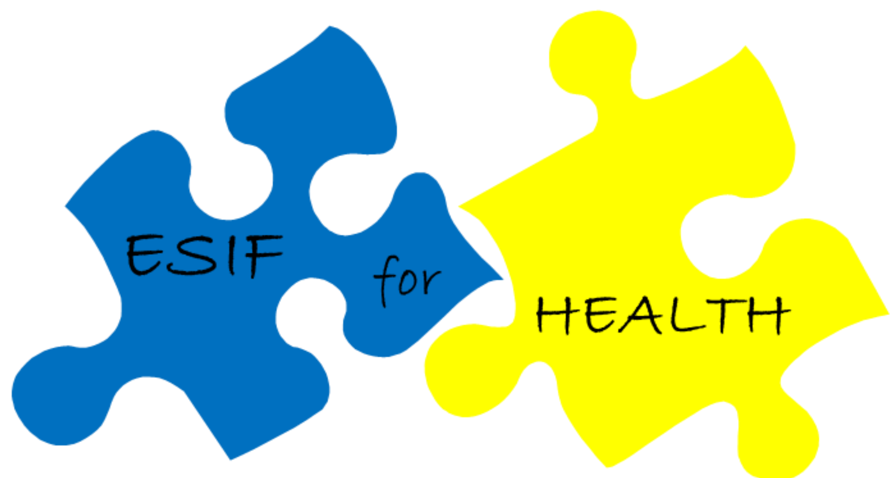
TECHNICAL TOOLKIT:

COMPENDIUM OF (NEW) CONCEPTS AND MODELS FOR INNOVATIVE, EFFECTIVE AND SUSTAINABLE HEALTH CARE

Developed under the project "Provision of support for the effective use of European Structural and Investment (ESI) Funds for health investments"



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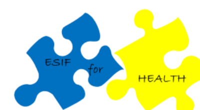

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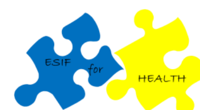

List of abbreviations

CHAFEA	Consumers, Health and Food Executive Agency
DG SANCO	Directorate General for Health and Consumers
EC	European Commission
EMR	Electronic Medical Record
EPR	Electronic Patient Record
ERNs	European Reference Networks
ESIF / ESI Funds	Network European Structural and Investment Funds
EU	European Union
No.	Number
PHR	Personal Health Record
SWD	Staff Working Document
WP	Work Package

Introduction

This document “Compendium of (new) concepts and models for innovative, effective and sustainable health care” forming a part of the Technical toolkit supporting the Guide for effective investments in health under ESI Funds (hereinafter “the Guide”) is developed in the framework of a tender action on the provision of support for the effective implementation of European Structural and Investment Funds (hereinafter “ESIF”) for health investments, managed by the Consumers, Health and Food Executive Agency (CHAFEA) on behalf of the Directorate General for Health and Consumers (DG SANCO), being delivered by EY.

The Guide and its supporting documents (see the list of project outputs below) are based on broad analyses of collected case studies and EY expert opinion and do not represent official European Commission documents.

The project outputs developed within the framework of the tender action are as follows:

- WP 1 MAPPING REPORT ON THE USE OF EUROPEAN STRUCTURAL AND INVESTMENT FUNDS IN HEALTH IN THE 2007-2013 AND 2014-2020 PROGRAMMING PERIODS
- WP 2 GUIDE FOR EFFECTIVE INVESTMENTS IN HEALTH UNDER ESI FUNDS
- WP 3 TECHNICAL TOOLKIT FOR EFFECTIVE INVESTMENTS IN HEALTH UNDER ESI FUNDS with the following documents under the toolkit:
  - WP 3 (1) CATEGORIZATION OF THE 2014-2020 ESI FUNDS INSTRUMENTS AND MECHANISMS
  - WP 3 (2) REFERENCE CHECKLIST: ESSENTIAL AND SUCCESS FACTORS FOR CALLS FOR PROPOSALS AND FOR THE ASSESSMENT OF PROJECT APPLICATIONS
  - WP 3 (3) SET OF INDICATORS USEFUL FOR THE FINAL EVALUATION OF ACTIONS
  - **WP 3 (4) COMPENDIUM OF (NEW) CONCEPTS AND MODELS FOR INNOVATIVE, EFFECTIVE AND SUSTAINABLE HEALTH CARE**
  - WP 3 (5) MANUAL ON HOW TO PLAN, IMPLEMENT AND SUSTAIN CAPITAL INVESTMENT IN HEALTH AND HEALTH CARE
  - WP 3 (6) REFERENCE DOCUMENT ON THE APPRAISAL OF INVESTMENT
  - WP 3 (7) REFLECTION OF ADDITIONAL ISSUES RAISED BY MEMBER STATES

This part of the toolkit aims to set out the different trends in health care that determine current health needs and introduce innovative approaches and models addressing these challenges, aiming at cost-effective and sustainable provision of health care. This document shall provide relevant health care authorities with an overview of possible approaches to the transformation of the health system and health care provision within the framework of the main European strategic documents and ESIF.

The document covers the following topics:

- Within chapter one, current **determinants of health care in Europe** are briefly introduced to provide the necessary background for readers.
- Chapter two introduces **innovative concepts and models addressing these challenges** and supporting achieving the objectives of the European Health Strategy and EUROPE 2020.

1. European health determinants

Health is an important part of public budgets as it represents almost a third of social policy budgets. In 2010, public spending on health care accounted for almost 15% of all government expenditure in the EU. The health care sector accounts for 8% of the total European workforce and for 10% of the EU's GDP.[1]

Due to the intensity of health care funding, the economic slowdown in recent years accompanied by budgetary restraints has led to reductions in health expenditures. However, reductions in health care expenditures were not always justified by cost-efficiency measures, i.e. lowering the system's demand on funding. The trend in health expenditure development has been rather reversed. Health systems across Europe have to react to the **changing demographic situation and increase in incidence of** so-called lifestyle or **civilization diseases both resulting in an increase in health services demand**. Another trend in modern health systems is the availability of new technologies, new treatment and diagnostics methods and new medication. In the long term, **new technologies and medication** can generate increased efficiency and cost-effectiveness of care and improve public health and stimulate growth. However, in the short term, they **are associated with considerable costs** related to research and innovation in the first place, and acquirement and implementation in the second, and **thus representing another burden for health care budgets**.

Below, the challenges are introduced in greater detail.

- **Ageing population**

As indicated above, one of the greatest challenges the governments have to deal with is the **ageing population**. Long-term predictions anticipate that the number of the working age population (age 15 to 64) will steadily fall whilst the elderly population aged 65+ will rise sharply. By 2060, about one-third of Europe's population will be aged 65 years and over and there will be a particularly rapid increase in the number of people aged 80 years and older.[2] This will have an immense impact on European societies and most importantly on the demand for health care and health care services. It is vital to mention that the ageing population is, and in the future will be, a major driver of the appreciable **rise in health care spending.** One of the cost-drivers associated with an ageing population could be seen in the predicted increased demand for long-term care (e.g. nursing homes etc.). Although not being the only driver, foreseen increased demand for long-term care justifies approaches supporting a transition to community-based care and closer integration of health and social services, which is being addressed among the health priorities in many Member States.

- **Increase in incidence of chronic diseases**

Another challenge for the health system's financial sustainability indicated is an **increase in incidence of civilization chronic diseases**, i.e. cardiovascular diseases, chronic lung problems, diabetes, and cancer. The challenge for the health system lies not only in the anticipated costs related to the treatment of patients with chronic diseases. Civilization diseases nowadays cause 86% of all deaths[3] and the number of people with these diseases is growing. This trend **has a negative influence not only on health care, but on economic progress altogether**. Dr Armin Fidler,

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[1] European Commission: Investing in Health - Commission Staff Working Document (SWD). Social Investment Package for growth and cohesion, February 2013. Available at: http://ec.europa.eu/health/strategy/docs/swd_investing_in_health.pdf

[2] DG ECFIN, Economic Policy Committee (AWG): The 2012 Ageing Report: Economic and budgetary projections for the EU27 Member States (2010-2060). European Economy No. 2, 2012. Available at: http://ec.europa.eu/economy_finance/publications/european_economy/2012/pdf/ee-2012-2_en.pdf

[3] Statistic of WHO-region of Europe.

a strategic advisor for public health policy at the World Bank and an EHFG board member, says that "If the frequency of civilization illnesses increases by 10%, it translates into minus 0.5% in terms of economic growth. The indirect costs of these illnesses far exceed the direct costs for economies which have already been hit by the global crisis and this poses a major risk".[4] Considering the high costs of treating chronic patients and the affiliated economic effects, it is obvious that without any preventive measures, the mass epidemic of lifestyle illnesses might become a negligible threat for the whole EU economy. This is mainly the reason for more and more frequent prevention campaigns aimed at reducing tobacco consumption, salt consumption, encouraging healthy nutrition and exercise, and the reduction of alcohol abuse launched in many Member States and the focus on the development of infrastructure for better and early diagnosis.

► **Increasing medical cost**

Another important driver of the increasing cost of health care is seen in the **use of health technology**. In the US, experts estimate that spending on new health technology—on drugs, medical devices, and procedures—makes up as much as two thirds of the (more than 6 percent) annual increase in health care costs.[5] **Despite being cost demanding, advanced devices and medicines have allowed patients to live longer and healthier, with a better quality of life**. For example, medical advances are responsible for 70% of the improvement in survival rates for heart attack patients and two-thirds of the reduction in mortality for those suffering from cancer.[6] This illustrates the dilemma health systems are facing, i.e. how to ensure the most effective and quality treatment for patients, at a reasonable cost? Approaches supporting evidence-based decision-making address this specific challenge, among them Health Technology Assessment prevails.

► **Health inequalities**

All the three challenges introduced above are the main drivers of the increasing cost of health care, and are thus threatening the current system's sustainability. Nevertheless, other factors shaping current health care models could be identified. Our society is built, among others, on principles of equity and solidarity. These principles stand behind the concept of "universal services". In health care, this is reflected by the commitment of all EU Member States to ensure equal access to and use of health care. However, health and access to health care in Europe are still strongly determined by socioeconomic status, which puts the most socially disadvantaged groups in an unequal position.[7] Another issue of current European health systems is therefore the **inequality in access to** and **use of health care services, resulting in disparities in the health status of the population**. Significant disparities in health status and access to care exist along not only social but also demographic dimensions, i.e. age, ethnic origin, geographic areas and socioeconomic status. Statistics show that people with lower income, migrant groups and socially disadvantaged people die younger and suffer more often from disability and diseases. As stated, the inequality in access to and use of health care services is crucial in this sense; however, other factors such as lifestyle, health education or environmental health factors determine the disparities as well. Being a commitment

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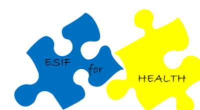
[4] EHFG 2011: DISEASES OF CIVILISATION BREAKING ECONOMIC GROWTH, Bad Hofgastein, October 5, 2011. Report from the EHFG meeting available at: http://www.ehfg.org/fileadmin/ehfg/Presse/2011/2_AmKongress/PMI-E-F2-Noncommunicable_diseases-FINAL.pdf

[5] US News: Cost of Medicine: Are High-Tech Medical Devices and Treatments Always Worth It? July 10, 2009. Article available at: http://health.usnews.com/health-news/best-hospitals/articles/2009/07/10/cost-of-medicine-are-high-tech-medical-devices-and-treatments-always-worth-it

[6] American hospital association: Increased Cost of Health Care Due to Advances in Medicine and Technology, Greater Demand for Care. The press release available at: http://www.aha.org/presscenter/pressrel/2011/110411-pr-costofcaring.shtml

[7] European Social Watch Report 2010: Access to Health Services in Europe. Available at: http://www.socialwatch.eu/wcm/access_to_health_services.html



for the EU Member States, reduction in health inequalities is often an addressed health priority in most of the Member States.

The above-mentioned challenges reflect the challenges identified in the European Health Strategy,[8] i.e. an ageing population, an increase in chronic diseases, a greater demand for health care and the high cost of technological progress. In reaction to these challenges, the health systems and public health models and concepts need to adapt and transform. To support such transformation, the Commission proposals for the programming period 2014-2020 provided for the support of the Cohesion and Structural Funds to the Member States' investments in health. Health is also included in most of the thematic objectives of the Common Strategic Framework.[9]

Various approaches, through which it is possible to tackle these challenges, exist. The following chapter provides an overview of various concepts and models supporting transformation to more efficient, cost-effective and sustainable health systems supported by the European Commission as investments contributing to achieving the objectives of Europe 2020 and supported by the Cohesion Policy in the 2014-2020 programming period.

[8] Commission White Paper 'Together for Health: A Strategic Approach for the EU 2008-2013' COM(2007) 630 final, 23.10.2007.

[9] Commission proposal for a regulation laying down common provisions and creating a common strategic framework, in particular Annex IV — COM(2011) 615 final/2, 2011/0276 (COD).

2. Models and concepts

Ensuring efficiency and making the provision of health services more cost-effective is crucial if countries are to ensure universal access to and equality in health services and their adequate and sustainable financing. As highlighted in the European Commission Annual Growth Survey 2012,[10] the recent crisis should be seen by Member States in this sense as an opportunity for structural reforms, in particular, for **reforms of health systems aiming at cost-efficiency and sustainability**. It is therefore essential to address the financial sustainability of health systems to ensure they are sustainable in terms of continuity of service, universal coverage and a high level of quality.

To address challenges identified in the European Health Strategy,[11] the following categories of investments in health are recommended by the European Commission to ensure sustainable health systems and to support achieving the objectives of Europe 2020:[12]

- **Investing in sustainable health systems** combining innovative reforms aimed at improving cost-efficiency and reconciling fiscal consolidation targets with the continued provision of sufficient levels of public services
- **Investments in people's health** as human capital, helping to improve the health of the population in general and reinforcing employability, and thus making active employment policies more effective, helping to secure adequate livelihoods and contributing to growth
- **Investing in reducing health inequalities** contributes to social cohesion and breaks the vicious spiral of poor health contributing to, and resulting from, poverty and exclusion

In line with these objectives, the core ESIF principles of social and territorial cohesion, and the 2013 SWD "Investing in health" as part of the Social Investment Package, **health investments under ESIF should concentrate on** the following goals:[13]

- The cost-effectiveness and sustainability of health systems mostly through their adaptation and reform
- The access to health services with particular attention to inequalities between geographical areas and between social groups

There are various concepts and models through which Member States could reach the aimed results. The following list represents an overview of the main concepts and investment actions supported by ESIF in 2014-2020[14] that are detailed further in the document. These were identified in the Policy Guide for Health Investments under European Structural and Investment Funds in 2014-2020 (hereinafter "DG SANCO Guide") developed by DG SANCO for desk officers from DGs REGIO and EMPL in the context of preparation and implementation of European Structural and Investment Funds 2014-2020 programming.

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[10] COM(2011) 815 final of 23 November 2011. Available at: http://ec.europa.eu/europe2020/pdf/ags2012_en.pdf

[11] Commission White Paper 'Together for Health: A Strategic Approach for the EU 2008-2013' COM(2007) 630 final, 23.10.2007.

[12] European Commission: Investing in Health - Commission Staff Working Document (SWD). Social Investment Package for growth and cohesion, February 2013. Available at: http://ec.europa.eu/health/strategy/docs/swd_investing_in_health.pdf

[13] DG SANCO: Policy Guide for Health Investments – European Structural and Investment Funds 2014-2020, November 2013. Available at: http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/thematic_guidance_fiche_health_investments.pdf

[14] Ibid.

Table 1: Compendium of main concepts and models for innovative, effective and sustainable health care supported by ESIF

Concepts and models introduced in the document	Page
Use of information technologies in health care: eHealth concepts ► *Networking and knowledge sharing between health professionals* ► *eRecords* ► *ePrescription* ► *telehealth* ► *mHealth*	p. 10
Strengthening of primary care	p. 19
Transition from institutional to community-based care	p. 22
Integration of health care	p. 26
Use of diagnosis-related groups (DRG) for establishing cost of health care services and remuneration	p. 29
Ensuring cost-effective use of medicine	p. 31
Systematic use of Health Technology Assessment for decision-making process	p. 33
Strengthening of health care capacities ► *Strengthening of health system capacities* ► *Adaptation and up-skilling of the health workforce*	p. 36
Active and healthy ageing	p.40
Health promotion and prevention	p.43
Patient empowerment	p.47
Cross-border care	p.49
Reduction in health inequalities	p.53

Source: DG SANCO Policy Guide for health investments under ESIF 2014-2020, mapping of health priorities for 2014-2020 programming period in Member States summarized in WP 1 Mapping report.

The concepts are not mutually exclusive, which means they could be combined to enhance possible effects on the health system. Below, these concepts and approaches are introduced in more detail.

For more details about concepts addressed at the level of individual Member States, please refer to WP 1 Mapping report on the use of European Structural and Investment Funds in health in the 2007-2013 and 2014-2020 programming periods.

2.1. Use of information technologies in health care: eHealth concepts

eHealth (also written as e-health or e-Health) means the use of information and communication technologies (ICT) for health and wellbeing. It represents the electronic storage and exchange of patient data and the provision of health care by electronic means. In a broader sense, it also includes the connectivity of health care providers and the development of eHealth applications including the necessary safety measures.

In general, the development of eHealth has four stages:

- **IT infrastructure development**, i.e. connection of care providers to broadband internet
- **Development of systems, modules and applications** for eHealth, including safety solutions to ensure data privacy
- **Implementation of eHealth into praxis** by engaging all stakeholders in it, using regulation measures and supporting training by medical staff and professionals to use it correctly
- **Enhancing of eHealth services and functionalities of the system**, i.e. continuous improving and enhancing of eHealth services, and related measures for ensuring high-quality e-services and data security

eHealth tools are playing an increasingly important role in the health system thanks to their significant potential to become both **cost- and time-effective means of health care provision**. The outcomes of these tools are beneficial for health care providers, as well as for patients. Integration of all relevant patient information and the medical processes has a positive impact on the improvement of cost, time and care efficiency, quality of provided care and patient safety. At the same time, the eHealth systems have the potential to provide a database to support clinical research, training of medical staff and raising public health awareness, improving data collection and using the information to underpin the improvement of the performance of health systems and effectiveness of health preventive actions.

To assure the benefits can be achieved, eHealth tools might deliver the following needs to be considered before implementation:

- For eHealth solutions, system interoperability is crucial for proper functioning. The interoperability with other systems needs to be ensured at national level as well as at European level.[15]
- eHealth solutions are highly demanding on data security. When dealing with sensitive personal data, security must be ensured at the maximum possible level.
- Fast and flexible eHealth tools may not have an automatically positive impact on the quality of care or outcome of care. As a matter of fact they may even make quality more difficult to be maintained, as e.g. in the case of distant care provision (telehealth). Development of new safeguards ensuring the quality of care is maintained is also essential before implementation of eHealth solutions.

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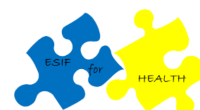
[15] Requirements on interoperability at the EU level are defined by the European Interoperability Framework (EIF) for European public services. Document available at: http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf
More about interoperability at the EU level could be found in the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Towards interoperability for European public services available at: http://ec.europa.eu/isa/documents/isa_iop_communication_en.pdf
Additional information could be found in the Commission recommendation on Cross-border interoperability of electronic health record systems, COM(2008) 3282 final of 2 July 2008. Available at:
http://ec.europa.eu/information_society/newsroom/cf/document.cfm?action=display&doc_id=513



eHealth has a broad content range which includes in particular the management and use of health information networks by various stakeholders. The level of interaction eHealth tools can assure can be divided into five groups:

- Between patient and health care provider
- Between health care professionals
- Between medical facilities (including pharmacies)
- Between patient and the administration (e.g. insurers or social security)
- Between patients

Below, the e-approaches and e-solutions used in modern health systems across the EU are described in greater detail. The following five categories will be addressed:

- Networking and knowledge sharing
- Electronic health records
- ePrescription
- Telecare
- mHealth

2.1.1. Networking and knowledge sharing

Electronic data and information sharing represents an important part of the eHealth structure rendering great benefits for all health stakeholders. The future goal of this concept is to create a global health network system which will allow effective and sustainable knowledge and information sharing.

Currently, the concept comprises various health portals and platforms including the following concepts:

- **Health information systems for citizens in order to increase health literacy, including information on:**
    - Available health services
    - Quality of services
    - Health care providers
    - Patient rights
    - Illness and medicines
    - Healthy lifestyle trends
- **Health knowledge management systems for professionals and students, including:**
    - Technical information on illnesses and medication
    - Best practice guidelines
    - E-learning portals
- **Virtual health care teams which consist of health care professionals who cooperate and share information on illnesses and patients through digital equipment**

European Reference Networks for rare diseases[16]

Networking and knowledge sharing practice can be illustrated by the example of the European Reference Networks (ERNs) for rare diseases. ERNs serve as research and knowledge centres, updating and contributing to the latest scientific findings, treating patients from other Member States and ensuring the availability of subsequent treatment facilities where necessary. They should also reflect the need for services and expertise to be distributed across the EU.

Particularly, the objectives of the ERNs at EU level encompass:

- *Better access of patients to highly specialized and high quality and safe care*
- *European cooperation on highly specialized health care*
- *Pooling knowledge*
- *Improving diagnosis and care in medical domains where expertise is rare*
- *Helping Member States with an insufficient number of patients to provide highly specialized care*
- *Maximizing the speed and scale of diffusion of innovations in medical science and health technologies*
- *Being focal points for medical training and research, information dissemination and evaluation*

2.1.2. Electronic health records

According to the definition of DG Media[17] 'an electronic health record (EHR) is a repository of electronically maintained information about individuals' lifetime health status and health care, stored so that it can serve the multiple legitimate users of the record. The key benefit is that all patient information can be found in one place or can be shared across different medical facilities.

The term electronic health record is often used interchangeably with the terms EPR (electronic patient record) and PHR (personal health record), although differences between them exist. According to definitions published by the Ministry of Health and Social Affairs in Sweden during the Swedish Presidency of the EU,[18] the terms have the following meanings:

- **Electronic medical record (EMR)** is a patient record system used only by a doctor or within one medical facility. It does not allow record sharing with other health care providers, and therefore is considered as provider-centric.

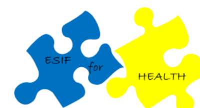
- **Personal health record (PHR)** is a patient record system which is designed to be set up, accessed, and managed by patients themselves. The personal records can include information from a variety of sources including care providers, home monitoring devices or even patients themselves. Use of this system is tightly connected with the patient empowerment concept.[19]

[16] For more details about the European Reference Networks for rare diseases see: http://ec.europa.eu/health/rare_diseases/european_reference_networks/erf/index_en.htm

[17] DG INFSO & Media: The conceptual framework of interoperable electronic health record and ePrescribing systems – Report, 2008. Available at: http://www.ehr-impact.eu/downloads/documents/EHRI_D1_2_Conceptual_framework_v1_0.pdf

[18] Gartner: eHealth for a Healthier Europe! Ministry of Health and Social Affairs' Report: S2009.011, Sweden. Available at: http://www.government.se/content/1/c6/12/98/15/5b63bacb.pdf

[19] Patient empowerment concept is described in chapter 3.3.



- **Electronic health record (EHR)** represents an electronic record of an individual that contains or virtually connects data and information which are shared across various health care settings (even within different countries) and patients. It includes EMR and in some cases PHR.

Electronic health records, compared to the traditional paper recording system, contain a much wider range of data, including:

- Patient demographics, family medical history, personal statistics (age, weight and others)
- Medical history, immunization status, vital signs
- Medication and allergies
- Vaccination records
- Laboratory and test results
- Billing information and other

Electronic health record systems provide faster and easier access to various types of medical records which improves health care in multiple ways, such as:

- Reduction of risks (prevention of negative drug interactions, drug allergies etc.)
- More convenient and cost-effective delivery of care (easier knowledge sharing, better informed cooperation between different institutions)
- Elimination of bureaucratic burden (saving time of all stakeholders)

The box below refers to an example of a highly-developed EHR system.

Regional integrated EHR in Kronoberg County, Sweden[20]

Kronoberg County in Southern Sweden implemented the Electronic health record system in 2003. Gradually, the electronic system replaced paper medical records. New EHR components either replaced or complemented the previously used system of electronic medical records. The county comprises 183 000 inhabitants of which about ***98% have their health records kept electronically****. The system is available to all the county´s health care facilities which include 2 hospitals, 31 health care centers, 3 mental health units, and 25 dental care centers.*

*Implementation of the system has already achieved impressive results; especially the socio-economic return is of major importance****. The main benefits of the new EHR system can be seen in two areas:***

- **Improved quality of provided services**
  - *Patient safety*
  - *Better continuity of care*
  - *Better informed medical decisions*
- **More effective health services**
  - *Time savings*
  - *Avoided unnecessary visits*

[20] Dobrev, A., Jones, T., Stroetmann, K., Vatter, Y., Peng, K.: The socio-economic impact of interoperable electronic health record (EHR) and ePrescribing systems in Europe and beyond – Final study report, October 2009. Available at: http://www.ehr-impact.eu/downloads/documents/EHRI_final_report_2009.pdf

2.1.3. ePrescription

Electronic drug prescription (ePrescription) represents an electronic system used for the transfer of a prescription from a health care provider to a pharmacy for retrieval of the medication by the patient via information and communication technologies. The system consists of two processes which are tightly connected to each other:

- ePrescribing, which is understood as prescribing using electronic software
- eDispensing, described as the act of electronic reception of the prescription by the pharmacy and dispensing it to the patient

The ePrescription system is usually being implemented together with the electronic health records. Together they enable electronic communication between doctors, pharmacies, health insurance companies and the health care recipients - the patients.

The main features of the ePrescription concept with a high impact on effectiveness, quality and sustainability of medical care are:

- **Patient safety**
    - Allows easier access to medication history for the provider who prescribes the medicine
    - Reduces the risk of the wrong dosage being dispensed, or misinterpretation of the prescription because of illegible hand writing
    - Reduces the risk of negative drug interactions
- **Efficient prescription**
    - Reduces the number of duplicate prescriptions
    - Time efficiency
    - Reduction of illegibility of prescriptions
    - Easier substitution for generics
- **Management efficiency**
    - Overview and easier monitoring
    - Timely control of accounts and limits
    - Simplification of billing

The box below refers to an example of a well-developed ePrescription concept.

ePrescribing module, Receta XXI, in Andalucía, Spain[21]

The Andalusian ePrescribing system Receta XXI is a part of the region's EHR and general health information system. Andalucía has a population of over 8 million inhabitants, representing about 18% of the whole Spanish population. The health care settings in the region include 1 500 primary health care centers, 28 hospitals and around 3 500 private pharmacies.

The system facilitates functionalities such as prescribing, dispensing and controlling drugs and it also interacts with the patient's medical history recorded in the EHRs. Another advantage of the system is that general practitioners can prescribe for periods of up to one year. In case of error detection, pharmacists can cancel prescriptions and send them back to the relevant practitioner for revision. In March 2013, 94% of all prescriptions used Receta XXI.

Two major benefits of the Receta XXI system are:

- **Efficiency of the system**
  - *Reduction of more than 15% in general practitioner visits for patients who have their first prescription*
  - *Savings in time and travel cost for patients and time savings for health care professionals and provider organizations*
  - *Sustained cumulative cash savings from generic prescribing*

- **Better quality of services**
  - *Improvement in the quality of prescribing procedures*
  - *Reduction in the risk of prescription errors*
  - *Increasing professional skills of pharmacists using Receta XXI's information*

2.1.4. Telehealth

Telehealth is a broad term which represents the provision of various health care services through the use of information and communication technologies in a situation where the stakeholders are not in the same location. It is often used interchangeably with the terms telemedicine and telecare which are in fact subgroups of telehealth.

Telemedicine refers to the electronic provision of health care services at a distance, where interaction between the health care provider and the patient is needed. Various forms of telemedicine include:

- Video consultations with specialists
- Remote medical evaluations and diagnoses
- Digital transmission of medical images
- Medical education

Telecare relates to providing remote health care to patients through modern technologies which allow them to remain at home. Telecare services are mostly based on patient monitoring using telephones, computers, videophones, alarms and other portable or wearable systems. Examples of telecare include:

- Remote physiological or movement monitoring of a patient
- Environment monitoring (floods, fire)

[21] DG INFSO & Media: The socio-economic impact of Receta XXI, the regional ePrescribing system of Andalucía's public health service, Spain – Report, 2009. Available at: http://www.ehr-impact.eu/cases/documents/EHRI_case_Receta_XXI_final.pdf

- Pill dispensers and reminders

Telehealth might be highly beneficial for patients, health systems and society, especially in the following ways:

- Improves access to health care, particularly for elderly or disabled people
- Reduces hospitalization and general practitioner or specialist visits
- Reduces the negative impact of a lack of health personnel and hospital capacities
- Decreases costs – telehealth directly reduces travel time which saves costs and time for both patients and health care providers, and it also reduces costs on other processes
- Enables fewer and shorter stays in hospitals
- Improves the quality of health care services thanks to fast and flexible solutions (linked with wider consultancy and easy access opportunities)

The box below refers to an example of a well-developed telehealth system.

Telehealth services in the United Kingdom[22]

The telehealth service model used in the United Kingdom is an example of an integrated health system supported by the National Health Service. The services are delivered by a variety of health service providers working collaboratively in the community. The telehealth model is mostly used for patients with heart failure, diabetes and chronic obstructive pulmonary disease. The patients record their weight, blood pressure, blood sugar and pulse on a daily basis and in some cases they answer questions regarding their wellbeing, including any signs or symptoms that they are experiencing. The system automatically evaluates the patient data and sends them to a responsible nurse together with any warning on potential health issues. In case of any detected abnormality, the nurse may contact the patient directly via telephone or may set up a doctor´s visit.

Two major benefits of the United Kingdom´s telehealth system are:

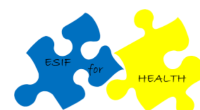
- **Improved quality of provided services**
  - *Increased patient safety*
- **More effective health services**
  - *Reduced costs for health care providers – the model saves around GBP 1 000 per patient per year in avoided hospital admissions*

2.1.5. mHealth[23]

Mobile health (mHealth) covers medical and public health practice supported by mobile devices. It also includes applications such as lifestyle and wellbeing ones that may connect to medical devices or sensors as well as personal guidance systems, health information and medication reminders provided by SMS and telemedicine provided wirelessly. To make clear the difference between mHealth and the previous Telehealth, mHealth is related primarily to the personal devices whereas Telecare is a matter of the hospitals' equipment.

[22] Stroetmann, K. A., Artmann, J., Stroetmann, V. N.: European countries on their journey towards national eHealth infrastructures – Final European progress report. eHealth Strategies, 2011. Available at: http://www.ehealth-strategies.eu/report/ehealth_strategies_final_report_web.pdf

[23] Digital Agenda for Europe: Green Paper on mobile health ("mHealth"). COM(2014) 219 final. Available at: http://ec.europa.eu/digital-agenda/en/news/green-paper-mobile-health-mhealth



mHealth is an emerging and rapidly developing field which has the potential to play an auxiliary part in the transformation of health care, and to a certain extent, increase its quality and efficiency.

Medical and public health practice is **supported by mobile devices** such as:

- Mobile phones
- Patient monitoring devices
- Personal digital assistants (PDA)
- Other wireless devices

Prominent examples of applications are communication, information and motivation tools, such as medication reminders or tools offering fitness and dietary recommendations. **mHealth supports the delivery of high-quality health care, and enables more accurate diagnosis and treatment through its properties:**

- Allows collection of medical, physiological, lifestyle, daily activity and environmental data
- Has the potential to serve as a basis for evidence-driven care practice
- Saves time of health care professionals spent on accessing and analysing information
- Contributes to the empowerment of patients as they can manage their health more actively

mHealth solutions cover various technological solutions, that among others **measure vital signs** such as:

- Heart rate
- Blood glucose level
- Blood pressure
- Body temperature
- Brain activities

The expanding spread of smartphones as well as 3G and 4G networks has boosted the use of mobile applications offering health care services. The availability of satellite navigation technologies in mobile devices provides the possibility to improve the safety and autonomy of patients.

The box below refers to an example of a well-developed mHealth solution.

Adoption of the GlucoTab mobile system under the REACTION project, Austria[24]

Nurses and doctors at the Medical University Graz, Austria, fully adopted the GlucoTab system. It is a mobile system, developed by the EU-funded REACTION project, ***allowing better medical information flow in hospitals****. Via sensors, the system monitors parameters such as blood glucose levels, nutritional intake, administered drugs and insulin sensitivity and gives therapy advice.* ***The data is stored on a server and is shared via tablets used by the medical staff.***

The system has reduced the workload, increased the autonomy of nurses and improved the quality of care. *GlucoTab has recently obtained CE marking, making its use possible in all hospitals.*

REACTION also supports self-management and life-style changes for diabetic patients. Chorleywood Health Centre in the UK is using the platform to exchange information with patients who monitor glucose levels in their blood, their weight and other parameters at home. Doctors and nurses can then give advice on diet, activity and medication.

[24] European Commission: MEMO/14/266 of 10 April 2014. Available at: http://europa.eu/rapid/press-release_MEMO-14-266_en.htm

2.2. Strengthening of primary care

The concept addressing the strengthening of primary care deals with the cost-effective provision of care building on the idea of a cost-effective path of care. The **cost-effective path of care** should always **lead from primary care** (advanced practice nurses,[25] general practitioners or family doctors providing a routine of promotion of health, early diagnosis of disease or disability, and prevention of disease) to **secondary care** (specialists, hospital and emergency care providing a routine of diagnosis and treatment which is performed in a hospital having specialized equipment and laboratory facilities) and then, where appropriate, **to tertiary care** (highly specialized consultative health care covering a routine of diagnosis and treatment of disease and disability by specialized intensive care units, advanced diagnostic support services and highly specialized personnel). It is generally accepted that **primary care is more cost-effective compared to secondary and tertiary care**, which is highly labour and capital intensive, and therefore much more expensive.

Although the total number of acute care beds in the EU per 100 000 inhabitants decreased during the last decade (from 491 in 1998 to 383 in 2008),[26] many countries still use hospital care and in particular hospital inpatient care as the main care setting for many health interventions, which is highly cost-inefficient. Currently, most European countries have more specialists than general practitioners, which leads to increased costs for care and makes the path of care ineffective. This is, among other reasons, caused by the growing remuneration gap between these two groups.

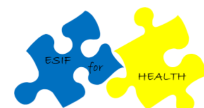
Strengthening primary health care can help improve the equality in access, effectiveness and responsiveness of health systems. Furthermore, it is generally recognized that the increased availability of primary health care is associated with higher patient satisfaction whilst an orientation towards a specialist based system enforces inequality in access. The main advantage of reinforcing the general practitioners, family doctors and advanced practice nurses is their role as coordinators. This means that they set up an appropriate path of care together for the patient which contributes to a more efficient health system.

A cost-effective path of care is beneficial due to the following reasons:

- Increases the accessibility to primary health care and reduces the inequalities in access to (primary) care
- Reduces the unnecessary use of specialist care
- Reduces inpatient hospital care
- Takes care of patients´ disease prevention
- Ensures patient follow-up care after secondary care
- Links patients to social care

[25] According to the International Council of Nursing, an advanced practice nurse is a nurse who has gained an expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which he or she is credentialed to practice.

[26] DG ECFIN, Economic Policy Committee (AWG): Joint Report on Health Systems. European Economy – Occasional Papers No. 74, 2010. Available at: http://europa.eu/epc/pdf/joint_healthcare_report_en.pdf.



To reinforce the use of primary care, it is vital to make it **more attractive to both patients and practitioners**. The process of strengthening needs a strong and specific endorsement by the administration and the medical profession and careful and medium- to long-term implementation. Additionally, there is a need for training and retraining to adjust the volumes of different medical professions. Patients may be encouraged to register with a general practitioner, family doctor or advanced practice nurse through financial incentives, for example by increasing the amount a patient is reimbursed for a secondary specialist or hospital care if this has come as a result of a general practitioner´s referral. On the other hand, in order to attract better informed patients and meet their growing expectations, the general practitioners and nurses have to be well trained.

Two examples of possible approaches to the strengthening of primary care are described below.

Advanced practice nursing in Sweden[27]

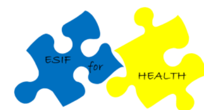
Since 2005, advanced practice nurses have become a part of the primary health care team in Sweden, and they are considered a valuable addition to the Swedish health system. In order to ensure the professional treatment of patients and competences, the advanced practice nurses are required to have nursing at graduate level.

The positive effects of implementing the advanced practice nursing mode in Sweden include:

- **Improved quality of provided services**
  - *Increased access to health care*
  - *Better continuity in patient health care*
  - *Personalized approach to patients*
- **More effective health services**
  - *Cost-effective impact – the system allows general practitioners to concentrate their time on more complicated cases*

[27] Lindblad, E., Hallman, E.-B., Gillsjö, C., Fagerström, L.: Experiences of the new role of advanced practice nurses in Swedish primary health care – A qualitative study. International Journal of Nursing Practice, Vol. 16, No. 1, pp. 69-74, February 2010.

[28] Case study collected within this project. For more details see case study 17 in the Appendix to the Guide.



***Promoting a new functional model for primary health care – Health Vouchers, Greece*[28]**

The portion of the population of Greece that has been uninsured for a long period of time has increased dramatically over the last few years. This reform centres on the provision of a ***voucher for the long-term uninsured population of the country, which will allow the members of this vulnerable social group to have primary health care medical examinations. Thus, the uninsured will be helped to maintain a good state of health in order to be competitive in the labour market.***

However, there is a divergence from the target value of 278 935 beneficiaries, with ***only 13.5% of this target having been achieved*** *six months before the completion of the project. There is also a divergence between the health vouchers that have been issued and those that have been approved for use, with the latter amounting only to 13% of the former.*

The implementation of this specific reform showed the potential administrative problems that have to be faced in such large scale interventions. A potential renewed effort to provide a Health Voucher to the uninsured or other such health benefits to vulnerable groups of the population could take advantage of this experience and base its targets on more data. ***It also showcased the importance to communicate properly about an intervention and the fact that the scale of its scope and the importance of the potential gain from it do not necessarily guarantee its success.***

2.3. Transition from institutional to community-based care

The concept of transition from institutional to community-based care addresses mainly the **change of a long-term care provision**. Across the European Union, seniors dependent on long-term care and people with disabilities and with mental health problems are often being placed in facilities providing institutional care. Institutions were once seen as the best way of caring for these vulnerable groups. However, evidence has shown that institutional care invariably provides poorer outcomes in terms of quality of life than quality services in the community, often amounting to a lifetime of social exclusion and segregation of patients,[29] and it is also linked with higher costs than ambulatory care and care provided to patients at home.

It is not only cost considerations that support this concept. Where social inclusion is one of the fundamental principles, institutional care associated with social exclusion is no longer supported by the EU Member States. Especially due to the growing number of elderly and the increasing life expectancy, care for dependent seniors cannot be provided on an institutional basis anymore. Similarly, people with disabilities and suffering from mental illnesses need to be seen as part of the society and should be granted the right of access to care while living with their families and in a natural environment. Today's society and European governments therefore often support provision of conditions for a transition from institutional to community-based alternatives which allow the patients or elderly to live actively in normal living conditions and to be part of society while improving their quality of life. This is necessary not only for inclusive growth, but also for sustainable and cost-effective health systems.

Community-based services supported in the Member States include:[30]

- Personal assistance
- Respite care
- Family-based care
- Hospital at home
- Independent living

Besides **financial and legal arrangements**, the transition from institutional to community-based care requires the following changes to health systems which could be funded from ESIF:

- **Improvement in the capacity of the workforce**. Establishing new community services demands an increase in personnel capacities (caregivers and advanced practice nurses). Emphasis should be placed on increasing the attractiveness of the occupation, ensuring adequate education as well as motivating the personnel with adequate remuneration and benefits.
- **Development of assistive aid and modern ICT**. The governments need to take actions which will enable older people to go on living independently and help carers in providing quality care. This includes various

[29] European Expert Group on the Transition from Institutional to Community-based Care (EEG): Common European Guidelines on the Transition from Institutional to Community-based Care. November 2012. [2014 update] Available at: http://deinstitutionalisationguide.eu/wp-content/uploads/2012-12-07-Guidelines-11-123-2012-FINAL-WEB-VERSION.pdf

[30] For more detailed information on structuring, see: European Expert Group on the Transition from Institutional to Community-based Care (EEG): Common European Guidelines on the Transition from Institutional to Community-based Care. November 2012. [2014 update] Available at: http://deinstitutionalisationguide.eu/wp-content/uploads/2012-12-07-Guidelines-11-123-2012-FINAL-WEB-VERSION.pdf

technological devices (eHealth services and other technological devices needed for qualitative long-term care).

- **Development of infrastructures** for the provision of community-based services. The development should include investments enabling people to leave residential care and live in the community with appropriate support (including investments in accessible housing for people with disabilities in the community and supported housing options integrated into the community).
- **Awareness raising actions**. Creating awareness about the available services among patients and families as well as developing activities focused on overcoming prejudice towards the patients in the community play an important role. Involvement of NGOs can be envisaged in this step.
- **Establishing and monitoring quality standards**. In order to create a sustainable and quality based model of care, it is crucial to ensure the appropriate education and training of carers as well as securing a functioning inspection system.

There are various possibilities for how to support transition to community-based care. Among others, the DG SANCO Guide recognized the following investments as possibly contributing to the transition:[31]

- Promotion of innovative integration of care, based on **improved communication and coordination, across the levels of health care** (primary, specialist, hospital) **and across health, social and community** / home-care systems
- **Promotion of community-based mental**, rehabilitation **and long-term care**
- Strengthening of ambulatory services and primary care, while increasing care coordination, to reduce unnecessary visits to specialists / hospitals, via prevention and monitoring including telemedicine and telecare solutions
- **Increase in coverage of family doctors / general practitioners in all areas** and strengthen the multidisciplinary professional cooperation
- Reduction in duplication of hospital services, where there is already a good territorial coverage of hospitals, via specialization and concentration of hospitals, and therefore allowing a reduction in capacities, and via joint management and operation of hospitals
- Creation of a more patient-oriented care by improving access to information, fostering health literacy, and providing personalized care solutions for chronic and long-term care needs

Common European Guidelines on the Transition from Institutional to Community-based Care sets ten general principles on how to achieve community living:[32]

- Ensure that champions for community living are involved in leading change
- Make the needs and preferences of people central to planning

[31] DG SANCO: Policy Guide for Health Investments – European Structural and Investment Funds 2014-2020, November 2013. Available at: http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/thematic_guidance_fiche_health_investments.pdf

[32] European Expert Group on the Transition from Institutional to Community-based Care (EEG): Common European Guidelines on the Transition from Institutional to Community-based Care. November 2012. [2014 update] Available at: http://deinstitutionalisationguide.eu/wp-content/uploads/2012-12-07-Guidelines-11-123-2012-FINAL-WEB-VERSION.pdf

- Respect the experiences and roles of families
- Create a real home and personalised support for each individual
- Focus on achieving quality services and ensuring people can lead their own lives safely
- Recruit and develop skilled personnel
- Engage a broad partnership in delivering change
- Establish a clear plan and timescale for creating the community services necessary to make each institution redundant
- Invest in communicating all this effectively to everyone affected, including in the communities to which people are moving
- Support each person in their transition to community living

Two examples of possible investments aimed at improving conditions of patients are described below.

Home and community-based system in Denmark[33]

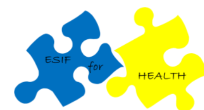
Denmark implemented its community and home-based care system in the early 1980s. During the past three decades, the Danish government has developed extensive services for elderly and disabled people.

Integrated systems outside institutional settings for community and home-based services have been implemented in 275 municipalities. Local municipalities have a statutory duty to provide home nursing, adapted and supported housing, nursing homes, 24-hour care for people in their own homes, preventive home visits for the elderly over the age of 75 and other preventive, rehabilitation and independence promoting activities.

Evaluations of the integrated services show the benefits of the system especially in these areas:

- **Improved quality of services**
  - *Greater continuity of care*
  - *Increased choice and autonomy for elderly*
  - *Good level of access to and quality of long-term care services*
- **Efficiency gains**
  - *Decrease in expenditures on long-term care (concerning the population over the age of 80)*

[33] Glendinning, C., Moran, N.: Reforming long-term care: Recent lessons from other countries. Research works 2009-06, University of York, York: 2009. Available at: http://www.york.ac.uk/inst/spru/research/pdf/LTCare.pdf.



***Mental health care reform in Greece*[34]**

The reform aimed at addressing / improving the unacceptable conditions of patients in mental health facilities, and at ensuring the quality of life of these residents. It targeted the following topics:

- *Psychosocial rehabilitation*
- *Prevention of new patients from becoming chronic*
- *Rehabilitation of persons with mental health problems living in the community*
- *Ensuring the continuity of care*
- *Further transformation of remaining psychiatric hospitals*
- *Achievement of full coverage of care needs in community structures*

More than 3500 people were de-institutionalised and returned to the community, to their homes and families and out of the asylums. *However, the Greek case shows that strong political commitment and support by the community are necessary for success.*

[34] Case study collected within this project. For more details see case study 21 in the Appendix to the Guide.

2.4. Integration of health care

In the context of growing health care costs, the ongoing patterns of the functioning of health systems' structures may, to some extent, undermine the long-term sustainability of public finances. The integrated care concept can be perceived as an important, innovative and promising safeguard assuring sustainability of the health system by **smart investing in health through reshaping and reinventing health care provision and delivery structures** which, to a large extent, determine the effectiveness of a health system and the value of health care services delivered.

Despite numerous and fundamental changes that different segments of the health care sector underwent during the previous century, health care delivery is often still frozen in two business models – the general hospital, and the physician's practice. Since the ideas of integration are not health sector specific, the health sector may be one of the few not fully taking advantage of the integration approach because of medical technology delivered with organizational structures that may prevent the health system from adequately reflecting the rapid changes happening in the medical sector. In general, the idea of value and supply chains is a synonym for integration. Each link in the chain should add some value to the one before. Creating, rescheduling and optimizing the chain are crucial in terms of increasing the effectiveness of the whole system and organization.

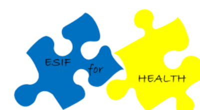
The main operational feature of the reshaping is a perspective that tries **to break through the so far dominant paradigm of fragmented and separated service delivery systems** at various levels:

- **Vertical**
    - Preventive
    - Primary
    - Secondary
    - Tertiary
- **Horizontal**
    - Health
    - Social
- **Areas of health systems' functions**
    - Governance
    - Financing
    - Funding
    - Pooling
    - Delivery
    - Organizational
    - Clinical

The integrated health care concept should cover primarily those projects that:

- **Try to integrate health systems vertically, horizontally or functionally**
- **Address the health needs of a population or community rather than being disease-specific**

It might be described as the **initiatives seeking to improve outcomes of care by overcoming issues of fragmentation through linkage or coordination of services of providers along the continuum of care**. These



approaches use different instruments operating at different levels and addressing different system functions, just as follows:[35]

- **Governance**

  The manner in which government regulatory and administrative functions are structured and devolved can help eliminate programme complexities, streamline eligibility and access, and better manage system resources.

- **Funding and pooling**

  Division, structure and flow of funds for health and social care and related services can affect virtually all aspects of integrated care.

- **Service delivery and payment mechanisms**

  The mode of service delivery and payment mechanism has a major impact on a number of critical variables in integrated care. Such variables include service access, availability and flexibility, continuity and coordination of care, consumer satisfaction, and quality and cost outcomes.

- **Organizational**

  Networking, both vertically and horizontally and through formal or informal means, is a major method to improve how organizations work together. Joint working relationships within and between agencies in the health and social care sectors can optimise resources, facilitate overall efficiency, and enhance the capacity for smooth and uninterrupted provision of necessary care.

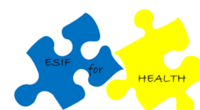
- **Clinical**

  Shared understanding of patient needs, common professional language and criteria, the use of specific, agreed-upon practices and standards throughout the lifecycle of a particular disease or condition, and the maintenance of ongoing patient-provider communication and feedback are essential quality ingredients in integrated care.

Due to the variety of initiatives and the various instruments employed to incentivize coordination among the different blocks and functions of health systems, it is hardly possible to assess the integrated care model as a model itself. More possible is the **assessment of instruments integrating care within targeted programmes** which should **improve the quality of care**. Through close integration of the vital health care functions, it may be possible to create value or supply chains by achieving strengths and synergies related to:

- Sharing experience and expertise to identify and implement successful practices
- Sharing a vast clinical knowledge base that continuously supports quality improvement
- Coordinating care across disciplines to provide continuity of care and reduce duplication and waste and make optimal use of workforces
- Practicing team-based care (physicians, nurses, care managers, technicians, and others)
- Monitoring and reporting on the performance of service delivery, quality of care and equal access

[35] Kodner, D. L., Spreeuwenber, C.: Integrated care: meaning, logic, applications, and implications – a discussion paper. International Journal of Integrated Care – Vol. 2., 14 November 2002. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1480401/pdf/ijic2002-200212.pdf



- Investing in sophisticated quality improvement tools and strategies that are not available to a solo practice or to small groups of physicians
- Empowering patients and citizens and promoting self-care and informal care

An example of a possible approach to integration of health services is introduced in the box below.

***Reform towards an integrated model of care in Finland*[36]**

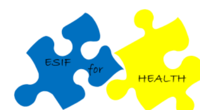
With the help of ERDF funding, an innovative and far reaching health reform model has been developed in Finland, with the following objectives: ***save at least 10% in current operating costs of the acute hospital service and double the numbers at present of the delivery of a care for elderly service with no increase in operating (staff) costs.***

A new approach to capital (infrastructure) investment holds the key to effective change. The first principle of reform was a move towards an integrated model of care, moving on from separate sectoral resources to a shared resource structure. ***The model adopted was vertical integration focused on redesigning elderly care services and reshaping acute hospital services – within existing budgets – to achieve a targeted improvement in operational efficiency.***

The key components of reform are to:

- *Integrate special/acute and primary care and some social services*
- *Reorganize service structures within hospitals to improve effectiveness and efficiency*
- *Rebuild aged care residential accommodation to provide better support and promote healthy ageing*
- *Improve rehabilitation services*
- *Invest in illness prevention wherever possible*

[36] Case study collected within this project. For more details, see case study 22 in the Appendix to the Guide.



2.5. Use of diagnosis-related groups (DRG) for establishing the cost of health care services and remuneration

The diagnosis-related group (DRG) is a **patient classification system** adopted on the basis of diagnosis consisting of distinct groupings.[37] In practice, the model assumes that the treatment of patients with the same diagnosis, despite the differences between them, will require a similar or identical diagnostic and therapeutic algorithm.

There is no universal approach and as far as DRG is concerned, there is probably no "one size fits all" situation.[38] When examining the question of the appropriate DRG case mix classification system to use, each country needs to reflect its specifics, e.g. size and diversity of health information software market, system of health insurance applied in the country etc., and purpose of DRG introduction and the expectations associated with their implementation. Some countries use DRGs mostly as a measure for assessing the hospital case mix (for example Sweden and Finland), whereas in other countries DRGs are used as a synonym for payment rates (such as in France and Germany).[39]

Although differing, European health systems increasingly use the DRG system due to its various advantages. Specific benefits of implementing the model are visible in the following aspects:

- **Financing hospital care**
  - Using DRG funding as a fixed payment per case in a specific DRG
  - Budget set up based on the measurement of production by DRG
- **Management of hospitals**
  - Access to provided care through clinically and economically comparable units
  - Tool for measuring the outputs
  - Tool for measuring the quality of the provided health care
- **Communication within and outside the hospital**
  - DRG is a language that allows professionals with a different focus to better communicate (e.g. communication between economists and doctors) in the complex environment of health care.
- **Comparison of different health care providers based not only on their costs, but also on their performance activity and the quality of services provided**

[37] US Legal: DRG Law & Legal definition. Available at: http://definitions.uslegal.com/d/diagnosis-related-group-drg/

[38] World Health Organization: European Observatory on Health Systems and Policies Series: Diagnosis-Related Groups in Europe - Moving towards transparency, efficiency and quality in hospitals, 2011.

[39] Ibid.

The box below refers to one specific example of the implementation of a DRG model in Slovenia:

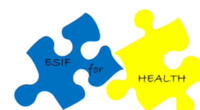
DRG implementation in Slovenia[40]

The DRG model was first presented to Slovenian inpatient hospital services in 2000 and was gradually implemented until its full introduction in January 2004. Before this, the hospitals used the financing system based on the number of prospectively contracted bed days.

The positive effects of introducing the DRG payment system in Slovenia are numerous:

- ***Improved quality of provided services***
  - *Increase in the number of acute patients treated*
  - *Better access to health care services (31% decrease in number of patients waiting for admission to hospital from 2003 to 2008)*
- ***More effective health services***
  - *Reduction in the average length of stay in hospitals (in the period 2003-2008, the average length of stay declined by 1.22 days or 18.5%)*
  - *Cost-effectiveness (a saving of EUR 18.9 mil from the decreased length of stay)*
  - *Time savings for health care professionals and provider organizations*
  - *Useful basis for transferring resources among hospitals*
  - *Tool for benchmarking between departments within hospitals and between hospitals*

[40] Marusic, D., Prevolnik-Rupel, V., Ceglar, J.: DGR implementation in Slovenia – Lessons learned. Institute for Economic Research, Working Paper No. 74, 2013. Available at: http://www.ier.si/files/Working%20paper-74.pdf



2.6. Ensuring cost-effective use of medicines

Ineffective use of medicines is a major problem worldwide. WHO estimates that more than half of all medicines are prescribed, dispensed or sold inappropriately; and that half of all patients fail to take them correctly.[41] Irrational use of medicines includes the prescription of overpriced medicines, polypharmacy[42] and inappropriate self-medication. This is having a negative impact on state budgets, patient budgets, the environment, and most importantly on patient health.

In order to ensure a sustainable and cost-effective pharmaceutical model, the governments should take the following actions:

- **Use less expensive equivalent (generic) drugs**. Emphasis should be put on increasing the prescription and consumption of generic drugs (for example through setting price limits, or lowering cost-sharing rates).
- **Set prescription guidelines**. Prescription guidelines should be set to prevent misuse and unnecessary use of medicines (for example antibiotics).
- **Raise awareness about medicines**. Governments should ensure better informed patients, health care staff and insurers regarding the use and misuse of medicines. Better patient literacy in terms of health information will allow them to better manage their medication (for example, the treatment of long-term diseases and other symptoms where patients can easily treat themselves).
- **Prevention orientation**. Prioritizing prevention rather than the cure can reduce the use of medicines in the long term.
- **Ensure transfer of information** between the health care units participating in the care of the patient. This will help to lower the number of unnecessarily prescribed medicines and drug interactions (through ePrescription and the creation of medication plans).
- **Implement non-medicinal forms of therapy**, such as creating healthy habits for the patients and lifestyle changes where suitable.

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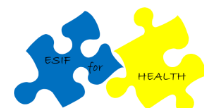
[41] World Health Organization: The Pursuit of Responsible Use of Medicines: Sharing and Learning from Country Experiences – Report, March 2012. Available at:
http://apps.who.int/iris/bitstream/10665/75828/1/WHO_EMP_MAR_2012.3_eng.pdf

[42] Polypharmacy refers to the use of an excessive number of medications by a patient, of which some are unnecessary.



An example of a long-term strategy in the field of medicines is introduced in the box below.

Strategy "MEDICINES POLICY 2020" of Finland[43]

In 2011, the Ministry of social affairs and health developed a strategy on the efficient, safe, rational and cost-effective use of medicines. It summarizes the joint objectives to be reached by 2020. The chief objective of pharmaceutical services is to enable an ***efficient, safe, rational*** *and* ***cost-effective pharmacotherapy for all citizens*** *who need it.*

The main goals of the strategy include:

- *Delivery of all prescriptions electronically*
- *Implementation of a medicine reimbursement system that will support cost-effective treatments in order to lower expenditures (through the development of competitive tendering methods)*
- *Empowerment of the clients' own role and responsibility in health care and medical treatment*
- *Promotions of patient health and medication literacy*
- *Assessment of the therapeutic and economic value of medicinal products.*

[43] Ministry of social affairs and health of Finnland: Long-term Care - Recent Lessons from Other Countries, Helsinki, 2011.

2.7. Systematic use of Health Technology Assessment for decision-making process

Health Technology Assessment (HTA) is an investment appraisal technique to support informed policy and decision-making. New medical technologies have the potential to change the ways of delivering or organizing the provision of health care, and thus improve cost-effectiveness of health care provision and quality of services. However, technological developments can be demanding on the cost of purchase and operation, and miss achieving cost-effectiveness in care provision when used inappropriately. A formalized and evidence-based decision-making process shall substantiate any introduction of innovative technological solutions, assessing the potential to improve the efficiency and productivity of the system. For these purposes, HTA is promoted and used by the European Commission, the WHO and many national authorities.

HTA is defined as a multidisciplinary field of policy analysis. HTA studies the medical, social, ethical and economic implications of the development, diffusion and use of health technology.[44] The overall aim of HTA is to systematically and objectively assess evidence to inform decision makers in their formulation of national / regional / local health policies to provide patients with equitable and timely access to safe, effective, high quality health technologies that achieve best value.[45]

In order to maximize the relevance of HTA for decision making, it needs to be undertaken within the policy context of the country rather than at European level. Policy context takes into account national priorities and systems, as well as cultural and social differences. Despite the differences in structure and priorities of health systems across Europe, **reducing the unnecessary duplication of HTA activities, developing and promoting good practices in HTA, and facilitating local adaptation of HTA information have been considered essential for the efficient use of HTA resources.**[46]

Cooperation between national and regional HTA bodies is supported by the Joint Action EUnetHTA. It performs the function of the scientific and technical support of the HTA Network which is a voluntary network, gathering all Member States together. The Network also associates (as observers) stakeholders representing industry, payers, providers and patients. EUnetHTA has developed a core model for HTA to serve as a generic framework to enable international collaboration for producing and sharing the results of HTAs.

[44] The term health technology covers a wide range of interventions used in health care and health promotion including methods for prevention, diagnosis, treatment and rehabilitation (such as vaccines, pharmaceuticals, medical devices, medical and surgical procedures), and the systems within which health is protected and maintained.

[45] EUnetHTA Strategy 2012 and beyond. JA-WP8 EUnetHTA Joint Action (2010-12). Available at: http://www.eunethta.eu/sites/5026.fedimbo.belgium.be/files/EUnetHTA%20Strategy%202012%20and%20beyond.pdf

[46] HTA Core Model Handbook Version 1.5. JA2-WP8 EUneHTA, Apr 8 2014. Available at: http://meka.thl.fi/htacore/ViewHandbook.aspx

***HTA** has been developed to **evaluate the impacts of health technology**. In the assessment, HTA may involve the investigation of one or more of the following impacts, or other effects of health technologies or applications, forming the EUnetHTA Core Model Domains:*[47]

Health problems and current use of technology

- *Description and technical characteristics of technology*
- *Clinical effectiveness*
- *Safety*
- *Costs and economic evaluation*
- *Ethical analysis*
- *Organizational aspects*
- *Social aspects*
- *Legal analysis*

*As indicated at the beginning of this document, the cost and economic evaluation domain of **HTA usually contains most of the individual investment appraisal techniques listed formerly.***

The basic steps involved in most of the HTAs can be depicted by the EUnetHTA Core Model Phases:[48]

- **Project definition**
  - Project scoping
  - Technology and its intended use
  - Target condition
  - Target population
  - Technology comparison
- **Protocol Design**
  - Selecting relevant issues and translating them into research questions
  - Relations between issues and possible overlaps
  - Domain framing
  - Viewing and locking protocol
- **Research**
- **Results**
- **Review and publishing**

Due to its complexity, HTA is able to cover a wide range of medical, social, economic, and ethical issues, such as:

[47] HTA Core Model Handbook Version 1.5. JA2-WP8 EUneHTA, Apr 8 2014. Available at: http://meka.thl.fi/htacore/ViewHandbook.aspx

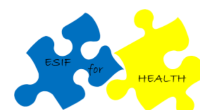
[48] Ibid.

- Drugs: e.g. aspirin, beta-blockers, antibiotics
- Biologics: vaccines, blood products, cellular and gene therapies
- Devices, equipment and supplies: e.g. cardiac pacemakers, CT scanners, surgical gloves, diagnostic test kits
- Medical and surgical procedures: e.g. psychotherapy, nutrition counselling, coronary angiography, gall bladder removal
- Support systems: e.g. electronic patient record systems, telemedicine systems, drug formularies, blood banks, clinical laboratories
- Organizational and managerial systems: e.g. prospective payment using diagnosis-related groups, alternative health care delivery configurations, clinical pathways, total quality management programs

- *In the UK, the National Institute for Health and Clinical Excellence issues recommendations based on HTA. An example is the comparison of different medicinal products used as the primary way of preventing osteoporosis. The outcome is guidance for practitioners on what products would be the preferred choice in different settings based on a cost-effectiveness analysis. It helps to avoid unnecessary, costly treatments.*
- *In Austria and Norway, HTA was used to assess the introduction of the HPV vaccine in national vaccination programs.*
- *In Poland, the Agency for HTA was established in 2005 as an advisory body to the Ministry of Health. It prepares recommendations for the financing of all health care services from public funds.*[49]

*For further information on HTA, see **WP3 (6) Reference document on the appraisal of investments**.*

[49] European Commission: Investing in Health - Commission Staff Working Document (SWD). Social Investment Package for growth and cohesion, February 2013. Available at: http://ec.europa.eu/health/strategy/docs/swd_investing_in_health.pdf



2.8. Strengthening of health system capacities

Strengthening of health system capacities is a cross-cutting theme, as it is not possible to attain objectives of cost-effectiveness of care and high-quality of care at the same time without an overall strengthening of health system capacities. Investment in the institutional capacity and in the efficiency of public administrations and public services represents an appreciable prerequisite for required reforms, better regulation and good governance. The strengthening of health system capacities aims at reaching sufficient capacities in order to properly manage an **efficient and effective health system**. Through this, an **appropriate cooperation** between health care institutions both vertically and horizontally can be attained.

To make the terminology clear, health systems cover health care and public health. These include the processes and infrastructures (legal, physical, financial and human resources) to deliver health care, prevent disease and improve health status, but also public health measures.

The whole scope of **the health system capacities strengthening** includes:

- **Public health surveillance**
  - Set up health information systems in order to provide comparable data and indicators to support development, implementation and evaluation of health action in the EU.
  - Cooperate with Commission services and agencies and international organizations to ensure collection and consistency of useful health data.
- **Health security**
  - Ensure permanent surveillance, information management and coordinated inter-sectorial response at national level as well as the liaison of command and control centres.
  - Use the scientific-based advice in generic preparedness planning provided by several EU scientific committees; use the EU Early Warning and Alert System for notifications.
- **Major and chronic diseases, HIV / AIDS, cancer, neurodegenerative diseases such as Alzheimer's disease, other dementia, mental disorders, vaccination**
  - Develop national strategies or action plans, and quality frameworks, for medical and care services in an integrated approach ensuring control to facilitate their implementation.
  - Raise awareness of general public and health care providers, promote public access to information on the disease, and on research and prevention / vaccination, encourage wider training for carers, and strengthen public trust in immunization.
  - Use standardized surveillance procedures and methods, improve epidemiological information on prevalence, incidence and survival rates, develop a vaccination information system.
- **Rare diseases**
  - Establish multidisciplinary national centres of expertise on rare diseases and connect them to European Reference Networks.
  - Support and develop national rare diseases registers and biobanks in the framework of the European Platform for Rare Diseases Registration.

- Implement prevention strategies for priority groups, including the promotion of voluntary testing / early screening.

- **Organ donation and transplantation**
  - Increase availability, and strengthen safety and quality, of organs, tissues and cells for transplantation, and of blood for transfusion, and set up a transplant / donor coordinator in every health facility with the potential for organ donation.
  - Promote the use of centres of reference and the exchange of organs between EU Member States, develop common methodology and definitions, and use a common accreditation system for organ donation and transplantation programmes.
  - Develop registers for living donors and organ recipients to evaluate and ensure their health and safety.

- **Patient safety**
  - Develop and implement a surveillance system for patient safety at national and health care facility level.
  - Implement a blame-free incident reporting and learning system, set up an electronic system for automatic warnings of allergenic reactions, and use common terminology and indicators for health care associated infections for patient safety.
  - Support the National Contact Points and health care providers to ensure patient information.
  - Support EU collaboration on exchange of best practice on patient safety and quality of care.

A specific example on strengthening the capacity of the health system is provided in the box below.

Structural reorganisation of the health system in Hungary[50]

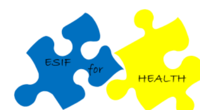
Structural reorganisation was needed in order to improve efficiency of the Hungarian health system and to adapt the system to the real needs.

The reform aimed at structural reorganisation of the health system, supporting the change of functions, making the necessary alignments with the new needs, development of urgency care, and modernisation of medical equipment. The investments were mainly infrastructural. ***After the reorganization there is no inpatient health care institute in Hungary, where there were no investments at all.***

Finally, **the need to strengthen infrastructure in the sense of human resources should be stressed** since it plays an essential role in the whole scope of the health system capacities strengthening listed above just as in multiple general concepts stated in this document (such as strengthening of primary health care or transition to community-based care). According to the DG SANCO Guide, this includes **health professionals' education and lifelong training** consisting of:[51]

[50] Case study collected within this project. For more details see case study 14 in the Appendix to the Guide.

[51] DG SANCO: Policy Guide for Health Investments – European Structural and Investment Funds 2014-2020, November 2013. Available at: http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/thematic_guidance_fiche_health_investments.pdf



- Increase in pool of primary care practitioners through, for example, promoting the option of university education level or specific training programmes
- Development of protocols on and include / reinforce in professional education and (lifelong) training programmes, for health professionals and other health care workers

- Multidisciplinary aspects of patient safety
- Specificities in relation to old age and ageing
- Specificities in HIV / AIDS, cancer, neurodegenerative diseases such as Alzheimer's disease, mental disorders, and other major and chronic diseases
- eHealth and ICT skills needed for the health care sector.

The Action Plan for the EU health workforce[52] supports cooperation to help improve workforce planning and forecasting and the recruitment and retention of health professionals.

Two more examples on adaptation and up-skilling of the health workforce are introduced in the text boxes below.

Support for the training of medical personnel in the field of geriatric care in Poland[53]

*The aim of the project is to **enhance care for older people** in Poland **by improving the competencies (by training) of health care professionals** in the field of geriatric care.*

People who received the geriatric care training:

- *Primary health care physicians*
- *Nurses during specialisation courses*
- *Medical carers*
- *Community therapists*
- *Physiotherapists in the field of geriatric physiotherapy*

*The project has not finished yet, but its coveted outcome is that trained **health care professionals will gain better adaptation skills for the ageing society phenomenon to ensure comprehensive and professional health care for older people in their communities.** Unfortunately, the lack of interest of primary health care physicians has been a problem encountered during the project's execution. Due to a low participation rate, the Department of Nurses and Midwives of MoH not only continued the information and promotion campaign but also took other actions to make this professional group more interested in the proposed training.*

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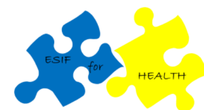
[52] Commission Staff Working Document on an Action Plan for the EU Health Workforce — SWD(2012) 93 final attached to the Commission Communication, Towards a Job Rich Recovery — COM(2012) 173 final, April 2012. Available at: http://ec.europa.eu/dgs/health_consumer/docs/swd_ap_eu_healthcare_workforce_en.pdf

[53] Case study collected within this project. For more details see case study 24 in the Appendix to the Guide.



Development of qualifications and skills of nurses in the context of demographic changes being the consequence of an ageing society in Poland[54]

The aim of this project is to ***enhance comprehensive nursing care for older people by organising a specialist course on the care of patients with the most common age-related diseases.***

Nursing personnel is a group which eagerly participates in various courses and training. The beneficiary did not encounter any difficulties in recruiting participants.

The project is still ongoing, but as a result, nurses will improve their qualifications in terms of comprehensive care for patients with the most common age-related diseases and ***the post-graduate training offer will be broadened and adjusted to the growing demand for nurse care for elderly people.***

[54] Case study collected within this project. For more details see case study 25 in the Appendix to the Guide.

2.9. Active and healthy ageing

According to the European Commission, active ageing means helping people stay in charge of their own lives for as long as possible as they age and, where possible, to contribute to the economy and society.[55] Structural changes in the population in Europe as described above indicate a need for increased efforts in this field, aiming among others to prolong the time people can stay in the labour market. The European Commission has identified active and healthy ageing as a major societal challenge common to all European countries, and an area which presents considerable potential for Europe to lead the world in providing innovative responses to this challenge.[56] With respect to this, the European Innovation Partnership on Active and Healthy Ageing has set a target of increasing the healthy lifespan of EU citizens by two years by 2020.[57]

Thanks to the increasing quality and accessibility of health care and better social conditions on the one hand, and a stagnating birth rate on the other, Europe needs to address an increasing proportion of elderly people. The economically active population is to decline steadily, while elderly persons will account for an increasing share of the total population – those aged 65 years or over will account for 29.5% of the EU 28's population by 2060 (17.5% in 2011). It means the population of 65+ year old will almost double in absolute numbers from 88 million to an estimated 154 million. This poses a significant challenge not only in terms of increasing health and social care costs but also in terms of its impact on economic growth and the future labour supply. Therefore, it is not surprising that European Union institutions stress this issue. To illustrate this point, the year 2012 was appointed European Year for Active Ageing and Solidarity between Generations.[58]

Increasing life expectancy has led to expectations amongst EU inhabitants not only to live longer, but **to live longer with a higher quality of life**. Hence, the concept of active and healthy aging plans to affect a wide range of areas. Elderly people should be empowered to stay independent and autonomous for longer in their preferred home and community environment and to remain socially active.

Implemented tools should involve holistic approaches that address both mental and physical health as well as a cross-sectorial approach to improve the social determinants of health:

- **Developing health promotion activities**
    - Accessible physical activity in terms of proximity and costs
    - Healthy diets
    - Strengthened prevention, screening and early diagnosis

Health sustaining activities prevent costly health care while enabling people to stay economically active longer.

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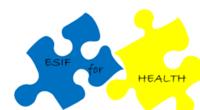
[55] European Commission: Employment, Social Affairs & Inclusion/Policies and activities/Social Protection & Social Inclusion/…/Active ageing. Available at: http://ec.europa.eu/social/main.jsp?catId=1062&langId=en

[56] EuroHealthNet: Healthy Ageing, European Policies and Initiatives. http://www.healthyageing.eu/initiatives/european-policies-and-initiatives

[57] Strategic Implementation Plan for the European Innovation Partnership on Active and Healthy Ageing, Steering Group Working Document, Brussels: 2011, p. 6. Available at: http://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/steering-group/implementation_plan.pdf

[58] European Parliament: 2012: European Year for Active Ageing … and Solidarity between Generations, 2011. Available at: http://www.europarl.europa.eu/news/en/news-room/content/20110314IPR15479/html/2012-European-Year-for-Active-Ageing-%E2%80%A6-and-Solidarity-between-Generations



- **Improving the employability of older people**
    - Courses to develop IT skills
    - More flexible working conditions
    - Promotion of age-friendly environments
    - Utilization of the advantages of the elderly workforce
    - Flexible retirement system

Activities improving the employability of older people also enable people to work longer and retire more gradually.

- **Addressing isolation**
    - Targeted cultural and educational activities through life-long learning
    - Active participation in various meaningful activities such as community or political engagements
    - Opportunities to share and develop their knowledge (counselling, volunteering)
    - Provision of accessible services in remote areas

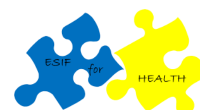
Social activities help older people to be active after retirement and have the potential to reduce treatment costs for neglected problems.

- **Providing support and advice to care providers**

As seen above, the active and healthy ageing concept is not only about health measures, as **social care and services are equally important**. Given the complexity of the tools needed to promote healthy ageing, the concept requires a range of approaches and initiatives at both an individual and societal level. Apart from contributing to the individual's life quality, activities promoting active and healthy aging also lower dependency burdens and create substantial cost savings related to health care.

It is assumed that the self-reliant and well-socialized elderly people will meet the following criteria:

- Will be able to **stay in the labour market longer**
- Will need **less intense health care**, and thus will not pose heavy burdens on state health budgets
- Will be **less dependent on family care**, which will enable family members of working age to stay economically active in full-time jobs
- Active and vital elderly people will even be able to stimulate **economic performance as they will act as active consumers.**



The active and healthy ageing concept has considerable potential for saving costs in an ageing Europe through various activities. An example of such a practice is as follows:

The European Innovation Partnership on Active and Healthy Ageing[59]

The European Innovation Partnership on Active and Healthy Ageing is an example of a complex initiative that brings together key stakeholders (end users, public and private authorities) in order to find innovative solutions to meet the needs of the ageing population. The Partnership considers ***ageing as an opportunity*** *rather than a burden, valuing the older people's contribution to society.*

- **The main aims of the Partnership include:**
  - *Empowerment of older people and their community through user-centered innovation and service delivery*
  - *Increase the average number of years of healthy life in the EU by two years by 2020*
- **Three priority areas of the Partnership contain:**
  - *Supporting people with cognitive impairments at home*
  - *Enhancing deployment and take-up of interoperable independent living solutions*
  - *Supporting social inclusion of older people*

[59] European Innovation Partnership on Active and Healthy Ageing. Available at: http://ec.europa.eu/health/ageing/innovation/index_en.htm

2.10. Health promotion and prevention

Health promotion and prevention concepts address changes in the lifestyle of the population, in response to the generally stressful and sedentary lifestyle of our time with a lack of exercise, which translates into a surge in diseases such as obesity, type two diabetes, cardiovascular diseases and cancer. Health promotion and prevention concepts aim to lay the foundations of sustainable health systems through a healthier population and, consequently reduced health care costs for disease treatment.

It is also true that prevention and health promotion have a positive impact on two other areas: that is the potential for cost savings for subsequent care and cure, and the improvement of the individual's health by allowing them to live a more active and independent life.

Health promotion is the process of enabling people to increase control over, and to improve, their health.[60] The concept aims to cope with chronic diseases and prevent life threatening acute diseases such as heart attack and focuses on the main factors that determine population health. As a result, it has the potential to increase people's employability and to enable them to stay in the workforce longer.

Prevention stands for actions directed at preventing illness and promoting health to reduce the risk of disease, identifying risk factors or detecting disease in its early, most treatable stages. It goes hand in hand with health promotion and together they create a potentially powerful tool for the reduction in health care costs, as opposed to treatment once a disease has appeared. Nevertheless, according to the EC statistics currently only about 3% of health expenditure is allocated to public health and prevention programs.[61]

Having a closer look at cost-effectiveness, it seems EU Member States do not utilize the opportunity for substantial savings. The World Economic Forum in 2011 indicated a large amount of spending on particular disease prevention and health should be seen as an investment with a significant rate of return.[62] Still, the shift from curative to preventive investment has not been very successful, even though investing in prevention also has societal benefits, since it is better to finance effective strategies to preserve health and prevent diseases than to use resources to cure them.

The concept of prevention is recognized at three levels:

- **Primary prevention** represents methods to avoid occurrences of disease either through eliminating disease agents or increasing resistance to disease. It consists of the following two concepts:
  - **Health promotion** includes activities which do not target a specific disease or condition but rather promote health and wellbeing at a very general level (e.g. eating nutritious meals and exercising daily)
  - Specific protection targets a type or group of diseases and complements the goals of health promotion (e.g. condoms and avoiding sexual promiscuity in case of a sexually transmitted disease)

[60] WHO definition. Available at: http://www.who.int/topics/health_promotion/en/

[61] European Commission: Investing in Health - Commission Staff Working Document (SWD). Social Investment Package for growth and cohesion, February 2013. Available at: http://ec.europa.eu/health/strategy/docs/swd_investing_in_health.pdf

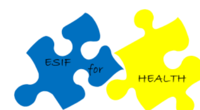
[62] World Economic Forum: The Global Economic Burden of Non-Communicable Diseases. Harvard School of Public Health, 2011. Available at: http://apps.who.int/medicinedocs/documents/s18806en/s18806en.pdf

- **Secondary prevention** deals with latent diseases and attempts to prevent asymptomatic disease from progressing to symptomatic disease. In other words, secondary prevention aims to detect and treat a disease early on. It consists of the following:
  - **Early diagnosis** and prompt treatment to contain the disease and prevent its spread to other individuals
  - **Disability limitation** to prevent potential future complications and disabilities from the disease
- **Tertiary prevention** attempts to reduce the damage caused by symptomatic disease by focusing on mental, physical, and social rehabilitation. It aims to maximize the remaining capabilities and functions of an already disabled patient.

Activities supported from ESI funds will **focus mainly on primary and secondary prevention**, which are the more common approaches to prevention. For an illustration of this, promotion of healthy lifestyle and disease prevention can reduce high long-term treatment costs and improve health outcomes by avoiding premature deaths and chronic diseases (primary prevention). Promotion of screening activities and preventive doctor's visits could support early detection of disease if it occurs and a prompt treatment (secondary) is provided, and thus saving a significant proportion of costs usually related to treatment of chronic patients. It might be advisable to coordinate primary and secondary prevention measures together to ensure effective continuation of the process and to achieve the maximum possible effect of health promotion and preventative measures, i.e. health system savings.

The World Health Organization and European Commission acknowledge several tools or measures in the area of health promotion and prevention with significant potential for change:

- **Public information campaigns** in the media raise awareness of the importance of a healthy lifestyle to prevent certain serious diseases. Awareness of the negative impact of substances such as tobacco, alcohol, sugar and saturated fats in high doses, and an unbalanced lifestyle may change people's attitude towards their own health and the health of their children.
- **Promotion of preventive examinations and early disease detection, especially in the high risk groups of the population**. Stressing the importance of preventive examinations can be done in the media as well as at the physicians' offices, and through targeted campaigns inviting people from increased-risk groups for a doctor's visit. Such measures can have a direct impact on the numbers of early detected diseases, lower treatment costs and improved public health. Successful screening and diagnostic tools exist nowadays for early detection of a disease or of people with a high risk of contracting it. High blood pressure diagnosis and treatment prevent heart attacks, while cancer screening of most common types, such as colorectal, cervical or breast cancer prevents further development of the cancer and enables early treatment with better chances of success.
- **Health education in schools**. The development of attitudes at a young age can increase the probability that behaviours will be altered and a more balanced lifestyle is developed. Programmes might – besides covering specific aspects such as different kinds of illnesses and their treatments – attempt to form values related to health.



- **Reducing harmful use of alcohol and tobacco consumption**. Cigarettes and alcohol belong to the biggest health threats nowadays. Treatment of the consequences of their consumption poses a huge burden on Member States' national budgets. The following measures can be carried out in addition to the above-mentioned media campaigns and health education:
    - Incentive fiscal measures such as excise taxes on tobacco and alcohol or financial incentives for consumers, patients and providers.
    - Targeted and direct help for addicted patients. Nurses and pharmacists may be trained to work individually with recognized addicts through advice and information on options for how to overcome the addiction.
- **Measures promoting improved quality of food products**. Salt, sugar, saturated fatty acids and trans-fatty acids in high doses have a serious negative health impact as proven by a number of studies. Food product reformulation aims to reduce the prevalence of diet-related diseases through programmes of fat, sugar and salt as well as portion size reduction.

It is clear, that concepts introduced in this compendium might be combined, and thus achieve greater benefits. In the case of health promotion and prevention, a wide range of eHealth tools could be used to enhance prevention, diagnosis, treatment and the monitoring of the health status of the population. The same applies to patient empowerment, which could be supported through disclosing patient and medical records to patients, as shown in the example in the grey box in the relevant chapter. The effectiveness of targeted health promotion and prevention actions could also be supported by improved collection of various data about the health system and population addressed in the chapter discussing possible tools for strengthening of capacities of the whole health system.

An example of a well-evaluated prevention programme implemented in Poland is described below.

Prevention programme in the field of diseases of cardiovascular diseases in Poland[63]

In Poland, four prevention programmes were implemented in the 2007-2013 programming period under the OP Human Capital. These were prevention programmes in the field of:

- **Hearing protection**
- **Disease of the musculoskeletal system and the peripheral nervous system**
- **Cardiovascular diseases**
- **Psychosocial hazards**

The ***prevention programme for cardiovascular diseases*** *included the following activities:*

- *Identification of the factors present in the working environment responsible for the development of occupational diseases*
- *Understanding of the needs, expectations, and the most appropriate form of implementation of the prevention programme for cardiovascular diseases*
- *Preparation of educational and informative materials on risk factors for cardiovascular diseases*
- *Development of the comprehensive prevention programme in the field of cardiovascular diseases*
- *Provision of electronic educational and informative materials on the website*

The objective of the programme was to prepare and implement a prevention programme for cardiovascular diseases, taking into account environmental factors at work, and oriented on selected professional groups.

*The comprehensive prevention programme for cardiovascular diseases presented includes several solutions worth being duplicated that can be considered "****best practices****":*

- *Detailed presentation of information on the risk factors associated with work - supported by analysis of the literature and own research*
- *Development of complex documents for physicians, employees, employers and supervising institutions and providing training based on them*
- *Wide range of recipients of education strategy*
- *Use of preventive examinations for early identification of risks of cardiovascular diseases. Conducting surveys among employees, allowing to identify their preferences in relation to preventive measures.*

[63] Case studies collected within this project. For more details, see case studies26-29 in the Appendix to the Guide.

2.11. Patient empowerment

Patient empowerment is a concept which aims to enable and encourage patients to take control of their health needs through an active role in their own health decisions and self-selected changes to their lifestyle. The concept requires patients to take responsibility for their own health – for example through attending regular preventative checks with their physicians and leading a healthy lifestyle.

An empowered patient:

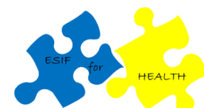
- Understands their health condition and its effect on their body
- Feels able to participate in decision making with their health care professional and to make informed choices about treatment
- Is able to challenge and ask questions of the health care professionals providing their care
- Understands the need to make necessary changes to their lifestyle
- Takes responsibility for their health and actively seeks care only when necessary

In its principle, this concept complements health prevention and promotion measures, addressing the patient from a different angle, but aiming at the same goals, i.e. prevention of disease development and eventually facilitation of early diagnosis by the patient themselves. Empowered patients are also expected to use medication more efficiently, and thus reduce the unnecessary costs of the system on inefficiently used / prescribed medication.

Needless to say, the patient empowerment concept does not substitute professional acute care; it rather aims to integrate patients into the cure process of their disease. It is a promising aspect of disease management that can help people act more proactively regarding their health.

In the current state of play, there is often little emphasis put on patient empowerment within health care services. Nowadays, informed consent is usually signed before medical intervention is carried out and there are also optional vaccinations accompanying those which are mandatory. Nevertheless, patient empowerment stands for a much broader concept. In order to implement it successfully, the Member States' authorities should take the following steps:

- **Promote the benefits of taking responsibility for one's own health**. The patients should be aware of the advantages of self-managing their wellbeing and treatment decisions.
- **Allow patients to have access to their medical records**. In many European countries, patients do not have the right to access their own medical records or the access is significantly limited. In order to ensure that patients better manage their own health, they need to be provided with their health information.
- **Ensure proper communication of care providers with the patients**. European patients often experience insufficient communication from the medical staff side which can lower the efficiency of delivery. This can be changed through setting quality standards and through training medical staff.
- **Enable patients to have the possibility of an alternative opinion**. Although patients usually lack the adequate knowledge to be able to make informed choices, they should have the right to an alternative opinion – however, in every second European country, the right to an alternative opinion is non-existent or infringed by a complicated process.
- **Provide patients with adequate self-management technologies**. Patients with chronic diseases (for example diabetes) can take control of their wellbeing by using various eHealth tools.



An example of a project that helps empower patients is described in the following box.

Access to Electronic Health Records in Estonia[64]

Estonia participates in the project SUSTAINS funded by the European Commission. The aim of the project is to develop services in 11 European regions providing patients with on-line access to their medical records.

Estonians have had on-line access to their medical records through the Estonian Electronic Health Record System (EHR) since 2009. Access is provided through the Patient's Portal, where they can browse their records, download documents, upload demographics information and access their prescribed medication. The patients have a right to set access restrictions to documents.

The main advantage of implementing this concept is that ***it enables patients to become more active players in the management of their own health.***

[64] Saluse, J., Aaviksoo, A., Ross, P., Tiik, M., Parv, L., Sepper, R., Pohjonen, H., Jakovlev, Ü., Enni, K.: Assessing the Economic Impact/Net Benefits of the Estonian Electronic Health Record System – DIGIMPACT Final Report, Tallinn: 2010. Available at: http://www.praxis.ee/fileadmin/tarmo/Projektid/Tervishoid/Digimoju/Digimpact.pdf

2.12. Cross-border care

The cross-border care concept is the key to unlocking the potential of individual health systems across the European Union, and thus contributing to the effort to balance health care accessibility, quality, equality, and last but not least, financial sustainability. At present, only considerably less than 1% of the expenditure and movement of patients is for planned cross-border health care, like hip and knee operations or cataract surgery.[65] But the concept of cross-border care has great potential as health systems across the European Union are increasingly interconnected through the following aspects:

- **In line with the free mobility of persons, patients are getting health care across the EU.** Patient mobility is motivated by the following issues:
    - Dissatisfaction with health care provision in the home country (e.g. long waiting times, use of older technology or exclusion of elsewhere included services)
    - Unavailability of a medical treatment in the home country
    - Cost consideration given by different tariffs (a quite recent trend, applies e.g. to dental tourism)
    - Some treatments may not be legal in the home country (such as abortions or fertility procedures)

  All these drivers are motivating patients to make use of cross-border health care. Its pattern arises from imbalances between countries' specific settings in health systems. Since the applied taxonomy to sort and describe health services differ from country to country, huge differences may exist in the way patients with identical conditions are treated in terms of the choice of technologies, procedures, staffing mix and usage intensity.
- **Health professionals working in different EU countries** – medical doctors and nurses go abroad for training, and for temporary or long-term employment, individual doctors and hospitals cooperate with each other across borders.
- **New developments in health technologies** allow even health services themselves to move across borders through telemedicine.

Putting together best health care practices and services for individual Member States may result in a more balanced and high-quality system. A balanced system does not necessarily mean that there has to be the same amount and the same level of specialized care in every country. Rather, the interconnected European health system should improve conditions for sharing knowledge, expertise and medical practice itself, and should offer more equal access to specialized care for all European citizens. Important potential benefits of cooperating Member States' health systems may be achieved by:

- **Facilitating the transfer of expertise and knowledge** among EU Member States in the following fields:
    - Research and development collaboration
    - Medical staff mobility
    - Medical technology mobility

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[65] European Commission: MEMO/13/918 of 22 October 2013. Available at: http://europa.eu/rapid/press-release_MEMO-13-918_en.htm

- **Improving the choice for patients** which is limited by nationally specific rules varying in every European country, taking into account the national sensitivity of the issue and the fact that health services are funded by nationally based health insurance.
    - Institutionalization and clear rules for medical mobility without threatening the access of citizens to care in their own country or financial sustainability of certain health systems.[66]
- **Enabling greater efficiency in providing health care through cross-border cooperation**
    - Emergency medical services cooperation in border regions
    - Cross-border transplant and blood transfusion cooperation
    - Developed infrastructure and joint action for effective responses to health threats (e.g. pandemics)

An effectively working system of cross-border medical cooperation requires the following challenges to be faced:

- **Providing clear rules** and reliable information to patients regarding access to health care received in another EU country.

  The diversity of health systems makes it difficult to take EU-wide action in this field as the consequences and impact of any measure regarding access to health care in another country would vary from one Member State to another. The challenges to address are:

    - The definition of legal entitlements to cross-border health care acceptable to all Member States
    - The guarantee of quality and safety standards of health care received in other EU Member States

  Patients need to get sufficient information on their rights and options for cross-border care, as well as the information on legal requirements such as the necessity of prior authorization or financial matters. Differences in tariffs may actually result in refusal by the payer to compensate the possibly higher tariffs in the country of treatment. Also, the absence of clear standards is often used as an argument to limit reimbursement of cross-border care services and to require the use of prior authorization. The way in which patient's rights – such as obtaining sufficient information on diagnosis and therapy, informed consent on treatment, privacy protection and medical data access, or mechanisms to file complaints – are defined and implemented is largely determined by national law, and thus differs widely.

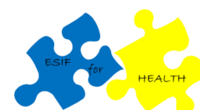
  National contact points could be established to play the role of an information provider and integrator. Formation of an integrated information / provider service would precede possible misunderstandings.

- **Maintaining continuity, quality and safety of health care**

  The majority of medical interventions require aftercare, follow-up checks and the continuity of medical supervision, which cannot be provided in the case of patient mobility. It requires the cooperation of medical institutions and hospitals across the Member States.

  Even though some safety aspects such as the safety of pharmaceuticals are harmonized across the EU, there is great diversity in, for example, the extent to which quality and safety measures are obligatory or voluntary.

[66] Current patients' rights to access safe and good quality treatment across EU borders, and be reimbursed for it are regulated by the DIRECTIVE 2011/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 on the application of patients' rights in cross-border health care.



- **Ensuring EU countries work closer together**

  Member States' cooperation is the key precondition for the successful enlargement and institutionalization of recent practice. Cooperation at country level would facilitate the cooperation of individual hospitals and medical institutions. It would also enable clearer cost-sharing arrangements and remove organizational barriers.

- **Reaching a balance between maintaining the sustainability of health systems while protecting the patients' right to seek treatment outside their home country**

  The rights of citizens of EU member states to access health care both in their home countries and in other EU Member States have limitations in the form of the different content of benefits allowances provided under certain medical procedures. It means that a medical operation in one country can include different services than in another one. Together with different tariffs for services, it may constitute an important influence on the willingness of the health insurance companies, which are nationally-based, to reimburse.

  At the same time, the issue of sustainability arises. Without the necessary preparation and cooperation, the unrestricted mobility of patients would undermine hospital and capacity planning and may lead to imbalances in the budgeting and financing of health care providers. On the other hand, positive impacts in terms of creating new business opportunities for border hospitals, in general improving healthy competition, or highly specialized services and strengthening healthy exchange should be mentioned.

According to the Directive 2011/24/EU,[67] Member States should facilitate cooperation between health care providers, purchasers and regulators of different Member States at national, regional or local level in order to ensure safe, high-quality and efficient cross-border health care. This could be of particular importance in border regions, where cross-border provision of services may be the most efficient way of organising health services for the local population, but where achieving such cross-border provision on a sustained basis requires cooperation between the health systems of different Member States. Such cooperation may concern:

- Joint planning
- Mutual recognition or adaptation of procedures / standards
- Interoperability of respective national information and communication technology systems (ICT)
- Practical mechanisms to ensure continuity of care
- Practical facilitating of cross-border provision of health care by health professionals on a temporary or occasional basis

An example of a project on cooperation of hospitals on a cross-border basis is described in the following box.

[67] DIRECTIVE 2011/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 on the application of patients' rights in cross-border health care.

French patient flows to hospitals and polyclinics in the Belgian Ardennes[68]

Inter-hospital agreements in the area began in the 1990s, but only with the subsequent closing of small hospitals did this lead to the innovative proposal in 2004 to regard the Belgian hospital at Dinant as a branch of the more distant French hospital at Charleville-Mezieres for the purposes of health care payments. The range of care included and area from which patients can cross the border has been enlarged with the ZOAST Ardennes (organized cross-border areas for access to care) agreement from 2008. ***All types of care are included, both inpatient and outpatient, except medically assisted reproduction.***

An agreement over the project applies for an unlimited duration, and authorizes reimbursement for care provided in one of the designated health care facilities across the border for all socially insured people residing in the ZOAST in both countries.

The agreement simplified the processes of verification of patients' insurance status and allowed patients to follow administrative access procedures similar to those in their own countries. *When French patients arrive at a Belgian hospital covered by the agreement they show their national health insurance cards and reader devices in the hospital allow administrative staff to access all the required information.*

Patients from France represent about 15% to 20% of CH de Dinant's turnover (for both ambulatory care and inpatient care): a very high proportion. The departments of neurology and ophthalmology receive many French patients, apparently because the waiting times are shorter than for the equivalent departments in France. The polyclinics of the socialist sickness fund (which only provide ambulatory care) receive about 5000 French patients per year and numbers are increasing.

[68] Case study collected within this project. For more details see case study 30 in the Appendix to the Guide.

2.13. Reduction of health inequalities

Some of the concepts introduced so far indicated the potential to deliver ulterior effects on improving access to health care to disadvantaged or vulnerable groups. Reduction of health inequalities in access to care was usually a secondary effect of conceptual transformation. This chapter aims to show examples of how to efficiently address the reduction of health inequalities as a main goal.

Approaches aimed at the reduction of health inequalities require a multispectral attitude, prioritizing less advantaged groups before the average. When addressing the reduction of health inequalities, social aspects could not stand separately. Effective approaches to the health inequalities reduction address the underlying risk factors in health behaviours and ensure adequate income in living and working conditions.[69]

Investing in reducing health inequalities will break the vicious spiral of poor health contributing to, and resulting from, poverty and exclusion.

Large differences in health outcomes and the ability to access health care could be seen between higher income countries and lower income countries. According to Eurostat statistics, people with a lower income and less education die younger and their life is worse.[70] Other vulnerable groups facing barriers in access to health care represent some migrant groups and minorities, such as Roma.

Inequalities caused by social determinants of health can be removed **through contribution towards reaching the Europe 2020 poverty and social exclusion target**. Member States may include **poverty mapping in the programming of ESIF** interventions to assist in prioritizing geographical areas. Investment in health could also be part of an **integrated territorial or urban strategy**.

Specific activities addressing health inequalities:

- Address risk factors that are particularly prevalent in disadvantaged population groups, e.g. tobacco consumption, harmful use of alcohol or inadequate nutrition
- Ensure physical activity possibilities in poorer regions / areas
- Set up, improve or expand local health care services, including infrastructure, for the rural population.
- Support for better living and housing conditions for vulnerable groups
  - Access to adequate housing (including adequate indoor temperature, access to sanitation and water which meets EU standards)
- Bring innovations to the care systems to improve patients' health literacy and empowerment
- Support development and collection of data and health inequalities indicators by age, sex, socio-economic status and geographic dimension

Barriers in access to health care can be removed through e.g.:

  - **Use of ICT in health**

[69] European Commission: Investing in Health - Commission Staff Working Document (SWD). Social Investment Package for growth and cohesion, February 2013. Available at: http://ec.europa.eu/health/strategy/docs/swd_investing_in_health.pdf

[70] Ibid.

- **Improved health care territorial cover**
- **Cross-border care**
- **Targeted health promotion**

Below, several examples of various investments addressing health inequalities are introduced.

Hungary – Opre Roma: Raising awareness for planning healthy and sustainable houses amongst a Roma community living in Debrecen[71]

The main aims of this initiative were to raise awareness in the community towards environmental, energy and health-behavioural issues, to build up community plans for sustainable, energy-saving and health-conductive social housing, but also to build up plans for social housing that can be performed immediately.

Community members were fully involved in the development of these plans and received appropriate training in the fields of household management and energy saving. More generally, linkage between health and housing and environment was a key skill acquired by people involved in the project.

Key results:

Housing conditions were identified as a key determinant of health status, and thus playing a role in health inequalities. Improvement of housing conditions, and building of new houses taking the Roma cultural background fully into account was one of the key achievements of this project.

Germany "Job Fit Regional": Linking health and employment promotion[72]

*The main objective was to use employment providers as an institutional framework for the implementation of health promotion. Specific training sessions were performed by training institutions that are normally in charge of supporting job seekers. Statutory health insurance institutions are also key partners of this project, as they also perform group-focused actions. Jobless people were approached and managed through a specific methodology** to assess individual health competence very precisely (especially a comprehensive motivational health talk) and to build up a health promotion plan. Various programs, especially prevention courses, stress management, and group-focused training sessions are financially supported by statutory health insurances. Training sessions were also specifically designed for the staff of the qualifying and employment providers.*

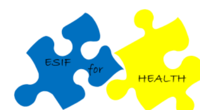
Thanks to this program, occupation and qualification institutions for the unemployed and statutory health insurance institutions work in close connection to improve the health of jobless people in their own setting.

Key results:

Housing conditions were identified as a key determinant of health status, and thus playing a role in health inequalities. Improvement of housing conditions, and building of new houses taking the Roma cultural background fully into account was one of the key achievements of this project.

[71] EuroHealthNet: Health Inequalities. Available at: http://www.health-inequalities.eu/?uid=e52af77626a071aba322dfded1c78d99&id=Seite3486

[72] Ibid.



Sure Start Local Programmes: Putting “proportionate universalism” into practice [73]

Based on a holistic approach of health inequalities, Sure Start Local Programmes bring together childcare, early education, health and family support services for families with children under 5 years old. It is one of the contributions of the British government to the reduction of health inequalities, from the perspective of child poverty and social exclusion.

These programmes are implemented on a local basis, in Sure Start Local Centres, located in underprivileged areas. The Sure Start approach brings together service providers from the statutory sector like health, social services and early education, as well as voluntary, private and community organisations and parents themselves, to provide integrated services for young children and their families based on what local children need and parents want.

Key results:

The Impact Study of the National Evaluation of the Sure Start focused on over 9000 3-year-old children and their families. Benefits were identified in the following fields: immunisation, accidental injuries and social development.

Furthermore, an example of a good practice of analysing the redistributive impact of public health expenditure, using collected data for the Eurostat Survey of Income and Living Conditions, is described in the following box.

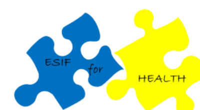
Analysis of the redistributive impact of public health expenditure in Spain [74]

This was done using an insurance value approach to take into account the effect of health care expenditure on household budgets. The equivalent household income complemented by public health care coverage was assessed and compared with household disposable income. It was found that public health care coverage was likely to keep families out of poverty. Extending the analysis to incorporate the household income foregone due to health care related tax transfers would allow the net impact of public health care coverage to be estimated in terms of the percentage of poverty avoided.

This could be calculated as the added number of covered residents that would fall below a given poverty threshold in the hypothetical absence of health care coverage. ***Spain recently introduced reforms of its co-payment system for medicines. The reforms take into account the redistributive impact of the co-payment system*** *by linking it to the level of income, and thus making it more progressive.*

[73] EuroHealthNet: Health Inequalities. Available at: http://www.health-inequalities.eu/?uid=e52af77626a071aba322dfded1c78d99&id=Seite3486

[74] Spadaro, A., et al.: Evaluating the Redistributive Impact of Public Health Expenditure using an Insurance Value Approach. Department of Applied Economics, University of the Balearic Islands: Palma de Mallorca 2011. Available at: http://www.ief.es/documentos/investigacion/seminarios/economia_publica/2011_18MayoPPT.pdf



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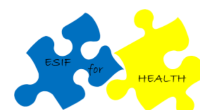

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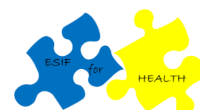

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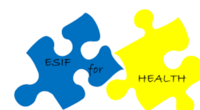

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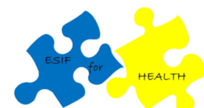

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