, $p=0.01$).

The CARTS demonstrated that frail individuals, living alone, were more likely to receive community services, than non-frail older adults, living with someone $p<0.001$. It also demonstrated that those institutionalised ($p<0.001$) or hospitalised ($p=0.002$), but not those that died ($p=0.07$), at six-month follow-up, were more likely to be receiving services than those that did not have an AO.

Resources available: The programme is supported by the HSE administration in Southern Ireland, the PHN nurses themselves, family doctors and Geriatricians. The Irish Minister of State with responsibility for Older People, Kathleen Lynch, is an advocate for this initiative. We also have support from European partners and colleagues in Australia and Turkey who are piloting our programme.



3. Innovation element

- Uses new methodology
- Has a vision on integrated care
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information

([http://www.cardi.ie/userfiles/Telecare%20\(Briefing%20Paper\)%20Web.pdf](http://www.cardi.ie/userfiles/Telecare%20(Briefing%20Paper)%20Web.pdf))

(<http://www.louthagefriendlycounty.ie/>)

The CARTS is being developed into a smartphone App in conjunction with the local SME, Doctot (<http://www.doctot.com/>)

We have engaged with a variety of partners, inside and outside Europe, who have various levels of commitment to the programme. Groups in the UK, Germany, Spain, Portugal, the Netherlands and Poland have expressed interest in the CARTS programme

5. Contact details

Organisation name: COLLAGE

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Be Home Be Happy

1. Location

Country: Portugal

Region: Bragança

Total population: 35000

2. Description

Target population: Older people in general population - 65 dependent elderly and their family

Main topic: Care givers and dependency

Description: Value the role and the skills of the caregiver; training programmes; to promote the self-care of the caregiver;

Deliverables: 742 home visits (nurse with a social worker when needed); 34 referrals to other services.

Outcomes:

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: decreased hospitalizations, decreased the level of dependence

Resources available: 2 nurses, 1 social worker and 1 psychologist (all of them at partial time)

3. Innovation element

- Incorporates incentives for change to stakeholders
- Has a multidisciplinary approach
- Has a vision on integrated care
- Advocates for network
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information



5. Contact Details

Organisation name: Be Home Be Happy – Observatory for the Quality of Life of the Elderly Living in the Community

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Caring for the Caregivers

1. Location

Country: Portugal

Region: Entre Douro e Vouga (EDV)

Total population: 277.020 thousand inhabitants in EDV

2. Description

Target population: Caregivers - Informal caregivers of people with Alzheimer's disease or post-stroke

Target population: 2.700

Main topic: Care givers and dependency

Description: Caring for the Caregiver (www.cuidardequemcuida.com) is a community-based initiative that takes place in five Portuguese northern municipalities (Arouca, Oliveira de Azeméis, São João da Madeira, Santa Maria da Feira and Vale de Cambra), that aims to help informal caregivers of people with Alzheimer's disease or in post-stroke conditions. The project was born within these municipalities' Social Development Conjoint Plan that has identified dementia care, along with cardiovascular diseases, two priority areas. In becoming aware of the increasing needs of specific responses by both health and social services, not only for the patients but also for their caregivers, this project was developed with the overall purpose of helping the caregivers with their responsibilities, and preventing physical and emotional stress through a community based approach. This is to be accomplished by involving health professional, formal caregivers, social workers, volunteers, students and the overall community, i.e., the project is based on inter-municipality cooperation between multidisciplinary professionals and individuals. It is structured in distinct but complementary actions:

(Line 1) *Psychoeducational groups for informal caregivers* – consist of 10 sessions of 2 hours each that occurs weekly. Sessions were coordinated by a psychologist and a nurse, with training and expertise in the involved areas. Major goals include improving caregiver's overall quality of life by promoting strategies to decrease burden and promote self-care. In addition, *Cognitive Stimulation Groups for the care-receivers* take place while the caregivers are attending the psychoeducational groups. Sessions are coordinated by an occupational therapist, a psychologist or a gerontologist, and involve stimulation in different areas (e.g. temporal and spatial orientation). Finally, *Mutual Help Groups* were also conducted with the caregivers after the conclusion of the intervention.

(Line 2) *Professional training on dementia care* - The purpose of this action is to create an opportunity for local formal caregivers to get advanced training in dementia care. Along with improving these professionals' skills, the intention is to develop a professional database, continuously updated, and made available for informal carers who may need these resources.



(Line 3) *Local volunteer's network involvement* – It aims to promote initiatives to get volunteers more aware of the needs of informal caregivers, and promote opportunities to volunteers provide support to this population.

(Line 4) *Respite Care Services* - Each municipality undergoes a social diagnosis on the implementation of this service (costs, potential and current use and factors that elicit or constrain the use). This action is complementary to a study that aims to get an accurate "caregiving profile" of the region with policy guiding purposes.

(Line 5) *Discussion Forums* - The main goals are to promote a professional and community level discussion (namely among graduate schools and general society) on dementia care. It includes local and media initiatives (newspapers, radio and television).

(Complementary Line) *Profile of the informal caregivers* - The main goal is to develop a profile of the informal caregivers of dependent persons in the EDV region.

Deliverables:

- Line 1: Development and publication of a psychoeducational intervention manual for caregivers of persons with dementia
- Line 2: Training programmes for formal caregivers
- Line 3: Training session for volunteers
- Line 4: Scientific report on residential respite care services in the EDV region
- Line 5: Newsletters; Site; Discussion Forums (e.g. formal carers, students, older people)
- Complementary Line: Report on informal caregivers profile in the EDV region

Outcomes: Implementation of 37 psychoeducational interventions including 288 informal caregivers. Main results point out a decrease of informal caregiver's burden and psychological distress, and an improvement of their general health and gratification with the caregiving role. Development of 5 training programmes for formal carers (1 in each municipality) that covered 43 professionals.

Development of 1 training session with 12 volunteers.

From all the social institutions in the EDV region (50), only 16% have residential respite care services; considerable predisposition to use these services was found among caregivers.

Development of 101 divulgation initiatives that achieved 393 high-school students and 18 teachers, 104 seniors and 283 formal caregivers.

Study of the profile of the informal caregivers of older dependent persons in the EDV region considering 301 individuals.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact : A positive impact on the well-being of the informal caregiver is justified by the benefits showed in terms of mental and physical health, burden and gratification with the caregiving role. 85.3% of the participants in the psychoeducational groups refer that are "very satisfied" or "extremely satisfied".

An estimated cost of 4.123,08€ were found for an implementation of a psychoeducational group.

82.0% of the formal carers participating in the training program refer that are "very satisfied" or "extremely satisfied".



91.0% of the volunteers participating in the training session refer that are “very satisfied” or “extremely satisfied”.

Recognition of the potential use of the residential respite care services in the EDV region.

Promote knowledge about informal care societal demands in the general population and in interested groups (e.g. older persons)

Resources available : The project was supported by several entities: Calouste Gulbenkian Foundation, Municipal Council of Santa Maria da Feira (CMSMF) and the Ministry of Health (Directorate-General of Health-DGS). Each municipality contributed with own human resources in order to promote the sustainability projects.

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care
- Brings together a big group of stakeholders
- Has relative advantages or brings benefits over existing practices

4. Further information

www.cuidardequemcuida.com

5. Contact Details

Organisation name: UNIFAI/ICBAS-UP, Centre for Social Services for Elderly and Children in Sanguedo (CASTIIS) and Municipality of Santa Maria da Feira

Contact person: Oscar Ribeiro

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Care at home

1. Location

Country: Portugal

Region: North Portugal (634 756)

Total population: 159 576 / Guimarães; 16 323 people 65 or older

2. Description

Target population: Carers - Informal caregivers of older people and general population

Target population: about 4 500 140

Main topic: Care givers and dependency

Description: *Care at home* is a community-based initiative and it took place in the municipality of Guimarães, since August 2010 to August 2011 (12 months). This project targeted mainly informal caregivers of dependent elders based in a strategy of health promotion and prevention. *Care at home* began was an initiative of UNIFAI/ICBAS-UP and Portuguese Red Cross of Guimarães, financed by the Ministry of Health (ACS). The project comprises actions directed to the caregivers and to the general population, completing the following tasks: 1) Organization of the psycho-educative program; 2) Training of the facilitators (health professionals) to conduct the sessions of the psycho-educative program; 3) Training of the volunteers to take care of the dependent elders while caregivers attend the sessions of the psycho-educative program; 4) Recruitment/selection of participants (about 140); 5) Implementation of the psycho-educative program; 6) Program assessment; 7) Sessions of awareness raising and distribution of information about caregiving in the general population; 8) Program dissemination. The psycho-educative program consists of 7 sessions of 2 hours a week. The coordinator of the group was a trained psychologist, and depending on the content of the different sessions, the coordinator was assisted by a nurse, physical therapist or social worker, trained in the program. The contents include subjects like the ageing process, providing instrumental and emotional care, and care of the caregiver. There were six open sessions for the general population to inform on informal care and its specificities and to disseminate the project. Along the project there was distribution of flyers to raise awareness about informal care in the general population. At the end of the project, a seminar was organized to disseminate the main results.

Main goals are: 1) To improve caregiver's overall quality of life; 2) To enhance the mental health of caregivers by decreasing burden and promote self-care; 3) To increase the quality of informal care, enhancing the skills of the caregivers; 4) To prevent premature



institutionalization of the dependent old people; 5) To make the community aware about caregiving issues; 6) To provide the Red Cross of Guimarães with the necessary tools to support informal careers in psycho-educational groups autonomously; 7) To provide the Red Cross of Guimarães with the tools necessary to training other institutions and individuals to disseminate the project.

Deliverables:

- 1) A psycho-educative intervention manual for caregivers of dependent elders;
- 2) Training program for facilitators;
- 3) Training program for volunteers;
- 4) Training session of awareness raising for the general community;
- 5) Four flyers about informal caregiving: i) Ageing process; ii) Caregiving I (bath; dressing; eyes, oral and feet care; toilet use; feeding); iii) Caregiving II (prevention of pressure sore; body positioning; transfers; falls prevention; medication); iv) Caring the caregiver (strategies to deal with burden and adaptation to the caregiver role);

Outcomes:

- 1) Implementation of 5 psycho-educative interventions that covered 63 informal caregivers.
- 2) Development of 1 training program for facilitators with 13 participants.
- 3) Development of 1 training program for volunteers with 12 participants.
- 4) Development of 6 sessions of awareness with 72 participants;
- 5) Deliver of 4000 (1000*4) flyers about informal care.
 - Has an impact on health status and quality of life for your local population
 - Has an impact on the sustainability and efficiency of the health or social care system of your local population
 - Improve quality of life of caregivers and frail elderly

Evidence of the impact: A positive impact was found in mental health with improvement in overall scores from baseline to follow-up ($p=0.021$). Subjective health and depressive symptoms revealed important improvement from pre-test to post-test ($p=0.002$ for both). 39.6% of the participants in the psycho-educative groups refer being “very satisfied” and 37.5% “extremely satisfied”.

Resources available: This project qualified a group of facilitators and a group of volunteers. Other resources available are the “Care at home program” for psycho-educative intervention; 4 booklets with information about informal caregiving, and the empowerment of an NGO professionals and volunteers. All this resources are available and may be transfer to other organizations or regions



3. Innovation element:

- Has a multidisciplinary approach
- Has a vision on integrated care
- Advocates for informal caregiving
- Study cases on informal caregiving
- Has relative advantages or brings benefits over existing practices
- Empowerment of stakeholders, specifically Portuguese Red Cross of Guimarães

4. Further information

5. Contact Details

Organisation name: UNIFAI/ICBAS-UP and Red Cross Guimarães

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Caregivers Education Basics (Initial Program)

1. Location

Country: Romania
Region:
Total population: 17 millions

2. Description

Target population: Caregivers - family caregivers, professional caregivers and the general population living with or taking care of other people with various forms of Dementia.

Target population: 40.000 persons (total estimated population with Dementia is 400.000)

Main topic: Care givers and dependency

Description: Caregivers Education Initiative is an ongoing program since January 2013, and promotes care-giver and care-receiver wellbeing in the region for the quality and dignity of life. Objectives are to be realized through access to care giving topics and educational programs leading to caregiver certification through e-learning. This is supported by collaboration between practitioners, researchers and organisations throughout the world with quality improvement expertise and care giving expertise, to deliver effective programs in response to people in the community.

The following objectives were set and will be evaluated annually:

- Reduce readmissions to acute hospitals
- Reduce unavoidable visits to primary care physicians
- Reduce the need for more expensive forms of intervention
- Reduce the pressure on informal carers
- Reduce the use of medications
- Reduce caregiver stress

Deliverables:

- Web-platform to share information and courses related to care giving, caregiver stress and new information in the fight against dementia.
- Training programmes for care-givers run in a physical environment and leading to care-giver certification.
- Training programmes for professionals leading to the granting of Continuing Education Units.

Outcomes: Care-giver education in the United States as led to a significant decline in hospital admissions for dementia patients as well as a decline in the depression rates amongst care-givers.



- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Enhances employment and job creation

Evidence of the impact: A satisfaction evaluation with care-givers was conducted in the United States and over 90% of those surveyed felt that the quality and dignity of life was better for not only their care-receivers but also for themselves.

Resources available: Funding for the pilot project and research was self-funded. On-going activities are financially supported by donations at this time.

3. Innovation element

- Has a cost analysis approach
- Has a multidisciplinary approach
- Has a vision on integrated care
- Adds to the existing large body of evidence
- This programme is about service integration and redesign with web-site based applications

4. Further information

A fuller range of materials is available at www.share-cei.org or www.imparte-cei.org.

5. Contact Details

Organisation name: Caregivers Education Initiative

Contact persons: Corina Danciu, Philip Choban

Email:



Longitudinal study of women and men caregiver's health and quality of life in two Spanish regions (CUIDAR-SE): Design and development of a questionnaire aimed to informal carers

1. Location

Country: Spain

Region: Andalusia and Basque Country

Total population : 10.556.663 people (Andalusia: 8.371.270; Basque Country: 2.185.393). From the Population Census Data 2011.

2. Description

Target population : Caregivers - Informal caregivers of dependent people, specifically in the middle ages and elderly caregivers.

Target population: Informal caregivers of dependent people from Andalusia and Basque Country (approximately 500.000). We will take special interest in the middle ages and elderly caregivers, who are the majority profiles in the informal care.

We defined dependent person as a person who, for reasons linked to the lack or loss of physical, mental, or intellectual autonomy, needs care and/or considerable help perform basic everyday activities, particularly with regard to personal care.

Main topic: Care givers dependency

Description: CUIDAR-SE is a project aimed to analyze the evolution in time of indicators of health and quality of life in informal caregivers from Andalusia and Basque Country and identify risk factors to present worse health and quality of life in women and men. We have designed a specific questionnaire aimed to identify these risk factors and other issues such as their needs, demands and supports which influence their quality of life.

This questionnaire provides innovative contributions, such as it has been designed with a gender perspective, and it includes an estimation of the economic value of informal care.

The questionnaire includes the following dimensions: Household structure and characteristics of care recipients; features and intensity of care; support needs and demands; general and mental health; consequences of care on health and other dimensions of quality of life; economic valuation of informal care; sociodemographic issues.

We will analyze the evolution of these indicators and the differences between men and women in a time frame of two years (2013-2015). Then, we will compare data obtained in the two Spanish contexts. The project will generate recommendations to improve the design and implementation of policies and services for informal caregivers. The results will guide the



strategies to reduce gender inequalities in informal care and its impact on health and quality of life.

The questionnaire has been designed by the team of the project from January to July 2013. On September 2013, the team is conducting a pilot study in order to test the level of understandability and adaptability of the questionnaire to the target population. The changes resulting from this pilot study will be incorporated into the final questionnaire, which will be ready for application in the study areas in September 2013, September 2014 and September 2015.

We will generate longitudinal data about physical and mental health and quality of life in caregivers, and share it with policy-makers and health professionals (By December 2013, May 2014 and May 2015).

We will provide data about the impact of different informal care models on the evolution of health status of caregivers, specifically in middle ages and elderly (By December 2013, May 2014 and May 2015).

We will elaborate guidelines aimed to policy makers and professionals to achieve the following:

- Implementation of education programmes for caregivers to take more control of their own health (By December 2014).
- Design and development of actuations aimed to caregivers, whose take into account their needs, demands and supports at every stage of the care process, from a gender perspective (By December 2015).

Deliverables: Design, development and validation of a questionnaire for collecting data aimed to informal caregivers.

Outcomes: Identifying factors associated with worse health and quality of life indicators resulting from the informal care will be especially useful for health and social services, to enable the definition of special risk groups (by December 2013, May 2014 and May 2015). The results will guide the strategies to reduce gender inequalities in informal care and its impact on health and quality of life.

Identifying needs, demands and support of the caregivers will be useful to design ICT solutions to improve their quality of life (by December 2014 and December 2015).

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact : Currently we have no evidence of the impact of the methodological tools developed. In September 2013, we are conducting a pilot study to test the questionnaire in terms of understandability and appropriateness to the target population. In October 2013, the first data collection of the project will take place. Final results of the project will be available from May 2015.

Resources available: The project has been funded by the Spanish Ministry of Health, Social Services and Equality (63.000 € for the overall project).



3. Innovation element

- Has a gender perspective approach
- Uses new methodology
- Adds to the existing large body of evidence
- This questionnaire is the first one designed and developed in our context with a gender perspective to obtain longitudinal data about informal caregivers and their health and quality of life. The questionnaire and the methodology based on a longitudinal study may be adapted to the Spanish and European context.

4. Further information

5. Contact Details

Organisation name: Escuela Andaluza de Salud Pública

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User Requirements and specifications of services

1. Location

Country: Spain

Region: Aragón

Total population: Aragón (2012): 1.349.467; (M) 671.898 (W) 677.569

2. Description

Target population (group): Dependent patients - (Elder and Dependant People)

Main topic: Caregivers and dependency

Description: To collect, in the most objective and comprehensive way as possible, the users' requirements that help us in the design of care services. We perform a needs and situation study, from the revision of each of the components involved: the individual person who wants to perform a particular activity, in a particular environment, and to what extent it requires an appropriate resource. When the case is a technological resource, starts the process of gathering the user's requirements and specifications to use the services. This phase is crucial to get a good service design.

It requires a good coordination and the participation of all members in the intervention, as well as interdisciplinary communication within the team and with end users (users, caregivers, responsible of social and health administration, industry and collaborators). To help the team on their task we use interdisciplinary tools of functional description for services, based on user-centered services design methodologies, as *Userfit* tool kit.

This activity collects in a first stage the necessary information to be used later in the design of services according to the specifications of need. It is used to better adjust the services design to the objectives. It helps us to make the designs tailored to the specifications.

Deliverables: User-centred Design Methodologies and Functional Description Interdisciplinary Tools.

Outcomes and evidence of impact:

- Has an impact on health status and quality of life for our local population.
- Has an impact on the sustainability and efficiency of the health or social care system of our local population.

Functional Description of services to test.

Services to test designed by properly methodology runs better than others that don't come from necessities study. Acceptance of services by users and carers.

Resources available:

- 2 Living-Labs,
- 2 elders flats



- Romareda Elder Residence.

3. Innovation element

- Develops living labs.
- Has a vision on integrated care.
- Has relative advantages or brings benefits over existing practices.
- Studies personal autonomy.

4. Further information

5. Contact details

Organisation name: Bio-Med Aragón / "Tecnodiscap Well-Tech" Research Group, University of Zaragoza

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Evaluation of the Impact of Technology on the Quality of Life of Users

1. Location

Country: Spain

Region: Aragón (Municipality of Zaragoza)

Total population:	Aragón (2012)	Total: 1.349.467	(M) 671.898	(W) 677.569
	Zaragoza (2012)	Total: 701.887	(M) 340.488	(W) 361.399
	Zaragoza (2013)	Total: 704.239	(M) 341.439	(W) 362.800

2. Core activities

Target population: Older people in general population - Elders, participants on Independent Living Programs, caregivers

Target population: Elder and Dependant People

Main topic: Care givers and dependency

Description:What: Evaluation of technology solutions on pilots to test with users the services and assistive technology, designed as before, in real environments requires a protocol. On it we define all the methodological, ethics, legal, administrative aspects and tools to use for manage de pilot and get the information to evaluation of the impact of the technology use on Quality of Live of users.

How: Defined evaluation process on three phases (Technological Evaluation, Usability Phase, and Evaluation of Impact), this aspect refers the third phase of evaluation. Define legal aspects, data protection, security aspects, and institutional support. Define social collaboration on entity programs with support of technology for users, other services providers, technology providers, users and entities. Define Evaluation Tools based on WHO-QoL and ISO 9126 criteria.

What for: Achieve the research goals on ITC solutions attending the protection of the users' rights on research.

Deliverables: Evaluation Protocol, Evaluation Tools based on WHO-QoL and ISO 9126 criteria

Outcomes: Guidelines, Protocol, Cooperation Agreements

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: We are testing on it. We get good results on manage of pilot in Residence Romareda and now we test on Independent Living Program.



Resources available: 2 Living-Labs, 2 elders flats, Romareda Elder Residence, Health Centre, Entities Collaborators

3. Innovation element

- Develops "living labs"
- Has a vision on integrated care
- Study cases on Personal Autonomy
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: Bio-Med Aragón / "Tecnodiscap Well-Tech" Research Group of University of Zaragoza

Contact person: Dr. Jorge L. Falcó Boudet

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Development and Testing of Use of Specific Services and Assistive Technology with users

1. Location

Country: Spain

Region: Aragón (Municipality of Zaragoza)

Total population:	Aragón (2012)	Total: 1.349.467	(M) 671.898	(W) 677.569
	Zaragoza (2012)	Total: 701.887	(M) 340.488	(W) 361.399
	Zaragoza (2013)	Total: 704.239	(M) 341.439	(W) 362.800

2. Description

Target population: Older people in general population - Elders, participants on Independent Living Programs, caregivers

Target population: Elder and Dependant People

Main topic: Care givers and Dependency

Description: Development of technology and Pilots to test with users the services and assistive technology designed as before requires a protocol. Design services using accessible devices based on open technologies is the target. The starting point is a system composed of several software components that run on a local machine to each installation, structured in 3 levels or layers:

- Physical devices (Hardware, Technology) [Internet Of Things]
- Logical Devices and Services (Abstraction, Interface) [Ontologies, Semantics]
- Functional Services (Applications, User Interface, Reasoners) [web, IA]

There is also a transverse support level where they lodge the structural and infrastructural services (Operating System, Log, Communications, Data Access...). On the other hand we have independent applications interacting with the system through a nonstandard protocol defined for access to the second layer (Logical Devices and Services) from the outside. The goal is to define a flexible and open architecture that provides an environment with a high degree of dynamism, deploy and implement the 3 levels of the system.

How: Using low-cost devices on sensors (as presence, humidity, light, open-close, sound, image), and actuators (as on-off, lights), and events notice (sending sms, emails, or making a call), we can design, all together with rest of participants involved on services design in the project, the services of social dynamization, health, personal autonomy or perceived safety, using the interdisciplinary functional services description tools.

What for: Those services are designed to improve the personal autonomy of users and help the caregivers work.

Deliverables: ICT solutions, web platforms and applications.



Outcomes: Logical Devices and Services (Interfaces), Functional Services (Applications)

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: We tested this line of actions in MonAMI Porject, SIAMyD, and nowadays are working on it on an Independent Living Home Program of Kairós.

Resources available: 2 Living-Labs, 2 elders flats, Romareda Elder Residence

3. Innovation element

- Develops "living labs"
- Has a vision on integrated care
- Study cases on Personal Autonomy
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: Bio-Med Aragón / "Tecnodiscap Well-Tech" Research Group of University of Zaragoza

Contact person: Dr. Jorge L. Falcó Boudet

Email: jfalco@unizar.es



Intervention to improve social support to informal caregivers (ICIAS)

1. Location

Country: Spain

Region: Catalonia

Total population: 5,6 million

2. Description

Target population (group): Caregivers (Caregivers, Home-care and Alzheimer disease patients).

Target population (figure): 48.000 caregivers and care-recipients

Main topic: Caregivers and dependency

Description: Taking care of chronically ill or dependent elderly patients is hard, often needing 24 hours' day work, thus caregivers often feel stress, and support burden, anxiety and depression. Elder abuse or pathological grief after patient's death is not uncommon. Education programmes and support groups along with other interventions can help caregivers improve their own health as well as the care of the patient.

Home health care is provided by primary health care nurses and physicians of the Catalan Health Institute (CHI), which is the public primary health care provider for 80% of the population in Catalonia. Home care is aimed to detect, assess, support and monitor the health and social problems of the individual and the caregiver, enhancing their autonomy and improving their quality of life.

A comprehensive geriatric assessment (CGA) conducted by a nurse and a physician is provided once a year or more often if needed. It includes functional assessment, cognitive status, psychological well-being, social risk, pain, sores, falls and caregiver burden. It allows a more accurate diagnosis and knowledge of the risk situations in order to address them with the best suited strategies, improving their quality of life and the sustainability and efficiency of the health care system.

The ECAP is the electronic workstation of the health centres of the Catalan Health Institute. All the clinical information from CGA in home-care patients and their caregivers is recorded in the electronic health records, enabling us to form a large longitudinal database with over 48,000 home-care elderly patients, most of them with identified informal caregivers.

Our organization, IDIAP Jordi Gol, has undertaken several initiatives to study caregiving and provide strategies for empowering the patients and caregivers to take care of their health and to be independent.

- **The effect of institutionalization or patient's death on Informal caregiver's health. A cohort study.** Aims to identify the characteristics of family caregivers that are related to a



higher risk of pathological grief, depression or caregiver burden. Analyze the relationship between changes in mental and physical health of caregivers and caregiver characteristics, and to describe the frequency of situations of elder abuse. The final goal is to design strategies to enhance empowering of caregivers through studies that evaluate the factors related to pathological grief and burden. Results to be provided by the end of 2013.

- **Qualitative research on the care of a patient with Alzheimer's disease and their family caregivers.** How the relationship between grandparents and grandchildren can be affected by the disease. To assess a new comprehensive approach of this growing disease at the community.
- **Intervention to improve social support for informal caregivers (ICIAS).** Multifactorial intervention on the main caregiver of a dependent patient carried out by health professionals of their primary care centre to improve social support, the main caregiver's burden and quality of life and to delay the institutionalization of the patient. Primary care professionals who participate in the intervention will enrol in a specific training programme that will consist in:
 - Neurolinguistic programming seminar
 - Workshop on family centred care
 - Workshop on family interviewing
 - Group education

The intervention will be carried out by primary care professionals and intends to further the social support aimed at the caregiver. Its multifactorial component is based on intervention studies that responded to different health conditions.

- a) Individual intervention: 90-minute counselling session to the caregiver.
- b) Family intervention: 1-2 90-minute sessions of family counselling.
- c) Group education: 4 60-minute sessions.

In addition, follow up phone calls will take place on a monthly basis and the caregiver will have access to a direct phone number to contact the relevant professional in the event of an emergency.

This new home care approach will emphasize the caregiver's role instead of being uniquely centred on the dependent patient. The aim is to empower, improve the quality of life and decrease burnout of informal caregivers.

Deliverables :

- Knowledge to help develop guidelines to care for the caregivers and family caregivers.
- Intervention strategies. A formal evaluation has been conducted in the context of a research study with the aim to validate the current intervention tool before expanding its use. Results are still preliminary and further analyses will be available

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for your local population.

Zarit Caregiver burden Scale, bereavement, mourning, affective scales (Goldberg Anxiety and Depression Scale), elder abuse screen, resources of the individual, the family and the social services , management of health risk, morbidity. SF-12 Health Survey, with physical and psychological components; MOS Social Support Survey.

A3 Action Group "Prevention on early diagnosis of frailty and functional decline, both physically and cognitive, in older people"



The informal caregivers’ cohort study (a) included more than 800 informal caregivers and their care-recipients during the past 5 years. Results are yet unpublished, but baseline data shows 43% of care recipients having dementia, 68% of their caregivers being burdened, and 59% depressed. Around 30% of the caregivers were at risk of committing elder abuse, either physical, psychological or neglect. 66% of the informal caregivers were younger than 65 years old, being a group where interventions based on technological solutions could be of much use.

ICIAS intervention. The multifactorial intervention of this proposal (c) will improve social support. However, the intervention only improves parameters related to psychological factors of the caregiver, whereas no changes can be observed on physical parameters.

The period of time during which a caregiver looks after a dependent patient can be lengthened with the improvement of the caregiver’s psychological wellbeing as an essential component of health related quality of life, independently of the burnout.

Pre and post intervention variable results. Comparison of the pre- and post- intervention differences between groups.

	Baseline		Post - Intervention		Pre- Post- Difference between groups ***	p-value
	Intervention	No Intervention	Intervention	No Intervention		
MOS	69.9±18.6	72.5±17.4	79.3±8.3	74.9± 16.4	6.9 95%CI 0.2 – 13.6	<0.044
Zarit	21.7± 8.1	20.3±7.3	20.9 ± 7.8	20.9±6.6	1.52 95%CI -4.5 –1.6	P=0.34
SF-12 P	42.4±10.8	45.2±10.3	42.2±11.9	44.8±12.2	1.8 95%CI 3.5 – - 3.8	P=0.97
SF-12 M	40.5±12.3	44.1±12.4	43.3±11.6	43.2±12.4	3.33 95%CI 1.2 – - 7.8	P=0.15

Resources available:

Supported by funding from health government and local authorities.

3. Innovation element



- Has a multidisciplinary approach.
- Adds to the existing large body of evidence by knowledge generation.
- Has relative advantages or brings benefits over existing practices.

4. Further information

Complete name: Caregivers. The effect of institutionalization or patient's death on Informal caregiver's health. Caregivers burden and elder abuse. Alzheimer's disease patients, their grandsons and family caregivers. Intervention to improve social support for informal caregivers (ICIAS).

5. Contact details

Organisation name: Jordi Gol Primary Care University Research Institute (IDIAP Jordi Gol)

Contact person: Francesc Orfila and Assumpta Ferrer.

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Community Care Unit (CCU)

1. Location

Country: Spain

Region: Madrid

Total population : 1 million

2. Description

Target population (group): Dependent patients - (Patients, over 75 years, with poor functional status, attended in their home).

Target population (figure): 25,000

Main topic: Care givers and dependency.

Description: Usually, patients who require to be assessed by any kind of specialist have to attend an outpatient clinic appointment. Elderly patients with severe cognitive decline, functional impairment or dependency have many difficulties to do so. Moreover, evaluating these patients in their own environment can help to improve the diagnosis and treatment.

The Community Care Unit or CCU (associated to the Geriatric Department) evaluates these patients in their homes (nursing homes or individual homes) providing a link between hospital, primary care and social facilities. This assessment is based on the Comprehensive Geriatric Assessment (CGA) providing an integral approach and ensuring a continuum care.

The CCU was launched in 1995. Several specific programs are on-going since then like behavioural disorders in severe cognitive impairment; falls risk assessment at home; continuity of care after discharge; evaluation of severe functional impairment; etc.

The objectives of CCU are:

1. To reduce readmissions in Acute Care.
2. Be a link between hospital, primary care and social facilities, sharing with them guidelines and ways of working.
3. Train primary care physicians in screening and first approach of geriatric syndromes.
4. Reduce the pressure on informal caregivers.

Deliverables:

1. Guidelines on the management of geriatric syndromes shared by primary care and CCU.
2. Training courses for primary care on CGA and geriatric syndromes detection held once a year.
3. Regular meetings, once a month, with primary care doctors and nursing home doctors to agree on ways of working and to share information on patients and scientific updated information.

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for the local population



A reduction on the number of dependent patient's readmissions has been achieved, especially from those nursing homes where there are medical facilities. In 2012, more than 15 nursing homes have been visited monthly. The objective is to cover 100% of them and establish referral criteria.

During 2012 more than 1,400 patients have been assessed by the CCU, 800 of them from nursing homes.

Resources available:

It is supported by the regional health government.

3. Innovation element

- Has a multidisciplinary approach
- Has a vision on integrated care
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: SERMAS-HOSPITAL UNIVERSITARIO DE GETAFE, Madrid

Contact person: Leocadio Rodriguez Mañas

Email: lrodriguez.hugf@salud.madrid.org



Dementia Support

1. Location

Country: Sweden

Region: Stockholm

Total population: 9 500 000 (Sweden)

2. Description

Target population: Caregivers - Caregivers and patients suffering from dementia (+ professionals)

Target population: 500 000 (Sweden)

Main topic: Care givers and dependency - Digital aid to caregivers, patients and professionals within the dementia field.

Description: iPhone and Android app aimed at supporting, aiding and inspiring family members and caregivers in home environment to patients suffering from dementia. Dementia Support is also a useful tool in the education of care professionals within the same field.

Deliverables: Training programs, ICT Solutions.

Outcomes: Dementia Support is facilitating knowledge to increase quality of life for caregivers and patients suffering from dementia.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Has an impact on the expansion of market and growth
- Has been adopted, tailored and validated in at least 2 other settings
- More than 10% of the local target population receives the innovative practice

Evidence of the impact: Not yet evaluated.

Resources available: In-house funding and corporate partnerships.

3. Innovation element

- Has a gender perspective approach
- Incorporates incentives for change to stakeholders
- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence
- Advocates for Caregivers and dementia patients.
- Brings together a big group of stakeholders



- Has relative advantages or brings benefits over existing practices

4. Further information

Dementia Support app is available on Apple App Store and Google Play.

5. Contact Details

Organisation name: Swedish Care International

Swedish Care International is committed to MISTRAL – Multimodal Interventions Supported by information and communications Technologies building Resilience for frAilTy prevention

Contact person: Ludvig Mörnesten

Email:



Activity monitoring as part of care delivery to frail, independently living seniors

1. Location

Country: Netherlands

Region: Limburg

Total population: 247.000 frail elderly (≥ 65 years) in 2007 in the Netherlands. Expected number by 2040: 505.000 frail elderly people in the Netherlands.

2. Description

Target population: Older people in general population - Frail, elderly people living at home alone.

Target population: In the present project: clients of three home care organisations.

Main topic: Care givers and dependency

Description: This project consists of an ongoing large scale implementation study and cost-effectiveness analysis of Activity Monitoring (Quiet Care monitor) as part of home care delivery to frail elderly people living at home alone. Quiet Care monitors activity in the home, entering/leaving the home, going to the bathroom, getting out of bed, temperature in the home and opening/closing of the fridge or medicine compartment. These 'activities' are all monitored 24 hours a day. When Quiet Care detects a change in one of these activities, for example when the fridge was not opened for a whole day or when the system detects that a person is wondering around in the home at night, a signal is forwarded to an (informal) caregiver who can contact the elderly person to inform whether they need help or support. Some of the signals may require acute response (e.g. when a person has not left the bathroom in the past 2 hours) whereas other signals do not required the acute response of a careprovider. This way, the Quiet Care system can support (informal) caregivers in providing care that is tailored to the needs of the elderly person who is living at home independently.

- A pilot project was organised at one home care organisation in the South of the Netherlands to study the feasibility of the system in 2007.
- Subsequently, a large-scale implementation study was organized among three home care organisations in the South of the Netherlands in 2008-2010 to study effects of the system on different levels: the level of the client, formal and informal caregiver. A business case was developed as well.
- Currently, a large-scale study on the cost-effectiveness is being performed among the same three organisations (2012-2014). The study consists of a pre-intervention measurement (T0)



before the introduction of the Quiet Care System, a period of introduction of the system among clients and a second post-intervention measurement (T1).

Deliverables:

- Availability of a technological system (Quiet Care system)
- Data communication infrastructure (data server, call center, home care employee)
- Protocol for using the system and care delivery
- Screening tool to select eligible clients
- Training programme for home care employees
- Instruction of informal caregivers

Outcomes: In the large-scale implementation study and the current study on cost-effectiveness, outcomes were assessed at the level of the client, formal caregiver, informal caregiver, the home care organisation.

Client:

- Health status
- Perceived independence
- Level of frailty
- Quality of Life
- Feelings of loneliness
- Feelings of safety

Formal caregiver:

- Work satisfaction

Informal caregiver:

- Objective burden of informal care delivery
- Subjective burden of informal care delivery

Organisation:

Costs versus benefits: installation/ costs, number of home care visits / use QC, duration of visits / use QC etc.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population

Evidence of the impact: The pilot project showed that the Quiet Care system could be used within the framework of Dutch home care organisations and proved to be a promising tool as part of home care delivery.

The large-scale implementation study indicated that the use of the Quiet Care system had positive effects on the subjective burden of informal caregivers. Formal caregivers reported to have better insight in the clients' functioning and that the system contributes to providing care better tailored to the clients' needs. A study on the cost-effectiveness of the system is still ongoing.

Resources available: Funding for the pilot project was obtained from a care organization in combination with an innovation program at the national level (zonMw). The large-scale implementation project was funded by a grant of the ministry of health 'Transition Program' and the regional health insurance authority. The cost-effectiveness study is financially supported by local health insurance authorities.



3. Innovation element

- Has a cost analysis approach
- Advocates support for informal care provision
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: Centre for Care Technology Research (CTR)/ Zuyd University of Applied Sciences,

Contact person: Prof. Dr. L.P. De Witte

Email:



Physical exercise



Portuguese National Walking and Running Program (PNWRP)

1. Location

Country: Portugal

Region: Portugal mainland

Total population: 1 million

2. Activities

Target population: Older people in general population - elderly subjects of 60 years or more of the participating NWRP Portuguese mainland municipalities

Target population: 0,5 million

Main topic: Physical exercise

Description: The National Walking and running program is an on-going exercise program since 2010 based on 3 main institutions connection: Faculty of Sports; National Sports Institution and Portuguese Athletics Federation. The main aim is bring the gap between science and practice. In this way, the objectives are mainly focused in: i) Develop synergies with Portuguese municipalities in order to promote active lifestyles and suitable regular exercise to older subjects.; ii) offer quality training monitoring by specialized technicians and avoid exercise practice with negative impact on health and functionality; iii) Develop local exercise initiatives in order to increase opportunities for group practice and socialization; iv) reinforce and disseminate models of good practice for older population.

At the moment more than 160 Portuguese municipalities are involved in this project involving more than 250 walking/running technicians to organise and supervise trainings. In the majority of the municipalities there is a strong connection with local health centres and hospitals. There is a progressive increment in the number of older participants (~1500 older participants)

Generally, the exercise sessions will have duration of about 50 min, involving, a 10-minute warm-up, 20-30 minutes of walking at moderate intensity and, finally, a 10 minutes cool-down involving respiratory and flexibility exercises.

including calisthenics and stretching exercises, 20-30 minutes of walking at moderate (Rating of Perceived Exertion – RPE of 4-6 on

Besides an accurate and oriented exercise practice, this project involves walking and running main events, conferences and a web-site (<http://www.marchaecorrida.pt/>) specially design to help people in developing suitable exercise practices.



Taking into account that typical sedentary lifestyles leads to a decrement in elderly's quality of life due to the negative impact on functionality, mobility, autonomy and health, this program is designed to modified negative lifestyles, counteracting the age-related disability. Promoting higher levels of participation by older adults in regular, moderate-intensity PA is a public health priority. The European Union recommendations for PA have highlighted organizations and projects which can be accessed by the majority of people, focusing on "sports for all". In terms of public health, walking has been indicated as being one of the most relevant behaviour to increase regular PA at a moderate intensity which is of importance since accumulating 30 minutes of moderate intensity physical activity on most days of the week substantially reduces the risk of mobility. and mortality associated with many chronic conditions and incapacities.

Deliverables: Regular and supervised exercise training programs; Web-platform to share information on physical exercise and nutrition counselling aim at technicians and old people.

Outcomes: Remarkable improvements in Physical activity patterns, functionally and health of the elderly are expected as a result of the national WP.

There is an on-going evaluation in some of the municipalities involving the assessment of: physical activity patterns (7 days accelerometers - Actigraph MTI), functional (Fullerton Functional Fitness Test (Rikli & Jones, 1999), health (Blood Pressure, Blood Samples for Lipid profile and Glycaemia, Anthropometrics and Body composition), Health-Related Quality of Life (Medical Outcome Study short form (MOS SF-36)) and environmental perceptions. Moreover, it is expected that after **PNWRP** men and women present a positive environmental perception that will influence daily physical activity patterns and adherence in formal exercise programs.

- Has an impact on health status and quality of life for your local population
- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Enhances employment and job creation

Evidence of the impact: Still in analysis

Resources available: Funding for the Portuguese National Walking and Running was provided mainly by Portuguese National Sports Institution, Athletics Federation. On-going activities are financially supported by health government and local authorities.

All the technicians received technical support as well as a specialized course from Faculty of Sports. Lecturing and preparation concerning training methodology and cares with older adults are supplied on a 2-day course by Faculty of Sports.



3. Innovation element

- Develops "living labs"
- Has a multidisciplinary approach
- Has a vision on integrated care
- This programme is about a national service involving different public (especially connected to sports and health) and some private institutions integration and offers a web-site for supporting technicians and older people to suitable exercise practice.

4. Further information

5. Contact Details

Organisation name: Faculty of Sports University of Porto

Contact person: Paulo Colaço; Joana Carvalho

Email: jcarvalho@fade.up.pt



Exercise and Health for Older Adults

1. Location

Country: Portugal

Region: Porto

Total population: 235.000

2. Description

Target population (group): Older people in general population (all residents in the city of Porto over 60 years of age).

Target population (figure): 2.500

Main topic: Physical exercise

Description: Exercise and Health for Older Adults is an ongoing program since 1996 of the Center for Research in Physical Activity, Health and Leisure (CIAFEL) of the Faculty of Sports of the University of Porto (FADEUP), which aims to provide planned, structured and regular exercise for older adults and to promote health and well-being. In this way, the specific objectives are mainly focused in: i) psychological and social well-being; ii) health and physical fitness; iii) scientific research; iv) master students training. The program involves multicomponent classes, resistance training sessions and walking groups in the Faculty of Sports facilities. The program also support exercise sessions in several nursing homes of Porto area. The classes are conducted from 2 to 3 times a week, for 50 minutes. During this program the master students apply a senior fitness test for functional assessment, and they prescribe and monitor the exercise sessions. All the sessions are supervised by a specialist in the area of exercise and aging.

Currently the Exercise and Health for Older Adults program involves near 250 older adults from the Porto area, 5 master students and 2 coordinators. All older adults' participants are submitted to a pre-participation evaluation of quality of life (Medical Outcomes Study 36-Item Short-Form Health Study questionnaire (SF-36)) body composition (Dual-energy X-ray Absorptiometry - DEXA), physical activity (accelerometers), physical fitness (Biodex and Functional Fitness Test), blood pressure, heart rate, and cardiovascular and osteoporosis risk factors. The assessments are repeated each year (participants were tested on 2 occasions pre and pos exercise) with academic and scientific research intentions.

Deliverables :

Regular and supervised exercise training programs; training program for master students; health-related guidelines and findings; institutionalized and community-based health research.

Outcomes and evidence of the impact:



Our previous data described the benefits of regular physical activity with health-related quality of life, cardiovascular and osteoporosis risk factors and older adults' functional fitness.

Several national and international per-review papers are already published and others are under review or submission. Among others:

- Botelho-Gomes P; Silva P; Novais C; Carvalho J. (2011): Estudo dos efeitos de um programa de atividade física no (re)posicionamento da identidade física de mulheres idosas. *Rev Port Cien Desp* 11(1) 447–456
- Carvalho, J.; Marques E. Soares, J.M.C; Mota J. (2009) "Isokinetic strength benefits after 24 weeks of multicomponent exercise training and a combined exercise training in older adults" *Aging Clinical and Experimental Research*. 22: 63-69
- Carvalho, J., Marques, E., Ascensão, A., Magalhães, J., Marques, F., Mota. J. (2010). Multicomponent exercise program improves blood lipid profile and antioxidant capacity in older women, *Arch Gerontol Geriatr*. 51:1-5
- Wanderley, F.; Oliveira, J.; Mota, J.; Carvalho, J. (2010): Effects of a moderate-intensity walking program on blood pressure, body composition and functional fitness in older women: results of a pilot study . *Archives of Exercise in Health and Disease*. Vol. 1, nº2: 50-57
- Marques, E; Carvalho J. (2011): The influence of physical activity, body composition, and lower extremity strength on walking ability. *Motor Control*. 15(4):494-506
- Wanderley F A C, Oliveira J, Mota J, Carvalho J. (2011): Six-minute walk distance (6MWD) is associated with body fat, systolic blood pressure, and rate-pressure product in community dwelling elderly subjects. *Archives of Gerontology and Geriatrics*. 52: 206–210
- Marques, E.; Mota J.; Machado, L; Sousa, F.; Coelho, M.; Moreira, P.; Carvalho, J. (2011): Multicomponent Training Program with Weight-Bearing Exercises Elicits Favourable Bone Density, Muscle Strength, and Balance Adaptations in Older Women. *Calcif Tissue Int*. 88:117–129
- Wanderley F, Silva G, Marques E, Oliveira J, Mota J Carvalho J. (2011): Associations between objectively assessed physical activity levels and fitness and self-reported health-related quality of life in community-dwelling older adults. *Qual Life Res*, 20: 1371
- Marques EA, Wanderley F, Machado L, Sousa F, Viana JL, Moreira-Goncalves D, Moreira P, Mota J, Carvalho J (2011): Effects of resistance and aerobic exercise on physical function, bone mineral density, OPG and RANKL in older women. *Exp Gerontol*. 46: 524-532.
- Marques E, Moreira P, Wanderley F, Pizarro A, Leao-Rosas J P, Mota J, Carvalho, J. (2011): Appendicular fat mass is positively associated with femoral neck bone mineral density in older women. *Menopause* 19 (3): 1-8
- Wanderley, F.; Moreira, A. Sokhatska, O. Palmares, C.; Moreira, P. Sandercock, FG; Oliveira, J. Carvalho, J. (2013): Differential responses of adiposity, inflammation and autonomic function to aerobic versus resistance training in older adults. *Experimental Gerontology* 48: 326–333
- Marques, E.; Mota, J.; Viana, J.; Tuna, D.; Figueiredo, P. T. Guimarães, J. T.; Carvalho, J. (2013): Response of bone mineral density, inflammatory cytokines, and biochemical bone markers to a 32-week combined loading exercise programme in older men and women. *Archives of Gerontology and Geriatrics*



Resources available:

- Funding for the Exercise and Health for Older Adults program is provided mainly by Portuguese Science Foundation which supports the Research Centre in Physical Activity, Health and Leisure (CIAFEL) projects.
- All participants pay also an annual fee of 30 euros for insurance and material.

3. Innovation element

- Has a multidisciplinary approach.
- Adds to the existing large body of evidence.
- Has an impact on health status and quality of life for our local population.

5. Further information

No.

5. Contact details

Organisation name: Faculty of Sports University of Porto

Contact person: Joana Carvalho

Email: jcarvalho@fade.up.pt



Frailty Programme in the Community (FPC)

1. Location

Country: Portugal

Region: North of country – Guimaraes

Total population: 159 576

2. Description

Target population: Older people in general population - People that live in the community that were considered as frail.

Target population: 5 576 persons

Main topic: Physical exercise

Description: Based in a first social diagnosis done by the social affairs division of the municipality of Guimarães that identified some specific deprived areas, there was a contact with UNIFAI to do a comprehensive screening of the target population (50+ years). The present program is being developed in ten parishes using a random sample, stratified by age, of a total of 338 subjects (6% of the total sample of people over 50 years).

The first phase corresponded to a screening to check the prevalence of frailty in the community, using the frailty phenotype of Fried. Data showed 50.9% (172) older people considered pre-frail and 34.9% (118) considered frail. These results supported the crucial need to develop an intervention program focusing the frail elders, including: a) the promotion of physical exercise; b) increasing cognitive performance; c) informing about healthy eating and d) increasing intra and intergenerational contact;

The aims are: 1) to improve physical and mental health 2) to slow the condition of frailty; 3) to improve quality of life; 4) to reduce the use of health services; 5) to delay the need on institutionalization.

Deliverables:

- A training programme for health professionals (nurses, physiotherapists, psychologists, nutritionists)
- A training programme for young volunteers to work with professionals and older people;
- A booklet with guidelines for older people self-care;
- Organization of support networks for frail people (including older people, caregivers, health professionals and young volunteers)

Outcomes:

Decrease 5% of frail elders and 10% of pre-frail elders, as assessed by the same standard measures (physical, psychological and social) used in the screening.

- Has an impact on health status and quality of life for your local population



- Has an impact on the sustainability and efficiency of the health or social care system of your local population
- Enhances employment and job creation

Evidence of the impact:

The impact of the intervention program will be done at the end of 2014.

Resources available (*budget, funding instruments, programmes, human resources*):

The project was financed by the City Council (CM Guimarães) and UNIFAI. Both entities provide human and physical resources.

3. Innovation element

- Develops "living labs"
- Has a multidisciplinary approach
- Uses new methodology
- Has a vision on integrated care
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices

4. Further information

5. Contact Details

Organisation name: UNIFAI and Municipality of Guimarães

Contact person: Mafalda Duarte

Email: mafaldaduarte@hotmail.com



TIPI TAPA

1. Location

Country: Spain

Region: Basque Country

Total population: 2.1 M

2. Description

Target population: Older people in general population (people over 64 years; community groups and members; sedentary elderly people).

Target population: 450,000 people

Main topic: Physical Exercise

Description: Tipi-Tapa Program is a community intervention for the promotion of physical activity in the elderly, designed from a public health point of view in coordination with health care services and local councils. The program takes into account three strategic programs included in the Chronicity Strategy of the Basque Country.

This intervention project is presented under the hypothesis that a health care initiative focused on frail elders could develop a better use of available resources and an improvement in autonomy and health perception of the target group.

A quasi-experimental cohort study is conducted, with elders on the brink of losing self-sufficiency. Variables included in the project will be measured before and after the intervention. If the hypothesis is confirmed, a new scenario for health care could be planned connected to local community.

Specific Objectives are:

- Contribute to the implementation of guidance on physical activity recommended by primary care professionals, through patient empowerment.
- Decrease complications associated to chronic diseases.
- Improve the physical condition of frail patients to increase functional capacity and thus enable access to community resources.
- Reduce the health costs of physical inactivity in people who need special attention.

Interventions: TIPI TAPA reaches the target population through two complementary lines of approach, community and individual.

Community approach: Targeted to people over 64, community groups and members. Activities:

1. Creating a discussion forum for elderly people: identifying barriers and proposing activities.
2. Campaign to promote moderate-intensity physical activity: walking
 - Use the media and local establishments to raise awareness and encourage people to "move": articles, poster information
 - Walking maps; Information on safe circuits with the following minimum basic data: kilometres, average length and slope.



- Promote parks and signalling pathways related to the walking activity and placement of exercise tables in large public spaces or promote the creation of groups of walkers
 - Advertise the program to organizations that can detect potential beneficiaries, with special attention to people suffering frailty
3. Establishment of social support mechanisms; AISILAGUNA (leisure time friend in Basque language), volunteers will be recruited through local associations. They will support participants through the development of the activities, especially when difficulties in the performance are detected. This method also intends to facilitate the integration of participants in the community.

Individual approach: Targeted to sedentary elderly people and especially to those presenting a high degree of difficulty (which may impair their active participation in the community program). The individual approach is based on five mechanisms that are intended to increase the adherence and follow up of the participants. These mechanisms are:

1. Doctor's personalized brief advice in the health centre.
2. Positive reinforcement along the intervention.
3. Brochures and graphic material to support the personalized advice.
4. Track record of the activity.
5. Social support serves as reinforcement and motivation.

Sedentary people are identified through a brief questionnaire which acknowledges compliance with the recommendations of physical activity and the ability to perform healthy walks. This information is recorded in their personal medical record in order to facilitate monitoring and control of the patient in this activity.

For people with emotional dependence or who require additional support and motivation for physical activity, the social support mechanisms established with the AISILAGUNA figure will act as a catalyst and facilitator and serve as a link among older people and the opportunities for participation in the municipality.

Deliverables : Poster, communication in congress and scientific publication scheduled for September, October and December 2013, respectively

- Walking maps; information on safe circuits with the following minimum basic information: kilometres, average length and slope.
- Informative posters in health centres and organizations that can detect potential beneficiaries.
- Leaflets in health centres.
- Exercise tables located in large public places.
- Physical activity workshops.

Outcomes:

Community approach: Satisfaction survey: Targeted to participants in the discussion forum created for the development of the community program.

Quantitative evaluation: (Number of walks done by the groups during the intervention period and Number of participants in the groups)

Individual approach: Satisfaction survey: collecting their opinion on the barriers found for the development of the activities they are proposed to perform.

Quantitative evaluation: (Number of participants and tracking rate of the advice for performing physical activity (people initiating the practice of physical activity after having received the recommendation to do it)



- Rate of adherence to the program (participants adherent to the physical activity practice in the end compared to initial participants performing physical activity).
- Rate of increase of physical activity (people switching from sedentary to active)

Evidence of the impact:

Preliminary results:

- 150 people derived from four health centres initially; 122 were evaluated, 40 people did not meet inclusion criteria. 24 receive individualized training, 58 people participate in group sessions during at least 3 months.
- 65 post-intervention re-evaluations:
- Barthel Index: 75% of patients get the same result, 15.6% of people shows some improvement
- SFT: 67% of the people shows improvement in strength tests of the lower extremities and 62.5% in the upper extremity, 79,68 % in aerobic endurance and 57.8% in agility and dynamic balance
- TUG: 57.8% of patients increase their capacity.
- Nottingham Health Profile: 62.5% of patients showed improvements in emotional reactions and 50% improvements in mobility.
- Level of user satisfaction: excellent.

Aspects to optimize:

- Involvement and referral of patients from primary care professionals
- The adherence of patients to the workshops
- The significance of the study is limited by the small number of participants

Lessons learned:

- It is important the direct supervision of a professional in the practice of physical activity in frail older people. The degree of satisfaction is very high.
- The supply of physical activity in the community is not targeted to this group. Both in the trained frail participants as in participants in group workshops improvements in perceived health test and the "Timed Up and Go test" have been achieved.
- Despite the observed improvements in the "Senior Fitness Test", this test is not the most appropriate for frail older people.
- Responsiveness of community agents to the continuity of workshops held at the municipal level is good,

Resources available:

- Laptop + database
- Equipment for physical exercise and assessment questionnaires: hoops, balls, rubbers, towels, dumbbells.
- Assessment questionnaires.



3. Innovation element

- Has a multidisciplinary approach
- Uses new methodology
- Adds to the existing large body of evidence
- Has relative advantages or brings benefits over existing practices
- Has an impact on health status and quality of life for our local population
- Has an impact on the sustainability and efficiency of the health or social care system of our local population

4. Further information

5. Contact Details

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Measuring physical fitness in persons with severe or profound intellectual and multiple disabilities

1. Location

Country: The Netherlands

Region: North

Total population:

2. Description

Target population (figure): 200 persons, living in a residential care facility (Royal Dutch Visio De Brink) in the Northern part of the Netherlands, housing persons with severe or profound intellectual and multiple disabilities (SPIMD). 50 % of these persons are older than 40 years. Given the abovementioned early ageing, they can be considered as elderly.

Target population (group): Dependent patients (Persons with both: severe or profound intellectual disabilities (IQ<35) and visual impairment.)

Main topic: physical activity

Description : As a sufficient physical fitness level and physical activity can counteract functional decline and improve health, and sufficient health in turn improves well-being and quality of life, it is imperative to gain comprehensive insight into the physical fitness of persons with visual impairment and intellectual disability. However, the feasibility and reliability of physical fitness measurements and tests in persons with these disabilities, had not been properly scrutinized, resulting in little reliable knowledge on the physical fitness levels of these target population. Our practice aims to examine the feasibility, the validity and the reliability of physical fitness tests in persons with visual impairment and intellectual disability. Six separate studies examined measurements and tests of the following components of physical fitness: body composition, cardiorespiratory fitness, flexibility and balance. The activity was a PhD project 2007-2011.

Deliverables :

1. The 'Basis test set Fitheid' (2008). In this test set, the main products of this research are published:

- Feasible, valid and reliable tests of physical fitness for persons with visual impairment and intellectual disability. These tests can directly be implemented into daily practice and also, can be used to evaluate interventions geared at promoting physical fitness.
- Various tested ways to enhance test environment and suggestions for further enhancement of test conditions.
- A couple of important findings regarding formulas or equations applicable to research on this specific target population.



2. A training program which was performed in care facilities in the Netherlands and in Belgium (2008 to 2013).
3. A web-platform with both the protocols of the tests and measurements and guidelines for interventions.
4. An indication of physical fitness levels of individuals with visual impairment en intellectual disability (publication in preparation).

Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population.
- Has been adopted, tailored and validated in at least 2 other settings.

Physical fitness levels of persons in persons with visual impairment and intellectual disability are assessed with valid and reliable assessment instruments and found to be insufficient:

- Persons with visual impairment and severe or profound intellectual disability show a more healthy body composition status than persons with mild or moderate ID.
- Persons with visual impairment and severe or profound intellectual disability show low cardio respiratory fitness levels and the do not meet the standard of sufficient physical activities.

It is recommended to develop, perform and evaluate tailored interventions with the aim of promoting components of physical fitness.

Persons with visual impairment and severe or profound intellectual disability are able to learn and become accustomed to test and measurement situations if an optimal test environment is created.

Based on the outcomes, for all 200 persons in the residential care facility of the Royal Dutch Visio, a 'movement plan' was made, as a basis for promoting a healthier lifestyle. In the care facilities in the Netherlands where the training program was performed, movement plans are made too.

Resources available:

The research is financed by Royal Dutch Visio De Brink & Hanze University of Applied Sciences Groningen.

3. Innovation element

- Incorporates incentives for change to stakeholders.
- Has a multidisciplinary approach.
- Advocates for improving physical activity in persons with visual impairment and intellectual disability.
- Study cases on a target population with a complex combination of disabilities.

4. Further information

The exact number of persons with visual impairment and severe/profound intellectual disability (ID) worldwide is unknown. In The Netherlands, it has been estimated that prevalence of mild to profound ID is 60.000 (Ras et al, 2010) and the prevalence of severe/profound ID in combination with visual ID is 14.000 to 16.000 (Van Splunder et al, 2006).



The prevalence of severe or profound ID and visual or motor (multiple) disabilities (SPIMD) is 10.000 to 12.000 (Vlaskamp, 2002). WHO, 2001; (severe) partially sighted or blind). Prevalence of motor disabilities in this sample was 35 % (Palisano et al, 2000)

This good practice is not specifically targeted to the elderly people of this population. However, the number of older adults with ID is growing, caused by an increased life expectancy due to improved health care. Also, in this specific population with ID the ageing effect is increased in comparison with the general population (Hilgenkamp et al, 2012). For example, older adults with ID show similar to even worse physical fitness levels than 75+ elderly in the general population (Hilgenkamp et al, 2012). Therefore, we consider this practice as target to the elder people.

5. Contact details

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PATH to Active and Healthy Ageing

1. Location

Country: UK

Region: Scotland

Total population: 5,4 Million

2. Description

Target population (group): Older people in general population (Older people in the community)

Target population (figure): 1 Million

Main topic: Physical exercise

Description: In 2012, the European Year of Active Ageing and Intergenerational Solidarity, we established a national collaboration between older people (representatives from the Scottish Older People's Assembly), health services, national and local government, Third sector, Sportscotland and academic partners to raise the profile and benefits of physical exercise in later life. This aimed to build on the legacy from the 2012 Olympics and to serve as a platform for the 2014 Commonwealth Games. A cross sector Reference Group developed a set of practical actions for active and healthy ageing, informed by what older people have told us is important to them:

- "I want to have fun and enjoy myself."
- "I wish to remain connected to my community and friends."
- "Don't talk about me without me."
- "I wish to be able to contribute to society for as long as I want and to be treated with respect."

Deliverables:

- Learning event at the Scottish Parliament in April 2012 and local participatory events for older people and staff to coincide with the World Congress on Active Ageing in August 2012.
- 'Go for Gold' events to promote the joys of physical activity for older people in care settings.
- '*Making Every Moment Count*' resource for staff working with older people in care homes.
- PATH to Active Ageing – summary of evidence and case studies shared widely with health, social care and housing partnerships, third sector and community groups.
- Learning exchange with British Irish Council and European partners.
- Development of a Physical Activity Pathway, Screening Questionnaire and DVD for use by staff.



Outcomes and evidence of the impact:

- Has an impact on health status and quality of life for our local population
- More than 10% of the local target population receives the innovative practice

Physical Activity and participation in meaningful activities are embedded in the national outcomes framework and Logic Model for older people.

Increased reach of tools to support good practice in promoting physical activity in later life shared with all 32 partnerships in Scotland through national and local workshops, bulletins and web ex sessions.

Increased awareness by all partners and by older people of the importance of physical exercise.

Resources available:

This is one of the workstreams within our Reshaping Care for Older People programme. Many of the local interventions to promote physical activity, wellbeing and prevent functional decline are funded from the £300 Million Change Fund (2011-2015) which is a catalyst to incentivise local health, social care and housing partnerships across Scotland to make a greater shift towards prevention.

3. Innovation element

- Incorporates incentives for change to stakeholders.
- Has a multidisciplinary approach.
- Advocates for what is important for the wellbeing of older people.
- Brings together a big group of stakeholders.

4. Further information

The PATH to Active Ageing resource can be accessed at the JIT website - follow this [web link](#)

5. Contact details

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