

# European Innovation Partnership on Active and Healthy Ageing



## ACTION PLAN

### *on 'Prescription and adherence to treatment'*

Date and place: 6 November 2012, Conference of Interested Partners, Brussels

## Table of Contents

<b>1. OVERVIEW.....</b>	<b>3</b>
<b>2. INTRODUCTION TO THE ACTION GROUP AND THE ACTION PLAN .....</b>	<b>3</b>
2.1. The Action Group .....	3
2.2. The Action Plan .....	4
2.3. Rationale for prescription and adherence action at regional level .....	5
2.4. Target population .....	7
<b>3. OBJECTIVES .....</b>	<b>7</b>
3.1. Headline Objective .....	7
3.2. General Objectives .....	7
3.3. Specific Objectives .....	8
<b>4. ACTIONS .....</b>	<b>8</b>
<b>5. ACTIVITIES, SPECIFIC DELIVERABLES AND OUTCOMES .....</b>	<b>9</b>
5.1. Objective: Improve patients' adherence .....	9
5.2. Objective: Empowerment .....	12
5.3. Objective: Contribute to the improvement of adherence in the health care system .....	15
5.4. Objective 4: Contribute to the research and methodology .....	18
5.5. Objective 5: Foster communication .....	20
<b>6. KEY GAPS IDENTIFIED FOR POTENTIAL FUTURE ACTIONS .....</b>	<b>21</b>
6.1. On improving patients adherence to medication .....	21
6.2. On empowerment of patients and caregivers issues .....	21
6.3. On research & methodology on ageing issues .....	21
6.4. On health services improvement issues .....	21
<b>7. MONITORING PROCESS AND INDICATORS .....</b>	<b>22</b>
<b>8. GOVERNANCE AND COORDINATION.....</b>	<b>24</b>
8.1. Governance Principles .....	24
8.2. Role & responsibilities of Partners: .....	24
8.3. Role & responsibilities of Coordinators: .....	24
8.4. Role & responsibilities of the European Commission:.....	24
8.5. Action Group Coordinators .....	25
<b>Glossary .....</b>	<b>26</b>
<b>Appendix 1 Deliverables by Partners.....</b>	<b>31</b>
<b>Appendix 2 Specific Objectives .....</b>	<b>546</b>
<b>Appendix 3 List of contributing Partners .....</b>	<b>577</b>

## **1. OVERVIEW**

Demographic ageing is a global trend. In the European Union (EU), the number of people aged 65+ will almost double over the next 50 years, from 85 million in 2008 to 151 million in 2060. While increased longevity is a great achievement, it is also a formidable challenge for both public and private budgets, for public services and for older people and their families. New approaches are needed urgently.

Innovation should play a key role in rethinking and changing the way we design and organise our society and environment and organise, finance, and deliver health and social care services to face challenges posed by ageing trends. However, many barriers and bottlenecks stand in the way of successful innovation.

European Innovation public-private Partnerships (PPP) were proposed in the Europe 2020 Strategy to tackle innovation barriers for major societal challenges. The first pilot of these PPP was the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) launched by the European Commission (EC) at the end of 2011.

The EIP on AHA aims to identify and remove persisting barriers to innovation for active and healthy ageing, through interdisciplinary and cross-sectorial approaches. It identifies a set of actions that can start as early as 2012 and deliver measurable outcomes within the 2012-2015 timeframe.

The Strategic Implementation Plan of the Partnership (SIP), adopted by a Steering Group (SG) of representatives from industry, regional and local public authorities, NGOs, EU member States and civil society, set out the vision as well as an operational plan focused on 13 priority areas to achieve the aim of an increase of two years in the number of healthy life years of EU citizens. The SG structured the work needed in three pillars reflecting the 'life stages' of the older individual in relation to care processes; A: Prevention, screening and early diagnosis; B: Care and cure and C: active ageing and independent living.

Under pillar A, Action on "Prescription and adherence action at regional level, delivering tangible adherence approaches for patients in various disease areas, at regional level and in different member states" was identified and ready to start on 2012.

In addition, the Strategic Implementation Plan also identified the area to be addressed: "Health literacy, patient empowerment, ethics and adherence programmes, using innovative tools and services". As well as the following actions to be launched:

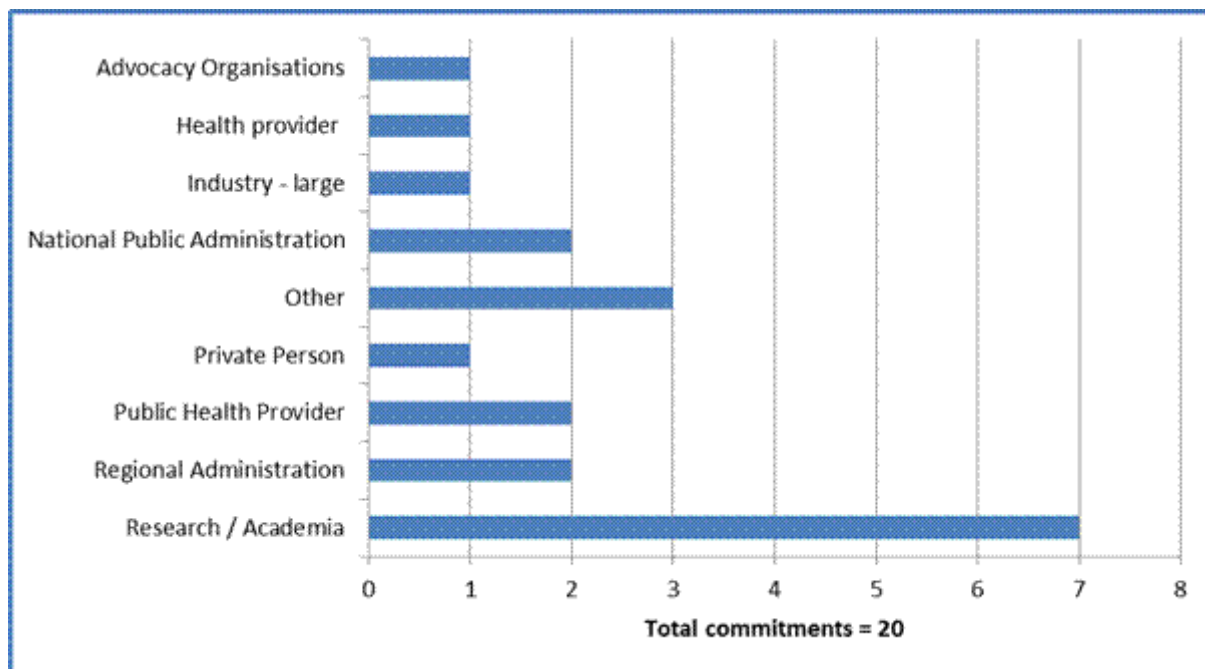
- Deliver a prescription and adherence action at regional level, supported by innovative tools.
- Develop innovative tools and applications to promote health literacy and patient empowerment for informed lifestyle choices, including a pan-European online community using ICT based solutions and social marketing models.

## **2. INTRODUCTION TO THE ACTION GROUP AND THE ACTION PLAN**

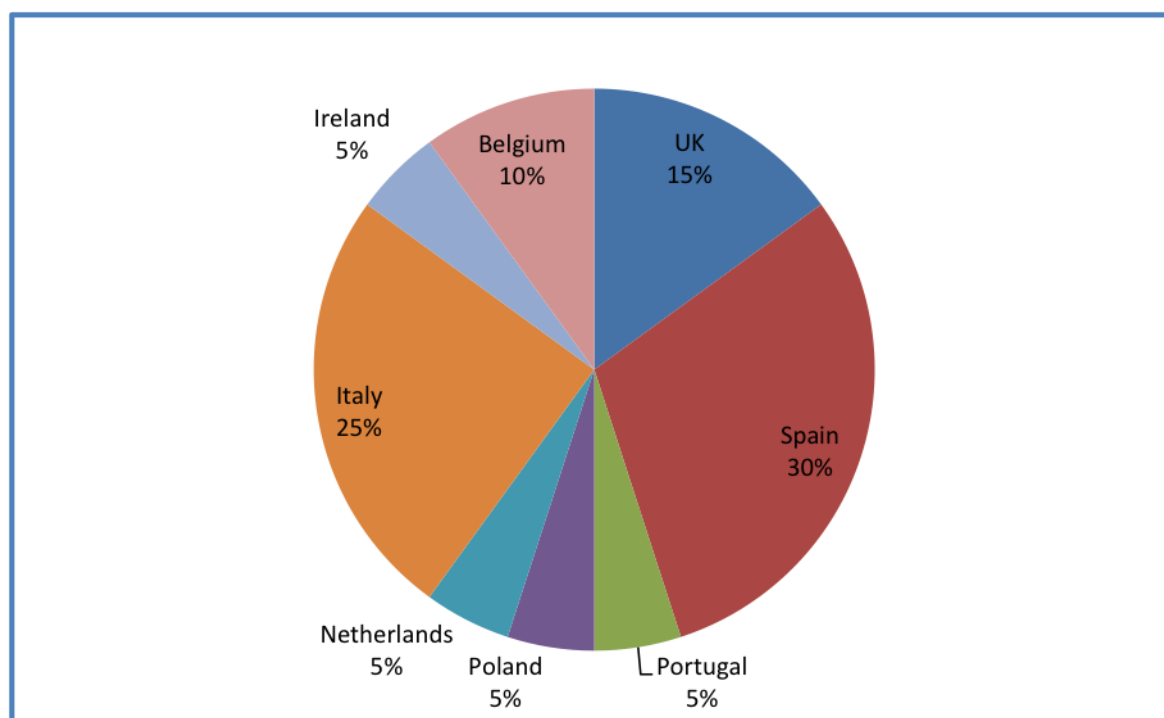
### **2.1. The Action Group**

In response to the Strategic Implementation Plan, the EC launched an invitation for commitments at the beginning of 2012 to contribute to the Partnership. The Action Group on "Adherence to treatment", formed on June 2012 following this invitation. The complete list of partners and countries involved can be consulted in Appendix 2.

This Action Group brings together partners representing 34 multi-stakeholder commitments from national, regional and local authorities, research centres, academia, industry, enterprises and existing consortiums across the EU. (See Figure 1 and figure 2).



**Figure 1 Commitments by type of organisation**



**Figure 2 Commitments by Member States**

## 2.2. The Action Plan

This document is the agreed Final Action Plan on "Prescription and adherence action at regional level".

It is based on the objectives, activities, timing and deliverables specified in the commitments sent in by the stakeholders mentioned above. It also takes on board the results of two

meetings held in Brussels on the 27<sup>th</sup> - 28<sup>th</sup> June and on the 27<sup>th</sup> September of 2012 and has been further developed by the Action Group, via e-mail interactions and phone contacts among Action Group members themselves and with the EC.

The discussions were facilitated by the Commission who has also been responsible for taking on board partners contributions and drafting the different versions of the text. This final document has been agreed by the Action Group and the ownership rests with its members.

The Action Group members are expected to "sign-up" to the objectives and deliverables of the present plan, re-affirm their commitment and work collaboratively to implement the present actions, as relevant for their own organisation. The partners involved commit to the broad joint objectives and outcomes in the area of adherence to treatment as identified in the SIP

The Action Plan will also be used as reference for those new stakeholders that would like to contribute to the Partnership after the 6<sup>th</sup> November Conference. Their potential actions and projects should fit into the objectives and expected outcomes or cover any of the identified gaps of action display on this document.

A number of common terms are currently used to refer to the act of seeking health and care services by different professionals, to the act of following medical plans or for taking medication. Sometimes they can be used interchangeably but some others terms imply different views about the relationship between the patient and the professional. Discussion on this regard is far beyond the scope of this document and, although some dialogue has taken place among the group, it was agreed to incorporate a glossary with standard definitions on the key concepts introduced on the text to share a common ground on which to build the document (Cf.glossary).

This Action Plan and its activities are structured according to 5 broad *general objectives*, which have been further detailed in a set of *specific objectives*. The 5 broad objectives constitute the core areas of work, under this Action Plan, and all the *deliverables* are organised accordingly. The Action Plan also details the expected (broad policy) *outcomes* which will result from the activities and deliverables identified. Finally, the deliverables throughout the Action Plan have also been allocated to each individual partner (per general objective).

### **2.3. Rationale for prescription and adherence action at regional level**

- Poor health does not have to be an inevitable consequence of aging. Older adults who engage in healthy behavior, take advantage of clinical preventive services, and continue to interact with family and friends are more likely to remain healthy , live independently, and incur fewer health related costs.
- An essential component of keeping older adults healthy is preventing chronic disease and reducing associated complications. Chronicity restrains quality of life, productivity and the functional status of people. It is a challenge to the health and social system and requires a systematic response.
- People 65+ represent 14% of the population in most industrialized countries, and constitute nearly one third of global medication consumption drugs. Extensive evidence indicates that even in healthy older people, ageing affects the way the body responds to medication.
- Poor adherence to medical plans and medication is a global issue of major public health concern. It is a widespread phenomenon and can be a barrier to safe and cost-effective use of medicines and services.
- The failure to adhere to medication and physician prescriptions could lead to the individual not taking the prescribed drug, taking it at the wrong time or missing doses.

- Poor adherence undermines the effectiveness of therapy and has significant implications for the costs of healthcare. At the same time, full adherence to prescriptions, medical plans and healthy lifestyles improves health outcomes and reduces the costs of care and cure.
- Adherence to long-term therapy for certain chronic illnesses in developed countries averages at only 50%.
- Innovative organizational, technical and medical practices for better adherence can achieve more efficient use of resources and efficacy of health interventions, and ultimately improve the health of patients, their quality of life, reduce the worsening of the disease and avoid unnecessary hospitalizations.
- Improving patient medication adherence strategies links in with the optimization of patient medication regimens and the promotion of patient centered care. The three are largely founded on care coordination and led by diverse care teams, from highly integrated teams to virtual teams.
- Each of these models is enabled by the wider deployment of healthcare IT, quality metrics, patient engagement tools, product innovation and research.
- An important way to achieve good adherence is to improve the prescription. For this purpose, it is necessary to develop tools that ensure drug safety and efficacy in the population. Clinical research involving the older population is a highly relevant tool.
- Hospital readmissions policy is another opportunity for improvement; preventing seriously ill patients from relapsing requires good medication management and adherence.
- The retail pharmacy industry is transforming itself from simply dispensing drugs to improving more patient services. Infrastructures, service platforms and e-prescription continue to grow, facilitating both professional and patient involvement and expanding the physician's capability to monitor treatment.
- Certain diseases represent ideal opportunities for improving medication adherence: i.e.: cardiovascular diseases, diabetes.
- The older population is underrepresented in clinical trials; less than 5% of trials are specifically focused on older people, even more age is an exclusion criteria in 72.1% of trials, and 38.5% of randomized control trials (RCTs) exclude patients older than 65.
- In most cases, older patients included in clinical trials are typically in their mid-60, and in good health. As a result, the data obtained is of limited use to geriatricians or family physicians involved in the care of older people.
- An increase in therapy compliance, with minor cost outlays can play a critical role in improving the health status for European citizens and the cost-effectiveness of treatment. Innovative solutions can help improve treatment efficacy data and indicators to more appropriately drive public health policy as well as contribute to the creation of a viable market for tracking tools and services.
- The EIP on AHA with its partnership approach offers an advantage in formulating more effective strategies and interventions to address the complex nature of adherence in a more coordinated and holistic way.
- As poor adherence severely compromises the effectiveness of treatment, the SIP makes adherence a critical issue in population health, from the perspective of both quality of life and of health economics.

## 2.4. Target population

The target population referred in this document as the individuals or the group of people who will be served and benefit from the different commitments vary widely, but they can be grouped in the following broad categories:

CATEGORIES	TARGET POPULATION
Older people in general population	Healthy and independent old people Older people in risk of dependency
Independent Patients	Polimedicated patients Multi-morbidity patients Chronic diseases patients in general and for specific diseases (e.g..diabetic) Patients in general
Dependent patients	Disabled people Nursing home patients Terminal patients
Caregivers	Formal carers Informal Carers Health professionals: hospital and primary care doctors and nurses, pharmacists. Patients' groups

Settings for action also vary from community places (houses, pharmacies, social-networks), to hospital, primary care centres, long term institutions or research and academia venues.

## 3. OBJECTIVES

In agreement with the overall goals of the EIP on AHA to improve quality of life, increase systems and services sustainability and increase the EU economy's competitiveness, the Action Group aims to contribute to the improvement of adherence to medical plans and medication at European level.

Taking into account the rationale for intervention in adherence and based on the expertise and interests of the group expressed in their commitments, five broad domain areas have been identified to address the challenge and organize the work ahead. Namely,

- Adherence to care plans
- Empowerment of the patient
- Improvements of the health care services
- Research and methodology
- Communication

A set of objectives will be pursued (headline objective, general objectives and specific objectives) on a three-year framework. They are described below and represented in Appendix 3.

### 3.1. Headline Objective

Improve the quality of life and health outcomes of older people living with chronic conditions, through a holistic approach, including enhanced self-care, personalised care, better adequacy of treatment, increased adherence to safe and effective care plans.

### 3.2. General Objectives

1. Improve patient adherence to care plans, including medication and healthy habits.
2. Empower the patients and caregivers to take care of their health and to be independent.
3. Deliver improvements in the health care system to promote adherence.

4. Contribute to the research and methodology on ageing and adherence.
5. Foster communication between different partners/actors in the healing and caring process to improve adherence.

### 3.3. Specific Objectives

The general objectives have been further detailed in a set of specific objectives, which can be consulted in Appendix 2.

## 4. ACTIONS

To achieve the above five general objectives, and closely align the different committed deliverables of the partners in this Action group, the activities of partners have been organised in the following Actions:

OBJECTIVES	• ACTIONS
1 - Improve Patient Adherence to Care Plans	<ul style="list-style-type: none"> <li>• Decision Support Tools</li> <li>• Dispensing &amp; Prescribing</li> <li>• Interventions</li> <li>• Monitoring</li> </ul>
2 - Empower the patients and care givers	<ul style="list-style-type: none"> <li>• Counselling &amp; Education</li> <li>• Online services</li> <li>• Social networks</li> </ul>
3 - Deliver improvements in the health care systems	<ul style="list-style-type: none"> <li>• Electronic prescription</li> <li>• Best-practices</li> <li>• Service models</li> <li>• Training</li> </ul>
4 - Research and methodology	<ul style="list-style-type: none"> <li>• Evidence</li> <li>• Guidelines</li> </ul>
5 - Fostering Communication	<ul style="list-style-type: none"> <li>• Data repositories</li> <li>• Networking</li> </ul>

**Figure 3: Actions in A1 Action Plan**



## 5. ACTIVITIES, SPECIFIC DELIVERABLES AND OUTCOMES

Activities to be undertaken to progress on the Action Plan are numerous, will involve different resources and actors and will be common to different objectives. They cannot be displayed to its whole extension in this document. As a result of these activities several deliverables will be achieved. What follows is a list of key activities that will be carried out by the partners to develop the plan and a list of the expected tangible results that different partners have committed to obtain.

In Appendix 1 a complete list of deliverables for each partner, with information on starting dates and deadlines and main outcomes is provided.

### 5.1. Objective: Improve patients' adherence

<b>Contributing Partners:</b> AEDEC; APSS; Atlantis Healthcare; CIRFF; Colegio Pharmacists Valencia, Spain; Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS, NI); Digital health Consortium; Esteve laboratories; European Association of Pharmaceutical Full-line Wholesalers (GIRP); European Generic medicines Association (EGA); European Patients' Forum (EPF); Federico II University; General Council of Pharmacists Spain (CGCOF); Gestione Sistemi per l'Informatica (GESI), Rome, Italy; Glasgow School of Art; GlaxoSmithKline; Hospital Clínico San Carlos; Hospital de Getafe; IRCCS San Raffaele Pisana, Rome, Italy; Italian Medicines Agency (AIFA); LST, Universidad Politécnica Madrid; Medical University of Warsaw; Medtronic Ibérica; Merck Serono Geneva, Switzerland; Merck Serono Rome, Italy; National Centre for Scientific Research-NCSR, Greece; NHS Scotland; Pfizer Italy; Regional health authorities of Campania Region; Regional pharmacists Chambers of Badajoz, Murcia and Vizcaya; RPS; Scottish Royal Colleges – GPs/Pharmacists/Physicians; The Division of Geriatric Medicine and Cardiology, the University of Florence, Italy; Università Cattolica del Sacro Cuore at Policlinico Gemelli of Rome; University Carlos III; University Medical Centre Groningen, The Netherlands; University of Naples/Campania Region; University of Salerno		
Activities	Deliverables	Outcomes
<p>Develop an early warning system on poor adherence to treatment resulting in an integrated adherence monitoring system.</p> <p>Create IT platforms that provide patients with feedback about their disease and its</p>	<p>Use of mobile devices to help facilitate adherence</p> <p>Prototype and lab tests of web applications for diabetes management.</p> <p>Sensor prototype along with the prototype of the</p>	<p>Improvement in patients' adherence to treatment and medical plans in different target groups and different settings.</p> <p>Insight into adherence and non-adherence issues with patients with different chronic</p>

<p>progression, and the success of interventions to improve function and quality of life.</p> <p>Develop IT tools to promote real time information exchange between patients, GPs and pharmacists.</p> <p>Develop and test assessment tools for the identification of individual problems in adhering to medical plans and medication, both in community and in hospital settings.</p> <p>Develop a device (sensor), which would monitor complex drug compliance.</p> <p>Assess the improvement of the patient's quality of life before and after the interventions.</p> <p>Develop an integrated group programme to combine medical advice with personalized physical training and cultural activity targeted to a specific population.</p> <p>Develop and implement pharmaceutical care services to improve adherence to treatment, e.g: protocols in dispensing, used medicines review and pharmaco-therapeutical follow up, and personalized dosage systems.</p> <p>Adherence support services for community pharmacists.</p>	<p>central computer system to plan and monitor the medicine intake.</p> <p>Monitoring electronic devices and alerting systems.</p> <p>Individual packaging and medication devices older friendly.</p> <p>Software programmes to help 65+ diabetic and multi-morbidity patients.</p> <p>Poly-pharmacy Demonstrator sites pilot.</p> <p>Decision support tools (including algorithms) and tele-monitoring devices</p> <p>Demonstrator programme on personalised communication.</p> <p>Adherence screening tool</p> <p>Databases</p> <p>Pilot adherence programme</p> <p>Novel methods of population stratification</p> <p>Utilise video conference technologies to deliver a) speech and language therapy and (b) COPD pulmonary rehabilitation to patients in their homes or local health facilities.</p>	<p>conditions and receiving care in different settings.</p> <p>Reduction of harm to patients through inappropriate prescribing or due to communication/cognitive issues for patients.</p> <p>Reduction of inappropriate prescription and reduction of the number of patients identified as being inappropriately poly-medicated.</p> <p>Use of ICT technology to boost safe and efficient use of medicines integrating: electronic prescription, electronic validation and dispensation for overall public prescriptions.</p> <p>Chronic patient's global health improvement through maximizing safety and effective use of medicines, enhancing treatment adherence and improving clinical outcomes.</p> <p>Improvement of lifestyle in target groups (weight loss, increased physical activity, increased education).</p> <p>Identification of main risk factors affecting health status and to be included in adherence care plan.</p>
---	--	---

Monitor adherence through electronic tools and alerting systems		Reduced complications and hospitalizations due to inappropriate medication or side effects.
---	--	---

## 5.2. Objective: Empowerment

<b>Contributing Partners:</b> Association of GPs, Campania Region; Atlantis Healthcare; AUSER; Basque Institute for Healthcare Innovation (O+Berri); Centro COSPES (Mogliano V.to); CIRFF; Coimbra Municipality; CSV (Centro Servizi Volontariato); Department of Health and Consumer Affairs of the Basque Government; Exploratório D. Henrique; Faculty of Medicine of Coimbra; Faculty of Sport Science, University Coimbra; Federico II University; GlaxoSmithKline(GSK); Italian Medicines Agency (AIFA); Local mountain community office; Luso Municipality (WiLuso); Museu de Ciência, University Coimbra; NHS Scotland; Nurses School, University Coimbra; Osatek (public company attached to the Basque Health Service); Perugia University; Public Basque Health Service provider (Osakidetza); Regional Authorities of Regione Veneto; Regional health authorities of Campania Region; The Department of Neurological Sciences and DEIS University of Bologna, Italy; Tourism authority Umbria Region; UCC Cork; University Coimbra; University of Coimbra Hospital; University of Naples/Campania Region; University of Salerno; Veneto Region		
Activities	Deliverables	Outcomes
Implement training programmes to support patients and carers.  Implement exercise training programmes to support patients and carers.  Develop a web-based social network to increase and monitor patient adherence to medical care, including prescription.  Develop web-based social networks to support chronic patients and their carers monitoring adherence to medical prescription, mood status, general needs.  Design specific content to support informative campaigns targeting patients and carers.  Develop cognitively, physically and intellectually	Lifestyle intervention plans encouraging the adoption of healthy behaviours.  Expert Patient Programme for type 2 diabetic patients.  “Let me decide” Programme for end of life care education.  Public lectures and round-table discussions in museums and other public spaces about healthy and active ageing.  Patient personal health folder.  Health literacy tool to support self- management, improve adherence and concordance (“Teachback”).  Healthy trials programme for patients and	Development of web applications linked to prescription databases to pull out appropriate information about adherence levels for different stakeholders.  Development of content-share platform to allow information campaigns and training interventions.  Use of ICT solutions and self-management/behaviour changing tools.  Implementation of solutions to provide support and assistance to patients in their own homes.

<p>stimulating social activities to empower patients.</p> <p>Improve patient access to their clinical information.</p> <p>Carry out group therapeutic education to increase social interaction and the patient's ability to cope with their disease.</p> <p>Carry out group psychological counselling and organized outdoor walking activities and trekking excursions (healthy trails).</p> <p>Implement consistent and reliable use of the “Teachback” approach to improve health literacy and people’s ability to self-care, self-manage and to promote concordance with medicines and treatment plans</p> <p>Develop a pharmacy educational programme on renal cancer disease understanding how to best manage patients following a specific treatment through the use of practical cases.</p> <p>Develop decision support tools to aid patient involvement and self –management.</p> <p>Enable social interactions among patients’ communities, caregivers and patients’ network to enhance patient empowerment.</p> <p>Develop remote systems of communication with patients and populations at risk, for health</p>	<p>caregivers.</p> <p>Education programmes for patients and caregivers.</p> <p>Social network to monitor adherence.</p> <p>Combined cultural and physical fitness/ training medically assisted tailored programmes for older and chronic diseases patients.</p> <p>PhD Program on ageing for health professionals</p> <p>Review of medication and patient education on type 2 diabetes patients taking multiple medicines - pilot project.</p>	
--	--	--

counselling and supporting healthy habits.		
--	--	--

### 5.3. Objective: Contribute to the improvement of adherence in the health care system

<b>Contributing Partners:</b> Andalusian Regional Ministry of Health and Social Welfare; APSS; ASL Brescia; Association of GPs, Campania Region; Basque Official Colleges of Pharmacists; Blue Works; CIRFF; Critical Health; Department of Health and Consumer Affairs of the Basque Government; Department of Health, Social Services and Public Safety Northern Ireland; Education, Health and Society Foundation Murcia; Esteve laboratories; EU-WISE partners(7thFP); Faculty of Sport Science, University Coimbra; Federico II University; General Council of Pharmacists Spain (CGCOF); GlaxoSmithKline, (GSK); IPN; Italian Medicines Agency (AIFA); Johanniter Klinikum Niederrhein, Duisburg; Media Primer; MSD; NHS Scotland; Nurses School, University Coimbra; ParkinsonNet (Radboud University Nijmegen Medical Centre); Perugia University; Public Basque Health Service provider (Osakidetza); Regional health authorities of Campania Region; Regional health authority of the Murcia Region; Regional pharmacists Chambers of Badajoz, Murcia and Vizcaya; Scottish Government; Take the Wind; Tice. Healthy; UCC Cork; University Carlos III; University Coimbra; University of Murcia; University of Naples/Campania Region; University of Salerno		
Activities	Deliverables	Outcomes
<p>Develop a content-sharing platform to allow for future information campaigns and training interventions.</p> <p>Design and implement specific informative campaigns targeted to patients, carers and pharmacists to support better adherence to treatment.</p> <p>Develop cost monitoring programmes for appropriate pharmaceutical expenditure.</p> <p>Pilot test new service models of intervention adherence across a range of settings.</p> <p>Develop innovative ICT solutions for monitoring of health status and specific diseases.</p>	<p>Medicine reconciliation program for all patients admitted to hospital on admission and discharge.</p> <p>Protocols of pharmaceutical care</p> <p>Reshaping Care for Older People Program.</p> <p>National Review of Pharmaceutical Care in the Community.</p> <p>Roll out of Emergency Care Summary and Chronic Medication Service.</p> <p>Delivery of a revised national contract for Community Pharmacists and a Scottish GP contract to encourage closer working, personalized care and high quality outcomes.</p>	<p>Implementation of appropriate support programmes, tools and educational materials to address adherence for different target groups: patients, hospital and primary care physicians, pharmacists, caregivers.</p> <p>Decrease of the number of care interventions that are not evidence based by providing guidance.</p> <p>Support and improvement of collaboration across professionals.</p> <p>Development of an early warning system on poor adherence to treatment resulting in an integrated adherence monitoring</p>

<p>Improve patient access to their clinical information.</p> <p>Develop electronic prescription tools.</p> <p>Implement pharmaco-vigilance programmes and software.</p> <p>Assess the patient's need for adherence support.</p> <p>Assess the range of adherence support that can be available to patients.</p> <p>Use of the SPARRA risk prediction algorithm to identify individuals with co-morbidity and a risk of non-adherence based on hospitalisation, prescribing, emergency department, outpatient and psychiatric admissions data.</p> <p>Establish/implement education for prescribers, domiciliary workers who assist patients on actions to improve adherence.</p> <p>Train health professionals (pharmacists, GPs and nurses) following specific support programmes: e.g: Chronic Disease Self-Management Support Program from the University of Stanford</p> <p>Clinical audit and continuous improvement approach to improve quality of integrated care.</p>	<p>Adherence support services and business case for community pharmacists based on the outcome of pilot service models.</p> <p>Electronic prescription. XXI Prescription</p> <p>Completion of advanced care plans for residents in long term care facilities.</p> <p>Training programs for pharmacists, caregivers, GPs, nurses, care workers who assist or indicate medication intake.</p> <p>Develop a business case for IT enabled adherence support for mental health patients and older patients taking multiple medicines.</p> <p>Implementation of best practices and guidelines following clinical audit of integrated care.</p> <p>Design of integrated pathways and mobile and web applications for diabetic patients management.</p> <p>ICT based programs for remote monitoring of health status, lifestyles and adherence to medical plans for old people and chronic diseases patients.</p> <p>Establish multi-disciplinary collaboration on Parkinson disease (including tools and guidelines)</p>	<p>system.</p> <p>Implementation of new information tools for patients and health care professionals aimed to increase adherence to treatment and care medical plans. e.g: telematic health counselling device, Remote warning system for adherence.</p> <p>Prescription XXI allows all pharmacies in the region to access centrally stored electronic prescriptions directly, and to share information on patients' current and long-term medications with doctors in public healthcare settings (GPs) can prescribe for periods of up to one year, and pharmacists' can cancel prescriptions and send them back to the relevant GP for revision.</p> <p>Allowance for a more efficient use of resources and enhancement of efficacy of health interventions.</p> <p>Delivery of efficient and sustainable pharmaceutical care.</p> <p>Implementation of an integrated medicines management system in hospital or care community settings.</p> <p>Multichannel access to the public health</p>
---	---	---



<p>Implement best practices and guidelines.</p>	<p>Program for chronic diseases</p> <p>Pilot testing of services models for community pharmacists to deliver adherence support to patients.</p> <p>Pilot testing of an assessment tool to identify adherence problems in individual older patients taking multiple medicines.</p> <p>New service delivery models for remote patients to improve access to rehabilitation therapy and attendance/adherence.</p>	<p>system and improved interaction among users and health professionals.</p> <p>Reduced health and care costs, while improving accessibility and quality of care of target groups in given regions.</p> <p>Development of cross-border collaborative care model for Parkinson's disease.</p>
---	--	--

#### 5.4. Objective 4: Contribute to the research and methodology

<b>Partners:</b> APPDE - Association for Physiotherapists and Parkinson's Disease Europe; APSS; Aston University; Atlantis Healthcare; CIRFF; Department of Health and Consumer Affairs of the Basque Government; EPDA - European Parkinson's Disease Association; Faculty of Medicine of Coimbra (FMUC); Faculty of Sport Science, University Coimbra; Federico II University; GlaxoSmithKline (GSK); Hospital de Getafe; IPN (business incubator), University Coimbra; NHS Scotland; Nurses School, University Coimbra; ParkinsonNet (Radboud University Nijmegen Medical Centre); Perugia University; Regional health authorities of Campania Region; Regional health authority of the Umbria Region; Social Studies, University Coimbra; University Coimbra; University of Coimbra Hospital (CHUC); University of East Anglia; University of Naples/Campania Region; University of Naples/Campania Region; University of Salerno		
Activities	Deliverables	Outcomes
<p>Develop an algorithm to identify indicators of levels of adherence and predictors of discontinuation, which will result in a score for patient intervention.</p> <p>Develop research on therapies and care strategies for poly-medicated patients.</p> <p>Establish collaborative public-private sector approaches to improve care models.</p> <p>Evaluate the cost-effectiveness of different strategies to support chronic patients self-care.</p> <p>Perform observational studies based on drug prescription databases to assess specific adherence issues.</p> <p>Perform cost-analysis and health technology assessment of innovative multidisciplinary lifestyle model for certain diseases. (e.g: type</p>	<p>Publication on market research in renal cancer patients and their doctors to understand behavior that leads to non- adherence.</p> <p>Validation of a reproducible model for patient centered type 2 diabetes care</p> <p>Cost-effectiveness analysis and high technology assessment.</p> <p>Publication of new guidelines to perform clinical trials in older people before marketing new drugs.</p> <p>Validation of the efficacy and cost effectiveness analysis of an innovative model to improve lifestyle in type 2 diabetic patients.</p> <p>Evaluation of the use of video conference technology to deliver therapy services to remote patients.</p>	<p>Increase of the knowledge and skills of different health care professionals regarding older people health and care problems.</p> <p>Development of an algorithm to identify indicators of levels of adherence and predictors of discontinuation, which will result in a score for intervention in patients.</p> <p>Development of algorithm to identify serious adverse reactions to medication in elderly patients.</p> <p>Evaluation of adherence rates to therapies used for chronic diseases in older patients by use of patients' databases.</p> <p>Implementation of a network for support</p>

<p>2 diabetes).</p> <p>Analyses to estimate outcomes of medication treatment in real-world conditions linking the results of prescribing and adherence from primary care databases to intermediate outcomes and also “hard endpoints” as collected in secondary care databases (hospital databases and nursing homes).</p> <p>Use of longitudinally gathered data on prescriptions and health outcomes to test various methods of evaluating rational drug use, including drug prescribing and medication adherence, using different measures for detecting problematic prescribing and non-adherence.</p> <p>Use the Scottish Patients at Risk of Readmission and Admission risk prediction algorithm to target individuals for support from Chronic Medication Services, enhanced Medication Reviews and tele-health and tele-care.</p>		<p>of incorporating older people in clinical trials.</p> <p>Validation and cost effectiveness analysis of a model to improve lifestyle.</p>
---	--	---

### 5.5. Objective 5: Foster communication

<b>Partners:</b> CIRFF; Education, Health and Society Foundation Murcia; Federico II University; Hospital de Getafe; MSD; Regional health authorities of Campania Region; Regional health authority of the Murcia Region; University of MurciaEU-WISE partners(7thFP); University of Naples/Campania Region; University of Salerno		
Activities	Deliverables	Outcomes
<p>Design and implement database to support an IT platform and tools for sharing information on adherence factors.</p> <p>Design and implement specific software to develop an IT platform and tools.</p> <p>Create a European database of clinical trials for older people in order to establish clinical trial collaboration between countries.</p> <p>Share pharmaceutical care records across primary and secondary care</p>	<p>European Network supporting clinical trials that include older people.</p> <p>Web Application with information about adherence levels.</p> <p>Web-based Social and stakeholder Network.</p> <p>ICT and portal communication to maximize clinical communication.</p> <p>Adherence-specific education in Ph.D programme.</p>	<p>Implementation of data bases to share information on adherence factors.</p> <p>Design and implementation of specific software to share information.</p>

## **6. KEY GAPS IDENTIFIED FOR POTENTIAL FUTURE ACTIONS**

The following topics have been identified as gaps that still need to be address to improve adherence in a comprehensive approach but, important as they may be, none of the commitments included in this AP specifically tackle them.

### **6.1. On improving patients adherence to medication**

- Lack of health literacy.
- Ways to make the patient an expert in his/her disease.
- Lack of IT literacy.
- Social isolation related to ageing, depression and cognitive deficits and dementia.
- Lack of tools to improve adherence and ability to score adherence and its outcomes.
- Screening tools for adherence.
- Tools to actually measure adherence.
- Product innovation including packaging and drug formulation is needed.

### **6.2. On empowerment of patients and caregivers issues**

- Lack of training of GPs to monitoring adherence to treatment protocols.
- Lack of information, awareness and health literacy strategies for older patients.
- Poor knowledge by patients of how to prevent or slow down progress of disease.
- Lack of time and competences of health professionals to address issues of patient motivation.
- Lack of tools to empower patients to monitor their own progress.

### **6.3. On research & methodology on ageing issues**

- Lack of new therapies that help overcome the complexity of medication regimens (number of daily doses, concurrent medication, side effects of treatment...).
- Lack of a critical mass of competitive interdisciplinary research groups dedicated to translational medicine (from bench to bedside).
- Lack of identified biomarkers to monitor health status and defects on cell pathways that must be corrected to guarantee health longevity.
- Lack of standardised procedures to identify ageing matched biomarkers and genetic defects that would eventually lead to frailty and functional decline.

### **6.4. On health services improvement issues**

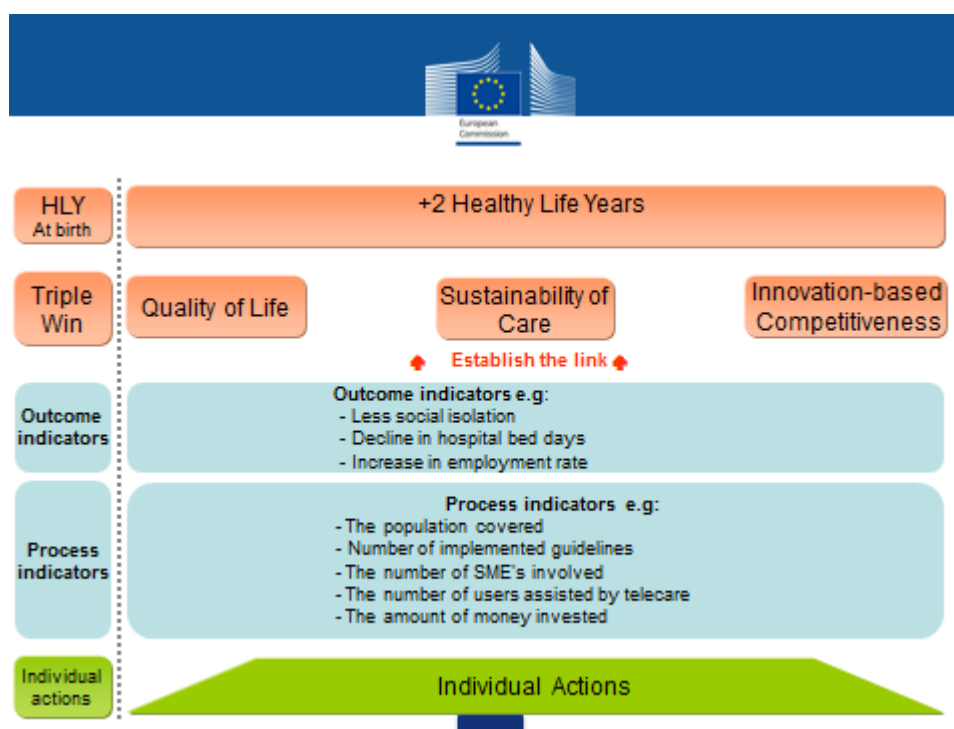
- Need to implement new organisational models for pro-active care.
- Need to bring together key players across health care patients associations, professional organizations and technological sectors.
- Lack of evidence on the key interventions to be combined in multidimensional methods for improving adherence in chronic health problems, in order to optimise both adherence rates and health outcomes.

## 7. MONITORING PROCESS AND INDICATORS

The measuring of the progress will be ensured by the general monitoring and evaluation framework of the EIP on AHA currently being developed by the European Commission and Joint Research Centre in collaboration with experts and members of the six action groups. The monitoring process will be guided by a group consisting of experts and two members of each action group.

The monitoring process is divided into two steps. The first step will deal with the monitoring of the EIP on AHA process. The EIP on AHA process will monitor different aspects: the involvement of stakeholders, the creation of synergies, knowledge transfers and the absorption of innovation by the health systems, and the added value for the participating organisations.

The second step is on monitoring the outcome of the EIP on AHA. This step will facilitate the overall monitoring framework of the activities and outcomes of the six action groups, linking them to the overall target of the EIP on AHA, namely, to add two healthy life years<sup>1</sup> (HLY) to the average healthy life span of European citizens by 2020 and equally to ensure the triple win: improved Quality of Life, improved sustainability of care systems and improved innovation based competitiveness. It should be emphasised that this framework is not about the evaluation of the individual actions.



The input of the action group members together with the input from experts has been the basis for the monitoring framework. The action group members were asked to deliver input about the methodology and indicators they are using and which kind of data they gather. In addition, experts were asked to provide input, among others, on the factors influencing the Quality of Life and about WHO, OECD and Eurostat data.

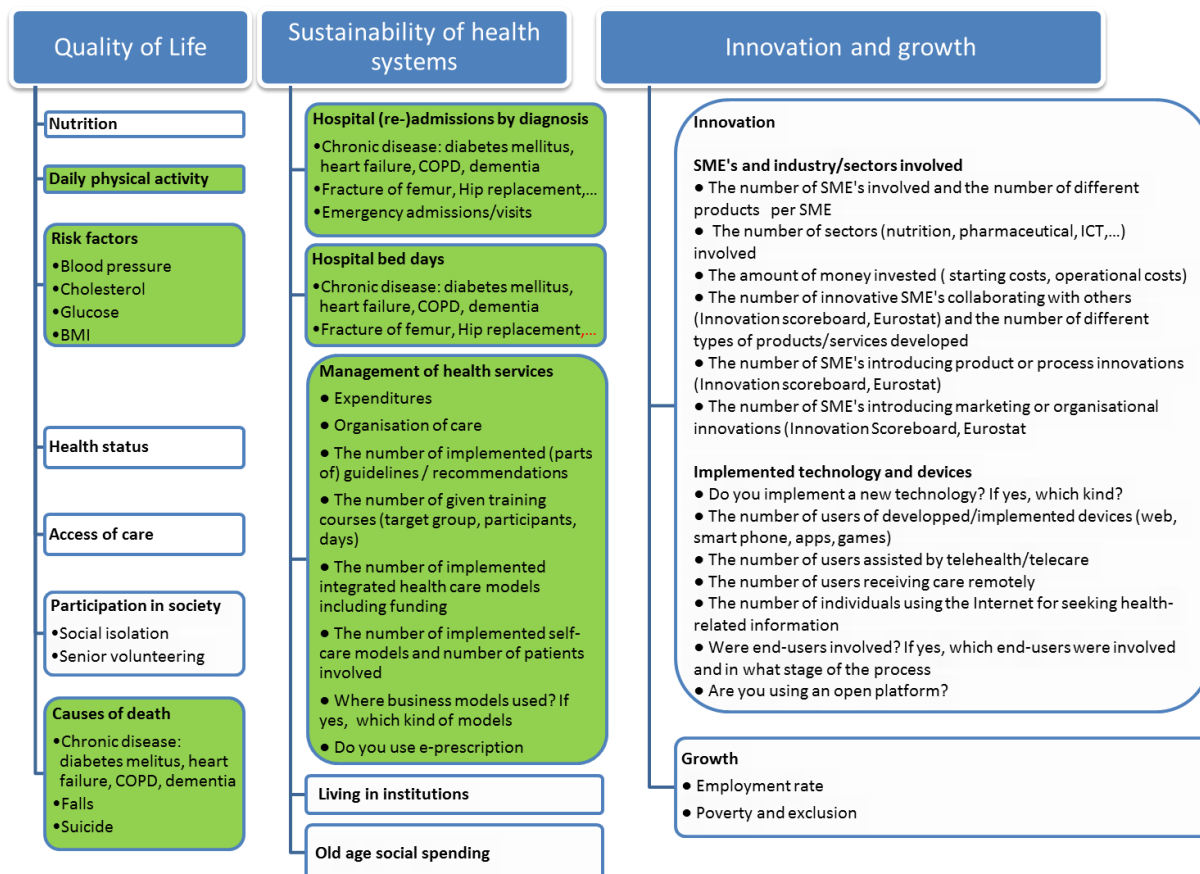
<sup>1</sup> The EU structural indicator Healthy Life Years (HLY) is based on limitations in daily activities and is therefore a disability-free life expectancy, one of the most common health expectancies reported. Healthy Life Years at a particular age are the number of years spent free of activity limitations. They are calculated by Eurostat. The target of the partnership is to increase, by 2020, by two healthy life years at birth.

The monitoring framework consists of a set of outcome indicators for each of the six action groups based on the objectives of the action groups and on process indicators. The selection of these indicators for the final draft of the monitoring framework has been an interactive process between the six action groups, the experts, EC and the JRC. More specific outcome indicators will be developed in close cooperation with the action group members.

The objective of the outcome indicators is to monitor the factors influencing the triple win, namely:

- the Quality of Life of patients/users , for instance, nutrition and physical activity
- the sustainability of the health systems, for instance, are there less hospital admissions, is there a shift from cure to care
- the innovation and growth possibilities, for instance, the employment rate

Of course, not all action groups and all individual actions will contribute to all of the above-mentioned factors. As such, the outcome monitoring framework consists of building blocks. For action group A1, the relevant building blocks are marked in green. The individual action should contribute to at least one building block of the action group.



In addition to the outcome monitoring framework, desk research will also be conducted alongside most probably a questionnaire which will be sent to patients/users about, among others, their Quality of Life and mental well-being.

## **8. GOVERNANCE AND COORDINATION**

### **8.1. Governance Principles**

Action Groups establish their own working methods and governance, with the EC acting as a facilitator. There are three components to governance structure: the partners, the action group coordinators and the EC. The governance structure will ensure timely development of the AP and the incorporation of newly interested partners. Overall, the rules of engagement between the parties are based on the following principles:

- Openness and partnership – common willingness of all partners to cooperate with other relevant partners.
- Coordination – participation of a representative(s) in the coordination meetings of the Action Group
- Reporting – regular reporting from the Action Group's meetings, progress of actions and deliverables to be made public
- Evaluation – outcome of actions to be evaluated, and results made public

### **8.2. Role & responsibilities of Partners:**

- Implement the agreed Action Plan to the agreed standards and deadlines
- Ensure the effective preparation and delivery of all WG products
- Evaluate of WG performance and reporting on progress

### **8.3. Role & responsibilities of Coordinators:**

- Implement the agreed Action Plan to the agreed standards and deadlines
- Lead the WG team and coordinating all matters of the commitment contents
- Regular liaison with the EC and facilitator on all AG related matters
- Ensure the effective preparation and delivery of all AG products
- Participation at meetings and in discussions
- Take responsibility for the effective flow of information between AG
- Support evaluation of AG performance and reporting on progress
- Submit of the final results of the Action Plan based on data provided by all AG

### **8.4. Role & responsibilities of the European Commission:**

- Representation of the Action Group
- Handling of external communication
- Monitoring framework
- Ensuring regular communication among partners
- Taking responsibility for the effective flow of information and interactions between WGs
- Facilitate process to achieve headline objective
- Seeking opportunities to consolidate EIP

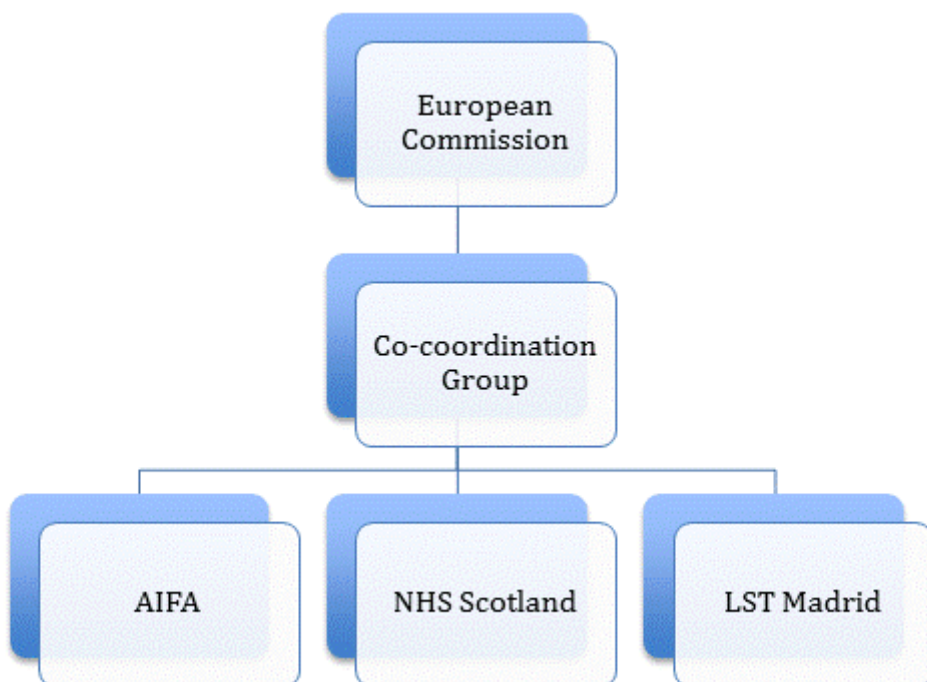


### 8.5. Action Group Coordinators

The following institution members of the A1 group will act as coordinators:

- AIFA
- NHS Scotland
- LST Madrid

They will be responsible for maintaining all of the procedural and administrative aspects of the group work, and will serve as the designated point-of-contact within the group and with the Commission for procedural issues during the implementation phase of the action plan.



## Glossary

**Adherence:** The extent to which the patient continues the agreed-upon mode of treatment under limited supervision when faced with conflicting demands, as distinguished from compliance or maintenance. Adherence or compliance or concordance in medicine, are often used interchangeably to define the degree to which a patient correctly follows medical advice (compliance to medicine/ drug or medical devices - treatment regimens). However, concordance is used to refer specifically to patient adherence to a treatment regimen that is designed collaboratively by the patient and physician, to differentiate it from adherence to a physician only prescribed treatment regimen, In this Action Plan SIP, only adherence and compliance are used, but taking account of patient involvement in the treatment process. **Citation:** *The American Heritage® Medical Dictionary Copyright © 2007, 2004 by Houghton Mifflin Company. Published by Houghton Mifflin Company. All rights reserved.*

**Adverse Drug Reactions (ADR):** An appreciably harmful or unpleasant reaction, resulting from an intervention related to the use of a medicinal product, which predicts hazard from future administration and warrants prevention or specific treatment, or alteration of the dosage regimen, or withdrawal of the product. **Citation:** 1. Edwards RI, Aronson JK. *Adverse Drug reactions: definitions, diagnosis, and management. The Lancet 2000; 356:1255-59.*

**Adverse events:** An adverse medical event or error is one that causes an injury to a patient as the result of a medical intervention rather than the underlying medical condition. It represents an unintentional harm to a patient arising from any aspect of healthcare management.

Preventable or avoidable adverse events are a direct result of failure(s) to follow recognized, evidence-based best practices or guidelines at the individual and/or system level. These accepted standards of care are the expected performance for the average, competent practitioner or healthcare system managing the specific medical condition. Physicians and healthcare systems, as patient advocates, are held responsible for the continuous monitoring, implementation, enforcement, and upgrading of the applicable standards. Disregard for, or ignorance of, these standards is no longer excusable. **Citation:** <http://www.aaos.org/news/aaosnow/may08/managing6.asp>

**Clinical trial units:** Any research project that prospectively assigns human subjects to intervention and comparison groups to study the cause-and-effect relationship between a medical intervention and a health outcome. By 'medical intervention' we mean any intervention used to modify a health outcome. This definition includes drugs, surgical procedures, devices, behavioral treatments, process-of-care changes, and the like. **Citation:** *International Committee of Medical Journal Editors*

**Counselling (health counselling, psychological):** Professional guidance of the individual by utilising psychological methods especially in collecting case history data, using various techniques of the personal interview, and testing interests and aptitudes. **Citation:** *Merriam Webster's Medical Desk Dictionary, 2005, Merriam-Webster, Incorporated, Publishers, Springfield, Massachusetts, USA.*

**Commitment:** a measurable and specific engagement from stakeholders in support of a specific action and aiming to deliver first outcomes within the 2012-2015 timeframe. **Citation:** SIP on AHA

**Drug Related Problems (DRP):** A Drug-Related Problem is an event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes. **Citation:** <http://www.pcne.org/sig/drp/documents/PCNE%20classification%20V5.01.pdf>

**Efficacy:** The extent to which a specific intervention, procedure, regimen, or service produces a beneficial result under ideal conditions. **Citation:** *Stedman's Medical Dictionary. Copyright © 2006 Lippincott Williams & Wilkins.*

**Independent living:** Independent living means that any practical assistance people need, should be based on their choices and aspirations. Independent living entails a right to

practical assistance and support to participate in society and live an ordinary life. Central to this definition are the principles of freedom, choice, dignity and control. **Citation:** 'An Essential Guide to Independent Living in Scotland': *Independent Living in Scotland (Ilis)* [http://www.volunteermoray.org.uk/resources/independent\\_living.pdf](http://www.volunteermoray.org.uk/resources/independent_living.pdf)

**Empowerment:** The concept of patient empowerment is discussed frequently in medical literature, especially surrounding the topic of chronic disease and its management. Typically, patient empowerment is defined as an individual being an active member of his/her disease management team. For example, a patient that is empowered would be able to make decisions regarding his/her treatment with the respect of the health professionals that are treating the disease. This idea has also been expressed in discussions of patient-centeredness in medicine – that treatments should be aimed at what the patient perceives to be the problematic symptoms. Of course, the power of the patient to choose what treatments he/she wishes to receive presupposes that the patient has the ability to be a patient at all, meaning that he/she has access to healthcare. This is not always the case, so to take a step back, it might seem that access is the first step to patient empowerment and choice is second to that.

Patient empowerment does not just encompass the ability of the patient to make decisions and be active in their care; it also encompasses their education on the topic. Typical patient education generally focuses on imparting knowledge to the patient that is disease-specific, and this is certainly important. However, patient empowerment also means that the patient is educated in making good decisions about their health and not just the “medical” decisions. It also means that they are educated in managing how the disease affects their roles in life (such as parent, teacher, spouse, etc.) as well as the emotional impact of the disease. It could be said that true patient empowerment integrates multiple concepts that allow a patient to effectively self-manage their disease. **Citation:** Weiner KA. *Empowering the pain patient to make treatment decisions. Home Health Care Management and Practice.* 2003;15:198-202.; Todd WE, Ladon EH. *Disease management: Maximizing treatment adherence and self-management. Disease Management & Health Outcomes.* 1998;3:1-10; Lorig KR, Holman HR. *Self-management education: History, definition, outcomes, and mechanisms. Annals of Behavioral Medicine.* 2003;26:1-7.

**Electronic prescription:** Electronic prescribing or *e-prescribing* (e-Rx) is the computer-based electronic generation, transmission and filling of a medical prescription, taking the place of paper and faxed prescriptions. E-prescribing allows a physician, nurse practitioner, or physician assistant to electronically transmit a new prescription or renewal authorization to a community or mail-order pharmacy. It outlines the ability to send error-free, accurate, and understandable prescriptions electronically from the healthcare provider to the pharmacy. E-prescribing is meant to reduce the risks associated with traditional prescription script writing. It is also one of the major reasons for the push for electronic medical records. By sharing medical prescription information, e-prescribing seeks to connect the patients' team of healthcare providers to facilitate knowledgeable decision making. **Citation:** MedRunner Inc. (2011). *e-Prescribing.* Retrieved November 22, 2011, from MedRunner Inc.: <http://www.medrunner.ca/learn-more/eprescribing>

**Elderly, older people:** The ageing process is of course a biological reality which has its own dynamic, largely beyond human control. However, it is also subject to the constructions by which each society makes sense of old age. In the developed world, chronological time plays a paramount role. The age of 60 or 65, roughly equivalent to retirement ages in most developed countries is said to be the beginning of old age. In many parts of the developing world, chronological time has little or no importance in the meaning of old age. Other socially constructed meanings of age are more significant such as the roles assigned to older people; in some cases it is the loss of roles accompanying physical decline which is significant in defining old age. Thus, in contrast to the chronological milestones which mark life stages in the developed world, old age in many developing countries is seen to begin at the point when active contribution is no longer possible. **Citation:** Gorman M. *Development and the rights*

of older people. In: Randel J, et al., eds. *The ageing and development report: poverty, independence and the world's older people*. London, Earthscan Publications Ltd., 1999:3-21.

Age classification varied between countries and over time, reflecting in many instances the social class differences or functional ability related to the workforce, but more often than not was a reflection of the current political and economic situation. Many times the definition is linked to the retirement age, which in some instances, was lower for women than men. This transition in livelihood became the basis for the definition of old age which occurred between the ages of 45 and 55 years for women and between the ages of 55 and 75 years for men.

**Citation:** Thane P. *The muddled history of retiring at 60 and 65*. *New Society*. 1978;45(826):234-236.

**Efficiency:** The production of the desired effects or results with minimum waste of time, effort, or skill. A measure of effectiveness; specifically, the useful work output divided by the energy input in any system. **Citation:** *The American Heritage® Medical Dictionary* Copyright © 2007, 2004 by Houghton Mifflin Company.

**Intervention:** An act performed to prevent harm to a patient or to improve the mental, emotional, or physical function of a patient. A physiologic process may be monitored or enhanced, or a pathologic process may be arrested or controlled. Independent intervention is any health care activity pertaining to aspects of professional practice that are encompassed by licensure and law and require no supervision or direction from others. Interdependent intervention refers to any health care activity carried out by one health care professional in collaboration with another. **Citation:** *Mosby's Medical Dictionary, 8th edition*. © 2009, Elsevier.

**Medicines reconciliation:** The process of identifying the most accurate list of a patient's current medicines – including the name, dosage, frequency and route – and comparing them to the current list in use, recognizing and discrepancies, and documenting any changes, thus resulting in a complete list of medications, accurately communicated. **Citation:** *The Institute for Healthcare Improvement (IHI)*. 2007.

Most adverse events are multifactorial, resulting from an overlap of system and human errors. Some adverse events may be new or unanticipated, due to changing technologies. Systems failures—such as poor management decisions, dysfunctional corporate cultures, poor communications, inadequate resources, poor staffing, poor documentation, or a lack of safeguards and check points—generally facilitate human errors. Human errors may be knowledge-based, skill-based, fatigue-based, or may result from a failure to follow rules, technical mistakes, and/or an inability to cope with the complexities or demands of the healthcare system.

**Personalized dosage systems:** Personalised Dosage Systems are a tool for which a great implementation growth is foreseen. Their purpose is to improve the patient's therapeutical compliance level. They allow patients to take their daily medication safely, this type of administering systems being under the strict supervision and control of pharmacists. **Citation:** *The European project Empowering Health learning for the Elderly (EHLE), Use of Drugs Among the Elderly: The Role of Pharmacists*

**Pharmacist:** a person licensed to prepare, compound, and dispense drugs upon written order (prescription) from a licensed practitioner such as a physician, dentist, or advanced practice nurse. A pharmacist is a health care professional who cooperates with, consults with, and sometimes advises the licensed practitioner concerning drugs.

For a licensed pharmacist, five years of education is a minimum, and some curricula require six years. This gives the pharmacist advanced knowledge of the chemical and physical properties of drugs and their available dosage forms, and he or she is thus qualified to play a key role in supplying information about drugs (both prescription and over-the-counter) to patients—those to whom such information is most important. Since the pharmacist may be the last health care professional to communicate with the patient or a significant other before the medication is taken, he or she is therefore in an ideal position to discuss the drug with those concerned. The discussion may include any side effects associated with the drug, its

stability under various conditions, its toxicity, its dosage, and its route of administration, all of which may be reassuring to the patient and be of benefit in helping insure patient compliance with the drug regimen. **Citation:** *Miller-Keane Encyclopaedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition.* © 2003 by Saunders, an imprint of Elsevier, Inc. All rights reserved.

**Pharmacologist:** One who makes a study of the actions of drugs. **Citation:** *Dorland's Medical Dictionary for Health Consumers.* © 2007 by Saunders, an imprint of Elsevier, Inc. All rights reserved

**Pilot test:** A smaller version of a larger study that is conducted to prepare for that study. A pilot study can involve pre-testing a research tool, like a new data collection method. It can also be used to test an idea or hypothesis. Pilot studies can also be used in clinical trials, in order to test different doses, routes of administration, dosing schedules and possible barriers to adherence before a large-scale multicenter drug study is launched. Pilot studies are used as feasibility studies, to ensure that the ideas or methods behind a research idea are sound, as well as to “work out the kinks” in a [study protocol](#) before launching a larger study. **Citation:** Julie Stachowiak, Ph.D. <http://www.nationalmssociety.org/online-community/personal-stories/julie-stachowiak/index.aspx>

**Poly-pharmacy:** The use of multiple medications by a patient, especially when too many forms of medication are used by a patient, when more drugs are prescribed than is clinically warranted, or even when all prescribed medications are clinically indicated but there are too many pills to take (pill burden). Furthermore, a portion of the treatments may not be evidence-based. The most common results of polypharmacy are increased adverse drug reactions, drug-drug interactions and higher costs. Polypharmacy is most common in the elderly but is also widespread in the general population. Polypharmacy is most common in people with multiple medical conditions. Combination therapy is the use of multiple drugs specifically to treat a single medical condition; monotherapy is the use of a single drug. **Citation:** Fulton MM, Allen ER. Polypharmacy in the elderly: a literature review. *J Am Acad Nurse Pract* 2005;17:123-32.; Haider SI, Johnell K, Weitoft GR, Thorslund M, Fastbom J (2009). "The influence of educational level on polypharmacy and inappropriate drug use: a register-based study of more than 600,000 older people." *Journal of the American Geriatrics Society* 57 (1): 62–69; Haider SI, Johnell K, Thorslund M, Fastbom J (2007). "Trends in polypharmacy and potential drug-drug interactions across educational groups in elderly patients in Sweden for the period 1992 - 2002". *International Journal of Clinical Pharmacology and Therapeutics* 45 (12): 643–653.

**Prescription:** A written direction for the preparation, compounding, and administration of a medicine; a prescribed remedy; a written formula for the grinding of corrective lenses for eyeglasses; a written direction for the application of physical therapy measures (as directed exercise or electrotherapy) in cases of injury or disability. **Citation:** *Merriam Webster's Medical Desk Dictionary, 2005, Merriam-Webster, Incorporated, Publishers, Springfield, Massachusetts, USA.*

**Quality of life: Quality of Life (QoL):** A phrase used to refer to an individual's total wellbeing. This includes all emotional, social, and physical aspects of the individual's life. However, when the phrase is used in reference to medicine and healthcare as Health Related Quality of Life, it refers to how the individual's wellbeing may be impacted over time by a disease, a disability, or a disorder. **Citation:** <http://www.cdc.gov/hrqol/>

**Risk factors:** A clearly defined occurrence or characteristic that has been associated with the increased rate of a subsequently occurring disease. Essentially, something that increases a person's chances of developing a disease. For example, cigarette [smoking](#) is a risk factor for [lung cancer](#), and [obesity](#) is a risk factor for [heart disease](#). **Citation:** <http://www.medterms.com/script/main/art.asp?articlekey=5377>

**Self-care management:** Self-care is defined as a naturalistic decision making process involving the choice of behaviors that maintain physiologic stability (maintenance) and the response to symptoms when they occur (management). Those practicing self-care

maintenance live a healthy lifestyle, adhere to the treatment regimen, and monitor symptoms. Symptom monitoring is essential if one is to make decisions in response to symptoms (management). Self-care management is an active, deliberate process that begins with recognizing a change in signs or symptoms (i.e., shortness of breath or edema), evaluating the change, deciding to take action, implementing a treatment strategy (e.g., take an extra diuretic dose), and evaluating the treatment implemented. **Citation:** *Dr Barbara Riegel*, <http://www.self-careofheartfailureindex.com/>

**Target Population:** Target population refers to the group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics. It is used in this document to denote the individuals or the group of people who will be served and benefit by the different commitments.



## Appendix 1 Deliverables by Partners

Objective 1: Improve Patients' adherence				
Partners	Deliverable	Starting date	Deadline	Action Area
<b>LST, Universidad Politécnica Madrid</b> <ul style="list-style-type: none"> <li>• AEDEC</li> <li>• Medtronic Ibérica</li> </ul>	Novel methods and procedures for the continuous stratification of the population at risk of diabetes and related complications.	On-going Project, January 2014	June 2014	<b>Decision support tools (including mobile devices)</b>
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> <li>• Digital health Consortium</li> <li>• Glasgow School of Art</li> </ul>	To develop decisions support tools that patients can use to help them manage their medication for their LTC that patients can use with mobile technology. Examples to date include tele-monitoring of COPD and Heart failure but mobile technology could help patients manage medication in exacerbations.	December 2012		
<b>CIRFF University of Naples/Campania Region</b> <ul style="list-style-type: none"> <li>• Federico II University</li> <li>• University of Salerno</li> <li>• Specialists</li> <li>• Association of GPs</li> <li>• Regional health authorities of Campania Region</li> </ul>	Algorithms will score persistence and adherence for chronic diseases of interest using the information from established databases.		October 2014	
<b>Colegio Pharmacysts Valencia, Spain</b>	3000 mobile-phone with warning signals for medicines intake.		2013	

<b>Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS NI)</b> <ul style="list-style-type: none"> <li>• Health and Social Care Trusts</li> <li>• Health and Social Care Board</li> <li>• Patient representative groups</li> <li>• Community Pharmacists</li> <li>• Independent care providers</li> <li>• General Practitioners</li> </ul>	Pilot test an adherence assessment tool for identifying problems with medicines adherence for individual patients who are identified as having problems with their medicines. The draft tool which has been designed will be tested by clinical pharmacists in hospital and community settings. The aim of the pilot will be to test feasibility and refine the tool and assessment processes for wider application. The pilot will operate in two HSC Trusts.	October 2012	September 2013	
<b>Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS NI)</b> <ul style="list-style-type: none"> <li>• Health and Social Care Trusts</li> <li>• Patient representative groups</li> </ul>	Utilise video conference technologies to deliver a) speech and language therapy and (b) COPD pulmonary rehabilitation to remote/isolated patients in their homes or local health facilities.	January 2013	December 2013	
<b>General Council of Pharmacists Spain (CGCOF)</b> <ul style="list-style-type: none"> <li>• Regional Pharmacy Chambers of Badajoz, Murcia and Vizcaya</li> <li>• Instituto de Salud Carlos III</li> <li>• Esteve laboratories</li> <li>• Pharmaceutical Group of the European Union (PGEU)</li> </ul>	Implement protocols of Pharmaceutical Care.	2013		
<b>General Council of Pharmacists Spain (CGCOF)</b> <ul style="list-style-type: none"> <li>• Regional Pharmacy Chambers of Badajoz, Murcia and Vizcaya</li> <li>• Instituto de Salud Carlos III</li> <li>• Esteve laboratories</li> <li>• Pharmaceutical Group of the European Union (PGEU)</li> </ul>	Implement use of mobile devices to help facilitating adherence.	2013		



<b>GlaxoSmithKline (GSK)</b> • Atlantis Healthcare	Patient adherence screening tool.	Q1-2 2013	Q3 2013	
<b>Hospital de Getafe</b>	Disseminate the use of STOPP START criteria between physicians to avoid the inappropriate polimedication.	End of 2013		
	Implementation at the hospitals computer tools or algorithms to prospective detection of serious adverse reactions in elderly population.	End of 2015		
<b>Italian Medicines Agency (AIFA)</b> • European Generic medicines Association (EGA) • European Patients' Forum (EPF)	Piloting adherence programmes with use of elderly-friendly devices and medicine products and development of information/awareness and health literacy strategies, including life-style recommendations.	Q1-2013		
<b>Italian Medicines Agency (AIFA)</b> • Gestione Sistemi per l'Informatica (GESI), Rome, Italy	Monitoring adherence through electronic tools and alerting systems.	Q1 2013		
<b>Italian Medicines Agency (AIFA)</b> • GlaxoSmithKline(GSK)European Office, Brussels, Belgium	Piloting adherence programmes with use of elderly-friendly devices and medicine products and development of information/awareness and health literacy strategies, including life-style recommendations and Public-Private collaborative and innovative organizational models for pro-active care.	Q1-2013		
<b>Italian Medicines Agency (AIFA)</b> • IRCCS San Raffaele Pisana, Rome, Italy	<ul style="list-style-type: none"> <li>• Establishment of risk definitions to tailor interventions</li> <li>• Questionnaires development and administration</li> <li>• Evaluation of adherence-patients clinical outcome correlation</li> <li>• Implementation of interventions addressed to improve poor adherence</li> </ul>	1) Q1 2013 2) 2014 3) 4) 2014	2014 2014  2015	

<b>European Association of Pharmaceutical Full-line Wholesalers (GIRP)</b> Brussels, Belgium	Support for improvement of adherence through individual patient packaging of medicines (weekly or daily doses) in an older persons-friendly manner and user-friendly devices to improve adherence (reminders and alerts).	On going	2016	<b>Dispensing</b>
<b>Hospital de Getafe</b>	Try to outfit to the hospitals clinical pharmacologist that know the differential properties in metabolism and management of drugs in ageing.	End of 2018		
<b>Italian Medicines Agency (AIFA)</b> • European Association of Pharmaceutical Full-line Wholesalers (GIRP) Brussels, Belgium	Expertise in evaluation of adherence-patients clinical outcome correlation and in implementation of interventions addressed to improve poor adherence through: • Medication review tool: Tool which automatically generates a questionnaire for the pharmacist as a basis for the medication review. Field study: Study focusing on the impact of the programme to hospitalisations. A scientific committee will be set up consisting of university professors to approve the clinical rules used by the programme. An observational study will be set up. • Pharmaceutical care tool: Tool which scans the population based on the clinical rules and medication history resulting in proposed intervention. • Trainings for pharmacists and caretakers: The pharmacists and assistants in the programme are trained on communications skills. • Repeat Prescription Service: monitoring on dispensing scheme, in combination with consultation, and if necessary interventions, when deviations from prescribing scheme is being identified. • Clinical rules: The clinical rules to generate the interventions on the target group continuously need to be adjusted and expanded to the most up to date insights and national guidelines.	On-going in Netherlands	2016	
<b>APSS</b>	Prototyping and lab testing of mobile and web	Q3 2013		<b>Interventions</b>

	applications for diabetes management.			
	System piloting.	Q4 2013		
	Rolling out of the system and testing in real life conditions; early validation of disease management programme (results, satisfaction, feasibility).	Q1 2014		
	Service piloting to assess organisational, economic and clinical impact. Service policy validation with stakeholders.	Q4 2014		
	Programme deployment to target population.	Q2 2015		
<b>Department of Health and Consumer Affairs of the Basque Government</b> • Public Basque Health Service provider (Osakidetza)	Review of medication and patient education on type 2 diabetes polymedicated patients – pilot project	2011. On-going.	Q4 2013 Pilot project  During 2014-2015, possibility of progressive extension to polymedicated patients (any chronic condition)	
<b>LST, Universidad Politécnica Madrid</b> • AEDEC • Medtronic Ibérica	Lifestyle intervention plans fostering a tight glycaemic control and encouraging the adoption of healthy behaviours through achievement of measurable goals.	On-going Project, January 2014	June 2014	
<b>LST, Universidad Politécnica Madrid</b> • AEDEC • Medtronic Ibérica • Hospital Clínico San Carlos	Software programmes to help 65+ people suffering with diabetes and multi-morbidities to achieve specific and measurable lifestyle goals (i.e.: losing weight through healthy diet and physical activity, improving education literacy in specific hot topics).	On-going Project, January 2014	June 2014	

<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> <li>• Royal Colleges – GPs/Pharmacists/Physicians</li> </ul>	Polypharmacy Demonstrator sites pilot.	Dec-12		
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> <li>• Royal Colleges – GPs/Pharmacists/Physicians</li> <li>• RPS</li> <li>• Social care</li> </ul>	Collaboration in working on polypharmacy and pharmaceutical care for patients still living at home to improve appropriate prescribing and patient decision making. Outcomes from work where pharmaceutical care issues are being addressed by pharmacists who are identified through social work will highlight how to best support these patients in their own homes.	December 2012		
<b>Medical University of Warsaw</b>	Design and manufacture of sensor prototype along with the prototype of the central computer system for planning / monitoring medicine intake.	Q1 2013		<b>Monitoring</b>
	Create IT system for monitoring elderly patients' medicaments intake, along with the integration with sensor.	Q1 2013		
<b>Italian Medicines Agency (AIFA)</b> <ul style="list-style-type: none"> <li>• The Division of Geriatric Medicine and Cardiology, the University of Florence, Italy</li> <li>• University Medical Centre Groningen, The Netherlands</li> <li>• CIRFF, University of Naples Federico II</li> </ul>	Monitoring adherence through the utilization of observatories and databases.	Q1 2013		
<b>Italian Medicines Agency (AIFA)</b> <ul style="list-style-type: none"> <li>• Università Cattolica del Sacro Cuore at Policlinico Gemelli of Rome</li> </ul>	Monitoring adherence through the utilization of observatories and databases and through electronic tools and alerting systems.	Q1 2013	Q4 2014	

<b>General Council of Pharmacists Spain (CGCOF)</b> <ul style="list-style-type: none"> <li>• Regional Pharmacy Chambers of Badajoz, Murcia and Vizcaya</li> <li>• Instituto de Salud Carlos III</li> <li>• Esteve laboratories</li> <li>• Pharmaceutical Group of the European Union (PGEU)</li> </ul>	IT platform with clinical information to monitor and analysing adherence.	2013		
<b>Italian Medicines Agency (AIFA)</b> <ul style="list-style-type: none"> <li>• Merck Serono Rome, Italy and Merck Serono Geneva, Switzerland;</li> <li>• Pfizer Italy</li> </ul>	Monitoring adherence through electronic tools and alerting systems and piloting adherence programmes with use of elderly-friendly devices and medicine products and development of information/awareness and health literacy strategies, including life-style recommendations.	Q1-2013		
<b>Italian Medicines Agency (AIFA)</b> <ul style="list-style-type: none"> <li>• National Centre for Scientific Research-NCSR, Greece</li> </ul>	ICT tools to monitor and identify causes of poor adherence (e.g. video cameras, electronic surveys and questionnaires through Smart TV sets etc.) will be developed and be validated. Implementation of older persons friendly packaging and formulations.	Q1- end 2013	2014	

Objective 2: Empowerment				
Partners	Deliverable	Starting date	Deadline	Domain
<b>UCC Cork</b> <ul style="list-style-type: none"> <li>• Long Term Care Staff</li> <li>• Health Service Executive</li> <li>• Local GPs providing care</li> </ul>	"Let me decide" Programme.	2012		<b>Counselling</b>
<b>Veneto Region</b> <ul style="list-style-type: none"> <li>• Centro COSPES (Mogliano V.to)</li> </ul>	Service of individual or group counselling to orient aged people toward an active and healthy aging and a personal well-being.	Q1-Q4 2013		
				<b>Education</b>
<b>Department of Health and Consumer Affairs of the Basque Government</b> <ul style="list-style-type: none"> <li>• Public Basque Health Service provider (Osakidetza)</li> </ul>	Expert Patient Programme for type 2 diabetic patients	2011. On-going	End year 2014	
<b>GlaxoSmithKline(GSK)</b> <ul style="list-style-type: none"> <li>• Atlantis Healthcare</li> <li>• Pharmacy organisations (to be determined)</li> </ul>	Tools/Training to support effective patient / HCP communication.	Q1-2 2013	Q3 2013	

<b>Italian Medicines Agency (AIFA)</b> • The Department of Neurological Sciences and DEIS University of Bologna, Italy	1) • Empower patients and their careers to take more responsibility and control of their own health care. • Development and implementation of education programmes for patients and their careers on actions to improve adherence • Implementation of other specific device (PD objective monitoring system): An ad hoc hardware platform with proper processing capability, a variety of connectivity options (including web communication between the patient and the health care provider), and a wide touch-screen interface. 2) • Identification of indicators • Progress monitoring • Identification of key gaps and difficulties	Q1 2013	Q4 2015	
<b>NHS Scotland</b> • Third Sector	Implement use of a health literacy tool (“Teachback”) to improve adherence and concordance.	December 2015		
<b>Perugia University</b> • Tourism authority Umbria Region • Local mountain community office	Development of “healthy trails”.	January-March, 2014	December 2014	
<b>University Coimbra</b> • Faculty of Sport Science • Nurses School • Exploratório D. Henrique • Museu de Ciência UC • Faculty of Medicine of Coimbra • Luso Municipality (WiLuso)	Programme of public lectures and round-table discussions in museums and other public spaces addressing healthy and active ageing and adherence to care plans.	January 2013	December 2015	

<b>University Coimbra</b> <ul style="list-style-type: none"> <li>• Faculty of Sport Science</li> <li>• Nurses School</li> <li>• Faculty of Medicine of Coimbra</li> <li>• Luso Municipality (WiLuso)</li> <li>• Coimbra Municipality</li> <li>• University of Coimbra Hospital</li> </ul>	Combined cultural and physical fitness/training medically-assisted tailored programmes, targeting +65 old or patients suffering from chronic diseases, joining sport faculty members, nurses and psychologists.	June 2013	December 2015	
<b>Veneto Region</b> <ul style="list-style-type: none"> <li>• Regional Authorities of Regione Veneto</li> <li>• AUSER</li> <li>• CSV (Centro Servizi Volontariato)</li> </ul>	Educational programme in Veneto Region, to promote health literacy, active and healthy aging and social involvement.	Q1-Q4 2013		
<b>CIRFF</b> <b>University of Naples/Campania Region</b> <ul style="list-style-type: none"> <li>• Federico II University</li> <li>• University of Salerno</li> <li>• Specialists</li> <li>• Association of GPs</li> <li>• Regional health authorities of Campania Region</li> </ul>	Web application to show appropriate information about adherence levels.		December 2014	<b>Online services</b>



<b>Department of Health and Consumer Affairs of the Basque Government</b> <ul style="list-style-type: none"> <li>• Public Basque Health Service provider (Osakidetza)</li> <li>• Osatek (public company attached to the Basque Health Service)</li> </ul>	Personal health folder and other online health services.	October 2012. On going	First version released by October 2012. Second version released by December 2012. Regular updates with progressive deployment of services during 2013.	
<b>University Coimbra</b> <ul style="list-style-type: none"> <li>• Faculty of Sport Science</li> <li>• Nurses School</li> <li>• Exploratório D. Henrique</li> <li>• Museu de Ciência UC</li> <li>• Faculty of Medicine of Coimbra</li> <li>• Education</li> </ul>	Implementation of social network to monitor adherence to prescription.	December 2012	December 2015	<b>Social network</b>
<b>Department of Health and Consumer Affairs of the Basque Government</b> <ul style="list-style-type: none"> <li>• Basque Institute for Healthcare Innovation (O+Berri)</li> </ul>	Social network for patients with chronic conditions, their relatives and caregivers.	April 2012. On going	None	
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Third Sector</li> </ul>	Adoption of patient e-health and social media innovations to support self-management (e.g. patient portals).	December 2015		

Objective 3: Contribute to the improvement of adherence in the health and care system				
Partners	Deliverable	Starting date	Deadline	Domain
<b>Andalusian Regional Ministry of Health and Social Welfare</b>	XXI prescription allows all pharmacies in the region to access centrally stored electronic prescriptions directly, and to share information on patients' current and long-term medications with doctors in public healthcare settings. GPs can prescribe for periods of up to one year, and pharmacists' can cancel prescriptions and send them back to the relevant GP for revision. Integrated prescribing decision support tools enable the application of regional standards and facilitate prescribing procedures	Ongoing since 2000 in PHC	ongoing	<b>Electronic prescription</b>
<b>Department of Health and Consumer Affairs of the Basque Government</b> <ul style="list-style-type: none"> <li>• Public Basque Health Service provider (Osakidetza)</li> <li>• Basque Official Colleges of Pharmacists</li> </ul>	Implementation of the electronic prescription in the Basque Country.	2011. On going	Q4 2013	
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> </ul>	e-Health strategy: electronic prescribing capture by all clinicians in primary and secondary care will allow for accurate picture of medications patients are taking. This will allow for monitoring not only of adherence but of safe and effective prescribing. Examples include electronic prescribing and HEPMA.	October 2012	On-going	

<b>CIRFFUniversity of Naples/Campania Region</b> <ul style="list-style-type: none"> <li>• Federico II University</li> <li>• University of Salerno</li> <li>• Specialists</li> <li>• Association of GPs</li> <li>• Regional health authorities of Campania Region</li> </ul>	Develop and test guidelines for improving adherence to medical plans for diabetes, hypertension, heart failure, obesity, osteoporosis/fracture, dementia, depression, falls etc.		December 2014	<b>Best-practices</b>
<b>Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS NI)</b> <ul style="list-style-type: none"> <li>• Health and Social Care Trusts</li> <li>• Health and Social Care Board</li> <li>• Independent care providers</li> </ul>	Develop a specification for training domiciliary care workers who assist patients with taking medicines or administer medicines. The specification will support Trusts in ensuring appropriate governance arrangements for medicine management in domiciliary care provided by Trust staff and private care agencies.	October 2012	March 2014	
<b>Education, Health and Society Foundation Murcia</b> <ul style="list-style-type: none"> <li>• Regional health authority of the Murcia Region</li> <li>• MSD</li> </ul>	Report on public interventions in adherence at the Murcia Region and integration with this project.	January 2013		
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> <li>• Royal Colleges – GPs/Pharmacists/Physicians</li> <li>• RPS</li> <li>• Social care</li> </ul>	National Review of Pharmaceutical Care in the Community.	October 2012		
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> <li>• Third Sector</li> </ul>	Investment in the development of a research-informed national toolkit to support the sharing of good practice and the promotion of literacy sensitivity in health and social care organisations.	December 2012		

<b>ParkinsonNet (Radboud University Nijmegen Medical Centre)</b> <ul style="list-style-type: none"> <li>• Neurologists and physiotherapists across the country</li> <li>• Healthcare insurers</li> </ul>	ParkinsonAtlas, which is a web application that shows quality of care in Parkinson's disease, including guideline adherence, offering the opportunity for regional benchmarking.	June 2012	June 2014	
<b>UCC Cork</b> <ul style="list-style-type: none"> <li>• Long Term Care Staff</li> <li>• Health Service Executive</li> <li>• Local GPs providing care</li> </ul>	Completion of advance care plans for residents in long term care facilities.	July 2012		
<b>APSS</b>	Hospital Specialist and MMG shared management of diabetics patients by using of tele-monitoring technologies.	Q1 2013		<b>Service models</b>
<b>Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS NI)</b> <ul style="list-style-type: none"> <li>• Health and Social Care Board</li> </ul>	Develop a business case for IT enabled adherence support which could be deployed as part of a medicines adherence support service. The business case will be required to secure funding for roll-out of an IT based solution across Northern Ireland. The development of the business case will require development of a specification for an IT based solution to meet the needs of the potential patient groups.	April 2013	March 2014	
<b>Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS NI)</b> <ul style="list-style-type: none"> <li>• Health and Social Care Trusts</li> <li>• Health and Social Care Board</li> <li>• Patient representative groups</li> <li>• Community Pharmacists</li> <li>• Independent care providers</li> <li>• General Practitioners</li> </ul>	Pilot testing of service models for community pharmacy to deliver adherence support for individual patients who are identified as having problems with their medicines and have been assessed as part of the assessment tool pilot in hospital and community settings in two HSC Trusts. The pilot will test the feasibility of particular solutions including Medicines Administration record charts and medicines reminder cards which are not routinely used at present. The draft tool which has been designed will be tested by clinical pharmacists and the aim of the pilot will be to test feasibility and refine the tool for wider application. The pilot will operate in two HSC	October 2012	September 2013	

	Trusts.			
<b>Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS NI)</b> <ul style="list-style-type: none"> <li>• Health and Social Care Trusts</li> <li>• Health and Social Care Board</li> <li>• Patient representative groups</li> <li>• Community Pharmacists</li> <li>• Independent care providers</li> <li>• General Practitioners</li> </ul>	Commission adherence support services from community pharmacy based on the outcomes of pilots of a medicines adherence assessment tool and community pharmacy service models to deliver medicines adherence support for patients.	September 2013	April 2014	
<b>NHS Scotland</b>	Delivery of a revised national contract for Community Pharmacists and a Scottish GP contract to encourage closer working, personalised care and high quality outcomes.	December 2012		
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> <li>• Third Sector</li> </ul>	Investment in the development of a robust national demonstrator programme to ensure consistent provision of personalised communication to enable effective participation in health care.	December 2012		
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Third Sector</li> <li>• Local Authorities / Government</li> </ul>	Reshaping Care for Older People Programme.	December 2015		

<b>ParkinsonNet (Radboud University Nijmegen Medical Centre)</b> • Johanniter Klinikum Niederrhein, Duisburg (Euregio grant applied for)	Establish a multidisciplinary expert centre for Parkinson's care (international up-scaling of Nijmegen Centre of Excellence), forming a cross-border collaborative care model.	Jan 2013 (2 yrs)		
<b>ParkinsonNet (Radboud University Nijmegen Medical Centre)</b> • Johanniter Klinikum Niederrhein, Duisburg (Euregio grant applied for)	Reorganisation of care: selecting and training physiotherapists to work according to evidence-based guidelines. Improve communication and collaboration with and between physiotherapists, neurologists and patients. ICT supported.	Jan 2013 (2 yrs)		
<b>University Coimbra</b> • Faculty of Sport Science • IPN • Tice.healthy • Take the Wind • Media Primer • Critical Health • Blue Works • Nurses School	• Implementation of ICT-based programmes for remote monitoring of health status and adherence to care/medical plans in +65 people and chronic disease patients in their homes/institutions. • Development of software and ICT devices.	June 2013		

<b>GlaxoSmithKline (GSK)</b> <ul style="list-style-type: none"> <li>• General practitioners</li> <li>• Specialists (pulmonologists)</li> <li>• Pharmacists</li> <li>• Local health units/hospitals</li> <li>• Healthcare managers</li> <li>• Industry</li> <li>• Scientific societies</li> </ul>	<ul style="list-style-type: none"> <li>• To improve quality of care following the clinical audit approach and to provide an integrated set of data for HCPs involved in the disease pathways, to payers and to health care managers;</li> <li>• To obtain new real practice data on epidemiology, diagnosis, care, use of drugs and costs of the disease at regional and local levels and make them available to the communities of professionals, health care managers and scientists;</li> <li>• To allow Local Health Units to experience new multidisciplinary way of working (including pharmacists, physicians, health care managers, budget holder, specialists) based on common data, methodology, knowledge;</li> <li>• To build specific way of working based on continuous improvement while implementing performance indicators that include clinical, economical and organizational outcomes;</li> <li>• To recognize and immediately implement the best practices from local health care units to all other units;</li> <li>• To identify and discuss with EEs the principal topics of COPD management to identify possible solutions based on the consensus conference methodology and to promptly publish available results;</li> <li>• To maintaining and exploit the F2F communications and “on line” discussions of the Scientific Network including all 55 participants units</li> </ul>	2011	Q4 2013	
<b>Italian Medicines Agency (AIFA)</b> <ul style="list-style-type: none"> <li>• ASL Brescia</li> </ul>	Public-Private collaborative and innovative organizational models for pro-active care.	Q1 2013		

<b>Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS NI)</b> <ul style="list-style-type: none"> <li>• Health and Social Care Trusts</li> <li>• Health and Social Care Board</li> <li>• Patient representative groups</li> <li>• Community Pharmacists</li> <li>• Independent care providers</li> </ul>	Commission adherence support services from community pharmacy based on outcome of pilot of service models;	March 2014	September 2012	
<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> <li>• Royal Colleges – GPs/Pharmacists/Physicians</li> </ul>	Using ICT and portal communication to maximise clinical communication. Roll out of Emergency Care Summary, key information summary and pilot of sharing of pharmaceutical care records within the Chronic Medication Service across primary and secondary care.	December 2013		
<b>Education, Health and Society Foundation Murcia</b> <ul style="list-style-type: none"> <li>• Regional health authority of the Murcia Region</li> <li>• MSD</li> <li>• University of Murcia</li> <li>• EU-WISE partners(7thFP)</li> </ul>	Training following CDSMP (Stanford SMS programme).	2013		<b>Training</b>
<b>General Council of Pharmacists Spain (CGCOF)</b> <ul style="list-style-type: none"> <li>• Regional Pharmacy Chambers of Badajoz, Murcia and Vizcaya</li> <li>• Instituto de Salud Carlos III</li> <li>• Esteve laboratories</li> <li>• Pharmaceutical Group of the European Union (PGEU)</li> </ul>	Training programmes for pharmacists on Pharmaceutical Care considering the specific characteristics of target population.	2013		
<b>Perugia University</b> <ul style="list-style-type: none"> <li>• European countries involved in the project (to be defined)</li> </ul>	Training of care givers from other European countries.	March 2014	December 2014	



<b>UCC Cork</b> <ul style="list-style-type: none"> <li>• Long Term Care Staff</li> <li>• Health Service Executive</li> <li>• Local GPs providing care</li> </ul>	Syllabus for end-of-life care education for staff in long term care facilities.	2013		
--	---	------	--	--

Objective 4: Contribute to research and methodology				
Partners	Deliverable	Starting date	Deadline	
<b>APSS</b>	Context analysis (qualitative and quantitative analysis of network of care) aimed at designing an integrated pathway for diabetes management.	Q4 2012		<b>Evidence</b>
<b>Aston University</b> • University of East Anglia	Development of an up-dated scale to assess anti-cholinergic burden (which may be associated with confusion and reduced adherence) in older people.	End of 2013		
<b>CIRFF University of Naples/Campania Region</b> • Federico II University • University of Salerno • Specialists • Association of GPs • Regional health authorities of Campania Region	Document that analyses and describes our current situation using information from administrative databases (drug prescriptions, hospitalizations, ambulatory procedures) to describe current adherence of patients for chronic diseases. Identify predictive factors for good and poor adherence and attempt to correlate these factors with particular outcomes e.g. hospitalisation, institutionalisation or death.		December 2013	
<b>CIRFF University of Naples/Campania Region</b> • Federico II University • University of Salerno • Specialists • Association of GPs • Regional health authorities of Campania Region	Data Analysis to outline the results obtained.		December 2015	
<b>Department of Health and Consumer Affairs of the Basque Government</b>	Evaluation of the effectiveness of a programme for primary prevention of diabetes type 2 through changes in lifestyle implemented by primary care professionals	2011. On-going	2013	

<b>Department of Health and Consumer Affairs of the Basque Government</b>	Evaluation of the effectiveness of the Expert Patient Programme for type 2 diabetic patients	2011. On-going	End year 2014	
<b>GlaxoSmithKline (GSK)</b> • Atlantis Healthcare	Carry out market research with renal cell cancer (RCC) patients and physicians treating RCC patients to understand behaviours that lead to non-adherence. This research to be published and to help develop appropriate programmes to support patients and pharmacists looking after those patients.	Q3 2012	Q4 2012	
<b>Perugia University</b> • Regional health authority of the Umbria Region	Validation of the efficacy of an innovative model to improve lifestyle.	January 2013	December 2013	
<b>Perugia University</b> • Regional health authority of the Umbria Region	Cost-effectiveness analysis and HTA of the model.	December 2013	March 2014	
<b>University Coimbra</b> • Faculty of Medicine of Coimbra (FMUC) • Faculty of Sport Science • Nurses School • University of Coimbra Hospital (CHUC) • Social Studies • IPN (business incubator) • Open to collaboration with other national and European PhD programs on Ageing	High-level interdisciplinary education and training of health care personal through the PhD programme on ageing with adherence-specific education and training modules.	On going	December 2015	
<b>Hospital de Getafe</b> • All countries	Recommendation on new guidelines performing RCT in older people before marketing new drugs intended for consumption.	End of 2014		<b>Guidelines</b>

<b>NHS Scotland</b> <ul style="list-style-type: none"> <li>• Scottish Government</li> <li>• Royal Colleges – GPs/Pharmacists/Physicians</li> </ul>	Guidance on dealing with appropriate prescribing and initial outcome data from Boards addressing Polypharmacy and value of risk of admissions data to inform which patient groups to target.	December 2012		
<b>ParkinsonNet (Radboud University Nijmegen Medical Centre)</b> <ul style="list-style-type: none"> <li>• EPDA - European Parkinson's Disease Association</li> <li>• APPDE - Association for Physiotherapists and Parkinson's Disease Europe</li> </ul>	Implementation of European Guideline for Physiotherapy in Parkinson's disease (2013; 18 countries involved).	2014		
<b>ParkinsonNet (Radboud University Nijmegen Medical Centre)</b> <ul style="list-style-type: none"> <li>• EPDA - European Parkinson's Disease Association</li> <li>• APPDE - Association for Physiotherapists and Parkinson's Disease Europe</li> <li>• Professional physiotherapy associations of 18 European countries</li> </ul>	European Clinical practice Guideline for physiotherapy in Parkinson's disease.	On going	Q4 2013	

Objective 5: Foster communication				
Partners	Deliverable	Starting date	Deadline	Domain
<b>CIRFF</b> <b>University of Naples/Campania Region</b> <ul style="list-style-type: none"> <li>• Federico II University</li> <li>• University of Salerno</li> <li>• Specialists</li> <li>• Association of GPs</li> <li>• Regional health authorities of Campania Region</li> </ul>	Database containing clinical information including drug prescriptions, hospitalisations, outpatient procedures will be designed for access by IT platform tools (Web Application, analysis tools etc.).		June 2014	Data repository
<b>Education, Health and Society Foundation Murcia</b> <ul style="list-style-type: none"> <li>• Regional health authority of the Murcia Region</li> <li>• MSD</li> <li>• University of Murcia</li> <li>• EU-WISE partners(7thFP)</li> </ul>	Benchmarking and validation of the project to other countries. Spread through conferences.	January-March 2014		
<b>Hospital de Getafe</b>	Develop and implement a network in EU of clinical trials unit with the necessary tools to carry out RCTs in old people (similar SOPs, protocols templates and information sheets, outcomes and recruitment strategies). In this, Spain there is a Clinical Trial Unit that meets these requirements, and it could be used as a model to implement it in the other European countries.	End of 2017		Networking

## Appendix 2 Specific Objectives

General Objective	Specific Objective
<b>No 1: Improve patient adherence to care plans, including medication and healthy habits</b>	<ol style="list-style-type: none"> <li>1. Make evidence-based and cost-effective adherence interventions an explicit element of coordinated care.</li> <li>2. Develop screening tools to measure adherence.</li> <li>3. Implement a national e-health strategy for safer medicines, extending medicine safety work to improve administration and adherence for vulnerable people.</li> <li>4. Implement new information tools: electronic prescription, remote warning system.</li> <li>5. Improve the quality and adequacy of prescription (particularly to patients with multiple chronic diseases).</li> <li>6. Improve the detection and the prevention of serious adverse drug reactions in the elderly.</li> <li>7. Engage health professionals, including pharmacists, in self-management support interventions to foster healthy lifestyles and adherence to medical plans and treatment.</li> <li>8. Encourage closer collaboration between pharmacists, GPs and community services aimed to increase adherence.</li> <li>9. Improve quality of care following the clinical audit approach and provide an integrated set of data to health care providers involved in the disease pathways, to payers and to health care managers.</li> </ol>
<b>No: 2 Empower the patients and caregivers to take care of their health and to be independent</b>	<ol style="list-style-type: none"> <li>1. Support the patient in setting their own goals in their healing – caring process and living up to them.</li> <li>2. Provide lifestyle intervention, education and motivation programs for patients and caregivers to encourage proactive attitudes to health self-care management and drive positive behavioral change.</li> <li>3. Reinforce socialization and patients' ability to cope with their diseases by group therapeutic education.</li> <li>4. Improve the health-literacy of the patients and carers.</li> <li>5. Support and empower patients to conduct a healthy life.</li> <li>6. Support patients and caregivers in the emotional management of their conditions.</li> <li>7. Improve patients' knowledge and understanding of their pharmacological treatment, in order to achieve an appropriate follow up and better adherence.</li> <li>8. Improve shared decision making between clinicians and patients, based on clinical evidence and the patient's informed preferences.</li> <li>9. Train health professionals and patients in tools and skills that allow them to better communicate with each other.</li> </ol>
<b>No: 3 Deliver improvements in the health care system to promote adherence</b>	<ol style="list-style-type: none"> <li>1. Support a coherent national programme on quality improvement on medical interventions, including polypharmacy, self-management, health literacy and medicine reconciliation.</li> <li>2. Make adherence to treatment and the rational use of medicines an explicit element of health professionals, patients and caregivers' training activities.</li> <li>3. Develop the competences of health professionals to support and motivate patients to take care of themselves to adhere to medical plans and treatments and to adopt healthy habits.</li> <li>4. Contribute to the goal that clinical trials units have similar operational programmes (protocols, outcomes...) with similar</li> </ol>

	<p>objectives and the capacity to collaborate.</p> <ol style="list-style-type: none"> <li>5. Change the current role of pharmacists by: <ol style="list-style-type: none"> <li>a. advocating for hospitals and primary care centres having clinical pharmacologists and pharmacists trained in the particularities of drug prescription for older people.</li> <li>b. implementing new service models for pharmacists to address structural and behavioral barriers to adherence.</li> <li>c. advocating for a national review of pharmaceutical care in the community which will make recommendations to enhance the role of pharmacists and encourage closer working with GPs and community services.</li> </ol> </li> <li>6. Incorporate tools and available evidence in hospitals and primary care centers in routine practice to avoid preventable adverse events and inappropriate poly-pharmacy.</li> <li>7. Establish better and more specific risk definitions to tailor interventions and stratify target populations according to risk.</li> <li>8. Develop the healthcare system capacity to prescribe healthy habits and motivate the population/users adherence to them.</li> <li>9. Allow local health units to experience new multidisciplinary way of working (including pharmacists, physicians, health care managers, budget holder, specialists) based on common data, methodology and knowledge.</li> </ol>
<b>No 4: Research and methodology on ageing and adherence</b>	<ol style="list-style-type: none"> <li>1. Evaluate the rational use of medication and estimate outcomes in realistic conditions.</li> <li>2. Continue to build data infrastructure; use of data- bases on prescriptions and health outcomes to evaluate the rational use of medication and to estimate outcomes in realistic conditions.</li> <li>3. Contribute to the research and methodology on ageing and adherence, with a focus on return on investment for adherence and long term outcomes.</li> <li>4. Support actions to promote the inclusion of older people in clinical trials.</li> <li>5. Develop cost-analysis and health technology assessment of multidisciplinary lifestyle model for specific diseases. (e.g. type 2 diabetes)</li> <li>6. Contribute to research on effective interventions to promote adherence to changes in lifestyle and healthy habits.</li> <li>7. Obtain new real practice data on epidemiology, diagnosis, care, use of drugs and costs of the disease at regional and local levels and make them available to the communities of professionals, health care managers and scientists.</li> </ol>
<b>No 5: Foster communication between different partners/actors in the healing and caring process to improve adherence</b>	<ol style="list-style-type: none"> <li>1. Develop Web Applications linked to prescription databases to extract data on adherence among different stakeholders.</li> <li>2. Develop a content-share platform to allow future information campaigns and training interventions.</li> <li>3. Design specific content to support informative campaigns targeting patients and caregivers.</li> </ol>

## Objectives of the strategic plan on prescription and adherence to treatment





### Appendix 3 List of contributing Partners

Partners' name /Consortium partners	Country	Partners
Andalusian Regional Ministry of Health and Social Welfare	Spain	
APSS	Italy	
Aston University	UK	<ul style="list-style-type: none"> <li>University of East Anglia</li> </ul>
CIRFF University Federico II, Naples, Campania Region	Italy	<ul style="list-style-type: none"> <li>Association of GPs</li> <li>Federico II University</li> <li>Regional health authorities of Campania Region</li> <li>Specialists</li> <li>University of Salerno</li> </ul>
Colegio Pharmacist Valencia	Spain	
Department of Health and Consumer Affairs of the Basque Government	Spain	<ul style="list-style-type: none"> <li>Basque Institute for Healthcare Innovation (O+Berri)</li> <li>Basque Official Colleges of Pharmacists</li> <li>Department of health and consumer affairs of the Basque Government</li> <li>Department of health and consumer affairs of the Basque Government</li> <li>Osatek (public company attached to the Basque Health Service)</li> <li>public Basque Health Service provider (Osakidetza)</li> </ul>
Department of Health, Social Services and Public Safety Northern Ireland (DHSSPS NI)	Northern Ireland	<ul style="list-style-type: none"> <li>Community Pharmacists</li> <li>Department of Health and social services</li> <li>General Practitioners</li> <li>Health and Social Care Board</li> <li>Health and Social Care Trusts</li> <li>Independent care providers</li> <li>Patient representative groups</li> <li>Pharmacy NI</li> </ul>
Education, Health and Society Foundation Murcia	Spain	<ul style="list-style-type: none"> <li>EU-WISE partners(7thFP)</li> <li>ICT partner</li> <li>MSD (national association of GPs and pharmacists)</li> <li>Regional health authority of the Murcia Region</li> <li>University of Murcia</li> </ul>
General Council of Pharmacists Spain	Spain	<ul style="list-style-type: none"> <li>Esteve laboratories</li> <li>General Council of Pharmacists of Spain (CGCOF)</li> <li>Institut de Salut Carlos III</li> <li>Murcia and Vizcaya</li> <li>Pharmaceutical Group of European Union</li> <li>Regional Chambers of pharmacists of Badajoz</li> </ul>

GIRP European Association of Pharmaceutical Full-line Wholesalers, Brussels, Belgium	Belgium	
Glaxo-Smith Kline (GSK)	Belgium	<ul style="list-style-type: none"> <li>• Atlantis Healthcare</li> <li>• General practitioners</li> <li>• Healthcare managers</li> <li>• Industry</li> <li>• Local health units/hospitals</li> <li>• Pharmacists</li> <li>• Scientific societies</li> <li>• Specialists (pulmonologists)</li> <li>• Italian Local Health units</li> <li>• University consortium (e.g. CINECA, CIRF)</li> </ul>
Healthy Ageing Network Northern Netherlands (HANNN)	Netherlands	<ul style="list-style-type: none"> <li>• University Medical Centre Groningen</li> </ul>
Hospital de Getafe	Spain	
Italian Medicines Agency (AIFA)	Italy	<ul style="list-style-type: none"> <li>• ASL Brescia</li> <li>• CIRFF, University of Naples</li> <li>• European Generic medicines Association (EGA)</li> <li>• European Patients' Forum (EPF)</li> <li>• Gestione Sistemi per l'Informatica (GESI), Rome, Italy</li> <li>• GIRP-European Association of Pharmaceutical Full-line Wholesalers, Brussels, Belgium</li> <li>• GlaxoSmithKline-GSK, European Office, Brussels, Belgium</li> <li>• IRCCS San Raffaele Pisana, Rome, Italy</li> <li>• Merck Serono Rome, Italy and Merck Serono Geneva, Switzerland</li> <li>• National Centre for Scientific Research-NCSR, Greece</li> <li>• Pfizer Italy</li> <li>• Philips Research, Eindhoven, The Netherlands</li> <li>• The Department of Neurological Sciences and DEIS University of Bologna, Italy</li> <li>• The Division of Geriatric Medicine and Cardiology, the University of Florence, Italy</li> <li>• Università Cattolica del Sacro Cuore at Policlinico Gemelli of Rome</li> <li>• University Medical Center Groningen, The Netherlands</li> </ul>
Life Supporting Technologies (LST) Universidad Politecnica Madrid	Spain	<ul style="list-style-type: none"> <li>• AEDEC</li> <li>• Hospital Clinico San Carlos</li> <li>• Medtronic Iberica</li> </ul>
Medical university of Warsaw	Poland	<ul style="list-style-type: none"> <li>• Medical innovations</li> <li>• Medical University of Warsaw</li> </ul>

NHS Scotland	UK	<ul style="list-style-type: none"> <li>• Digital health Consortium</li> <li>• Glasgow School of Art</li> <li>• NHS Scotland</li> <li>• Royal Colleges GPs/Pharmacists/Physicians</li> <li>• Scottish Government</li> <li>• Social care</li> <li>• Third Sector organisations</li> </ul>
ParkinsonNet Radboud University Nijmegen Medical Centre	Netherlands	<ul style="list-style-type: none"> <li>• Association for Physiotherapists and Parkinson's Disease Europe (APPDE)</li> <li>• EPDA, APPDE and professional physiotherapy associations of 18 European countries</li> <li>• European Parkinson's Disease Association (EPDA)</li> <li>• Healthcare insurers</li> <li>• Johanniter Klinikum Niederrhein Duisburg</li> <li>• Neurologists and physiotherapists across the country</li> </ul>
Perugia University	Italy	<ul style="list-style-type: none"> <li>• Local mountain community office</li> <li>• Regional health authority of the Umbria Region</li> <li>• Tourism authority Umbria Region</li> </ul>
University College Cork (UCC Cork)	Ireland	<ul style="list-style-type: none"> <li>• Health Service Executive</li> <li>• Local GPs providing care</li> <li>• Long Term Care Staff</li> </ul>
University Coimbra	Portugal	<ul style="list-style-type: none"> <li>• Blue Works</li> <li>• Coimbra Municipality</li> <li>• Critical Health</li> <li>• Exploratório D. Henrique</li> <li>• Faculty of Medicine of Coimbra (FMUC)</li> <li>• Faculty of Sport Science</li> <li>• IPN (business incubator)</li> <li>• Luso Municipality (WiLuso)</li> <li>• Media Primer</li> <li>• Museu de Ciência UC</li> <li>• Nurses School</li> <li>• Social Studies</li> <li>• Take the Wind</li> <li>• Tice.healthy</li> <li>• University of Coimbra Hospital (CHUC)</li> </ul>
Veneto Region	Italy	<ul style="list-style-type: none"> <li>• Centro COSPES (Mogliano V.to)</li> <li>• Regional Authorities of Regione Veneto, AUSER or CSV (Centro Servizi Volontariato)</li> </ul>