JADE CARE

Joint action on implementation of digitally enabled integrated person-centred care

D8.1 THE DANISH ROADMAP TOWARDS INTEGRATED CARE ORIGINAL GOOD PRACTICE AND TRANSFER PROCESS

Core document

Health Innovation Centre of Southern Denmark

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Table of abbreviations

App	Application
B	Block
(P)CCP	(Prioritized) Complex chronic patients
CCU	Care continuity Unit
CCUH	Children' s Clinical University Hospital
CHIF	Croatian Health Insurance Fund
CIPH	Croatian Institute of Public Health
CF	Core Feature
COPD	Chronic Obstructive Pulmonary Disease
COVID	Coronavirus disease
CSCJFA	Consejería de Salud y Consumo Junta de Andalucía (Andalusian Regional Ministry of Health and Consumer Affairs)
CSPFU	Centralised System for Proactive Follow-up
DESI	Digital Economy and Society Index
DK	Denmark
DKK	Danish Krone
DM	Diabetes mellitus
EHR	Electronic Health Record
EU	European Union
FFIS	Fundación para la Formación e Investigación Sanitario de la Región de Murcia (Foundation for Health Training and Research of the Region of Murcia)
FPS	Fundación Progreso y Salud (Progress and Health Foundation)
GP	General Practitioner
GRS	Gerencia Regional de Salud (Regional Health Department)
I(C)T	Information (and Communication) Technology
JA	Joint Action
KPI	Key Performance Indicator
LAP	Local Action Plan
LCF	Local Core Feature
LGP	Local Good Practice
MoH	Ministry of Health
NA	Next Adopter
NAWG	Next Adopter Working Group
NCD	Non-communicable diseases
oGP	Original Good Practice
OUH	Odense University Hospital
POCT	Point-of-care-testing
PDSA	Plan Do Study Act
SACYL	Gerencia Regional de Salud de Castilla y León (Regional Health Department of Castila and Leon)

SAS	Servicio Andaluz de Salud (Andalusian Health Department)
SMS	Servicio Murciano de Salud (Health Department of Murcia)
SMART	Specific Measurable Achievable Relevant Time-bound
SWOT	Strenghts-Weaknessess-Opportunities-Threats
TC	Teleconsultation
UHO	University Hospital Olomouc
WP	Work Package

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1 The Region South Danish original Good Practice

1.1 Presentation of the original Good Practice

1.1.1 The trigger and network

The Digital Roadmap towards an Integrated Healthcare Sector is a story of long-term efforts to build strong relationships and coordination between sectors and its healthcare professionals. It is founded on a patient-centred and collaborative approach, to ensure correct and coherent communication and coordination between the different healthcare sectors in the Region of Southern Denmark.

The digital roadmap consists of three core features that serves as the foundation for all cross-sectorial communication in the healthcare system in The Region of Southern Denmark:

- **The Health Agreement**: A regional political agreement and vision that frame the cooperation between the Region of Southern Denmark, the municipalities, and the general practitioners,
- **National digital communication standards**: Standardized ways of communicating and sharing data about the patients, that are compliant with the many different Information and Communication (IT)systems, and
- **The SAM:BO Agreement**: A unique regional cooperation agreement concerning cross-sectorial integrated care and continuity of care. It describes how the organization around the cross-sectoral healthcare of citizens needs to be organized, implemented and followed up.

These three elements overall constitute the highway, and a variety of digitally supported health services are connected to the highway: e.g. apps and website for patients, video conferencing for psychiatric patients, toolboxes for healthcare professionals, and national programs and initiatives.

Denmark as a Digital Nation

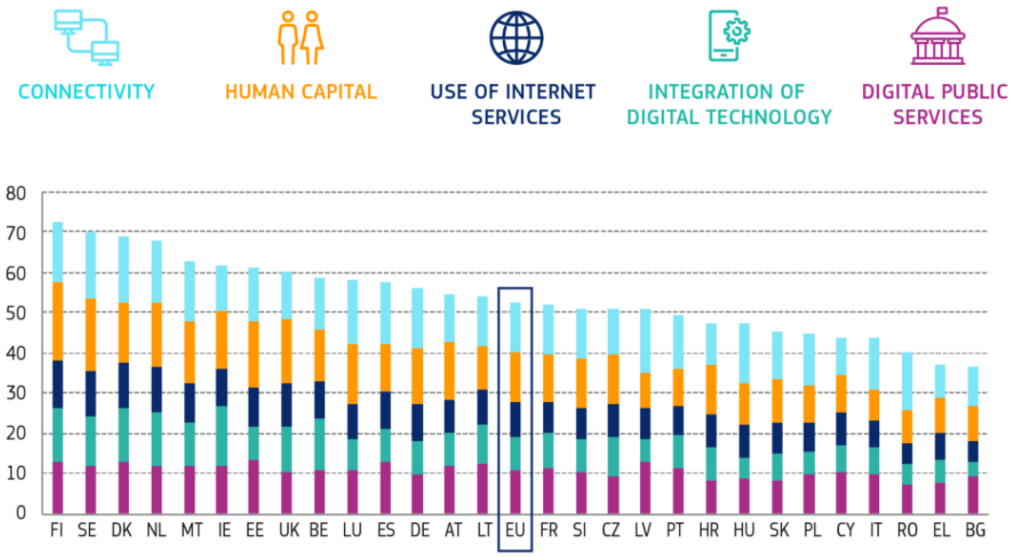

Figure 1: The Digital Economy and Society Index (DESI) 2020
Source: https://ec.europa.eu/digital-single-market/en/digital-economy-and-society-index-desi

Denmark ranks third out of the 28 EU Member States in the European Commission's 2020 edition of the Digital Economy and Society Index (DESI), which tracks the progress of digitization in the following five dimensions:

- **Connectivity** – the deployment of broadband infrastructure and its quality
- **Digital skills** – The skills needed to take advantage of the possibilities offered by a digital society
- **Citizen use of Internet** – the variety of activities performed by citizens already online
- **Business technology integration** – the digitization of business and development of online sales channels
- **Digital public services** – the digitization of public services, focusing on eGovernment

The International Digital Economy and Society Index is a composite index that summarizes relevant indicators on Europe's digital performance and tracks the evolution of EU Member States in digital competitiveness. Over the past year, all EU countries improved their digital performance. Denmark scored the third highest ratings in DESI 2020 with an overall DESI score of 69 (out of 80) and excels in connectivity, use of internet services, and digital public services (see figure 2 below).

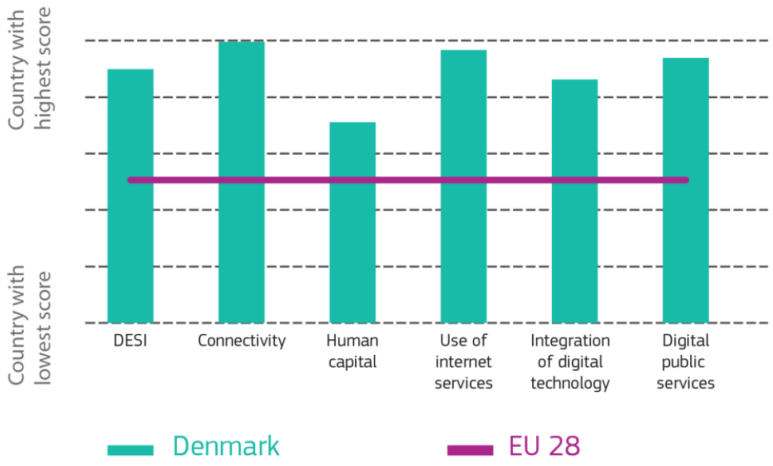

Figure 2: Denmark's Digital Economy and Society Index (DESI) ranking in 2020
Source: https://ec.europa.eu/digital-single-market/en/scoreboard/denmark

1.1.1.1 The Danish Healthcare System

Universal access to healthcare is the underlying principle in the Danish Health Law, which sets out the government's obligation to promote population health, and prevent and treat illness, suffering, and functional limitations. Other core principles include ensuring: a high quality of care; easy and equal access to care; service integration; choice; transparency; access to information; and short waiting times for care. The law also assigns responsibility to regions and municipalities for delivering health services. The Danish healthcare system is primarily publicly funded. The majority of funds for the healthcare system comes from a block grant given by the state, which constitutes 81% of the total budget, a co-financing of 18% of costs per patient from the different municipalities and a 1% activity contribution from the state. Co-financing from the municipalities is one of the incentive structures that has been implemented in our healthcare system to reduce the number of admission days. The Danish healthcare system operates across three political and administrative levels: the state, the regions, and the municipalities (national, regional, and local levels). The Ministry of Health holds the overall regulatory and supervisory functions on health policies.

The five regions are primarily responsible for the hospitals and psychiatric care, but also other areas such as regional development, ground pollution, specialized social services and special needs education. The municipalities are responsible for the primary healthcare services, as well as elderly care. Both the regions and the municipalities are governed by political councils, which are elected for terms of four years.

There are around 3,400 general practitioners (GPs) in Denmark. They are self-employed and paid by the regions via capitation (about 30% of income) and fee-for-service (70% of income). The GP is often the citizens' first meeting with the healthcare sector in DK, i.e. the gatekeeper in the healthcare system. Gatekeeping means that the patients have to see a primary care provider who decides whether specialist care is necessary, and the GP can therefore be seen as overall coordinators for the citizens' course of illness, as the GP refer citizens to both specialized services and treatment options within the healthcare sector.

1.1.1.2 The Region of Southern Denmark

The Region's core assignments are divided into four main areas:

- Health
- Social services and Special education
- Psychiatry
- Regional Development

The most important task of the Region of Southern Denmark is to operate the healthcare services in Southern Denmark. The Region also manages specialist assignments in the field of social services, and in relation to both children and adults with disabilities. Finally, the Region is responsible for assuring and coordinating development in Southern Denmark.

The Region of Southern Denmark has an annual budget of approximately 3.36 billion euros (DKK 25 billion) and a population of 1.2 million people. Around 21,000 people are employed in the field of healthcare in the Region of Southern Denmark.

The Region of Southern Denmark runs four main somatic hospital units - one of these is a university hospital with all the medical specialties represented - and a psychiatric hospital. The Region of Southern Denmark works with approximately 800 General Practitioners (GPs) to provide medical care. The Region is also responsible for subsidizing medicine as well as treatment by dentists, physiotherapists, chiropodists, chiropractors and psychologists. Moreover, the Region works closely with both GPs and the 22 local authorities (municipalities) to provide citizens with the best possible coherence and coordination in the continuity of care.

The vision for the healthcare service in the Region of Southern Denmark is to serve citizens, and make an active contribution in preventing and treating illnesses – and thus improving citizens' health in general.

1.1.2 Scope of the practice

The main challenge that The Digital Roadmap addresses is the need for timely and continuous communication throughout the different sectors and domains in the Danish healthcare system. A sectorial division in handling different aspects of a citizen's health and wellbeing characterizes the Danish Healthcare system. Therefore, coherence, cooperation, coordination and continuity of care are keywords when it comes to the patients' courses and treatments, especially when all sectors of the healthcare system (GP, municipality, hospital, and other healthcare providers) are involved.

The general purpose of the implementation is to improve and strengthen the existing cooperation between the healthcare sectors, in order to create a healthcare system where the patient experiences coherence, security, and a seamless transition from one sector to another. The digital solutions to support complex and chronical diseases further support the digital and cross-sectorial communication.

The target population is all users of the healthcare sector in the region. Focused initiatives and digital solutions for e.g. people with one or more chronical disease, elderly people, people with mental health disorders and lifestyle diseases, emerges in different ways, but are often rooted in national or regional agreements, such as The Health Agreements, or local needs.

1.1.2.1 Information on main blocks and core features

1.1.2.1.1 The Health Agreements (B1-CF1)

The Health Agreements have existed since 2007 and every Danish regions and municipalities have obligated themselves to form agreements that evolves around integrated care and continuity of care across the healthcare sectors. The Health Agreements are formed every four years, and can be seen as the formal framework for the cross-sectorial cooperation between the regions, the municipalities and the general practitioners. The agreements differ from region to region and have different focal points, as different challenges around the country are prevailing, and political views may factor in as well.

The current Health Agreement (2019-2023) aims to cooperate in preventive initiatives, by decreasing the number of smokers (particularly young people), reducing the number of people who are overweight, and increase the mental wellbeing and health among children and young people. Secondly, it aims to work for better continuity of care for people with mental illness, elderly citizens, and people with chronic disease. Lastly, it aims to secure a connection to the educational system and job market, as we know it is important for all people, whether suffering from somatic or mental diseases, to have a close connection to society and feel that we make a difference in our everyday lives.

These objectives are compared to The Eight National Health Goals, relevant national databases and the Danish National Health Survey to see how well the goals are achieved.

Figure 3: The Eight National Health Goals. The national goals will ensure a clear and common direction towards higher quality and potentials for improvement for all sectors and actors in the Danish healthcare sector

Previous Health Agreements have led to a decrease in the average length of stays in our hospitals in the Region of Southern Denmark. Figures from 2011 and 2012 show, that the average length of stay in hospital was significantly lower in the Region of Southern Denmark than in the country as a whole. Particularly in 2012, the average length of stay in the Region of Southern Denmark was only half the national average.

1.1.2.1.2 Messaging Standards (B1-CF2)

The communication and exchange of healthcare related data across sectors would not have been possible, had it not been for the excellent IT-infrastructure and without the development of standards and profiles throughout the entire Danish healthcare sector.

MedCom supports integrated care and facilitates cooperation between all parties in the healthcare sector through digital communication. MedCom was established in 1994 as a publicly funded, non-profit organization with the mission of facilitating the digital cooperation between authorities, public organizations, private entities, and companies who are all linked to the Danish healthcare sector. MedCom is financed and owned by the Ministry of Health, Danish Regions and Local Government Denmark (the municipalities). MedCom enables general practitioners, hospitals, municipalities, and other healthcare providers to exchange health information by developing and implementing digital solutions. These solutions enable data exchange across sectors in order to support a digitally coherent healthcare system, which ensures that patients and citizens receive the best possible care and that relevant health information is available across the whole care pathway. MedCom works in close cooperation with all parts of the healthcare sector, including the IT-vendors, aiming to build solutions that supports clinical needs and that are implementable across the healthcare ecosystem. Furthermore, MedCom also safeguards data to allow specialized IT-systems to exchange health data in a secure and trusted way.

In the past 25 years, MedCom has developed standards for the exchange of healthcare data. More than 150 standards, profiles and web services consisting of 'the good letters' have been developed and are increasingly used in the healthcare sector. New standards are developed based on clinical needs, e.g. discharge summaries, laboratory results, referrals and rehabilitation plans. The standards secure that the various IT-systems and organizations can reuse the exchanged data.

The standards are the foundation for exchange of relevant data between the different parts of the healthcare sector. MedCom develops, documents, tests, and certifies IT vendors' implementations of these standards and offers support and consultancy as part of the process. For this, MedCom operates a quality management system and is ISO 9001:2015 certified. The increasing use requires a modernization of the digital health communication and of the standards that are used today. The communication must be efficient and with as few errors as possible. This is ensured when vendors and organizations go through a regular, homogenous and certified test procedure at MedCom's test center.

Currently, MedCom has a specific focus on the digital foundation for better collaboration between the social and healthcare sector as well as on national implementation of better digital tools for the GP, supporting even better collaboration in the healthcare system. MedCom recently started a process to convert all

standards from EDIFACT[1] and OIOXML[2] to HL7[3] FHIR[4]. This transformation will happen over the coming years and will happen in close collaboration with the healthcare providers and IT-vendors. At the same time, MedCom will also modernize the infrastructure used to exchange these messages. First, the European developed infrastructure for exchange of documents and data, eDelivery[5], will be tested and later nationally implemented in the healthcare domain. Both activities are a central part of MedCom's work in the coming years and they aim to support the emerging needs within the healthcare sector to share data in a more secure, reliable, and faster way by using international standards and infrastructure building blocks.

MedCom is systems manager for three cross-sectoral IT-solutions: the Danish Health Data Network, the Joint Video Infrastructure (VDX), and the National Home-Monitoring Database. Consequently, MedCom has the responsibility for tasks such as requirement specifications, tenders, follow-up on contracts, surveillance, information security, support, user groups and further development of these public and shared IT-solutions.

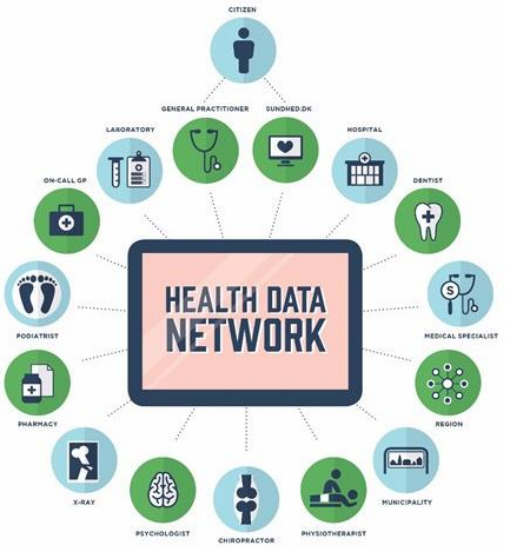

Figure 4: Illustration of The Danish Health Data Network and the cross-sectorial communication flow
Source: https://www.medcom.dk/medcom-in-english/about-medcom

1.1.2.1.3 The SAM:BO Agreement (B1-CF3)

SAM:BO is a regional cooperation agreement between the Region of Southern Denmark and the 22 municipalities in the region concerning integrated care and continuity of care across sectors. The aim of the

[1] Electronic Data Interchange for Administration, Commerce and Transport is an international standard developed by the United Nations . Source: https://ec.europa.eu/eip/ageing/tags/edifact_en

[2] *OISXML is an* XML invoice standard that is used in Denmark

[3] Health Level Seven International (HL7) is a not-for-profit, ANSI-accredited standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services. Source: https://www.hl7.org/

[4] FHIR (Fast Healthcare Interoperability Resources) is an interoperability standard intended to facilitate the exchange of healthcare information between healthcare providers, patients, caregivers, payers, researchers, and anyone else involved in the healthcare ecosystem. Source: https://www.hl7.org/implement/standards/product_brief.cfm?product_id=491

[5] A building block that provides technical specifications and standards, installable software and ancillary services to allow projects to create a network of nodes for secure digital data exchange. By building with eDelivery, public and private organizations from different sectors can easily create a safe and interoperable channel to transfer documents and data among each other over a public or private network. Source: https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery

regional cooperation agreement is to ensure that end users (patients) are offered coherent courses of treatment involving different sectors of the healthcare services in the region, and hereby achieving higher quality and greater patient satisfaction with the health services provided. Patients must experience coherence in the course of treatment offered: starting at their home, from where the general practitioner is contacted, through diagnosis and hospital treatment, until the person is back home again and subsequently begins rehabilitation. The point of departure is the individual's needs, so treatment is offered when the need arises. The cooperation agreement aims to improve collaboration between general practice, primary and secondary care sector, with regard to individual end users (patients) and their passage through the systems, and to ensure dialogue and coordination between the parties, with the greatest possible involvement of patients and their relatives.

The agreement was put into practice in February 2009, and can be seen as an overall agreement that replaced agreements between the different counties and municipalities. When the Region of Southern Denmark was formed and a lot of municipalities merged, citizens could potentially become patients on a range of hospitals within the region, meaning that hospitals could get patients from all 22 municipalities, which was not the case before where the counties and municipalities worked as much smaller units. Therefore, a need to set some common guidelines, secure the cooperation, and ease the work procedures between the parties occurred. One of the main changes was that the discharge notification from the hospitals to the municipalities no longer applied. Instead, common guidelines for discharge of a patient takes place as a dialogue between hospital and municipality immediately upon admission. In this way, a more careful discharge can be prepared, securing the continuity of care. Continuity of care is an important part of the agreement, as well as a holistic approach to healthcare, quality of care and patient safety.

SAM:BO is the first harmonized cooperation agreement covering the entire region to be incorporated in a Health Agreement between the region and municipalities. SAM:BO is an agreement binding on the two authorities, their institutions and employees.

The basic principles of *The SAM:BO Agreement*:

- Coherent courses of treatment for patients
- The effort should be adjusted according to needs
- Discharge begins at admission
- Achieving coherence and flexibility through dialogue
- Involving the end user (patient)

The agreement is based on IT-communication, and the parties involved have agreed on a joint IT-strategy. The purpose of this strategy is to secure cooperation and coordination in the continuity of care for the patients, which means that the communication must operate across all three sectors.

The working agreement applies to all health and social professionals working within municipalities or regional health services and includes general practitioners, clinical personal working in the hospital sector, community nursing and home help services as well as rehabilitation and social service employees e.g. social workers. The agreement has contributed to the transformation of the regional health system from a hospital-centred service to a patient-centred service.

The agreement applies to all commonly occurring cross-sectoral types of treatment offered to patients in the Region of Southern Denmark, regardless of diagnosis and age group. In relation to these types of treatment

offered to patients, the agreement sets up requirements for collaboration, communication, patient information and quality monitoring, with attention to cross-sectorial transitions throughout the course of treatment.

In addition to the cooperation agreement, special requirements concerning collaboration and coordination apply to a number of categories of patients, and these requirements are described separately. Here descriptions of and programs of treatment for groups of patients with chronic illnesses, and cooperation models designed for patients with incurable life-threatening illnesses and presumed short life expectancies.

1.1.2.1.4 Cross-sectorial digital communication: Additional solutions to support complex disease areas (B2)

Denmark has a strong and high-performing healthcare system. However, challenges remain when it comes to primary care and prevention. Harmful alcohol consumption and rising overweight and obesity rates among adults suggest a need for targeted public health policies in Denmark[6]. Denmark has a significant socioeconomic gap in life expectancy, and this can partly be explained by differences in exposure to various risk factors and lifestyles, including higher smoking rates, poorer nutrition and higher obesity rates among men and women with low levels of education. This has brought higher focus on prevention initiatives and programs, and e-learning, webinars, and other educational tools are increasingly used an integrated part of many the initiatives.

In the coming years, the healthcare sector will face more challenges; there is a demand for GPs that will grow faster than the supply, and we will see an increase of elderly citizens. Today, 15% of the population in the region is over the age of 60, and the increasing senior population poses an increase in use of healthcare services. Furthermore, an increase in comorbidity in older adults will greatly increase the complexity of managing disease in patients and overall health service utilization.

Some of the future challenges can be resolved with e.g. telemedicine, home-monitoring, video conference, and other tools to interact with the patients, making them more aware and better at mastering their own health and illnesses.

It is proven, that patients recover better and faster in the comfort of their own home, and that the benefits counts: reduced risk of further complications and infections, increase in independence, and that being in familiar surroundings with support from loved ones, family and friends is good for the overall recovery as well as mental wellbeing. Although allocating patients at home can result in a reduction in hospital length of stay, it can however increase overall length of care, which can lead to an increase of cost in the primary sector.

1.1.2.1.5 TeleCOPD (B2-CF1)

In the fall of 2015, the Danish Government, Local Government Denmark and Danish Regions agreed that telemedicine should be provided nationwide to all relevant patients with COPD (Chronic Obstructive Pulmonary Disease) by the end of 2019. The agreement was based on best practice from two large-scale

[6] For further reading, see the Danish Country Health Profile 2019: https://www.oecd.org/health/denmark-country-health-profile-2019-5eede1c6-en.htm

projects7, which cleared the way for the political agreement. The agreement entails a formation of a cross-sectoral telemedicine offer, within the five regions, which will be offered to relevant COPD patients. Five regionally based programs, consisting of regions and municipalities, will be leading the practical implementation of the dissemination, while the regional programs, Local Government Denmark and Danish Regions will be in charge of progress and benefits realization in the dissemination. The nationwide dissemination of telemedicine to patients with COPD will be contributing to the development of a collaborative health care system. The dissemination is expected to be the first step in this process. In time, new relevant patient groups will be offered telemedicine, insofar as the experiences are favorable and the effects are well documented.

Local Government Denmark, Danish regions and the Danish Government have agreed on a number of strategic objectives, which are key for both centralized and decentralized activities within the dissemination for patients with COPD.

The objectives are meant to ensure the realization of both patient-related and economic effects:

- Patients with COPD will experience a telemedicine solution involving fewer hospitalizations and outpatient visits
- Patients with COPD, who are offered telemedicine, has to experience an increased quality in treatment, increased flexibility and safety in their everyday life along with increased control of their disease
- It must be easy for patients with COPD and relevant for employees to use the telemedicine solutions

A joint portfolio steering committee was been established containing representatives from the five regional programs, Local Government Denmark, Danish Regions, the Ministry of Health and the Danish Agency for Digitization. Among other things, the steering committee coordinates a number of national projects, which are a prerequisite for the dissemination, and monitors the development within both the centralized and decentralized activities.

In the future, a similar setup for people with heart failure will be implemented under the name TeleHeart. The aim is to tackle the increase in heart failures due to demographic changes, where more people have greater life expectancy, and thus a higher risk of heart failure. In Denmark, approx. 62,000 people (2020) live with heart failure, and approx. 12,000 new cases are yearly found.

1.1.2.1.6 Telepsychiatry (B2-CF2)

The Centre for Telepsychiatry is running the Internet Psychiatry Clinic offering internet-based therapy in depression and anxiety in addition to the development and implementation of outpatient video consultations, mobile applications for mental health and web-based interventions to improve wellbeing among young people. Video consultations in outpatient care are used to ensure:

- Improved access to high-quality treatment services

[7]The large-scale project TeleCare North showed that telemedicine for patients with COPD has both financial and health effects. Further readings: *"TeleCare North has shown the way":* https://en.digst.dk/policy-and-strategy/digital-welfare/telemedicine/background/telecare-north-has-shown-the-way/ and *"The Economics of Telemedicine for Patients with COPD":* https://en.digst.dk/policy-and-strategy/digital-welfare/telemedicine/background/the-economics-of-telemedicine/

- Greater flexibility for patients
- Less time spent on transport to and from the outpatient clinic
- Fewer cancellations of appointments

Every department in the region's mental health service has video conferencing equipment and offers video consultations between patient and provider for treatment and follow-up. Patients are offered video consultation in the comfort of their own home. Outpatient video consultations are used for scheduled and urgent outpatient visits, medication management, psychotherapy and other forms of therapeutic and supportive consultations. The video consultations are compliant with data security and patient safety guidelines, and based on a bring-your-own-device model where patients use their own tablets or desktop computers. Following two pilots in 2013 and international randomized controlled trials showing that video consultations are safe, acceptable and effective in patients deemed clinically eligible in a range of mental health conditions, video outpatient consultations have been implemented at scale in the hospital, with reimbursement for the service equaling that of in-person consultation.

1.1.2.1.7 My Hospital (B2-CF3)

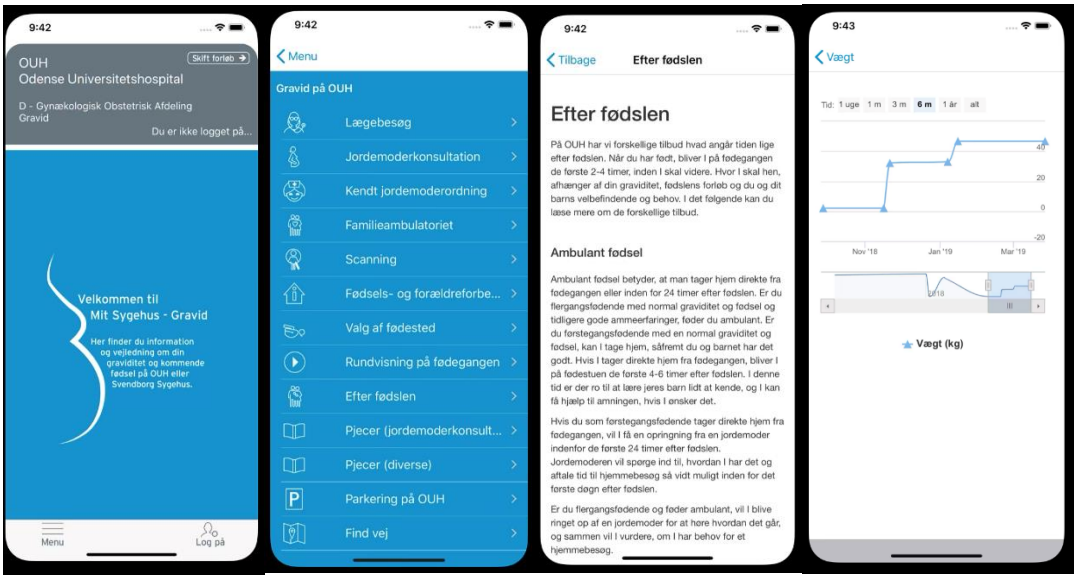

Figure 5: Examples from a maternity course in My Hospital

My Hospital (formerly known as: *My Patient Journey*) is an app for patients at hospitals in the Region of Southern Denmark, developed at Odense University Hospital (OUH). The app was first released in 2014, and more than 30,000 patients with 65 different types of disease courses use it. *My Hospital* became more widely used in 2014, as part of a Ph.D.-project funded by The South Danish Growth Forum (*Syddansk Vækstforum*) and the European Regional Development Fund and the European Social Fund as part of the innovation project *GameLab4Health*. In the Region of Southern Denmark, new parents are discharged after only four hours after an uncomplicated birth of a child. This practice created a need for easy communication with the new family when they came home to inform them about caring for a newborn, breast-feeding etc. In 2016, My Hospital was also put into use in two of the region's municipalities.

In the app, patients are able to:

- Read overall information (as seen on the third screen in figure 6)

- See pictures and watch videos
- Keep a journal of illness, conditions and symptoms
- Communicate with the hospital using chat messages, pictures and video
- Enter data on weight, temperature, blood pressure and optionally share with the hospital (as seen on the fourth screen in figure 6)
- Keep an overview on appointments at the hospital (as seen on the second screen in figure 6)

Not all functions are available in all course of illnesses, but where they are relevant, and some functions require login. Everyone can access general information on different conditions and diseases, instruction videos etc., but only patients can use the communication and registration tools, as it requires access granted by the relevant hospital ward. The app is free, available for both iPhone and Android, and can be used in a web version too.

*My Hospita*l is patient empowerment put into practice, as it gives patients the possibility to become more involved in their own treatment and rehabilitation, and thereby lead a more active role instead of as passive role in receiving treatment. The advantages of the app *My Hospital* are numerous:

- Healthcare professionals write the texts. This means that the patient will find correct information on his/her condition and course at the hospital
- It is easy to update the content, thereby avoiding outdated material and pamphlets
- The patient can fill in data ahead of hospitalization/consultation, and thereby avoid wasting time at the hospital, and the healthcare personnel have the patient's specific situation as a starting point for the consultation
- The patient can use video consultation and thereby avoid some trips to the hospital
- *My Hospital* results in fewer phone calls and hence fewer interruptions for the hospital staff, as the patients are in most cases able to find the answers to their questions in the app
- The chat-function enables communication with the hospital in a new and flexible manner; the patient can write whenever the question occurs and the hospital staff can answer when they have the time and have consulted e.g. the patient's journal
- *My Hospital* meets the patients where they are: anytime and anywhere.

1.1.2.1.8 Online Physical Rehabilitation (B2-CF4)

In Denmark, the municipalities have the responsibility for psychical rehabilitation. In 2012, the municipalities identified the need for a more flexible approach to rehabilitation while still maintaining high quality training programs. Health Innovation Centre of Southern Denmark and two municipalities co-created the virtual portal *Genoptræn|DK* (Rehabilitate|DK) in 2012. Since the beginning, healthcare professionals and users have provided feedback, so the portal will continue to offer, not only a vast amount of exercises, but also high-quality training programs based on user needs, and the portal is continuously updated to meet the needs of health professionals and users. The virtual rehabilitation program is not a replacement for personal contact with a healthcare professional, but a supplement to e.g. physical therapy, where the user can take responsibility for their own rehabilitation and training recommended by the therapist based on their needs. For many users, the flexibility of the program may also increase their compliance of completing the training program. Both primary and secondary care services contribute to the development of the content and the

training videos. Presently, there are 600+ video exercises, and the training videos are available to various patient groups, e.g. patients with COPD, cardiovascular disease, musculoskeletal conditions, and more.

Figure 6: Genoptræn|DK's application icon and logo

Rehabilitate|DK (Genoptræn|DK) is both a platform with physical exercises, and a support tool for dialogue to integrate the cross-sectorial rehabilitation process. The virtual guide rehabilitation program is available as an app for smartphones and tablets, and can be used in a web version too. The solution lets the patients train via guiding videos, gives notifications regarding their training, and allows patients to report their compliance and experienced level of pain-development. For healthcare professionals at the hospital, a web-based solution allows them to send relevant rehabilitation data to colleagues working at the local municipal healthcare center.

The virtual rehabilitation program aims to:

- Offer high quality, easy and flexible personalized training programs
- Support patients in their homes
- Empower and encourage patients to take ownership, and engage more actively in their rehabilitation
- Improve the quality of care in the healthcare sector
- Create transparency between the primary and secondary healthcare sectors

1.1.2.1.9 The Digital Health Centre (B2-CF5)

Figure 7: The Digital Health Centre's logo

The Digital Health Centre[8] is a partnership between The Region of Southern Denmark and a number of municipalities and patients' association. With *The Digital Health Centre* a wide range of different initiatives and digital offers within health promotion and prevention are unified.

The Digital Health Centre aims to improve quality of life for people with a chronical illness by developing and integrating digital solutions in the education of patients. It supplements the physical training but replaces the traditional education in a physical health center and offers patients a far more flexible solution. Patients can participate in webinars from their own home and chat with healthcare professionals and other patients. The use of digital solutions results in both resource optimization and patient empowerment.

[8] The Digital Health Centre's webpage: https://detdigitalesundhedscenter.dk/

The Digital Health Centre is focused on supporting citizens with a type 2 diabetes and/or heart conditions. The main tasks of the municipal health centers are to provide health promotion and disease prevention targeted on the citizens. This is e.g. done through guidance and counselling on healthy lifestyle choices. The focus is on providing tools, motivation and support for self-managing a change of their lifestyle and routines. They also create network possibilities for citizens, as well as provide knowledge to health organizations in the civil society. They support rehabilitation after interventions at the hospital and offer preventive home visits to citizens above the age of 75. The health centers have nurses, dieticians, physiotherapists and doctors.

The challenges for the health centers are:

- An increasing number of at-risk citizens
- Difficulties engaging the citizens in patient education (for reasons such as geography, economy, time or physical conditions)
- Maintaining lifestyle changes has proved very challenging

The limited accessibility and flexibility in the traditional social care services is not compatible with the fact that many citizens have geographical, economical, physical and time limitations. In some cases, there are large distances between the patients' home and the health care center, and often the services are available during working hours where many patients are at work. Some patients are unable to use public transportation and some are uncomfortable with group sessions. Therefore, there are many reasons why many patients do not attend or drop out of the traditional patient courses offered to help them understand and control their chronic disease. At the same time, studies show that the motivation for lifestyle changes are dynamic and often vary over time making it necessary for flexible and long-term services. For the time being, this is hard to provide as many of the smaller municipalities only have a limited amount of resources available.

The vision of *The Digital Healthcare Center* is to contribute to solving some of the challenges described above by integrating digital solutions in the social care sector's services within prevention and health promotion. The vision's overall aim is to:

1. Increase flexibility and accessibility of the services of the social care sector's health centers
2. Ensure that lifestyle changes are maintained by developing differentiated services and thereby increasing the citizens' motivation
3. Support resource optimization by enabling health care professionals across municipality lines to collaborate on digital services reaching more patients and ensuring that more patients are able to support themselves

The first part of *The Digital Health Centre* is the Digital Patient Education. This part had two purposes:

1. To develop, test and scale up digital services for patient educations for citizens with type 2 diabetes and/or heart disease
2. To experiment with different applications to communicate health information in relation to preventative measures in the local health care centers

Two patient education programs called "Live your life with diabetes" and "Live your life with heart disease" has already been successfully implemented and tested. The Patient Education Program consists of three supporting elements:

1. Individual contact between the citizen and the healthcare professional, start- and end sessions

2. Help to self-help in the form of a series of e-learning modules
3. Online group sessions facilitated by healthcare professionals as webinars

Results of the project so far have been good with higher user satisfaction, fewer dropouts and more efficient use of healthcare resources. Since the smaller municipalities can go together to produce content to the online-platform and therapists can be used for a wide range of citizens from different areas resources can be better used. Patients that do not like to be in physical sessions with others can join and they have the possibility to go back and revisit the information when they are motivated to implement a change.

The project is now in operation in more than 20 municipalities Denmark. The perspectives of the solution are wide and include the possibilities for both a geographical spread and the inclusion of more disease areas.

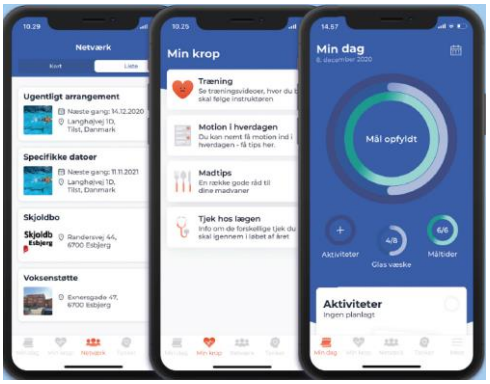

Figure 8: The app My Life – My Health which is currently being developed and tested for citizens with type 2 diabetes under the initiative Digital Diabetes

1.1.2.1.10 The GERI Toolbox (B2-CF6)

In frail older adults, late diagnostics of acute disease may increase disease severity and risk of complications from comorbid conditions, eventually leading to acute hospitalization. Early diagnostics and treatment is necessary, but challenging due to weak/atypical symptoms, and lack of specific geriatric knowledge among healthcare professionals. Increasing knowledge of early disease symptoms among frontline homecare staff, clear communication of symptoms to homecare nurses, to assess the use of a basic clinical objective toolbox and cross-sectoral communication.

The GERI Toolbox is a solution that can help municipal homecare nurses to offer proactive and comprehensive care to elderly citizens in collaboration with the general practitioner. The aim is to detect deterioration in the overall state of health before an acute admission to hospital becomes necessary.

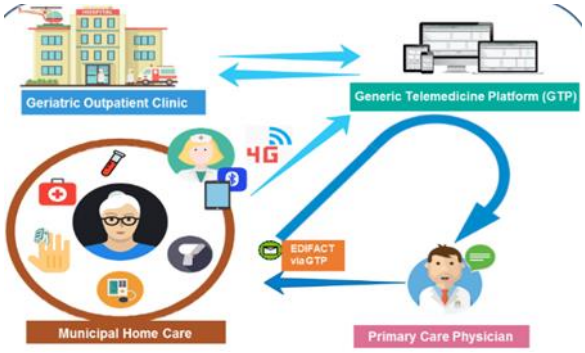

Figure 9: The overall communication flow in The GERI Toolbox

The GERI Toolbox is a physical kit containing point-of-care-testing (POCT) for basic health examinations and a digital cross-sectorial communication platform. Nurses from the local homecare services, who have been trained specifically in using the equipment, use The GERI Toolbox. During a home visit, the nurse brings a GERI Toolbox and performs clinical readings based on the symptoms of the patient. The data registered during the visit is directly transferred to a joint IT-platform, which can be accessed by the home care nurses, the general practitioner and the hospital. The goal of sharing the information is to reduce risk of misunderstandings and provide a better basis for decision-making in the following treatment.

An 18 months observational study in the homecare setting of four Danish municipalities and frail homecare-receiving citizens including: an e-Learn program for all home care employees on early recognition of emerging disease, systematic clinical assessment (Barthel ADL, vital status (ABCDE), and The GERI Toolbox, showed that: Nurses experienced good support in their decision-making. Two-thirds of general practitioners believed that The GERI Toolbox reduced acute hospital admissions. Interviewed citizens felt safe with the acute nurse assessment using The GERI Toolbox, and 51% found the service equivalent to a GP's house call. In conclusions, The GERI Toolbox was perceived useful in preventing acute admissions[9].

1.1.3 Main facilitators and barriers vs. factors for success and sustainability

Strength / Enablers / Facilitators

- The IT-infrastructure is under government ownership, making the Danish Health Data Network a secure to send and receive data
- Citizens have a high IT-literacy
- A generally high trust in the public healthcare system
- All citizens have personal identification numbers
- Denmark is a world leader in unique healthcare registers and infrastructures for linking data across registers and databases

Weaknesses / Barriers

- A tradition of dividing healthcare into silos by sectors
- Implementing new standards is a complicated task that takes years from the development to operation, and involves national, regional, cross-sectorial and local collaboration

[9] Andersen-Ranberg et al. (2020): *The "GERI-toolbox". Initial outcomes of an E-Health instrument for the prevention of acute hospital admission of frail older adults.* Abstracts of the 16th International E-Congress of the European Geriatric Medicine Society. *Eur Geriatr Med* 11, 1–309 (2020)

- Requires extensive knowledge of clinical needs, political and local agreements, data contracts etc.
- Challenging to create long-term commitment on all levels (from political to operational level)
- Integration between systems is a complex task

Threats

- Risk of losing important information if not all IT-systems in all sectors are updated and able to both send and receive the same standards/formats. Requires implementation strategies (e.g. Big Bang, phased approach, transitional solutions, etc.), cross-sectorial agreements and political goodwill.

1.2 Maturity Requirements for The Digital Roadmap towards an integrated healthcare sector

The Digital Roadmap with its core elements and digitally supported health services continues to be important elements of healthcare sectors in The Region of Southern Denmark.

Some of the aspects that has made the solutions sustainable are:

- Continuous political focus and support i.e. renewal of The Health Agreements
- Revision The SAM:BO Agreement when needed
- A general focus on the digital future of healthcare
- Continuous evaluation, follow-up on goals, initiatives, and projects
- Constant focus on cross-sectorial cooperation and organizational collaboration with the patient in focus
- A strong focus on innovation and telemedicine in The Region of Southern Denmark

Professional	Profile	Organization
Emil Høstrup	Project Manager	Online Physical Rehabilitation
Dorthe Skou Lassen	Senior Consultant	Messaging Standards
Kuno Julian Strand Kudajewski	Project Manager	TeleCOPD

Figure 10: Maturity Model for Digitally enabled Integrated Care – consensus stage

Assessments for this original Good Practice – Southern Region of Denmark

Dimension	Score	Maturity Requirements agreed by stakeholders
D1: Readiness to Change	3	• Local leaders and champions must be recognized by national leaders at the same time • Local champions need openness • basis for cross-sector dialogue required • Readiness to support patients in their homes via portal • Fixed policy binding agreements have been reached on the introduction of the change, which are supported by all parties.
D2: Structure & Governance	2	• Collaboration between the various parts in the rehabilitation process – law and official guidelines. • Rehab|DK is an add-on to the official Rehab Plan (GGOP) • Participants must simultaneously decide on a roadmap, but it must be able to accommodate different local schedules and differences. A slightly dynamic approach is a requirement • There is agreement among the participating parties on the governance and structure of the planned changes.
D3: Digital infrastructure	3	• System can work in itself without other systems required (you can send patients to other departments). • Requires cross-sector acknowledgement and internal servers

		• Agreements formally written into the political agreements between regions, municipalities and the general practitioners.
D4: Funding	3	• Rehab|DK is currently mentioned in the Digitalization strategy in Denmark and is owned and funded by the region and municipalities • In connection with the annual political budget negotiations, funds have been set aside and agreed for the operation and purchase of new systems and the building of the necessary governance around them.
D5: Process Coordination	3	• You have to be ready to embrace differences. • Rehab|DK is already used in several locations, so there is official pathways and processes on several objects, but there is difference in implementation strategy according the needs of the location and patient group. • There is agreement on standards, just as there is agreement on jointly purchasing and designing the necessary systems for change.
D6: Removal of inhibitors	1	• Old habits – this digitalization requires new actions by the healthcare professionals • There are still local challenges in getting all parties involved deeply in the project, but work is being done locally to solve these challenges.
D7: Population Approach	2	• The project has a strong focus on addressing patient groups that have already been proven to benefit from the project.
D8: Citizen Empowerment	3	• Rehab|DK is highly considered a Dialogue tool that empowers patients to take more part in their rehabilitation process • Patient empowerment is a major and important factor in the approach to the patients involved, just as there is a strong focus on involving the relatives.
D9: Evaluation Methods	3	• Research- and quality and development projects have been evaluated and there is a build on PRO-tool that enables on-going evaluation • The number of admissions, the number of bed days and the outpatient visits for the patients involved are monitored on an ongoing basis, just as the patients' satisfaction with being part of the project is measured.
D10: Breadth of Ambition	3	• Primarily coordination between hospital and municipality-based rehab. GP is a potential. • There is a high degree of cooperation between the parties involved at all levels of the health service.
D11: Innovation Management	4	• Innovation is part of the solution. On-going development and innovation is essential • There is a high degree of innovative processes embed into the system, so that it can be continuously adapted to the challenges that are met. In addition, the system is built so that it can be adopted into new disease areas without the great difficulties.

D12: Capacity Building	4	• We are currently expanding within the region, and the capacity is expanding • A formalized system for competence development has been built into the entire organization around the system and everyone involved is trained both before and during the participation in the project.

2 Transfer and adoption process

The Region of Southern Denmark good practice has been transferred to eight Next Adopters (NAs) in European regions. Six of them transfer core features only of the Region of Southern Denmark, while two of them adopted a mix and match approach, meaning that they transfer features of other good practices of JADECARE.

2.1 University Hospital Olomouc (UHO)

2.1.1 The context and trigger

Olomouc region is located in the central part of Moravia and extends into its northern part (north-east territory of the Czech Republic). The total area of the region 5,267 km2 makes up 6.7% of the total area of the Czech Republic. With a population of 631,660 (as of 30 September 2020), the Olomouc Region is the sixth most populous among the 14 regions in the Czech Republic, i.e. 6.1% of the total population of the Czech Republic. The Olomouc Region consists of 5 districts – Jeseník, Olomouc, Prostějov, Přerov and Šumperk. From the territorial-administrative point of view, together with the Zlín Region, it forms the NUTS II Cohesion Region - Central Moravia.

Olomouc University Hospital is the biggest healthcare institution in the Olomouc Region. A part of the hospital is the Czech National eHealth Centre that systematically and long term develops observations, knowledge and experience in digital innovations in healthcare. It has unique technologies and is a Competence centre in the area of eHealth (esp. telemedicine) of the Ministry of Health in the Czech Republic and a Reference Site of the European Innovation Partnership on Active and Healthy Aging.

The overall situation in general in the Czech Republic in terms of eHealth has been delayed, both in terms of training programs, laws, and actual services provided. The Czech Republic is at the lower half of the digitalization of healthcare in terms of Europe. It does not have to follow the multi-year path that some countries have followed during development, but it is possible to effectively accelerate the process thanks to the possibility of obtaining valuable experience from other EU projects. In the last couple of years, the improvements in the field of eHealth delivery services were rather small, limited to a few interventions, fragmented and without conceptual direction. Health service providers tried to make their way often using private ICT projects, but also in various other country-internal and EU projects, especially during the COVID-19 pandemic.

With the new law on digitization in healthcare in the pipeline, the JADECARE project, hit an opportune window with the possibility of moving the Czech Republic closer to new practices and approaches in ICT-enabled healthcare delivery. The competent MoH department wanted to put more pressure on education, experience and dissemination of best practices in digital health care.

2.1.2 The Local Good Practice

UHO is the competence centre of the MoH for telemedicine in the Czech Republic and due to the fact that it is a large provider of health services, it has greater possibilities in terms of introducing innovations, at least in pilot mode, subsequent data analysis, etc. and processing the output for later practical use. As the largest and most modern health centre in the region, UHO could be an inspiration for others and, as a result, the new approaches would help to spread further.

UHO was preparing to purchase a new hospital system (NIS) when it became clear that the old system no longer met the requirements for interoperability, modern Electronic Health Record (EHR) capabilities, security, access to patient records, quick and easy data sharing, and collaboration with other healthcare providers. It was necessary to set the terms of the procurement correctly and sufficiently to ensure that the NIS met all the elements for building, processing and using hospital data. The JADECARE Joint Action (JA) was a good opportunity to draw experiences from other countries, in developing a NIS with efficient data standard and more advanced interoperability features.

UHO had up until the JADECARE had built some good experience with the use of telemedicine within the field of cardiology, where there was a sufficiently well-defined group of patients. This area was under development thanks to the personal implication of Professor Milos Taborsky, who was behind the establishment of the National telemedicine centre at UHO. Based on earlier experiences with another patient group, the assumption was that it would be feasible to extend the experience to another patient group. Based on the SWOT-methodology a mixed match approach with Telepsychiatry, a core feature of the Region of Southern Denmark. Regarding the creation of a new approach to ICT, the Basque good practice was chosen. This mix and match approach could synergize broadening the use of telemedicine to other pathologies, as well as secure valuable input in developing a new and robust ICT system.

2.1.3 The Implementation process and result

The main objectives of UHO's mix and match approach were to (i) improve communication between health organisations, (ii) prepare the introduction of video consultations as a normal part of psychiatric practice (including a set of appropriate patient groups, (iii) Create and update an online space as a solution for more effective data sharing, communication, etc. and (iv) create a new application, modification of NIS, IT communication model, etc.

UHO started working to create a new approach to ICT, trying to push for faster approval of changes in the law. Moreover, they also tried to compile foreign experience a pilot testing in the Czech Republic and finally held a strategic discussion on future approach. In turn, they planned to work on the creation of software (custom solution for telemedicine application, integration platform for documentation sharing meeting interoperability conditions). They also worked to adapt the application for the needs of psychiatry, psychology and finally, to introduce and implement video consultation as a valid part of psychiatry.

The Next Adopter Working Group (NAWG) dedicated to the implementation was composed with multiple expertise. However, the number and membership of the "core" NAWG, which had participants in theme days and theme workshops, varied from time to time. It included the head of Digitization, and strategic Innovation Consultant, a researcher and academic from Palacky University Olomouc, a regional policy representative for the social area, a project Manager, an IT project support staff, representatives of the MoH representative, representative politicians and officials of the city and the region and selected members of the e-Healh working group within the SMART Region Committee.

The piloting of video consultation in psychiatry has verified the possibilities of this approach in the Czech Republic and also extended its applicability to other areas where video conferencing can be suitably used (psychology, communication with patients within the palliative team, communication of doctors, etc.). Moreover, there is a suitable group of patients (diagnosis, stage of disease, etc. for whom video consultation is an appropriate method within the psychiatric treatment process). That will be further developed with the participation of a network of physicians and professional societies in psychiatry.

The validation and analysis of the lessons learned from foreign experiences and pilot testing showed the importance of transforming existing systems and also the feasible change in the system. The analysis of the outcomes was carried out partly in terms of both quality and quantity, with quality - feasibility, adoption, etc., being of greater interest to us.

In addition, a National Recovery Plan grant programme has been prepared to disseminate the knowledge gained through interventions in telemedicine and to implement it in routine practice. This project guarantees the sustainability of the project whether the beneficiary is UHO or someone else within the country. Even so, they can expect to be partners at a minimum. It is expected that after the completion of JADECARE, a policy decision will be taken due to the large project, which will ensure not only the maintenance but the acceptance and further development of the interventions started. The transfer of Telepsychiatry (Work Package 8 (WP8)) clearly declares the fact that it is possible to implement telemedicine even in sectors where, there are not necessarily a large number of external measuring devices, such as in cardiology. The pilot operation has verified the possibilities of this approach in the Czech Republic and also extended its applicability to other areas where video conferencing can be suitably used (psychology, communication with patients within the palliative team, communication of doctors, etc.). The introduction of video consultation in psychiatry has reached other psychiatrists and there is a growing interest in this service, which is in place in 6 out of 7 health insurance companies. The experience develops the potential in psychosocial support (video consultations) for palliative patients and their family members. Working with WP8 leaders, it is the hope that the use of video consultations in the psychiatry will become a natural part of the psychiatric practice. This will be further developed with the participation of a network of physicians and professional societies in psychiatry. Telemedicine in general has gained more awareness and interest from other clinics. This has led to the development of gestational diabetes, teleophthalmology, etc. using the dashboard for documentation sharing, communication, integrated care, etc.

The inspiration from the Danish and Basque good practices in particular, but also the Catalan good practice, is great. The fact that UHO will be able to continue to build and improve the system and the growing support of the physicians, has positively influenced sustainability in terms of management's willingness to continue the activities. The JA made it possible to for UHO to draw a large amount of information, experience, data and concrete outputs from RSD (WP8), Kronikgune (WP5) and Catalonia (WP6), which has made it possible to push for a faster approval of changes in the law.

2.2 Croatian Institute of Public Health (CIPH)

2.2.1 Context and trigger

Croatian health system is legally regulated by the Health Care Act from 2018. The Ministry of Health is the main institution in charge of designing different health related policies and programs, healthcare planning and regulation. Facilities involved in healthcare activities are either state, country or private. All the public

facilities receive funds by means of contracts with the Croatian Health Insurance Fund and local authorities are responsible for financing infrastructures, maintenance and capital investments. Health services financed by state budget are organized to cover everything from health promotion to end-of-life care accessible to all population.

Primary care consists of health care centres, public health services and public pharmacies. Patients are referred to secondary level (specialist consultative and hospital health centres) and tertiary level (the most complex forms of the latter) of healthcare services by their general practitioners.

The presumed level of health literacy in Croatia is relatively low. In addition, there is an increasing demand from GPs to reduce the administrative workload. According to a survey conducted by a Croatian news portal, two thirds of the population have low levels of health literacy. It is well known that a low level of health literacy can lead to late diagnosis and poor disease management, especially for chronic non-communicable diseases.

In this framework, it is highly likely that the creation of a webpage that would be tailored to patients' needs, and written in collaboration with healthcare providers would help in overcoming everyday problems that patients with chronic diseases face.

The Health Portal (*Portal zdravlja*) was created to provide Croatian citizens access to a part of their own healthcare information from the Central Health Information System of the Republic of Croatia (CEZIH for tis name in Czech). The Health portal also enables active communication between the patient and the doctor if some options have been activated (e.g. patients could make and cancel appointments with their primary care physicians, send a request for prescriptions for medication approved for reissuing by the physician etc.) This could make GP-patient communication more efficient, but there were no actual data of how many GPs are actually using it but there were suggestions that this Portal needed more promoting

To sum up, CIPH identified various main problems such as no specific, multidisciplinary approach to complex chronic patients, low health literacy, and specifically lack of patient oriented and trustworthy content on chronic diseases. Furthermore, lack of human and financial resources in healthcare and an increased workload of GPs due to aging population and the interruption of COVID-19 resulting in less time available for the patients. And also, a low rate of health digitalization amongst general population.

2.2.2 The Local Good Practice

The main objective is to improve health literacy and thanks to that increase efficacy of the healthcare system especially in the population with chronic diseases resulting in an improvement of health outcomes, reduction of the workload of GPs regarding informing patients on the specifics of their conditions, and also reduction of the time needed for the care of chronic patients (regarding drug prescription for chronic conditions) through digital means and tools.

The target population of the intervention were patients with leading chronic non-communicable diseases (NCDs) (COPD, hypertension, diabetes mellitus (DM), multimorbidity) with special accent on patients with Diabetes mellitus and also physicians (general practitioners).

The intervention consisted on four main lines of action, being the first one to conduct an on-line survey on the use of the Health Portal (*Portal zdravlja*) for active communication between physicians (general practitioners) and patients and analyse the results. Furthermore, they planned to promote of the Health Portal (*Portal zdravlja*) by encouraging GPs to introduce their patient to the Health Portal, also encouraging

the use of the Health Portal for GPs for active communication with their patients and finally encouraging the use of the Health Portal for patients.

On other range of issues, they planned to create a Website (webpage) intended primarily for patients with leading non-communicable diseases, but also for the general public. They planned to design and include disease management materials (creation of the materials on NCDs: DM, COPD, hypertension etc). One section of the website would contain information on the most frequent risk factors for non-communicable diseases and would be focused on prevention and other would include recommendations on diet, physical activity, stress management, sleep hygiene, smoking cessation and alcohol intake reduction. Moreover, they planned to contacted patient groups and advocates to evaluate the webpage content and gather input on for easy-to-use suggestions as well as new ideas from their point of view, what would make this specific intervention more efficient.

Finally, the planned to work on improvement of disease management for patients with diabetes mellitus using digital tools by means of identification of healthcare professionals connected on digital platform (e-health), the identification of diabetes mellitus patients, the web page creation and the design of e-learning about diabetes mellitus for patients.

The excepted outcomes of the intervention included providing timely and more appropriate personalized care for NCDs patients based on their care needs, enabling better and more efficient communication among healthcare professionals and patients with focus on digital communication, empowering patients by providing user friendly educational materials, in both digital and paper form and finally, improving the time dedicated to each patient, by providing ready-made materials and resources for patients.

The NAWG of CIPH has consisted of experienced medical doctors with specialist in occupational medicine and sports medicine (4) and epidemiology (4), medical doctors currently doing residency in epidemiology (2), medical doctors currently doing residency in occupational and sports medicine (3), psychologist (1), social educator (1), nurse (1) and administrative assistant (1), IT experts (3), medical doctor specialist in public health (1).

Finally, the assessment of the intervention was done by means of quantitative analysis to see the increase in *Portal zdravlja* app use and also to track web page visits and material downloads with a special focus on data analysis regarding Diabetes mellitus.

2.2.3 Implementation process and results

The questionnaire (QA) on the use of the *Portal zdravlja* application was disseminated online to all the GPs in Croatia. Later, the results were analyzed and a short training session was held in order to promote the app.

Furthermore, a patient oriented, evidence-based web page was designed with information on most common chronic diseases being its target group the patients with leading chronic NCDs (COPD, hypertension, DM and multimorbidity). Educational materials have been created on NCD'S (diabetes, hypertension, COPD, osteoporosis etc.) and demo version of the web page was launched.

Finally, due to the interest on digital health promotion and disease management of Diabetes mellitus, an invitation letter was sent to GPs, National Reference Centre for diabetes and Croatian Federation of Diabetic Associations to inform about the intervention.

The limitations related to the launch of the survey were firstly that it had to pass the permission of the Ministry of Health and the Croatian Health Insurance Fund (CHIF), which took longer than expected due to the administrative procedures. Later, they could not confirm how many GPs received the questionnaire because primary healthcare systems use several different digital service providers. Moreover, they could not ensure whether in some GP offices only nurses replied and even opened the QA. Therefore, the sample of the GPs may be biased, with those using the app being more prone to answer the QA. Moreover, some GPs are not willing to participate due to other work-related obligations.

As for the web page creation, basic concept and preliminary materials were sent to the designers and web developers, and demo version of the web page is available, even if the process took longer than expected. Major issue in the web page creation was a financing problem; namely, the funds for the web page were not allocated in the project budget, so they had to organize their own funding in the CIPH on a very short notice, which slowed down the process. This also meant, that the desired two-way communication system wasn't achievable within the timeframe of the JA, and as such was abandoned.

Last but not least, the COVID-19 pandemic affected the implementation of planned activities, especially because the project team (CIPH) has been very much engaged in controlling the COVID-19 pandemic activities including continuous vaccination. As family physicians had also been extremely engaged it was finally agreed that a questionnaire should be sent later when the pandemic slows down.

2.3 Consejería de Salud y Consumo Junta de Andalucía & Fundación Pública Andaluza Progreso y Salud (CSCJA & FPS)

2.3.1 Context and trigger

Andalusia, with a population of 8.4 million and a life expectancy reaching on average 82,22 years (79,57-males and 84,85-females), as well as other European countries, faces a rapid increase in their population living with chronic conditions, which puts a high pressure on their health systems. Multimorbidity (defined as the coexistence of several chronic conditions in the same individual) has become in one of the most important challenge for healthcare system that has to be overcome.

In Andalusia, people with chronic conditions represent the main reason for all primary healthcare appointments (50% doctor appointments and 68% if we add the nurses appointments). Moreover, more than 60% of inpatient days are due to people with chronic conditions. In this context, 404,092 complex chronic patients (patients with chronic severe health problems, multimorbidity and polypharmacy were identified in 2022. Complex chronic patients (CCP) correspond to 5% of the whole people included in the User database (BDU) of Andalusia and consume up to 30% of primary healthcare and hospital resources.

Healthcare is mainly provided in primary healthcare centres and hospitals, while home-care is given usually in a reactive way. Proactive care at home is an area of improvement in our system.

The Andalusian Public Healthcare System (Servicio Andaluz de Salud -SAS-) is responsible for the provision of universal health care in the region, with two levels of care:

- Primary health care, which forms the backbone of the system and is provided in 1513 centres (411 main ones) grouped in 34 health districts, the managerial unit for this level of care, throughout the region; and

- Specialized care of diverse complexity, which is available in 50 public hospitals including specialised outpatient care.

After the WP8 study visits carried out in May, Jun and July 2021, the Andalusian NAWG decided to implement the first two core features (CF1 and CF6). These are the core features, which are a better fit and adaptable to the current situation and developments in the region.

Final Core Features
B2 - CF1 Tele-COPD
B2 - CF6 Geri Toolbox

2.3.2 The Local Good Practice

The development of the JADECARE pilot in Andalusia takes advantage of the existence of a regional public funded healthcare system, with universal coverage. Patient with chronic conditions and complex healthcare needs, has been integrated into the regions plans and Strategies. Also, a massive use of the corporate IT system, Diraya, which includes eHR available at all levels of care facilitates the adaptation of the Andalusian pilot, since allows both at registering information and retrieving data for assessment. Results needs to be referred to this context and potential transferability may be limited to these facts.

The Andalusian local good practice was based on the components Tele-COPD (CF1) of the Danish good practice and is aligned to the “Andalusian Comprehensive Healthcare Plan for Patients with Chronic Diseases”, the “Andalusian Integrated Care Process ‘Healthcare for Multimorbidity Patients’”, the “Andalusian Comprehensive Care Plan” and the “Chronic Patients "Proactive Monitoring" in Primary Healthcare Plan.

Thus, to improve the healthcare at home of complex chronic patients, a Centralised System for Proactive Follow-up (CSPFU), that will allow to gather information from homecare professionals when attending CCPs at home, has been developed and integrated within the corporate IT system (Diraya). As in the Danish good practice, the collected data are uploaded to the Patient EHR. The platform will be a key element for healthcare professionals in the proactive and remote monitoring of chronic patients, by mean of the early identification of warning signs/signals, the adaptation of prescriptions, the anticipation of health problems, providing support to caregivers, avoiding unplanned inpatient episodes, etc.

Besides, the Andalusian teleconsultation (TC) platform is also used to facilitate the communication between healthcare professionals (mainly between primary and hospital healthcare professionals) so it will also be included in the assessment. In summary, the CSPFU and TC will facilitate the patient follow-up, will improve the continuity of care by healthcare professionals and improve patient’s quality of life.

2.3.3 Implementation process and results

The Andalusian pilot focused on improving healthcare at home based on TeleCOPD component of the Danish good practice. Alignment with regional strategies and plans on chronic care, strong corporate information systems to support data retrieval and analysis, and political support may help future implementations, sustainability and replicability of this pilot to the broader EU arena. Training of healthcare professionals is also a key element. Dissemination and reporting results of the implemented activities will support the generation of solid evidence-based practices to be shared across Europe. Internal limitations include unexpected issues emerging during the integration of the solution developed for the Centralised System for

Proactive Follow-up in pre-existing corporate IT systems. An in-depth assessment of the identified problems was carried out and subsequent new tests were needed. This caused a delay of six month in the implementation process. In any case, the new system is expected to be fully adjusted and operative in early summer 2023. No limitations affected the TC system, which has been expanded as expected. The sustainability of the Andalusian pilot is guaranteed since it is imbedded in the long-term plans and strategies of the Regional Ministry of Health Consumers Affairs of Andalusia.

This pilot has been strongly supported by political leaders and directors of the Plan for CCPs in Andalusia. Close implication by General Directorate for Healthcare and Health Outcomes of the Andalusian Health Service and General Directorate for Social and Health Care, Strategies and Plan of the Regional Ministry has been a reality.

Direct involvement of healthcare professionals has been possible thanks to both personal commitment and inclusion of objectives to be considered for incentives. Results needs to be referred to the overall Andalusian context and potential transferability may be limited to the local conditions of the pilot.

Additional assessments have to be addressed in a following stage. Thus, once full 2022 data will be released, healthcare utilization indicators on Prioritized CCPs (PCCPs) included in proactive follow-up programme will be included in the next update of this report. Moreover, patient experience and technology acceptance by healthcare professionals will be addressed in a following stage.

2.4 Servicio Cántabro de Salud & Instituto de Investigación Marqués de Valdecilla, Spain (SCS & IDIVAL)

2.4.1 Context and trigger

The main aim of the Strategy for the digitization of health services in Cantabria is to improve and develop new ways to continue caring for patients with digital and technological tools. Specifically, the Cantabria's Online physical rehabilitation program has as main objective to improve results in rehabilitation in outpatients after suffering a lower limb fracture, the patient satisfaction and reduce direct and indirect costs. Improve the active participation of the patient and therapeutic compliance in the rehabilitation program from hospital discharge and throughout the process.

On the other hand, the main aim of the Cantabrian Patients' schools, is to provide health promotion and disease prevention to the citizens. The focus is on providing tools, motivation and support for self-managing a change of their lifestyle and routines. Patients' School also create network possibilities for citizens, as well as provide knowledge to health organizations in the civil society. One of the objectives of the Cantabrian School of Patients is to develop and integrated digital solution to empower the patients. The use of this digital solution should result in: flexibility, motivation and resource optimization.

Lastly, Support program in tele-psychogeriatric for nursing homes in Cantabria aims to improve the quality of health care for the elderly with mental illness and cognitive impairment, institutionalized in nursing homes.

Before start this project, the healthcare ecosystem of Cantabria identified some problems that we needed to solve

- To update the "Health Plan of Cantabria" (2014-2019)
- To improve the cross-sectorial collaboration.

- To involve patients in the definition of a new Health Plan
- To know another successful plans implemented in other regions
- To offer adapted digital solutions for the patients
- To use IT solutions in order to improve the continuous follow up
- To receive feedback from the patients
- To train the implementers and patients in telemedicine
- To update the technology used in the hospital

2.4.2 The Local Good Practice

The Cantabrian School of patients is providing tools to improve the patient empowerment through health promotion and disease prevention. This is e.g. done through workshops, courses, small texts, guidance and counselling on a healthy lifestyle. The focus is on providing tools, motivation and support for self-managing a change of their lifestyle and routines. Cantabrian Patients' School has also created network possibilities for citizens, associations and healthcare professionals, as well as provide knowledge to health organizations in the civil society. A lot of nurses, dieticians, physiotherapists and doctors are collaborating in the Patients' School.

The principal activity of the Cantabrian Patients' School is to develop and integrate digital solutions to improve the patient empowerment. Under this vision, several subprojects are unfolded (Responsible Care Workshop, Online self-management program in population with chronic disease, Meeting space, Digital skills course, Online space for consultations). Patients can join from home, where they can see pre-recorded information, participate in webinars gain knowledge by reading short texts, and chat with both health care professionals and other patients.

Online Tele-psychogeriatric program aimed at the health care of the elderly with cognitive-functional impairment and mental illness institutionalized in nursing homes, with the objectives of facilitating accessibility to specialized hospital programs without the need for travel, with care focused on the patient and their environment in nursing homes, to obtain an improvement in the symptomatic control of psychogeriatric pathologies, better health results and reduction of direct and indirect costs. This modality of online service provision includes a wide range of care services for the elderly with institutionalized mental illness, from evaluation and diagnosis to pharmacological and psychosocial interventions, and monitoring and care in the residence, development of clinical care plans, case management, crisis intervention and severe behavioral disturbances, neuropsychological tests, liaison services for other medical specialties, nursing care, etc. Paradigm shift in the health care system, centred on the patient with chronic psychogeriatric mental illness, based on the development of electronic medical records, and the use of new technologies from which short-term benefits are expected.

Video-directed tele rehabilitation home program for patients with lower limb fractures with the objectives of early mobilization, greater patient participation, better health outcomes and reduction of direct and indirect costs. It involves a paradigm shift and a new form of care that requires training of patients and professionals and integration with electronic medical records, but short-term benefits are expected.

Improve results in rehabilitation in outpatients after suffering a lower limb fracture, the patient satisfaction and reduce direct and indirect costs. Improve the active participation of the patient and therapeutic compliance in the rehabilitation program from hospital discharge and throughout the process.

These three Local Good Practices matched the WP8s core features, and therefore The Digital Health Centre, Rehab|DK and Telepsychiatry, where used as a source of inspiration for the transfer process.

2.4.3 Implementation process and results

Telerehabilitation intervention: have designed and recorded on video tutorial exercise programs for the most frequent processes: Ankle fracture, Tibial plateau fracture and fractures of the proximal end of the femur in different evolutionary stages. The videos are accessible to the patient on a web platform to be consulted as many times as necessary. The tools developed are:

- Application Web for tele-rehabilitation in electronic medical record.
- App for mobile devices
- Online questionnaires to evaluate progress.
- Teleconsultations

Patients school intervention: The Cantabrian School of Health have improved the content and organization of the patients' school and appointed the team that is working on it. This have been possible fulfilling the following activities: Create a professional work team, design and record webinars and courses to promote healthy lifestyle, update the online platform with new content, create a new online space to solve the most common questions of patients. All this content is available on a web platform to be consulted as many times as necessary.

Geriatric Tele-psychiatry online intervention: the Long Term Care Unit of the Psychiatry Service of Valdecilla University Hospital have designed and launched the Psychogeriatric Program for the care of institutionalized elderly with mental illness, mainly psychosis, depression, cognitive and / or functional impairment as a support measure to the nursing homes, establishing a direct online consultation between the Psychogeriatric Team of the Long Term Care Unit of the Psychiatry Service of the Valdecilla University Hospital.

Target population; All kind of patients living in Cantabria. Mainly Outpatients with lower limb fractures living in Marques de Valdecilla University hospital health area.

Elderly people in nursing homes in Santander Health Area. Cantabria. Spain

To DO the planned actions, regarding the telerehabilitation program, we engaged 15 professionals and we approved and published 3 protocols. 63 video programs were finished. The APP availability is in progress. Regarding the patients' school program, 5 patients and 11 professionals were involved. 6 online workshops and 1 face-to-face workshop were held following the active patient peer learning methodology. Almost 20 videos available. 82 patients have finished the programme considering 6 groups from February to November, 2022 (More than 180 patients registered, but later the participation becomes lower). We accomplished an 80% satisfaction rate between patients. Finally, regarding the telepsychogeriatrics program, one Psychiatrist part time and one Geriatrician part time were involved. 5 available protocols are available. 286 patients included until December 2022

(208 evaluated by Psychiatrist, 59 evaluated by a Geriatrician and 19 by both of them), 46 patients died during the study period. 1201 consultations made (195 face-to-face and 1006 telephone or online). The expertise of the professionals is mandatory to select the patients who qualify for no face-to-face consultation.

Mainly, with the help of this project, we have improved the digitalization of our health care system, other of our main objectives was to empower the citizens/patients, and we think that we have achieved it partially.

To carry out the tasks proposed in this JA we have re-organized our health care system and improved the cohesion between the relevant stakeholders

Our participation in this JA have helped us to wide our international network and boost the regional cooperation.

We will make the whole study from the discharge from Trauma Service passing through consultation, secretary, appointments, etc. As well, we consider It could be possible to study other pathologies.

This program could be considered sustainable because it can be assimilated as an enhancement of the current procedures that simplifies the duty to provide effective information to a patient.

Nevertheless, regarding tele-psycho-geriatric program the subjective impression of the Psychiatrist and the Geriatrician is oriented towards a real need of face-to-face consultation. It might not be enough to carry out just tele-psycho-geriatric consultation in all cases. The selection between face-to-face or teleconsultation is related with the patient's pathologies not with their technological skills.

2.5 Gerencia Regional de Salud de Castilla y León (SACYL)

2.5.1 Context and trigger

Castilla y León (Spain) is a large region in the central north of the Iberian Peninsula, distributed in 11 health areas and 249 Basic Health Zones. The entire population of the Castilla y León region cover 2.3 M people's healthcare need. The region is characterized with the lowest population density in Spain and the highest population of older people: More than 54.8% of people over the age of 65 live in rural areas and more than 50% of the population lives in municipalities with fewer than 1,000 inhabitants.

This context of aging population, geographical dispersion and eminently rural poses a challenge for the effective and efficient provision of health and social services.

The Chronic Patient Care Strategy in Castilla y León (SACYL) aims to adapt the functioning of the Castilla y León healthcare system to the new reality of the growing demand for care derived from patients with chronic diseases. It focuses on five fundamental aspects:

- Organize and adapt hospital resources to the conditions and needs of these patients;
- Strengthen the role of primary care and improve its conditions to facilitate effective care;
- To ensure coordination between the professionals of the different levels of care that intervene to guarantee the continuity of care;
- To advance towards healthcare integration through the effective coordination of the health and social systems;
- To promote the active participation of patients and caregivers in the maintenance of health.

After studying the Danish experience, and carrying out and analyzing a SWOT, those actions that had already been planned to be carried out from the GRS were selected and aspects learned from Danish practice were introduced. This resulted in the following core features where chosen from WP8.

Final Core Features	
Core Feature 2.6: The GERI Toolbox	Improving communication between levels of care
Core Feature 1.1: Health Agreements	Improving socio-health coordination and Telehealth care protocols
Core Feature 2.2: Telepsychiatry	Digitally facilitated healthcare

The target population of this good practice are the 2.3 million people who depend on the public health system in Castilla y León (SACYL). The purpose of our project is the implementation, in rural and urban areas, of technological solutions that make it possible to improve person-centred care in their environment (either at home or in the immediate environment), especially caring for people with chronic illness and dependents, based on the adaptation and incorporation of the original good practice of the South Denmark region of the Joint Action: "Digital roadmap towards an integrated health care sector".

2.5.2 The Local Good Practice

The Regional Health System: from primary care to hospitals

Within the region, there had been some previous experience with non-face-to-face consultation with Teledermatology and teleconsultation with Continuity of Care Unit (CCU). The main aim of the practice is to facilitate communication between healthcare levels and integrated healthcare through digital and technological support, and support and the definition of efficient and decisive healthcare pathways. Castilla y Léon wanted to modernize the technology in the healthcare system, applicable to the field of dermatology and care of chronic multi-pathological patients, supported by organizational innovation and training, especially to strengthen the coverage in rural areas. It was expected to reduce the waiting time for dermatology consultations from primary care and avoid unnecessary patient trips to receive hospital specialist care. Therefore, there was also a need to define protocols for referrals, clinical guidelines and create safe patient pathways.

To succeed a Regional Health Management team was established, with the following fields of expertise: Health Research and Innovation Service (Organizer and Decision maker), Technology of the information and communication (Expert and Decision maker), Social health Service (Expert and Decision maker) and Health System Department (Expert). Primary care management and Hospitals (Managers and Medical and nurse staff).

There was also allocated local resources to provide video conference equipment and other necessary IT technology to support the implementation.

2.5.3 Implementation process and results

After choosing the core features of WP8, each of the Activities defined in the Local Action Plan (LAP) for each Local Core Feature (LCF) was broken down into concrete actions to be implemented during the first cycle. Castilla y Leon planned the work in the first step: "PLAN" of the cycle and established Key Performance Indicators (KPIs) for each of the action, as well as target value for each of the KPIs was defined. The methods used to measure the KPIs were quantitative and qualitative. With a focus on knowing patient satisfaction,

data was collected qualitatively through questionnaires and meetings with patient associations. The assessment and satisfaction of the professionals was carried out through periodic meetings. Quantitatively, the JA was measured by periodically collecting various BI for example Percentage of dermatology services that use teledermatology, number and percentage of telepresence equipment installed, reduction of time on waiting lists, number of patients attended by teleconsultation/year

For teledermatology, the data analyzed and interpreted from. The method used to assess the variations found was discussed with follow-up meetings with those responsible for collecting the information for each of the KPIs and those responsible for the services involved. All of the necessary equipment, smartphones and dermatoscopes, was also sent out to the primary centers in the health areas. This was supported by reference professionals in each center, training programs and LCF running in 10 of 12 health areas. During the period of execution of the project, the piloting of the project was carried out in all the health centers of the health area of Segovia. There was also established referral protocols and defined the record in the medical history. The project demonstrated strong results with 80% of the health areas use teledermatology, approximately 20 days reduction in waiting for the most experienced centers10, and an annual average of 38% resolution in teleconsultation. The project results presented the project to different patient Associations, and as of now five patient Associations have been implicated in the project.

During the first PSDA cycle, the telepresence project was piloted to respond to complex chronic patients in the Care Continuity Unit (CCU) of the Zamora Care Complex with the Benavente Norte Health Center. During the second cycle, the project will continue to be extended to the rest of the health areas. The delay in the training of professionals was mainly due to the delay in the installation of telepresence equipment in the centers. It has now been installed and connected in all health areas. Protocols for referral was also adapted from WP8 as well as definition of care pathway. Activity Registration procedures was also defined. To support the implementation, training of internal medicine doctors of the CCUs was completed. In primary care, the training of 247 trainers was completed. Inclusion of the contributions of the professionals in relation to the information necessary for the teleconsultation. - Integration of the patient survey in the touch panel of the equipment.

Altogether the project was disseminated to health centers and hospitals, as well as it was presented the project to Patient Associations.

Regarding the costs of resolved activities of the project, they do not imply an additional cost, (apart from the acquisition of equipment) as we found in the added publications. Patient satisfaction with the care received was greatly improved. Some expenses such as those made for the training of health professionals are an investment for the implementation of the LCF.

The useful of the work is that any citizen of Castilla y León can benefit from the services provided by this technology, especially in rural areas, a very important reality in the region. Castilla y Leon has also taken steps to support the sustainability of the practice once the project is finished by:

- Strategic and political support.
- The participation and commitment of all parties through leaders in each area and in the health centres.
- Continuous training of healthcare professionals and providing good educational material.

[10] Data is from the first PSDA Cycle. Data from the second PSDA cycle hasn't been published as of this writing.

- Involve and transfer to the public the information necessary for them to accept and value the new modalities of health care.

The project has shown future possibilities of combining telepresence with other telemonitoring diagnostic devices (as in the case of teleEPOC). This opens up for different possibilities and telemonitoring systems have been studied these months that, combined with telepresence, offer a more adequate care response to the needs. It is still an ongoing process, but telerehabilitation, teleictus and telecardiology are specialities that are being considered. The extension of the project to other healthcare areas in Castilla y León, through the SACYL technology already installed throughout the territory

2.6 Servicio Murciano de Salud & Fundación para la Formación e Investigación Sanitaria de la Región de Murcia (SMS & FFIS)

2.6.1 Context and trigger

The SMS, depending directly of the Regional Ministry of Health employs about 19.000 workers providing universal health services. The health service is divided into 9 health areas, where the JA is represented in Area VI. The Morales Meseguer Hospital (HMM) is the reference hospital of the area and serves a population of 250.000 inhabitants. The Flota Vistalegre Primary Care Health Center corresponds to 2 basic health zones. It served a population of 30.441 inhabitants in 2020.

As in many other countries, the Rehabilitation Service suffers from a great demand and a limited installed capacity, with waiting times up to three to six months. This causes patients in acute processes to seek private alternate services instead of public services, but also skews the equality of access to healthcare. Therefore, online rehabilitation represents an alternative solution that will allow the preservation of quality care and an alternative service focused on the empowerment of patients. The region is faced with a great challenge to solve, the online Rehabilitation alternative for certain conditions offers an interesting possibility of evaluate by implementing a Danish good practice in this field.

Once the needs for change were analyzed through the survey and a SWOT analysis, the following aspects were detected:

- An important motivation of the professionals, both Rehabilitation specialists, Family Doctors, Physiotherapists and Managers.
- Collaboration and support from policy members and stakeholders.
- Great support from the ICT area.
- Identification of resources to make synergies and achieve the design of a platform compatible with the Project.
- Make a great effort to achieve interoperability of medical records and the platform.
- Obtaining institutional resources for the preparation of both scientific material and videos thanks to a great effort by Rehabilitators and physiotherapists and a Communication Technician.
- Detailed and meticulous management and control process for the achievement of all tasks.

The SWOT analysis indicated Rehab|DK as the relevant WP8 core feature to transfer. The main aim is to obtain, through an online process, an accessible home rehabilitation treatment that empowers the patient and facilitates communication between professionals and patients. It is a solution with the potential to meet

the challenges of the rehabilitation process of patients, without replacing the personal contact with professionals.

2.6.2 The Local Good Practice

The implementation unit of the WP8 core feature was the Rehabilitation Service and Physiotherapy Service of the Morales Messenger Hospital, Murcia, Spain. The implementation of Rehab|DK aims to obtain higher quality and better support in the rehabilitation treatment with the development of activities at citizens' homes, offering greater flexibility in the rehabilitation process, both for health professionals and for patients by improving collaboration between sectors and achieving greater accessibility of person-centred comprehensive care data and reports and achieving patient empowerment. As well as facilitating the obtaining of information on pro indicators that patients register and that allows to the professional the transparency of the data and the respective monitoring and evaluation accessible to all the actors. To succeed a multidisciplinary work group was established with technological professionals, project manager, physiotherapists and technical trainers and assistants. The implementation project was supported by the Medical Director. The implementation project had access to material resources such as smartphones, tablets and web access.

2.6.3 Implementation process and results

The main aim of the project was to develop an online rehabilitation program that allows offering treatments to patients with greater flexibility to perform them. To scope the project, three pathologies were selected; ankle sprain pain, lumbar spine pain and cervical spine pain.

A combined treatment plan between face-to-face and online consultation, which can be supervised by professionals in Rehabilitation and Physiotherapy, was developed. Several videos with rehabilitation exercises according to the pathology of the patients was also developed. To provide the physiotherapists with more data to evaluate recovery and progress, a meticulous scientific review on pain assessment scales was accomplished. Synergies were made with a previous platform development existing in the health system (patient circle) and after multiple efforts, the online Rehabilitation project was integrated into platform. This integration has made video exercises accessible to patients and professionals, and also made it possible to answer surveys (PROM), record pain parameters and activities. In the future, it will also make it able to secure interoperability between EHR from primary care and specialized care.

Despite the fact that the implementation process of online rehabilitation has been delayed, it has nevertheless been a great achievement to have the interoperability of the systems with the patient records in Primary and Hospital Care and the Platform (Patient Circle) which it is almost never achieved in innovation processes, and when it is achieved there is a great possibility that the project will achieve sustainability over time.

2.7 Regione Lombardia

2.7.1 Context and trigger

The Lombardy Region DG Welfare covers 775.237 citizens and an area of 4.111,76 square kilometers. The region is characterized with a rural area made by several villages spread all around the countryside. Local Healthcare Authority ATS Valpadana made up of three health hubs: Crema, Cremona and Mantua. The main aim of the project is to improve the quality of healthcare services addressing territories, users and mild needs

still uncovered. To meet the demands of the citizens, an improvement of the digital transition of the regional healthcare system, handling accessibility issues was needed.

In the situation analysis the following parameters where seen as important:

- Improve the accessibility to psychiatric and rehabilitation services
- Organize a cross-sectoral healthcare based on citizens' needs, implemented and followed up
- Improve digitalization in order to provide broader services
- Low coverage of some users (geographic issues, mild disorders, etc…)
- Focus on non-COVID-19 related issues (funds, professionals, activities, etc…)
- Different individual approach to digitalization in the healthcare domain (patients and professionals)

As a result, the following core features of WP8 were chosen:

Final Core Features
CF 2.2 Telepsychiatry
CF 2.4 Online physical rehabilitation

2.7.2 The Local Good Practice

The project works with two different core features – Telepsychiatry and online physical rehabilitation (Rehab|DK). The aim is to bring psychiatric and rehabilitation services to users who usually can hardly access them due to the physical geographical distance to be covered to reach the closest hospital.

The psychiatric service would allow to involve more easily users reluctant to have physical meetings, involving the access to crowded places such as hospitals.

2.7.3 Implementation process and results

In the beginning it was a hope transferring the Rehab|DK platform, unfortunately technical issues related to the app and the backend integration into the Danish healthcare infrastructure, was too much to overcome. Therefore, it was agreed that this process wouldn't be feasible and it would be better to find a local organization/Partnership. This could also be more sustainable in the long term. However, as a consequence it has delayed the implementation process. To assist in finding an alternative platform, demonstration of the different functions of the Rehab|DK app as well as access to the test environment were provided.

Treatment protocols including pain measurement scales, example of consent templates and overview of the patient pathway was provided as a source for the pilot.

Related to telepsychiatry, WP8 have shared protocols, clinical guidelines as well as a literature review to the state of the art in relation to using video consultations in the psychiatry.

Lombardia have chosen three areas, where they are testing two local platforms. They have extended the functionality to also work with the JADECARE project. Due to the delay, the pilot is still undergoing, but will include 60 patients in total covering different pathologies. Lombardia has also succeeded in recruiting and training health care professional at the local level. This has led to the development on guidelines that have been adjusted to the local hospital setting.

2.8 Children's Clinical University Hospital (CCUH)

2.8.1 Context and trigger

The Children's Clinical University Hospital covers 359.000 children in Latvia, with 70.000 patients visiting the Emergency department annually. 17.000 patients are being treated in Inpatient units of CCUH. In total the CCUH work force covers 700 physicians and 600 of nursing staff in CCUH working to together with 800 pediatricians in Latvia. In Latvia, patients still face fragmented, incomplete, and under-coordinated healthcare and unclear patient pathways. It limits the opportunities for timely, full, and modern care for the health of the population, affects public health, causes economic losses, and limits people's confidence in the health care system.

One of the main issues are that many of the emergency visits are non-emergencies, which leads to an inefficient use of increasingly limited healthcare resources. Improved integration and cross sectorial communication would be able to address this inefficiency.

The patient data and technological capabilities, partners with comprehensive competence and the best practices are currently available in the context of personalized or precise medicine to offer integrated and fully digitized, the value and each individual-based an integrated health care system that would enable citizens to stimulate the common health management (alongside medical professionals) and the highest quality of life. The CCUH intends to introduce telemedicine solutions in Child Health Care and as such the JADECARE JA was a good opportunity to draw from experiences from other European countries working with integrated care and telemedicine.

To achieve that, WP8 and the holistic approach to a Digital Roadmap towards and integrated healthcare sector was chosen.

2.8.2 The Local Good Practice

Develop a strategy of digital eligible ecosystem

CCUH is in a continuous process in improving the digitization of their healthcare system with a focus on working towards an integrated healthcare services with the primary sector. One of the main aims of the project was to establish a digital eligible ecosystem. Harnessing the use of digital technologies was seen as a strong tool for equalizing the quality of paediatrician's services throughout Latvia.

The digital eligible innovation ecosystem for children's healthcare would build on the following levels: children's health portal, patient portal, portal for professionals. The strategy should contribute to the transition to digitally-enable, integrated, person centred care with special emphasis on sustainability. In the scoping of viable telemedicine and digital solutions for a patient-centred healthcare model, several parties were expected to be involved - the doctors, a patient, health care management institutions, research organizations and companies - work together by taking advantage of information technology capabilities. On the one hand, to organize and ensure the patient treatment processes the best way possible, on the other hand, to manage the health care system in the most effective way.

2.8.3 Implementation process and results

In the project period a rather extensive analysis was accomplished. It included more than 25 interviews with several stakeholders and a mapping of a lot of the needs of the different specializations in the hospital and in the healthcare eco system surrounding CCUH. As a part of the knowledge exchange an onsite study visit

to Odense University Hospital H.C. Andersen Children's Hospital was arranged with a focus on the use of digital technologies, children centred design and video consultations. With inspiration from WP8 Block 1, a proposal for a digitization strategy including telemedicine solutions was drafted. In the process WP8 has provided advice on how to approach various topics like integration and support of video consultations.

Although the strategy has been developed, there are still barriers for implementing it. Mainly the issues relate to external stake holders – for instance primary care/primary sectors and the GPs. They are not easily persuaded in implementing the initiatives and sees it as an extra burden.

The plan is that it will be approved in the beginning of 2023. For the implementation of the Digitization strategy, there is a broad consortium in the working group with representation of hospitals, primary sector with a lead by the Ministry of Health. It is the hope of CCUH that the experiences and knowledge collected as a part of the JADECARE JA will be included in the strategy on the national level.

3 Main conclusions and key learnings

3.1 University Hospital Olomouc (UHO)

JADECARE has been very useful to UHO and is sustainable after the end of the project because ICT, the need for collaboration, etc. is embedded in UHO's core activities.

During the project, a working group has been formed and expanded to include another group, which is part of the Olomouc Region eHealth. Within this group, a regional subsidy programme for this area has been established, in view of the need for its further development and expansion.

The introduction of video consultation in psychiatry has reached other psychiatrists and there is a growing interest in this service, which is in place in 6 out of 7 health insurance companies. In addition, there is a possibility to extend the ideas to other areas, as the "video consultation code" can be extended to other clinics quite easily. Telemedicine in general has gained more awareness and interest from other clinics. This has led to the development of gestational diabetes, tele ophthalmology, etc. using the dashboard for documentation sharing, communication, integrated care, etc.

It can be assumed that this approach will continue to expand and evolve as the need for better, stratified data collection increases, which can be further augmented with additional data, UDIs, etc. Longer extensions to include collaboration with social, field services in healthcare to a more holistic view of the person allowing risk stratification etc. to machine learning with whisperer for doctors.

As the above clearly shows, the inspiration from the Danish and Basque Good Practices in particular, but also the Catalan Good Practice, is great. The fact that they will continue to build and improve the system, as they are also pushed to do so by the need of the physicians themselves in their research work, positively influences sustainability in terms of management's willingness to continue the activities.

The telemedicine programs\apps developed as a result of the intervention built in JADECARE are very good basis for further management of the software, for expansion or redesign in other areas of eHealth or also for linking to another interoperability programme across the EU, as the integration platform created is ready to meet the standards of various other systems.

JADECARE has contributed with new perspectives, networks and concrete inputs to give UHO a solid foundation for this work. They also believe that this is the type of knowledge and experience needed to increase the likelihood of obtaining the additional funding needed not only for sustainability but also for

further development in this area. Although, the development of both the telemedicine application and the integration platform was not funded by JADECARE, oGP's experience greatly facilitated the development and direction of the pilot validations. As for key learnings, UHO highlights the importance of contractual solutions to agreements. This formal approach helps to solidify commitments and expectations, ensuring all parties involved are clear on their roles and responsibilities. It acts as a safety net, addressing any discrepancies or misinterpretations that may arise during the course of the project.

Secondly, there's a clear need to secure pre-defined financial resources for further work. Adequate funding is paramount for the successful execution of any project. It not only provides the necessary stability but also allows for the timely completion of the JADECARE initiatives.

Thirdly, the organization has realized the value of studying not just the main projects but also marginal, yet necessary and related activities to the oGP on site. These supplementary activities often have a significant impact on the core project, and their importance cannot be underestimated. Direct involvement and understanding of these related activities allow for comprehensive planning and efficient resource allocation.

The next key learning pertains to communication. UHO has underscored the need for appropriately selected functional communication channels. Communication is the lifeblood of any organization, and when it's effective, it can significantly enhance project delivery and stakeholder engagement.

Lastly, UHO has recognized the importance of engaging with local politicians. Navigating the political landscape is integral to securing necessary support and advancing the organization's mission. Engagement with local politicians can help to build key relationships, promote advocacy, and sustainability after JADECARE has finished.

3.2 Croatian Institute of Public Health (CIPH)

The Croatian Institute of Public Health (CIPH) is strategically leveraging the growing trend of digital literacy to enhance healthcare service delivery, with particular emphasis on NCDs' management. They anticipate an increase in the usage of the *Portal zdravlja* app and their upcoming web page across all age groups, improving the efficiency of disease management and GP - patient communication. This aligns with the European Commission's initiative to establish the European Health Data Space, aimed at empowering citizens with access to their respective health data. Furthermore, a web page is a relatively low-cost, user-friendly way for patients with NCDs to obtain useful, evidence-based information on disease management.

However, data from the questionnaire shows a low proportion of GPs utilizing the health portal app. In response, CIPH has identified and invited GPs with diabetes patients to participate in the project, encouraging them to disseminate the educational materials provided. Altogether CIPH has succeeded in strengthening the ecosystem with the identification of the most suitable GPs and engagement of the (Croatian) National Reference Centre for diabetes and Croatian Federation of Diabetic Associations. This will be a good starting point for future communication and dissemination, since the GP has shown a readiness for cooperation and willingness to use educational materials on the webpage. CIPH believes that with time, more GPs will actively use these digital tools and promote their use among patients.

While the health portal app is operational, the webpage, designed to provide evidence-based information to NCD patients, is not yet online. To populate the webpage, content has been prepared on diverse health-related topics such as pregnancy, vaccination, workplace disease management etc. The plan is to periodically update the content and continuously promote digital literacy and health literacy among the general

population. CIPH sees the webpage as sustainable and easy to maintain, and a good foundation for future initiatives.

Key learnings from the project thus far indicate that GPs are generally receptive to using digital tools for patient interaction and disease management. They are the first point of contact in identifying which patients are suitable and demonstrates adequate digital literacy. However, the successful recruitment and motivation of both GPs and patients hinge significantly on adequate resources, including personnel, time, and finances. These factors are crucial for the successful transition to digital health management methods.

3.3 Consejería de Salud y Consumo Junta de Andalucía & Fundación Pública Andaluza Progreso y Salud (CSCJA & FPS)

The Andalusian pilot project marked a significant step in improving healthcare at home, primarily CCPs. It successfully incorporated the TeleCOPD component from the Danish good practice. This implementation covered all the Andalusian healthcare districts, serving a total of 404,092 CCPs identified in 2022, nearly half of which were the pilot's target population: the prioritized complex chronic patients (PCCPs).

In the year 2022, around 11.6% of PCCPs were included in the teleconsultation programme. The majority of these consultations were associated with Dermatology, Cardiology, Rehabilitation, Digestive System, Trauma and Orthopaedic Surgery. Furthermore, the Proactive Follow-Up programme, initiated in 2021, managed to include 39.5% of identified PCCP in 2022.

Regarding health outcomes and utilization indicators, there was a notable decrease in visits at Primary Healthcare Centers contrasted with a significant increase in home visits and emergency episodes. However, the total number of inpatient episodes remained almost steady.

Key lessons from this initiative underline that the transition from reactive care to a proactive follow-up approach is significantly facilitated by the use of digital tools, particularly when these tools are aligned with local strategies and plans. Effective communication and sufficient training among healthcare professionals and patients emerged as crucial components for the success of such initiatives. Moreover, the early involvement of key stakeholders and professionals proved necessary for successful implementation.

Despite encountering difficulties when integrating the new initiative into pre-existing IT systems, the Andalusian pilot project team demonstrated an innovative approach towards managing interoperability within the existing IT platform. Recognizing that the CSPFU digital platform data was not immediately available due to a six-month delay in the implementation process, the team turned towards an alternative source of data for their assessment.

They leveraged the Proactive Follow-Up programme, which had been initiated in 2021 and was already integrated into Diraya, the existing EHR system. This programme had been performing direct follow-ups with complex chronic patients and compiling surrogate data. The team decided to use this information to assess the current implementation of the pilot.

This tactic exemplified a pragmatic approach to working around the issue of IT interoperability and reaffirmed that issues of data integration and interoperability can often be navigated through innovative, 'out-of-the-box' thinking. Despite the initial hurdle, the successful utilization of surrogate data underscored the importance of flexibility and resourcefulness when dealing with interoperability challenges in healthcare IT.

In the long run, addressing interoperability issues will require a combination of technical solutions and strategic solutions. However, the Andalusian pilot project has shown that in the short term, a flexible and innovative approach can help to keep important initiatives on track.

Lastly, to ensure sustainability, it became apparent that embedding the LGP within long-term healthcare systems plans and strategies was a must. Overall, the Andalusian pilot project provides a solid example of how digital tools and a well-structured approach can contribute to improving home healthcare for complex chronic patients.

3.4 Servicio Cántabro de Salud & Instituto de Investigación Marqués de Valdecilla, Spain (SCS & IDIVAL)

The primary objective of the Strategy for the digitization of health services in Cantabria was to leverage digital and technological tools to enhance and evolve patient care services. The strategy consisted of three distinctive programmes that each address unique healthcare needs.

The first, Cantabria's Online Physical Rehabilitation Programme, aimed at improving rehabilitation results for outpatients who have experienced a lower limb fracture. Beyond physical recovery, this programme also focuses on patient satisfaction and cost-effectiveness, enhancing the active involvement of patients in their own rehabilitation process from hospital discharge onwards. The goal is to promote therapeutic adherence, maximizing the effectiveness of the rehabilitation programme through digital means.

Secondly, the Cantabrian Patients' Schools aim to empower citizens with knowledge and tools for health promotion and disease prevention. This initiative focuses on motivating patients and providing support to enable them to make lifestyle changes and adopt healthier routines. By establishing networking opportunities for citizens and providing valuable insights to health organizations, the Cantabrian Patients' Schools aim to develop an integrated digital solution to further enhance patient empowerment. This digital solution is envisioned to offer increased flexibility and resource optimization while fostering patient motivation.

The final component of the strategy is the Support Program in Tele-psychogeriatric for nursing homes. This initiative focuses on improving the quality of health care for elderly individuals suffering from mental illness and cognitive impairment who reside in nursing homes.

The implementation process, while successful overall, faced several challenges. Among these were administrative issues and staff shortages that led to delays. However, the teams were able to make significant progress on multiple fronts. For example, the tele-rehabilitation programme engaged 15 professionals, approved and published three protocols, and completed 63 video programs. Despite initial difficulties, the teams' enthusiasm and problem-solving approaches enabled them to keep moving forward.

Regarding the Cantabrian Patients' Schools, active patient participation was promoted through the involvement of several patients and healthcare professionals. These stakeholders collaborated to hold six online workshops and one face-to-face workshop using the active patient peer learning methodology. This interactive approach, paired with the creation of nearly 20 educational videos, led to a very high satisfaction rate among participating patients.

Lastly, the tele-psychogeriatrics programme involved two part-time professionals and included 286 patients. Despite challenges related to internet connectivity and operational issues with the teleconsultation process, the team was able to conduct over 1200 consultations, either face-to-face or online. It was a notable realization that while teleconsultations could offer convenience, they could not entirely replace the need for in-person interactions, particularly for this demographic of patients. The willingness and open-mindedness to new learnings from the intervention, is a characteristic of a sound and responsive organization.

One crucial step towards improving user experience was the introduction of the MyHealth@SCS app. This app's improved visual interface, enhanced accessibility, and user-friendly functionality promise to significantly augment the patient experience in the future, and hopefully it will be possible to build on the JADECARE experiences.

It must be commended, that despite facing several challenges, the Cantabrian team were successful in adapting, mitigating and overcoming them. From these initiatives, several key learnings were drawn. Firstly, it became apparent that comprehensive information must be provided to healthcare professionals and patients from the outset. This encourages a deeper understanding and active involvement in the project. Secondly, the importance of effective planning and communication was underscored, as was the need to involve the entire team from the beginning. Lastly, the role of implementation leaders was identified as critical. These leaders drive the project forward, ensuring the alignment of all parties and fostering a collaborative environment. Willingness and the skill to change the intervention reflects an agile organization and is both an achievement and a key learning

3.5 Gerencia Regional de Salud de Castilla y León (SACYL)

The main aim for SACYL was to implement new forms of communication between primary care and hospitals, aiming to modernize the healthcare system technologically. This was particularly relevant for dermatology and the care of chronic multi-pathological patients, with an emphasis on rural areas. The objective was to facilitate communication between healthcare levels and integrated healthcare through digital and technological support, defining efficient and decisive healthcare pathways.

Two significant projects under this initiative were Teledermatology and Teleconsultation of pluripathological chronic patients with the continuity of care unit. During the Teledermatology project's execution period, primary care centers in all health areas were equipped with smartphones and dermatoscopes, referral protocols were defined, and the training of dermatologists and primary care professionals was completed. It resulted in a 20-day reduction in waiting times for dermatology consultation in the most experienced centers and a 38% average resolution in teleconsultation.

The Teleconsultation project piloted telepresence to respond to complex chronic patients in the Care Continuity Unit (CCU) of the Zamora Care Complex. The telepresence equipment was purchased, installed, and connected in all health areas. The project further established protocols for referral, defined care pathways, and completed the training of internal medicine doctors in the CCUs and primary care.

However, due to a government change, some actions such as the bidding process and installation of telepresence equipment in the centers were delayed. Other challenges included an interoperability problem in the digital medical record in two hospitals and a delay in the training of professionals from primary care due to the delay in the installation of telepresence equipment in the centers.

Despite these challenges, after the first cycle, several improvements were made. A patient survey was integrated into the touch panel of the equipment, the process of uploading photos to the repository was improved, advanced online training of dermatology was prepared, and satisfaction surveys for professionals and patients were carried out.

The project identified staffing shortages in Continuity of care units and rectified them. Some key learnings were the importance of strong project leadership, involving health services and all involved areas, adjusting the work organization to accommodate the new tool, and considering the suggestions from professionals for improvement.

The project stressed the importance of setting realistic deadlines and schedules, the need for project leaders, the involvement of main users in developing digital strategies, active intervention of patients and relatives from the project's inception, and the importance of coordinating and agreeing on the objectives with all parties involved in telemedicine.

3.6 Servicio Murciano de Salud & Fundación para la Formación e Investigación Sanitaria de la Región de Murcia (SMS & FFIS)

The main objective of SMS & FFIS was to create an accessible online home rehabilitation treatment that could empower patients and streamline communication between professionals and patients. This innovative solution was conceptualized to meet the many challenges of the patient rehabilitation process, without replacing the indispensable personal contact with medical professionals.

A significant milestone for SMS & FFIS was the successful definition of the treatment plan. This feat was accomplished thanks to an extensive collaboration of committed professionals. SMS & FFIS then moved to define pathologies, draft video scripts, record videos, and review them. This massive undertaking was brought to fruition by the combined efforts of physiotherapists, communication technicians, project managers, and rehabilitation doctors. Despite the overload of service commitments, these tasks were diligently completed.

Another pivotal accomplishment was the development of a platform that has the potential for future interoperability with health record systems. However, it was not without its challenges. A significant demand on the ICT department and a scarcity of human resources to timely resolve complaints slowed down the processes, especially in the development of the protocol in primary care and hospitals. This delay led to substantial implementation setbacks.

Despite these obstacles, SMS & FFIS diligently carried out an extensive review of scientific evidence to define pain assessment scales that would be integrated into the app. The process of selecting a platform was a major step in this project. With patience and tenacity, SMS & FFIF established synergies with an existing health system platform called 'Patient Circle.' Although the process faced a significant delay due to the ICT department's workload, the online Rehabilitation project was successfully integrated into the pre-existing structure.

Developing interoperability connections and an ICT area for the interoperability of health records were crucial yet challenging aspects of this project. The development of the protocols presented significant

challenges, but once accepted, the interoperability process was conducted successfully. Further, with simple design considerations, patient surveys were also incorporated into the platform.

However, due to delays in previous activities, the progress in developing the ITC platform was slower than anticipated, causing subsequent delays in professional training sessions, patient inclusion, analysis of potential pathologies for development, and the planning of necessary activities for novel treatment modalities.

SMS & FFIS's participation in the JADECARE project has yielded several key learnings: the importance of motivation and commitment from professionals, the need for the right platform with the correct functionality, the necessity of dedicated development resources, the critical nature of collaboration with the ICT department to achieve interoperability between primary and specialized care, and the importance of not overlooking consistent monitoring.

Although the implementation process of online rehabilitation encountered delays, SMS & FFIS achieved a substantial feat – the interoperability of systems with patient records in Primary, Hospital Care, and the Platform (Patient Circle). This accomplishment is often elusive in innovation processes, and when achieved, it significantly bolsters the project's potential for sustainability over time

3.7 Regione Lombardia

Regione Lombardia aimed to enhance the quality of healthcare services by focusing on areas with unmet needs and issues of accessibility. In doing so, the region also sought to accelerate the digital transition of its healthcare system. The primary goal was to create a user-friendly, efficient telemedicine solution, assessed mainly through qualitative feedback and some quantitative indicators.

The project implementation necessitated certain adaptations to accommodate new needs and unforeseen issues. Initially, it was expected that a teleconsultation platform was to be received from oGP, but due to technical and judicial issues this wouldn't be feasible option. Eventually, an existing platform was chosen and modified. These changes resulted in a postponement of the start date, a reduction in the study duration and the number of patients involved.

The pilot project also encountered difficulties due to the lack of available devices within the healthcare hubs (Azienda Socio Sanitaria Territoriale-ASST), which required the use of other devices like tablets and smartphones to ensure the project's progression. Privacy concerns were addressed through numerous meetings involving various stakeholders. Early involvement of IT technicians was crucial in evaluating the IT infrastructure and device starting point. Clinical and methodological training was also carried out to ensure smooth operation.

The project garnered positive feedback from patients and professionals. A majority of patients found no significant differences in the treatment outcomes between online and face-to-face visits. Some patients preferred online visits for comfort and convenience. Among the professionals, 7 out of 8 would recommend a further development of telemedicine.

The practice was praised for saving patients' time, reducing anxiety, increasing flexibility, and ensuring continuity of care. Professionals also benefited from managing emergencies better, making the service more accessible, and maintaining contact with distant patients.

The project brought several key learnings to light. First, having an existing online visit platform minimizes the need for additional training activities. Second, using a single platform for various telemedicine services streamlines the process and saves resources by reducing the need for managing multiple databases and training personnel. It also highlighted the importance of stakeholder involvement from the outset, the value of investing in digital equipment, and ensuring the platform's simplicity for effective implementation.

For patients, the main benefits of the practice were saving time, reducing anxiety compared to in-person visits, increasing flexibility, and ensuring continuity of care. Professionals noted the benefits of better emergency management, increased service accessibility, and the ease of maintaining contact with geographically distant patients.

The future development of telemedicine in the region will likely be influenced by these key learnings, with an emphasis on the development and adoption of a common telemedicine platform to reduce training times and costs. Moreover, the experience has shown the importance of early IT technician involvement, and the need to address privacy concerns when tailoring the telemedicine solution to local contexts.

The commitment to sustainability is demonstrated by the willingness of some hubs to continue the activities beyond JADECARE.

3.8 Children's Clinical University Hospital (CCUH)

CCUH's initiative aimed to create a digital ecosystem to enhance children's healthcare. To achieve this, the strategy included familiarizing with global best practices, formulating a Telemedicine strategy, designing the Conceptual Design document, and structuring a digital solution implementation plan at the CCUH. The idea was to establish an innovative digital ecosystem that would improve healthcare for children.

The process involved engaging professionals and designing an evaluation matrix for the Telemedicine strategy. It also involved developing a digital solution implementation plan, a general framework for cooperation, and agreement templates to ensure citizen engagement. The collaboration agreements focused on integrated care and continuity of care, and they also emphasized citizen involvement and the use of digital solutions. Training programs were organized to increase medical staff competency with telemedicine systems and equipment.

This project connected to both specific policy frameworks like the Medium-term Strategy (2020-2025) of CCUH and Public Health Policy Guidelines 2021-2027, as well as supporting policy frameworks like the Sustainable Development Strategy of Latvia until 2030 and Smart Specialization Strategy (RIS3).

Ownership sustainability was ensured through involvement from various stakeholders including the CCUH, funding institutions like the Ministry of Health, and high-level support such as the Latvian President's office. A culture of collaboration and consensus was built with stakeholders at the national level. Despite a few challenges such as disconnect between municipal and state structures, and an underperforming primary care system, the initiative benefited from a centralized clinical pathway and the recent experiences from the COVID-19 crisis.

The key learnings from CCUH's participation in the JADECARE project include the necessity to involve primary users along with digitalization experts and the need for external expert involvement. It was discovered that physicians were ready and willing to engage in digital development. The project encouraged learning from

mistakes and making necessary adjustments. It also highlighted the need to create illustrative use cases and engaging narratives. It was crucial to involve all key stakeholders, including internal ones, from the very beginning and to engage potential contributors and partners early, as this allowed the project concept to be improved. Moreover, it was noted that clear project ownership and a strong project team were vital for the success of the project.

3.9 General conclusions and key learnings

The implementation of a telemedicine project requires careful planning and execution to ensure its success. The points mentioned in the discussion are vital for the successful implementation of a telemedicine project. Below, some of the most important points are highlighted and described in more detail:

- **Leadership**: A telemedicine project requires strong leadership to ensure its successful implementation. Leaders are needed at various levels, including central administration, peripheral management, and local teams. It is essential to establish a network of leaders to extend the project to the entire community. Managers should push with enthusiasm and conviction, but healthcare professionals should also be leaders in their own environments with the staff of their teams.
- **Involvement of all stakeholders**: The implementation of telemedicine involves various stakeholders, including healthcare services, regulations, material and technological equipment, information systems, care organization, and human resources. It is essential to involve all the areas involved in the project to ensure smooth implementation.
- **Work organization**: The previous work organization needs to be considered and adjusted to establish the modifications that improve the use of the new tool. This will help in the smooth integration of telemedicine into the existing system.
- **Training and motivation**: Training and motivation in the work environment are critical elements for the success of telemedicine projects. Healthcare professionals need to be trained to use telemedicine tools effectively. Motivation is also essential to ensure that healthcare professionals are enthusiastic about the new technology and willing to use it.
- **Listening to stakeholders**: Listening to healthcare professionals, patients, and other agents in the organization who will be influenced by the incorporation of telemedicine is crucial. It helps in understanding the concerns and challenges faced by stakeholders and enables the project team to address them effectively.
- **Involvement of main users**: Involving the main users, such as patients, in the development of digital strategies is vital. This will help in designing telemedicine solutions that are user-friendly and meet the needs of the users.

In conclusion, the successful implementation of a telemedicine project requires careful planning, strong leadership, involvement of all stakeholders, adjustments to work organization, training and motivation, listening to stakeholders, and involvement of main users. These factors are critical in ensuring that the telemedicine project is successful and delivers the desired outcomes.

The points mentioned in the above highlight the challenges and benefits of transferring integrated care solutions from one setting to another. In detail the following points can be made:

The results of JADECARE show that a 1:1 transfer of original Good Practices (oGPs) is difficult, and a need for a frontloaded process of adjusting the oGP to a local setting is recommended. This highlights the importance of adapting integrated care solutions to local contexts to ensure their successful implementation.

The transfer of technical solutions is highly difficult and contingent on externalities, which is difficult to take into account when estimating timelines for the implementation process. This has led to delays in the execution for many of the NAWG. This highlights the challenges of transferring technical solutions, where local regulation and the need to consider external factors may affect the implementation. The NAWG has kept momentum in developing educational material that has been used in preparation and training of the healthcare professional for the pilot.

Sharing knowledge and experiences of working with integrated care has been highly valuable. This emphasizes the importance of Joint Actions like JADECARE, where sharing best practices and learning from experiences with the main aim at improving the integrated care delivery.

It is highly important that most early processes think about the inclusion of the necessary stakeholders to develop an ownership of the implementation project. This highlights the importance of involving relevant stakeholders in the implementation of integrated care solutions to ensure their success and sustainability.

Sharing experiences on how to strengthen the organization and structure of cross-sectorial cooperation has been shown to be beneficial. This emphasizes the importance of collaboration and cooperation between different sectors to deliver integrated care effectively.

The JADECARE project has also been a way to showcase different healthcare concepts and patient pathways related to integrated care. This has helped to highlight the potential benefits of integrated care solutions. It also served as a platform, where it has been possible to demonstrate the potential of technical solutions in integrated care, and how it can be scaled to different areas and pathologies. This has helped to showcase the general benefits of technology in delivering integrated care.

A derived consequence of JADECARE is that it has succeeded in strengthening the network of likeminded professionals who work for a better and more integrated healthcare system. This highlights the importance of collaboration and building networks to improve healthcare delivery.

In conclusion, JADECARE is a step in the right direction, but it also highlights the challenges of transferring integrated care solutions from one setting to another. However, sharing knowledge and experiences, strengthening cross-sectorial cooperation, showcasing healthcare concepts and patient pathways, and illustrating the potential of technical solutions can help to overcome these challenges and improve integrated care delivery.