

# REVIEW OF CARE METHODS OF FRAILTY PATIENTS DISCHARGED FROM HOSPITAL- ECARE MODEL AND OTHER EU MODELS

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## 1. Description

Discharge documents are important for transferring information from hospitals to the referring clinician in the CZ and many countries, this is often the patient's general practitioner or family physician. However, patients may or may not receive their discharge letters, and whether patients should routinely receive discharge letters remains unclear.

It is a well-established practice that written discharge communication should take place between the discharging physician and follow-up physician, typically the patient's general practitioner (GP) or family physician. This is particularly important in healthcare systems in which primary care services are well established, such as in the Czech Republic. 'Discharge communication' may follow inpatient or outpatient discharge and typically comprises a discharge letter or summary. Patient receive written documentation about health status, and it is very problematic part because of documentation sharing.

In the Czech Republic, the length of hospital stay in a medical facility is steadily decreasing than in previous decades, as the hospital wants to release seniors from an acute bed as soon as possible due to limited funding for health care and needs beds for other patients.

The personal Social and Health Record consists of a computerized procedure that manages a database with detailed (social, health, health status, habits, living setting, etc.) information on the elderly patient, including all their personal data. It is linked to and powered by the Electronic Health Record, already in operation in the Emilia-Romagna region, and can provide information on the demographic and structural setup of the population entered in the data base. In particular, it contains the social and personal data of the user, the user's family situation, living conditions and, consequently, the safety of the living setting.

The issue of sharing medical records is a very often discussed topic in the Czech Republic, where there is very slow progress in the field of digitization of processes, which has a significant impact on the continuity of health care, but also social care. In the Czech Republic, there is a National Strategy for Electronic Healthcare for the years 2016 - 2020, where a specific goal is defined Improving the quality and safe provision of health services, where the main goal is to support treatment and decision-making, team communication between providers of health and social services where as an indicator has been set measurable increase of EBM procedures in medical practice.

Output name:

- Creating a plan for gradual interconnection with social care providers.
- Providing a platform and infrastructure to support knowledge and skills sharing tools

It is appropriate to respond well in advance to the need to share selected information for social services, which is, among other things, the future in the form of integration of services. Integrated health and social services cannot be effectively implemented on a large scale without shared PHR (or EHR) with social services. However, this future sharing must have legislative support.

## 1.1. Current situation in Emilia Romagna region

The level of integration between health and social care is still weak from a political and organizational point of view, even if under specific circumstances, such as the services for the IHCA (Integrated Home Care Assistance), both Health and Social Policies General Directorates have made a significant joint effort to reach an ICT integration of the service. All citizens of Emilia Romagna have access to their personal HER.

Inside the hospital are social assistants, so relatives or patients can ask help for the discharge. Social assistant sends requests to nursing centre which organizes long term care of home nurse services, or rehabilitation.

In Bologna the final users refer to different categories and therefore they are selected by following different methodologies.

- The seniors who are part of the eCare service, active all year round, are usually identified by the social workers of the municipalities of the network, or by the Volunteer organisation. In parallel with their activity in the communities, they identify seniors who are particularly frail.
- Another source of identification is represented by the hospitals of LHA BO: every week eCare receives the list of people discharged from hospitals who are over 75 years old and live alone.
- When climate emergencies are occurred (summer heat/winter frost waves) the LHA Public Health Department provides to eCare a list of about 5,000 elderly people, selected on the base of the highest scores of the Frailty Index. This index, calculated on the basis of scientifically validated algorithms, allows to classify seniors on the basis of greater or lower risk of suffering harmful effects, for instance, of summer heat waves.

## 2. Current situation in the Czech Republic - discharged patients from hospital

At the beginning of the process, the health and social worker initiates a social investigation to find out what the patient's social situation is. The initiative for the social investigation of the socio-economic area is submitted by the attending physician or also directly by the health and social worker. It is sometimes possible that a proposal for a social inquiry is made by several entities at once. Social worker obtains basic information for a personal anamnesis by interviewing colleagues from the for example geriatric team and studying patient medical records. Then social worker starts working with the patient and finds out his social situation through an interview with him, the aim is to find out what are the patient's needs, wishes and goals. Through the interview, social worker learns information about patient's natural environment, family situation and his social history.

When the senior is dismissed, not only the social aspect of the senior is addressed, but also the medical aspect. Follow-up health care is provided (cooperation of a general practitioner or outpatient specialists, home nursing care, follow-up aftercare and rehabilitation care in a hospital for the long-term illnesses) and the method of discharge (whether the patient is removed from the medical facility by ambulance car, family member or leaves alone). Sometimes there may be a situation where the family does not want or cannot take care of the patient, so the health and social worker decides with the patient where he will be released after hospitalization. It offers the patient all the options that a senior can use. In order to better manage the adaptation process, it is important that the patient actively participates in the selection of the institution, the selection was wide and not forced into anything. These correct starting points prevent the translocation syndrome. A senior in this situation is often released into a nursing home, nursing home or special treatment home.

## 2.1. Stages of the planned discharged process

Health and social worker (case manager) mainly working on the basis of the case management method. The method is based on the fact that the senior has the right to know his diagnosis, treatment and has his own right to co-decide on health care during the stay in the medical facility. The case manager has the following tasks during the dismissal process:

- Phase 1

The case manager begins the process of planned release of a senior. As already reported, the processing is performed immediately upon admission of the patient to the medical facility to allow enough time for the healthcare facility and services.

- Phase 2

The case manager involves the patient, who has the right to decide on his future himself and evaluates his needs and goals related to his dismissal and care in their family or in the social facility.

- Phase 3

In this phase, the case manager plans the process with other people who are involved in the process.

- Phase 4

The case manager then carries out the planned process.

- Phase 5

The act of dismissal of the senior.

- Phase 6

Case manager monitors the senior after his release from the medical facility.

- Phase 7

The case manager closes the case and evaluates it retrospectively



### 3. eCare review - discharged patients

#### The technological and organizational background of the eCare Service

The experimental project was made possible in Bologna and in the Emilia-Romagna region owing to the five major technical and organizational "Enablers":

- 1) The presence of a high-tech network that connects all the 4,000 General Practitioners and Primary Care Paediatricians with the public hospitals of the entire Region (the S.O.L.E. - Sanità On LinE - Health On LinE Network), which made possible, among other things, the exchange of information and advice between professionals and the integration of General Medical Practitioners' records with medical reports and examinations carried out in all regional facilities, as well as the hospital discharge letters;
- 2) The well-established Electronic Personal Health Record, made possible by the Health On LinE Network, and developed on the basis of Ministerial Guidelines and European Community legislation. The Electronic Health Record, through a customized "My Page", presently allows citizens to collect and manage all their health data; in the future it will be also possible collect their socio-health data;
- 3) The presence of a public company, such as CUP 2000 S.p.A., which works as "in-house provider" operating on behalf of its public shareholders (the Emilia-Romagna Regional authority, the Municipal and the Provincial authorities of Bologna, all 17 Local Health Authorities, including local out-patient and Hospital facilities at the regional level). CUP 2000 is a major Italian company with very high expertise in eHealth and eWelfare, entrusted by the Regional authority with the task of implementing the two above mentioned projects, which are two best practices at both Italian and European level;
- 4) The experience acquired by the CUP 2000 and by the Local Health Authority of Bologna, in several projects funded within the framework of European research programmes, focused on the themes of Telemedicine and Information & Communication Technology services for home-based care of the elderly;
- 5) The Decision by the Emilia-Romagna government which has set up the Regional Fund for Non Self-Sufficiency. Emilia-Romagna is the only Italian Region that has set up a special *ad hoc* fund, fed through a specific tax income dedicated to interventions in furtherance of the prevention and care of dependent elderly people. About 450 million euros are allocated each year to the Regional Fund for Non Self-Sufficiency, that is aimed at the development and enhancement of an integrated flexible service network, evenly distributed throughout the region, centered on the needs of dependent elderly people, of their families and caregivers, with a specific focus on activities in support of frailty and prevention.

As it will be shown in deeper detail, the innovations that represents the basis of the project are based on the technological and organization prerequisites.

Other technological instruments, like the devices that are necessary for the telemedicine applications and e.g. the fall sensors, have been utilized in the course of the service development, but have been considered as a “state of the art” technology, therefore no scientific experimentation on these devices has been performed, giving the high number of European projects already existing in the field.

### 3.1. THE BOLOGNA ECARE NETWORK

ECare Services, intended as a form of Information & Communication Technology-based care (including remote maintenance, remote monitoring, remote safety, remote information and telemedicine), are not still widely available in Italy.

This new form of online social and health services is becoming especially useful for the provision of home care for elderly patients (esp. frail patients, who live alone at home, who are discharged from hospital and who suffer from chronic diseases). ECare is mainly designed to link and network all the various available home care services provided by a number of partners working, as Moruzzi (2005) states, “in the fields of health, health care, home care, safety, solidarity and access to Public Administration” (p. 173).

These new services are mainly intended to meet the healthcare and social needs of the elderly population, in a coordinated manner, through a “networked” service system designed to provide new forms of home care, while maintaining the cared persons in their living environment as much as possible.

### 3.2. How does the eCare Network work?

The real hub of the entire eCare Network is the Bologna eCare Service Center. The Service Center is made up primarily by a specialized Call Center, available on a 24/7 basis (including Sundays and public holidays) for calls to a toll-free number which is the key operational tool for managing relationships with the elderly, family members and other stakeholders involved in the project. Users can therefore call the Call Center any time they need, on their own initiative. Yet, in any case, it will be up to the Call Center to call each elderly person who is cared for, on a regular basis, at a frequency set by the Individual Support Plan, agreed with the Physician and/or the Social Worker, but that is usually never less than at least one call a week. A few key professionals work within the Service Centre enabling the functioning of the entire system.

The Network Social Manager collects all the social reports and warnings forwarded by the Call Center agents, performs a preliminary inquiry, gets in touch with the family members or neighbors (if necessary), refers the case to the Social Services responsible for that local district and follows up the case until its successful conclusion.



Three professionals, called "District Managers" are responsible for keeping constant contact with the 6 Districts that make up the local health district area. They play a key role in contributing to achieve one of the main objectives pursued by the eCare project, namely, to create synergies and to pool all the human and institutional resources that, for various reasons, offer services and opportunities to the elderly population. District Managers perform a capillary work on a daily basis in each municipality within their territory, in order to actually implement the eCare service as a "network of networks", by involving all the stakeholders, setting up common projects for the provision of ad hoc services to the frail elderly (ranging from the home delivery of groceries or books and videos borrowed from the Municipal Library, to the organization of transportation and accompaniment to medical examinations or other types of errands). They are also responsible for the promotion of recreational and socialization events, such as theater and creative writing workshops, sewing or gardening courses and so forth.

The main task of the Call Center is to promote a significant enhancement in the quality of life of frail elderly people living alone, through daily or weekly phone calls to provide companionship, to monitor the various types of frailty and to detect any "discomfort" (which would not be otherwise detected by local services), or critical situations or simply needs, by following up cases until their successful solution.

The Call Center provides support, companionship and aid through specifically trained and motivated staff. It tries to respond to elderly people's daily needs using voluntary work and local resources. It also provides a daily help and psychological counseling, in addition to companionship and safety. Each user is "taken care of" by means of at least one weekly phone call by the Call Center operator, according to customized action plans responding to users' needs. In this way, synergy between information and communication technologies and human intervention gives rise to a "network of networks" that provides operators with all the necessary information on the elderly and on the local resources that can be made available for them.

The service does not only ensure a daily help and psychological counseling, through companionship and security for the frail elderly, but it also promotes behaviors aimed at improving their health conditions and compliance with therapeutic indications, in accordance with the same therapeutic indications prescribed by their family doctor.

The notification to the eCare Network operators of frail elderly people to be included in the service is performed by means of a user-friendly tool that has been specifically designed for general practitioners and social workers in the municipalities around Bologna and in its province. A website - accessible via the Internet - allows practitioners to enter reports, by filling out forms with the personal data and frailty features of elderly patients.

To allow an appropriate customization of actions in favor of each elderly person, the eCare Network also provides two specific service configuration, called "Basic" eCare and "Intensive" eCare, differentiated by care intensity degrees applied to users, quantity and quality of services offered, based on different types of users' inclusion in the various services made available, based on the recommendation of local Social Services and/or General Practitioners.





The Basic formula provides for the inclusion of the elderly into a weekly psychological and physical monitoring programme (through the previously mentioned Monitoring Grid) and remote companionship services, by means of a guided interview and updating of the cared person's social and health report, in addition to remote healthcare services, information, advice on taxation and social security issues (thanks to the free voluntary cooperation of the main Retirees Trade Unions). The Intensive eCare is addressed to older people at higher risk of loss of independence or suffering from serious problems, but still able to be kept at home thanks to a suitable support. It is linked to the number and combination of frailty conditions that each senior presents (at least 6 different types of frailty among the 15 types identified by the Operational Group, or the specific presence of a few types of frailty that, combined together, put the frail elderly person in a much more dangerous condition). Hence, a longer list of services is made available, in addition to the basic ones, as above mentioned. In particular, thanks to the collaboration of voluntary associations, the following services are provided:

- Transportation and accompaniment of elderly people to access health services;
- Transportation and accompaniment of elderly people for handling various errands and tasks;
- Transportation and accompaniment of elderly people to allow them to take part in recreational and socialization events (e.g., within community centers or premises of associations joining the network);
- Home company (also for newspaper or book reading);
- Home Grocery Delivery and distribution of products coming from a "Food Bank";
- Delivery of drugs (with the help of Pharmacy associations);
- Home delivery of medical reports, collected from the various health facilities;
- Performance of small domestic chores.

The so-called "temporary Intensive eCare" service was also defined. It includes the provision of the service for a limited period of time to senior citizens in particular situations, such as: falls, post- discharge from hospital or from a senior facility, momentary situation of acute illness (e.g.: flu, trauma, health deterioration), temporary absence of family members, etc.

### 3.3. Assistential continuity after difficult hospital discharges

The main objective of this branch of intervention is to guarantee a socio-assistential network, aiming to favor the possibility for the senior to anticipate his/her return to home from the hospital, “protecting” the discharge in a prospective of assistential continuity and of prevention of a further hospitalization.

The actual implementation modality consists in the provision to the senior of a temporary service supporting the hospital discharge, according to the real necessity of the citizen, allowing therefore a return to home that is earlier than what would be possible in standard times, without the service. This way, a double important result are obtained: the length of the senior’s hospitalization, allowing him/her to be back at his/her domicile as quickly as possible; and consequently leading to a significant reduction in hospitalization costs.

The service target is constituted by the senior population, with a special attention dedicated to citizens over 70, selected according to the following criteria:

Conditions of partial self-sufficiency, that are expected to be temporary and depending on the event which caused the hospitalization;

A family that is present and able to collaborate, but not to take charge of the need or part of it;

Co-presence of socio-assistential exigencies and necessity of a health support, of whatever entity.

The selected subjects, that are notified by the hospitals before the actual discharge, are provided with a temporary support, with a variable lengths from one to six months, according to the real necessity of the senior; such support can consist in a professional intervention with highly specialized personnel (professional nurses, other paramedical staff and so forth), in addition to the presence of a familiar assistant, full time or part-time on a daily/weekly basis, able to take care of the daily domestic errands (shopping, cooking of meals, house cleaning, personal hygiene and so forth).

In these cases, the eCare service performs the extremely important role of “hub” of the entire service: through the Contact Center, in fact, the persons discharged from the hospital are monitored in all the aspects related to their condition: the patient or his/her relatives can, in fact, call on a 24/7 basis to signal problems of any nature, and the operators take charge of the problematic situation. The involved professionals also regularly refresh the information provided in the socio-health file of the citizen, in order for all the subjects that are involved in the assistant process to remain always updated on the evolving situation in all its aspects, as well as on the treatments or services that have been implemented for the assisted person. In addition, the Contact Center monitors the state of the relationship between the assisted person and the familiar assistant, in order to try to solve all the possible cases of friction or conflict that can occur in the daily exchange.

## 4. Other successful EU model

### 4.1. Technology Supported Self Care (at Scale) - United Kingdom

Ageing populations and the rise in chronic diseases are major societal challenges for the UK, Europe and beyond. The growing number and proportion of older people are likely to increase the incidence of chronic diseases and place considerable financial and capacity pressures on health and social care services and the wider economy. In Liverpool City Region, these challenges are exacerbated by health and well-being indicators, that despite some notable improvements in recent years, remain worse than national averages.

Partnering with healthcare, third sector and industry, the NHS in Liverpool has added capacity to community nursing services by building a remote telemetry hub. This hub, which is clinically staffed, provides patients (and their families) with:

- education
- information & advice
- support to enable them to manage their long-term health conditions e.g. COPD, heart failure and diabetes.

Patients (and/or families) use digital, peripheral devices to record vital signs which are monitored by clinical practitioners in the hub who use the data to decide upon the appropriate intervention. This is a mainstreamed, core funded service which has increased service capacity by in excess of 12,000 patients over the last 2 years, and currently supporting 1,100 at any one time.

Liverpool has been widely recognised, nationally and internationally, as being in the vanguard of developing, implementing and testing policy and practical solutions to these key challenges. This profile is built upon the More Independent (Mi) initiative, led by Liverpool Clinical Commissioning Group (LCCG), that is developing and deploying innovative technologies and integrated services to boost self-care and enable people to live independently for longer. In so doing, LCCG and Mi aim to reduce financial and capacity pressures on expensive secondary care, enhance the efficiency and effectiveness of health and social care provision, improve people's health and wellbeing and garner the economic development potential of strengthened knowledge and innovative solutions that can promote a healthy and active population.

Mi is one of four dallas (delivering assisted living lifestyles at scale) programmes that, following an extensive competitive process that culminated in 2012, received financial backing, from the UK Government's Innovate UK (formerly the Technology Strategy Board). The dallas programme has the overarching aim of transforming the lives of people by developing and using innovative technology products, systems and services to improve well-being and increase independence. Reflecting the Innovate UK's economic brief to boost the United Kingdom's (UK) economy through technological innovation, its focus includes positioning the UK as a global leader in care and health technology.

Mi approached the challenge of achieving transformation (within health and social care) not from a technological perspective but from a people perspective. It has moved from a position where the welfare state acts simply as a safety net, to one where there is an expectation that the state is responsible for every aspect of health. This situation contributes to very “traditional” views of what citizens expect when they become vulnerable (social worker/ care home/home care/day centre) or ill (hospital/doctor).

Mi is investing in the creation of a ‘Person-Held Record’ (PHR) Platform to enable data sharing and integration between the statutory sector, the citizen, their circle of care, plus thirdparty Apps and organisations. The underlying principle of the PHR is that the citizen’s personal data is owned by them, and their consent must be obtained before any sharing of their data can take place. The Mi approach is unique in that we do not wish to create a closed system, but view this as a market place which offers:

- functionality to encourage development of the next generation of third-party health and wellbeing Apps, where data and events can be easily shared with other Apps, people or organisations - according to the citizen’s wishes a choice of third-party Apps for citizens to access their data (not designed by the NHS)
- the ability for citizens to use an existing social identity, rather than create a separate one
- a secure, encrypted mechanism for data exchange with NHS N3 systems and integration with remote staff
- secure storage of personal data, plus built-in integration with a range of health devices
- a referral mechanism, so that Apps can be recommended by service providers and easily picked up by the citizen.

As part of this development, Mi is hoping to pilot new identity authentication mechanisms to link social identities to an NHS identity, so that the right clinical information can be confidently shared with the citizen. Linked to this, Mi expects to develop a Trust Framework for sharing data with the citizen that will help to crystallise national IG guidance.

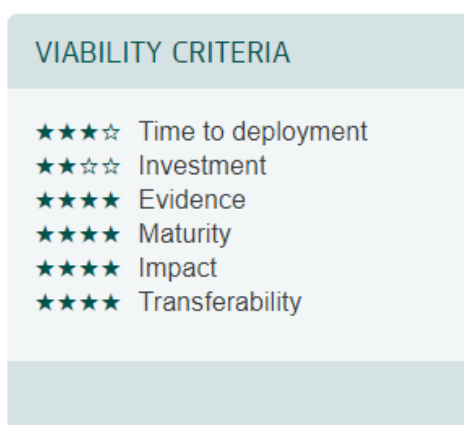


Fig.1 - EIP AHA Viability criteria of GP - Technology Supported Self Care

## 4.2. Telemedicine for real life integrated care in chronic patients - Italy

The Service consists of a structured telemedicine program differentiated for the types of chronic disease involved. From year 2006 up to now chronic patients (chronic obstructive pulmonary disease and chronic respiratory insufficiency, chronic heart failure, amyotrophic lateral sclerosis, post-stroke and post-cardiac surgery) discharged from our Institute after a period of in-hospital rehabilitation were admitted to the program. The length of the program differed among diseases. The Telemedicine service consists of a structured physician-directed and nurse-managed telephone support and telemonitoring. An educated and dedicated health team is involved, including specialists, nurses, physiotherapist and technical personnel. A nurse-tutor has the key role in the service, connecting all the hospital and home personnel by telephone. The intervention consists of four principle components:

- 1) pre-discharge education sessions on the disease and its therapy
- 2) regularly scheduled telephone coaching
- 3) home telemonitoring in real time of different parameters (weight, blood pressure, heart rate, saturation, etc.) and assessment of scales to help patients to detect worsening symptoms,
- 4) A specialist second opinion for nurse or patient' GP if necessary. The devices supplied for remote telemonitoring depend to the principle problems of the patients. Where rehabilitation sessions are present, a videoconference solution is provided.

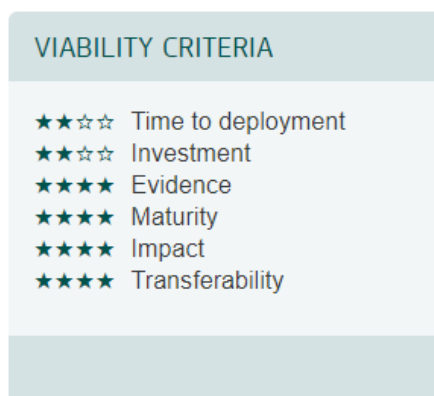


Fig.2 - EIP AHA Viability criteria of GP - Telemedicine for real life integrated care in chronic patients

### 4.3. Advanced Risk Modelling for Early Detection - Scotland

This practice focuses on allowing a person to use ubiquitous and non-stigmatising consumer technologies to act preventatively, pre-empting negative events and remaining independent for longer. General and specific objectives by identifying at-risk individuals sooner, there is potential to improve quality of life and save millions of pounds from the public purse, by changing care delivery, increasing self-management and reducing hospital admissions.

Main methods, processes and organisation ARMED focuses on key metrics associated with frailty and risk of falling, such as low grip strength, muscle mass, hydration levels, low heart rate and heart rate variability. These can easily be monitored and measured from the comfort of an individual's own home using the latest wearable technologies. Data captured helps identify a variety of frailty indicators that would have previously gone unnoticed, such as Service Users who are significantly dehydrated or have a reduction in grip strength. It helps identify risk trends through Service User weight loss or a reduction in muscle mass, despite an increase in weight and direct fat. It highlights restlessness at night, which flags up ongoing risk during the day.

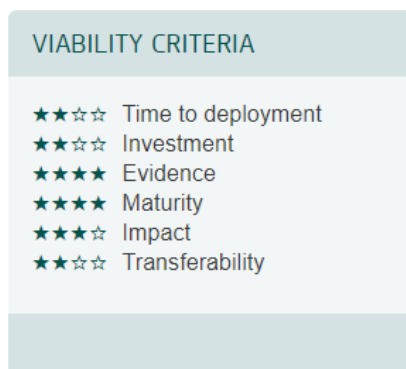


Fig.3 - EIP AHA Viability criteria of GP - Advanced Risk Modelling for Early Detection

#### 4.4. Home Care for Early and Protected Hospital Discharge - Italy

Chronic multimorbid patients often have access to hospital for the reacutezation of one condition, but once in the hospital, often the discharge is delayed by the exacerbation of the other conditions. The longer the stay, the more the conditions exacerbate. For this reason, early discharge represents an important target in the management of hospitalized patient. To favour this strategy, ADD protection has developed an ICT based home monitoring provided as a service by a private company of home care, that allow the hospital staff to follow the patient at home, like it was still in the hospital. The data collected at the place of the patient are made available to the staff of the hospital through a web-based platform, that feeds the hospital EHR of the patient.

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

The good practice implements pro-active and multidisciplinary management of chronic diseases, with approach beyond the boundaries of the health system. The focus of the practice is on the integrated management of chronic diseases that increase the risk of frailty and disability - specifically: hypertension, atherosclerosis, endocrinometabolic diseases, heart failure, malnutrition, osteoporosis and compliance to therapy. The good practice has the following characteristics:

- 1) Organization model for managing homecare in the region with specific solution for Salerno sub region that use ICT to integrate the community-targeted approach of healthcare, healthy lifestyles promotion and disease prevention with the clinical databases;
- 2) Scaling-up the use of the ICT-supported services to other outpatients clinics for chronic diseases and increase the number of chronically ill patients that are enrolled in homecare and telehealth based follow-up;
- 3) Integration of all necessary processes between local health care providers (incl. family doctors), hospital and local health authorities to support continuity and integration of care by using shared database;
- 4) Integration of novel tools in the services provided to home assisted patients, such as teleconsultation and telemonitoring of vital signs;
- 5) Business model to run homecare by using innovative ICT solution;
- 6) Design of innovation in line with up to date EU wide recognized methodologies and recommendations, incl. quadruple helix, integrated care, patient empowerment and challenging chronic diseases in line with EIP on AHA innovation framework and also healthcare and care delivery transformation enablers as presented in Blueprint Digital transformation of HC and C for the ageing society.



ICT solution was developed by a local company that also provides homecare. The solution was provided free of charge to the regional office in Salerno as part the business model. Cost of homecare is covered by Campania region. Regional office decides about payments to the provider of homecare for each patient. The Curedom platform allows the analysis of the detailed cost per access at the home of the patient. According to the identified care pathways there is possibility to define the cost of each patient. So far, the average cost is around 400€. Business case is an essential part of the overall solution to guarantee its sustainability.

All the stakeholders to get together and work on innovations of homecare - in competitive environment (in the sense of other concepts of homecare or ICT driven innovations) both on both regional (Campania) and national (Italy) levels (it means that there are also other solutions being developed in parallel and regions and the country can select from more models for future support). Technical solution is indispensable part but creation of functional organizational model is the core of the good practice. All this to be done practically only from operational resources, i.e. without substantial extra investment. There were no extra barriers as the new way of homecare provisioning addressed commonly recognized problem in insufficient capacity of previous system to cope with increasing demand for homecare, esp. by seniors.

Technical solution as such is interesting in its functionality (the management and database SW, portal) but it is not considered key element for the practice and it can be designed and developed in line with local conditions in the Czech Rep. and Olomouc. The practice as seen in Salerno provoked to review various aspects of similar services provided in Olomouc region from organizational viewpoint, though they are different in its scope and quantity in comparison to Italy. This relates especially of Czech form of homecare reimbursed by health insurance, here referenced as healthcare homecare.

The good practice in Salerno has also opened question of suitable ways how to procure ICT solution, in this case for telehealth services provided by University Hospital Olomouc (UHO). This is topical as there is program prepared for it in UHO. Telemonitoring services and their technologies in the good practice in Salerno are part of Beyond Silos EU project and their scopes are similar to those known in Olomouc Reference site. Exchange of relevant information regarding telemonitoring in various diseases is however very useful.



The practice as seen in Salerno spans over several stakeholders in health and social care. The practice demonstrates current viable application of ICT in healthcare (and social care) i.e. helps to keep the patients at home instead moving them to hospitals, palliative care providers or other institutional settings. UHO is complex healthcare provider in Olomouc region and its responsibility is given by state regulations. UHOs main focus including investment in innovation is in clinical care and clinically-relevant innovations. Homecare in the form as provided in Italy is not established in the CR. Original idea of this Twinning was to make use the experience of the good practice in development of new system for telemonitoring of patients with a range of diseases that are treated in UHO. This idea is still pursued but this Campania practice can provide more.

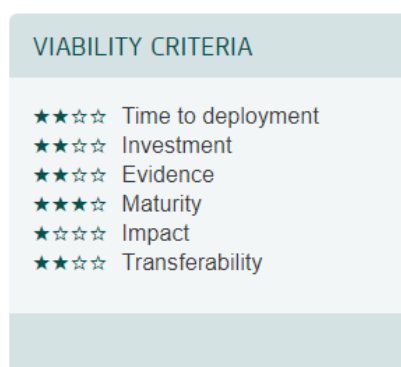


Fig.4 - EIP AHA Viability criteria of GP - Home Care for Early and Protected Hospital Discharge

## 4.5. Refer-to-Pharmacy - United Kingdom

Refer-to-Pharmacy allows bedside referral of patients to their community pharmacist for either a post-discharge medicines adherence consultation (New Medicine Service, Medicines Use Review), or to update a patient's medication record with changes made in hospital to improve safety. Pharmacies are also informed on hospital admission of their care home or blister pack patients so they can pause dispensing to reduce wasted medicines. Refer-to-Pharmacy is an electronic tool that facilitates rapid referral by the hospital pharmacy team; it is integrated with Trust IT systems so patient demography instantly populates the referral and their electronic discharge letter is automatically attached at discharge.

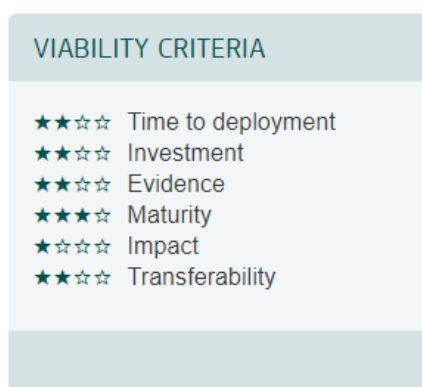


Fig.5 - EIP AHA Viability criteria of GP - Refer-to-Pharmacy

## 4.6. My plan - Sweden

The Project covers 5 hospitals, 33 primary Health care centres and the social service at 14 municipalities. It aims to empower the patient in both the discharge planning process and the planning process at home by increasing their influence on the process and enhance their access to their plan. This will be reached through development, test and implementation of new workflows, routines and new supportive technology that support a new upcoming law that regulate the planning process.

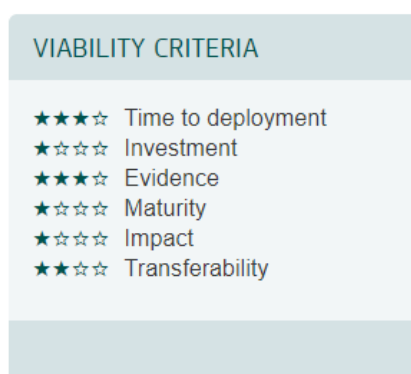


Fig.6 - EIP AHA Viability criteria of GP - My plan

## 4.7. Catalan open innovation hub on ICT-supported integrated care services for chronic patients

The Catalan Open Innovation Hub on ICT-supported integrated care services for chronic patients aims to foster a collaborative network at European level in terms of generation, deployment and evaluation of digitally-supported innovative health services. The practice is conceived to serve the entire population of Catalonia (7.5M citizens), Spain (ES). However, the target group are chronic patients with focus on multimorbidity management and on coordination with social support and dependence. Accordingly, it encompasses both vertical (specialized vs. community-based care) and horizontal (healthcare vs. social support) integrations, combining a population-health orientation with a collaborative adaptive case management approach. The Catalan Open Hub promotes and assesses the transfer of care complexity from hospital-based to community-based care aiming at generating health value both at provider and at health system level with a triple aim approach (i.e., Improve Population Health, Improve Care Experience and Reduce per Capita Cost).

Ultimately, the practice fosters the transfer of biomedical knowledge and technologies to healthcare service providers, health-related actors and industry. The initiative would like to generate a significant contribution of Catalonia toward a more efficient healthcare scenario in the 21st Century, based on the following strategic areas: Deployment and assessment of ICT-supported integrated care services. Priority is given to services focused on prevention, enhancement of patients' resilience to disease and rehabilitation. Application of holistic strategies for subject-specific risk prediction that consider multi-level covariates influencing patient health in order to increase predictive power and enhance clinical decision-making based on sound estimates of individual prognosis. Alignment with the Big Data Analytics Master Plan promoted by the Catalan Health System (SISCAT) fostering adoption of cloud-based services in real world settings.

Catalan concept of ICT-supported integrated care services is a set of well interrelated practices that implemented patient and citizen centered care based on population approach and care integrating supported by ICT.

As the Originator's good practice comprises dozens of elementary measures that have been developing over more than 30 years, there are elements that can be transferred faster but many require longer preparation even on political and legislative level and also involvement of further stakeholders. One essential barrier that is given by lack of relevant information how IC and digital health innovations can be implemented and operated in practice in Europe as many of the stakeholders in the CR are not very familiar with capabilities and benefits of IC and digital health innovations. Practical experience of advanced regions such as Catalonia with respect to impact on QoL of the population, expected length of life, healthy years and effectiveness of the systems, or there is cultural barrier set by present form health and social care systems has immense value for the Adopter.

Digital support of health services in Catalonia involves regional interoperability among an extensive network of healthcare providers with highly heterogeneous health information systems. It is of note that a well-developed health information exchange system is in place. This is the role of the shared regional health record (HC3) that consist of a series of health information exchange platforms linking publicly-paid heterogeneous healthcare providers at regional level. Within this mature scenario the following key tools are fully consolidated and implemented across the entire region:

- Primary Care electronic medical record (eCAP) and the Electronic Prescription;
- The Personal Health Folder (La Meva Salut, LMS) also interoperable with HC3.

All these basic tools are governed by the eHealth (eSalut) Office. The steps followed for the development of these three items, their current status and future evolution will be shared by the practice.

It is of note that the region is currently developing an ambitious ICT plan aiming at full digital transformation of the health system with emphasis on cloud-computing and introduction of artificial intelligence (AI). Within this umbrella will be sharing experiences testing digital tools to support - collaborative work among stakeholders across health and social care tiers, as well as implementation of adaptive case management and digital tools for patients' self-tracking information.

Target citizens in the practice are chronic patients with focus on multimorbidity management and on coordination with social support and dependence. The program encompasses both vertical (specialized vs. community-based care) and horizontal (healthcare vs. social support) integrations. Combines a population-health orientation with a collaborative dynamic case management approach.

The practice has been implemented during the last decade with a close alignment between policies and efforts of the Catalan Ministry of Health-Generalitat de Catalunya, developed through the regional Health Plans 2011-2015 and 2016-2020, and specific innovation projects: NEXES and NEXTCARE implemented and adopted in the health care district of Barcelona-Esquerra (AISBE, 520 k inhabitants) wherein the Hospital Clinic of Barcelona is the reference centre.

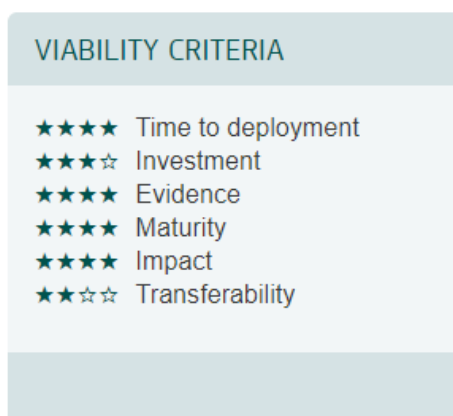


Fig.7 - EIP AHA Viability criteria of GP - My plan

## Conclusion

Implementation of practices mentioned above requires essential changes of the current health and social care system in the CR; that means first legal and economic conditions that would enable viability of such practice. As the Czech healthcare system has been developed for decades in given paradigm (strong concentration on medical interventions including prevention ones but less on patient empowerment and lifelong healthcare measures and non-hospital care) the changes may not be easy to implement for longer time. This is due to existing models of money flow in health and social care, reimbursement and lack of regulation/supervision related to societal outcomes of reimbursed healthcare (typically such as impact on healthy years).

Complete practices cannot be transferred to the CR as a whole system instantly due to differences in health and social care systems, extend of homecare, absence legislative and economic conditions, scope of regional strategic agenda of the region with regards to seniors and healthcare, and remit of UHO. It is therefore clear that original plan that assumed lower barriers given by the differences in health and social care systems cannot be followed if the practice shall be sustainable.

All the above-mentioned good practices have one main feature - the degree of digitization of individual processes and especially the possibility of easy sharing of medical documentation in the form of EHR, which highly facilitates communication between the health and social system. Another common feature is the interconnection of the health and social system from the point of view of ministries, where in the Czech Republic these ministries work separately, but in most of the mentioned countries it is the opposite. For this reason, it is possible to adopt only some elements of the listed good practices, which can be implemented almost immediately without major interventions in the system. The whole organizational process of good practices, especially from Italy and Barcelona, is more time-consuming and it is necessary to make systemic changes so that good practice can be transferred almost completely regarding the specifics of the Czech Republic. It should be noted that the creation of such good practices took more than 30 years for example in the case of Catalonia.



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