JADE CARE

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

D5.1 THE BASQUE INTEGRATED CARE APPROACH ORIGINAL GOOD PRACTICE AND TRANSFER PROCESS

Annex document

KRONIKGUNE Institute for Health Services Research

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Version history

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0.2	17/03/23	Tanja Lelas, Ivana Brkick, CIPH Christina Plomariti, Fivos Papamalis AUTH Ulrik Appel, RND Chiara Ferravante and Paolo Micheluti, ARS Toscany Vanessa Ribeiro, ACSS Zdislav Doleček, UHO	Next Adopters suggestions for corrections in First Draft
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		Dora Toth, OKFÖ	
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Disclaimer

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Table of abbreviations

ACG-PM	Adjusted Clinical Group-Predictive Model
ACSS	Central Administration of the Health System Portugal
AFT	Aggregazioni Funzionali Territoriali (Functional Territorial Aggregation)
App	Application
ARS Tuscany	Agenzia Regionale di Sanità della Toscana (Tuscany Regional Health Agency)
ATC	Anatomical Therapeutic Chemical classification
AUTH	Aristotle University of Thessaloniki
B	Block
BI	Business Intelligence
CDSMP	Chronic Disease Self-Management Program
CHIF	Croatian Health Insurance Fund
CKD	Chronic kidney disease
CIPH	Croatian Institute of Public Health
CF	Core Feature
CT	Computed tomography
COPD	Chronic Obstructive Pulmonary Disease
COT	Centrale Operativa Territoriale (Territorial Operative Central)
COVID	Coronavirus disease
DKK	Danish Korone
DM	Diabetes mellitus
DPO	Data protection Officer
DTCP	Diagnostic and Therapeutic Care Pathways
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
EDC	Expanded Diagnosis Clusters
EHR	Electronic Health Record
ENSP	Escola Nacional de Saúde Pública (National School of Public Health)
EPJ	Electronic Patient Journal
EU	European Union
FCN	Family and Community Nurse
FSE	Fascicolo Sanitario Elettronico (Regional Electronic Health Folder)
GDPR	General Data Protection Regulation
GP	General Practitioner
HCP	Healthcare professional
(C)HF	(Congestive)Heart Failure
HIS	Healthcare Information Systems
ICD	International Classifications of Diseases
I(C)T	Information (and Communication) Technology
ICP	Individualized Care Plan
ICU	Intensive Care Unit
IHD	Ischemic heart disease
IHO	Integrated Healthcare Organization
JA	Joint Action
KPI	Key Performance Indicator
LAP	Local Action Plan

LCF	Local Core Feature
LGP	Local Good Practice
MoH	Ministry of Health
MoHRS	Ministry of Health of the Republic of Serbia
NA	Next Adopter
NAWG	Next Adopter Working Group
NCD	Non-communicable Diseases
NHIF	National Health Insurance Fund
NHS	National Health System
oGP	Original Good Practice
PC	Primary Care
PDSA	Plan Do Study Act
PM	Project Manager
PHF	Personal Health Folder
PI	Predictive Index
PIP	Population Intervention Plan
PREST	Basque Country population stratification program
QA	Questionnaire
RND	Region of North Denmark
RUB	Resource Use Band
SDCN	Steno Diabetes Centre North Denmark
SMART	Specific Measurable Achievable Relevant Time-bound
SUS	System Usability Scale
SWG	Specific Working Group
UHO	University Hospital Olomouc
UNODP	United Nations Office on Drugs and Crime
USL Umbria 1	Unità Sanitarie Locali Umbria 1 (United Local Health Authority Umbria 1)
VR	Virtual Reality
WHO	World Health Organization

Annex 1: Implementation reporting documentation

This appendix document includes the reporting documentation of the eight NAs of the Basque Good Prcatice for the three phases of the implementation process:

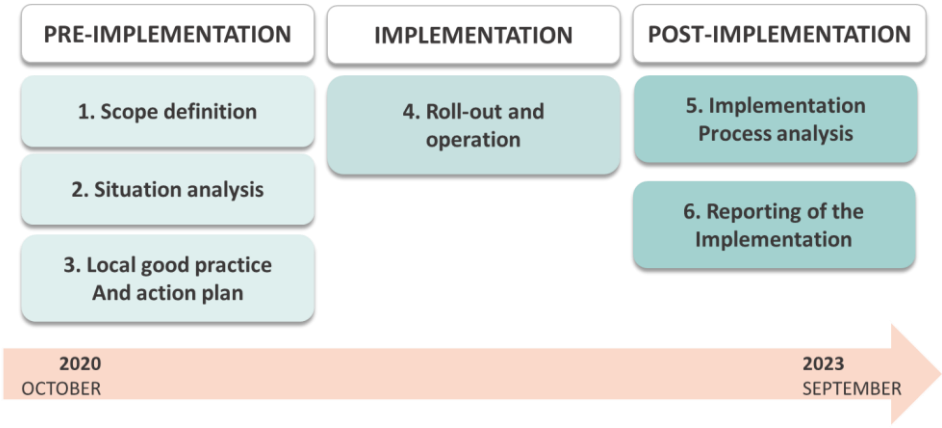


Figure 1: JADECARE three step Implementation Strategy

Pre-implementation

The objective of this phase is to elaborate the LGPs and the LAPs to be followed during the implementation by means of three activities:

- Scope definition: that implies selecting the CFs of the oGP(s) to be implemented and integrated in routine practice in each NA site. For this means, the NAs assessed the relevance and feasibility of the CFs of the oGP(s) in a four points scale, where 0=Not at all and 4= Extremely, and selected those to be implemented at the local site.
- Situation analysis: whose purpose is to analyse the organizational position of the NAs within the environment by conducting a SWOT analysis to then define its Strategic Intervention Areas (SIAs).
- Definition of the LGPs and LAPs: including the detail of the intervention designed: name of the Good Practice, target population, setting, main aim, general description, needed inputs, main components and expected outcomes and the concrete actions to be taken to deploy it, including each SMART objective, specific activities, actors, resources, settings(s), timeline and KPIs.

Implementation

It consisted on the execution and monitoring of the implementation by means of 2 Plan-Do-Study-Act (PDSA) Cycles, where the report of each step includes:

- Plan: a detail of the activities broken down into actions, actors, timeline and information on KPIs to assess them (target value and who/when and how will the data be collected).
- Do: information on the actual value of the KPIs compared to the planned target value, a summary of what was actually implemented and description of deviations, problems or unexpected findings, if any, as well as the implementation progress achieved until the moment.
- Study: the reasons for the deviations, mitigation actions implemented and their impact, considering the planned and actual KPI values.
- Act: the decision to maintain, adapt or abandon each activity as well any new proposed action for the future.

Post-implementation

The whole implementation was reported by each NA by means of the SQUIRE 2.0 adapted guidelines. It contains SQUIRE 2.0 contains 18 items to respond 2 general sections and 4 key questions: title and abstract, why did you start?, what did you do? , what did you find?, what does it mean? and other information

North Denmark Region (RND)

Pre-implementation

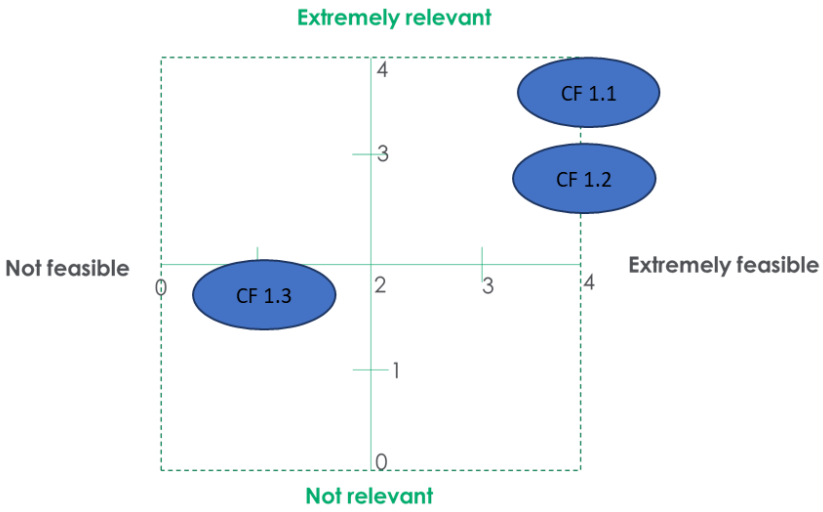
Scope definition

Identified and prioritized needs

Block	Prioritized needs
Stratification	Stratification for choice of treatment
	Stratification to prioritize development initiatives
Dashboard	Dashboard on individual patient level
	Dashboard on population
Prediction	Support on data collection and data quality
	Prediction on late complication and quality of life
	Search for State of the art in diabetes treatment

Assessment of Core Features

Core feature	Relevance	Feasibility
CF 1.1 Stratification data extraction and construction of dashboards	4	4
CF 1.2 Classification of patients	3	4
CF 1.3 Stratification in the framework contract	2	1



Final Core Features selected

CF1.1 - Risk stratification
CF1.2 - Classification of patients
CF1.3 - Stratification in the Framework Contract

Situation analysis

	Strengths	Weaknesses
Internal	• RND have a large Data pool • We have a mutual ambition to use data • The staff has a generally high level of competence in relation to data and IT • (almost) Realtime Data on patients • Great focus on data collection	• DO!!! (it is sometimes difficult to get things done even though data supports new initiatives) • We do not have access to socio-economic data (Family status, level of education, housing, social services, municipal health services)

	• We have the best data completeness in Denmark • We have the resources to work with data (3 employees in BI dedicated to diabetes data) • We have a high degree of valid data • Data from many difference data sources within the healthcare system • High level of motivation • Strong focus on our strategy - it is a stated ambition	• You can´t make dynamic adjustments in a clinic that is booked far into the future (over a year) • The healthcare economy is politically controlled and sometimes there is a risk that political decisions are poorly related to data in the field. • Data across sectors is very difficult • Lack of quality in registration • Validity - clinicians often do not get everything registered. For example, documentation of delivery of diabetes equipment. • Lack of financial incentives • The ability to manage change through data is weak
	Opportunities	**Threats**
External	• Data-driven competence development - adaptive services for patients • Cross-sectoral - exchange data and knowledge with other health actors • Patient empowerment • Opportunity to see potentials that we cannot see today without data • Increased quality through insight into effect • Data as a basis for idea generation and innovation • Strengthen the power of transformation • Prioritization of the target group • Individually adapted treatment • Competence boost in relation to data use • Decision and treatment support • AI • Targeted efforts for smaller geographical areas • The actual use of data in itself creates better registration quality	• Inappropriate breaches of data definitions and data flows associated with new EHR and other new systems • It is difficult to change the habits within the health field • Conflict in the field. Data have been used for natural scientific evidence and scientific publications. A new tradition must be built. • Commercial issues with external partners. • Who owns data: Diabetic pump manufacturer, healthcare provider or patients? • GDPR • Change in key staff • Change in politics agendas • Daily operations consume time from development tasks • We are having a new primary source for data processing in 2022 (NordEPJ) • Change in data definitions (New subcategories of treatment types) • Noisy data • IT maturity • Data overload • Resistance to change • Distrust of data (due to previous misinterpretations)

Strategic Intervention Areas

Strategic intervention area	Priority	Ranking
Further development of SDCN Data dashboards	3	1
Develop Competencies to use data strategically	3	2
Implementation in practice (DO part)	3	3
Framework conditions (Law, risks, systems)	1	
Cross-sectoral data	2	
Change management with data	2	

Definition of the LGP and LAP

Local Good Practice

Local Good Practice	Region of North Denmark (RND)
Target population	**Setting(s)**
The North Jutland region has 590.439 inhabitants in 2021. The project will have a special focus on active diabetes patients in the hospital (5.627 active based on the current patient status)	The regional health system - possibly in collaboration with selected municipalities
Main aim	
The North Jutland region has already come a long way with their strategic use of data. The reason for joining JADECARE is to be inspired to further develop our own solutions with the Mix and Match approach. The purpose has therefore not been to implement a complete or parts of IT systems of the oGPs but primarily to learn from positive experiences from other EU countries. Our NAWG has expressed interest in these parts: German Good Practice (OptiMedis): CF 5.1: Potential analysis tool and CF 5.2: Performance dashboards Basque Good Practice: CF 1.1: Stratification Data extraction and construction of Dashboards and CF 1.2: Classification of patients. 1.3: Stratification in the Framework Contract It is these areas where we would like to be inspired about ways to build our dashboards and develop new project ideas. Therefore, our local action plan and local core features is more of an exchange of ideas for areas where we expect to be able to learn from oGPs. We would like to be inspired in two levels: **First Main aim: Focus on the diabetic patients (5.627 active patients)** Here we would like to realize Steno Diabetes Centre North Jutland's vision • Increase quality of life and life expectancy for citizens with diabetes. • Create a coherent diabetes treatment close to the citizen. • Slow down the growth of new cases of diabetes. This must happen based on strategic use of data and data dashboard in the field of diabetes. Although this part is focused on the diabetes area, there are many external actors (Other hospitals, municipalities, rehabilitation units, etc.) who can strengthen cooperation with SDCN through joint use of dashboards. **Second main aim: Focus on the entire population in North Jutland (590.439 inhabitants)** The second focus is a main aim for the whole region. Among North Jutland health actors (11 municipalities and one region), there is a strong focus on citizens with chronic diseases and / or complex issues. To ensure a new and more data-driven approach to the health field, new knowledge and methods are needed to focus on the entire population group and not only on active patient groups in the hospital.	

Outcomes	**Local Core Features and their Components**	**Inputs**
Short term outcome for the project will be: 1: New data dashboards and strategical data usage 2: New competencies at RND and SDCN 3: New projects on the basis of data The long-term effect of this project will be better and more targeted patient care, but this cannot be documented within the JADECARE project period.	1: Further development of SDCN Data dashboards 2: Data-driven approach for the North Jutland population: feasibility study 3: New projects based on data (AI is based on Experience from German Good Practice B5 and Basque Good Practice B1)	• Funding (Novo Nordisk foundation) • BI staff (Recruitment) • Program managers • Decision markers • IT system (Need for ACG Grouper?)

General description
A significant investment for Steno Diabetes Centre Nordjylland (part of RND) is a new database of all North Jutland diabetes patients to make a more targeted patient treatment. The database must be the central basis for an ambitious digitization and research effort in SDCN and serve as a valuable basis for both patients, healthcare professionals and researchers in the development of new and improved healthcare services for diabetic patients. There are a large number of data sources that support the field of diabetes today and with increased digitization and the use of home technology and wearables, even more possibilities arise. The aim of the project is to establish a coherent and generic data platform where the diverse data types are brought together and this development work is already well initiated. The database must be able to be used for clinical use, at citizen level, for quality development and clinical research as well as for the development of models for value-based management. SDCN would like to incorporate methods such as patient stratification and risk assessment into the database, so that in the long-term new treatment methods can be created for the individual patient groups. Therefore, RND would like to investigate the ideas, data sources and methods in solutions such as Johns Hopkins ACG System in the Basque Good Practice and the systems of th Germang Good Practice considering which data (Finance data, PRO-data, Quality of Life) the method is based on and if the data can be found in a Danish context.
Local Core Feature 1
Further development of SDCN Data dashboards
Local Core Feature 2
Data-driven approach for the North Jutland population: feasibility study
Local Core Feature 3
New projects based on data

Local Action Plan

Local Good Practice	Region of North Denmark (RND)
Target population	**Setting**
The North Jutland region has 590.439 inhabitants in 2021. The project will have a special focus on active diabetes patients in the hospital (5.627 active based on the current patient status)	The regional health system - possibly in collaboration with selected municipalities
Main aim	
The LGP has a double aim: **1: Focus on the diabetic patients** Here we would like to realize Steno Diabetes Centre North Jutland's vision: • Increase quality of life and life expectancy for citizens with diabetes. • Create a coherent diabetes treatment close to the citizen. • Slow down the growth of new cases of diabetes. This must happen on the basis of strategic use of data and data dashboard in the field of diabetes. **2: Focus on the entire population in North Jutland** The second focus is a main aim for the whole region. Among North Jutland health actors (11 municipalities and one region), there is a strong focus on citizens with chronic diseases and / or complex issues. To ensure a new and more data-driven approach to the health field, new knowledge and methods are needed to focus on the entire population group and not only on active patient groups in the hospital. Therefore, RND would like to investigate the ideas, data sources and methods in solutions such as Johns Hopkins ACG System in the Basque Good Practice and the systems of the German Good Practice considering	

which data (Finance data, PRO-data, Quality of Life) the method is based on and if the data can be found in a Danish context.

General description

A significant investment for Steno Diabetes Centre Nordjylland (part of RND) is a new database of all North Jutland diabetes patients.
The database must be the central basis for an ambitious digitization and research effort in SDCN and serve as a valuable basis for both patients, healthcare professionals and researchers in the development of new and improved healthcare services for diabetic patients.
There are a large number of data sources that support the field of diabetes today and with increased digitization and the use of home technology and wearables, even more possibilities arise. The aim of the project is to establish a coherent and generic data platform where the diverse data types are brought together. The database must be able to be used for clinical use, at citizen level, for quality development and clinical research as well as for the development of models for value-based management.
SDCN would like to incorporate methods such as patient stratification and risk assessment into the database, so that in the long-term new treatment methods can be created for the individual patient groups.

Related oGPs and CFs	Mix and Match • German Good Practice (Optimedis): CF5.1: Potential analysis tool and CF5.2: Performance dashboards • Basque Good Practice: CF1.1: Stratification Data extraction and construction of Dashboards and CF1.2: Classification of patients CF1.3: Stratification in the Framework Contract
Local Core Feature 1	**Further development of SDCN Data dashboards**

SMART objective

At the end of JADECARE (September 2023) the Region of Northdenmark will have designed a new dashboard approach for the diabetes patients in Northdenmark - which after the project period will provide better patient care through more targeted offers.

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
Step 1: Examination Examination of programmes used by German and Basque Good Practices	NAWG and German and Basque Good Practices (Data managers etc,)	• Communications-platform • Licenses or demo	Web-based meeting	2021/ 2022	• 1 overview over relevant programmes, software, tools and license (both German and Basque Good Practices) • 1 overview of data sources (both German and Basque Good Practices) • 1 overview of project with diabetes (both German and Basque Good Practices) • 1 Danish overview of
Examine data sources in German and Basque Good Practices	NAWG and German and Basque Good Practices (Data managers etc,)	Communications-platform	Web-based meeting	2021/ 2022	
Examine selected activities and project that are initiated by German and Basque Good Practices on the basis of data. This could be both diabetes project and general health projects.	NAWG and German and Basque Good Practices (Project managers)	Communications-platform	Web-based meeting	2021/ 2022	

Step 2: Analysis Identify the location and conditions for Danish data sources (Fit gap)	NAWG		NA's site	2022	Danish health data sources (Both existing and potential) • 1 new Dashboard for use at Steno Diabetes Centre North Denmark
Step 3: Development Development of a new dashboard in the diabetes field in Northdenmark	NAWG and German and Basque Good Practices	Next Adopters' database – Development cost	NA's site	End of 2022	
Local Core Feature 2	**Data-driven approach for the North Jutland population: feasibility study**				
SMART objective					
At the end of JADECARE (September 2023) the Region of Northdenmark will have new competencies to use data strategically for better patient care. These competencies are both at employee level and at management level and can be documented that they have been in knowledge sharing process the German and the Basque Good Practices.					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Site visit for the end-users of data Knowledge development for chief physician and chief nurse about the use of data and patient stratification	• Chief physician and chief nurse (RND) • German and Basque Good Practices (chief physician and chief nurse)	Study visit (Time and Travel expences)	oGP site	2022	• 4 managers have completed exchange visit • 2 Business intelligence consultants have completed exchange visit • 2 Researchers have completed exchange visit
Site visit for the end-users of data Knowledge development for Business intelligence consultants about development of dashboards and datasources	• Business intelligence consultants (RND) • German and Basque Good Practices (Business intelligence consultants or datamanagers)	Study visit (Time and Travel expences)	oGP site	2022	
Site visit for the end-users of data Knowledge development for researchers about datasources	• Researchers (RND) • German and Basque Good Practices (researchers)	Study visit (Time and Travel expences)	oGP Site	2022	
Local Core Feature 3	**New projects based on data**				

SMART objective					
At the end of JADECARE (September 2023) the Region of Northdenmark will have a list of new project ideas based on data that can be submitted to the Steno board and patientsboards.					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Prepare specific project proposals based on data from RND. An example of an projectidea could be “Type 1 diabetespatient absences”	• NAWG • ”The idea clinic”	Communication with oGP (Emails, teams etc)	NA site	End of 2022	2 Project proposal
Prototype for data model for stratification – both for diabetic patients and the entire population	• NAWG • ”The idea clinic”	Communication with OGP (Emails, teams etc)	NA site	End of 2022	1 prototype for a new datamodel
Presentation of the results of JADECARE to the internal and external strategic decision-makers in North Jutland	• ”The idea clinic” • ”the health innovation platform” in RND (Policy level representative)	Communication with oGP (Emails, teams etc)	NA site	End of 2022	1 project summary to policy makers

Implementation

1st PDSA Cycle

Plan

LCF1	Further development of SDCN Data dashboards (Type 1 diabetes)							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
1: Examination	• Examination of programs used by German Good Practice • Online Consultations of German Good Practice experts on the existing database in RND • Revisit the Basque Good Practice online site visit and powerpoint	• Project manager: Ulrik Appel • Quality manager: Amar Nikontovic • Head of Digitalization: Tina Heide • Dr. Med. Manfred Zahorka • Head of health data analytics Pascal Wendel • Senior manager Justin Rautenberg	• Completed with the German Good Practice 29/11-2021 • Completed with Basque Good Practice on 17/1-2022 with Amar Nikontovic	1 Meeting about relevant programs, software, tools and license	Project manager Ulrik Appel	31 January 2022	From calendar	1
	Examine data sources in German and Basque Good Practices. The German Good Practice shares their file for datarequest with RND. The Basque Good Practice leaders send ASG contract and similar list of datasources	• Dr. Med. Manfred Zahorka from Optimedis • Jon Txarramendieta Suarez from *Kronikgune*	1/1 -2022 to 28/2-2022	1 overview of data sources (both German and Basque Good Practices)	Project manager Ulrik Appel	31 January 2022	Received file/mails	1

	Examine selected activities and diabetes project that are initiated by the German and Basque Good Practices on the basis of data. Both sends information about projects based diabetes data	Dr. Med. Manfred Zahorka dialog on Next Adapters status meeting	1/1 -2022 to 28/2-2022	1 brief overview of project with diabetes (both the German and Basque Good Practices)	Project manager Ulrik Appel	31 January 2022	Received information	1
2: Analysis	Identify the location and conditions for Danish data sources (Fit gap) The fit gap analysis will determining how well RND current data access will fits model from the German and Basque Good Practices. In other words, it helps RND identify the areas where problems are occurring and how severe they are	• Project manager: Ulrik Appel • Quality manager: Amar Nikontovic • Data manager: vacant	1/3 2022 to 31/3 2022	1 Danish overview of Danish health data sources (Both existing and potential)	Project manager Ulrik Appel	30 April 2022	File	1
3: Development	Development of a new dashboard in the diabetes field in Northdenmark within the Regions "Qlik" system. Priority: Type 1 diabetes When the database is developed, there will be an 1 hour online meeting with NAWG and the German Good Practice about the new model	• Project manager: Ulrik Appel • Quality manager: Amar Nikontovic • Data manager: vacant • Dr. Med. Manfred Zahorka • Head of health data analytics Pascal Wendel	1/4 2022 to 30/6 2022	1 new Dashboard embedded in the Qlik system for use at Steno Diabetes Centre North Denmark	Project manager Ulrik Appel	30 June 2022	A new improved dashboard in Qlik	1

		• Senior manager Justin Rautenberg						

LCF2	**Data-driven approach for the North Jutland population: feasibility study**							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
1: Site visit for the end-users of data (Site visit could thematic workshop, site visit on hospital or a conference. Must be matched with needs from other countries NAWGs. A possible solutions could be workshops in Denmark at the ICIC 2022 congress in Odense)	Knowledge development for chief physician and chief nurse about the use of data and patient stratification	• Jon Txarramendieta Suarez from Kronikgune • Dr. Med. Manfred Zahorka from Optimedis • Project manager: Ulrik Appel	Q1 develop program Q2 visit	4 managers have received an invite	Project manager Ulrik Appel	30 June 2022	Program or calendar	1
	Knowledge development for Business intelligence consultants about development of dashboards and data sources	• Jon Txarramendieta Suarez from Kronikgune • Dr. Med. Manfred Zahorka from Optimedis • Project manager: Ulrik Appel	Q1 develop program Q2 visit	2 Business intelligence consultants have completed exchange visit	Project manager Ulrik Appel	30 June 2022	Program or calendar	1
	Knowledge development for researchers about data sources and research projects	• Jon Txarramendieta Suarez from Kronikgune	Q1 develop program Q2 visit	2 Researchers have completed exchange visit	Project manager Ulrik Appel	30 June 2022	Program or calendar	1

		• Dr. Med. Manfred Zahorka from Optimedis • Project manager: Ulrik Appel						

Do

Cycle number	**1**	
Activity	**KPI**	**Actual value**
LCF 1: Dashboard Step 1: Examination	1 Meeting about relevant programs, software, tools and license	1 = 100%
	1 overview of data sources (both the German and Basque Good Practices)	1 = 100%
	1 brief overview of project with diabetes (both the Basque and German Good Practices)	1 = 100%
LCF 1: Dashboard Step 2: Analysis	1 Danish overview of Danish health data sources (Both existing and potential	1 = 100%
LCF 1: Dashboard Step 3: Development	1 new Dashboard embedded in the Qlik system for use at Steno Diabetes Centre North Denmark	0 – but started = 10%
LCF 2: Site Visit	4 managers have received an invite	Total 12 = 100% Manager/Projectmanager at ICIC 2022 = 2, Slovenia (WP7)= 1, Strassbourg (WP7)= 3, Aalborg (WP5)= 6
	2 Business intelligence consultants have completed exchange visit	Total 8 = 100% Business intelligence or Quality manager at ICIC 2022 = 1, Slovenia(WP7) = 1, Strassbourg (WP7)= 1, Aalborg (WP5)= 5
	2 Researchers have completed exchange visit	Total 4 = 100% Researcher at ICIC 2022 = 1, Slovenia (WP7)= 0, Strassbourg = 0, Aalborg (WP5)= 3

QUESTIONS	**ANSWERS**
What was actually implemented? Any deviation from the planned actions	The Examination and Analysis (LCF1) and Site visit (LCF2) are completed. However, the development phase of the Dashboard (LCF1) has been postponed to PDSA part 2 due to shifts in both EPJ and key personnel.
Problems? Unexpected findings? Please describe	There have been problems with the development phase of the dashboard (LCF1) due to new EPJ and problems with site visits (LCF2) due to COVID-19. However, these are problems that are considered to be solvable in PDSA part 2. On the other hand, the project has progressed further with the strategic part (LCF3), which was first planned to start in PDSA part 2. Here, a working group has already been set up with external actors and a strategic note on organization is being prepared.

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**

		X	

Study

Cycle number		**1**				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
LCF 1: Dashboard Step 3: Development	1 new Dashboard embedded in the Qlik system for use at Steno Diabetes Centre North Denmark	1	0	vacant position at the Business Intelligence unit	Dialogue with 2 other consultants from the BI unit (Stine and Camilla) to solve the task of building the reports. The new agreement was that the design of the report is carried out by Steno, which will make a mock up based on input from the German and Basque Good Practices. The next step is for the reports to be built from September to December 2022	The task will be part of PDSA part 2 (Activity 1.1 to 1.3)

Act

Cycle number	1		
Activity	**Maintain**	**Adapt**	**Abandon**
1.1 Dashboard: *Mock up (Steno)*		X	
1.1 Dashboards: *Build (BI)*	X		
2.1. Dashboard for of Patients Absence: *Data extraction (Steno)*	X		
2.2. Dashboard for of Patients Absence: *Data analysis (Together with the Alexandra Institute)*	X		
2.3. Dashboard for of Patients Absence: *Build a new dashboard*	X		
3.1. Sustainability and strategic anchoring. *Write a strategic paper*		X	
3.2. Sustainability and strategic anchoring. *Dialogue about the paper at the administrative level*		X	
3.3. Sustainability and strategic anchoring. *Political decision*		X	

QUESTIONS	**ANSWERS**
Any new proposed action for the future?	PDSA Part Two focuses more on the strategic level

2nd PDSA Cycle

Plan

LCF1	Further development of SDCN Data dashboards (Part 2)							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
1. Building the **Dashboard**	Make a dashboard **Mockup** from input from fit-gap report (PDSA1) (Germand and Basque Good Practices)	Ulrik Appel and Amar Nikontovic (Sending to German and Basque Good Practices)	August 2022	Make 6 Mockups	Ulrik Appel	Dec. 2022	Copies of Mockups	6
	Prototype meeting of the mockup with health professionals - Head physician - Head nurse - Cross-sectoral employee Brainstorm for new inputs and improvements	Ulrik Appel and Amar Nikontovic	September 2022	3 meeting	Ulrik Appel	Dec. 2022	Calender invitation	3
	Building the final Dashboard	Stine Fly Bay and Camilla Winther Nielsen	Sep. - dec. 2022	1 New Dashboard	Ulrik Appel	Dec. 2022	Screen dump of new dashboard	6
	Final Dialogue with healthcare professional and cross-sectoral employees about use cases of the new dashboard	Ulrik Appel and Tina Heide	Dec. 2022	1 Meeting	Ulrik Appel	Dec. 2022	Calendar invitation	1
2. Data on **patient absences** (Risk factors)	**Data transfer** for external analysis (AI program with Alexandra Institute)	Ulrik Appel and Amar Nikontovic	July 2022	1 transfer of health data	Ulrik Appel	Dec. 2022	Copy of "Standard Contractual Clauses" with Alexandra	1

	Report from the Alexandra Institute (External)	Rasmus Larsen from Alexandra Institute	July – Nov. 2022	1 Report from Alexandra about signal values and possibilities for riskdata	Ulrik Appel	Dec. 2022	One report (Google Translate)	1
	Mock up for a new dashboard with risk of non-attendance	Ulrik Appel and Amar Nikontovic (Sending to Germand and Basque Good Practices)	Dec. 2022	A mockup where the report's recommendations have been translated into a draft for new risk dashboard	Ulrik Appel	Dec. 2022	One Mock-up	.

LCF2	**Strategic discussion of the population approach in RND (new)**							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
1: Discussion about **population approach in RND**	Preparation of a **strategic paper** about the strategic use of health data about vulnerability in the North Jutland Region	Ulrik Appel, Bente Koch and Amar Nikontovic Niels Frederik Rottbøll And Gorm Simonsen	August 2022	1 strategic paper (google translate to English)	Ulrik Appel	December	1 paper	1
	Action plan for new specific cross-sectoral initiatives on the basis of the report A: New network with specialists and support functions B: Mapping of legal frameworks	Ulrik Appel, Bente Koch and Amar Nikontovic	Aug. 2022 – Dec. 2022	1 new network	Ulrik Appel	December	1 plan	1

	C: Project on data and vulnerable diabetes patients	Niels Frederik Rottbøll And Gorm Simonsen						
	Mapping of Steno and RND data situation (With Aalborg University)	Ulrik Appel Aalborg University	Aug. 2022 – Dec. 2022	1 Report about Steno's data infrastructure and data issues	Ulrik Appel	December	1 paper	1
	Use of **data on the morning conference**	Ulrik Appel and external consultant	Sep. 2022 – Dec. 2022	1, process about the use af data on morning conference	Ulrik Appel	December	1 paper	1

Do

Cycle number	**2**	
Activity	**KPI**	**Actual value**
Dashboard: Mockup	6	6
Dashboard: Prototype meeting	3	3
Dashboard: Building	6	6
Dashboard: Final dialogue	1	1
Patient absence: Data Transfer	1	1
Patient absence: Report	1	1
Patient absence: Mockup	1	1 (see deviation)
Population approach: Strategic paper	1	1
Population approach: Action plan	1	1
Population approach: Mapping	1	1
Population approach: Morning conference	1	(1) (see study)

QUESTIONS	**ANSWERS**
What was actually implemented? Any deviation from the planned actions	A large number of elements were implemented in JADECARE • Dashboard for patient overview • Dashboard for age distribution of patients • Diabetes Prevalence Dashboard • Geographic dashboards • Generic model for new dashboards (Labka) • Analysis and recommendations* for minimizing absenteeism • Strategic report • Strategic cross-sectoral network *Deviation: Patient absence and mockup: We had expected to create a data report on non-attendance at an individual level, but based on the AI report choose to focus on a group instead (Young men 20-45 years). Therefore, there is no need for a mockup for a dynamic report, since we focus on a group and not individual patients.
Problems? Unexpected findings? Please describe	-

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
			X

Study

Cycle number		2				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Population approach: Morning conference	One process about the use of data in morning conference	1	(1)	There has been a process, which, however, did not become a concrete proposal. Meeting with the German Good Practice held the 24. November in Hamborg, where models for "portfolio analysis" was presented for RND's general inspiration. If the model should be suitable for the hospital system it requires a lot of adjustment, development, and involvement of end users / health professionals. After a dialogue with the senior physician, it was decided that the whole process should be "bottom-up" since the medical doctors (end-users) had to be involved from the start and the solution had to be based on their needs. This was not possible within JADECARE 's time frames	This focus area became part of another and larger project in RND and was therefore taken out of JADECARE.	The reports will be developed in 2023 and 2024 based on a "bottom up" approach in another project.

Act

Cycle number	2		
Activity	**Maintain**	**Adapt**	**Aband**
1. Building the **Dashboard**	We have reached the goal in JADECARE. We are continuously expanding the database with new data sources and reports - also after JADECARE ends. In the future, SDCN will run a dedicated "data track" in the digital health department.		
2. Data on **patient absences** (Risk factors)	We have reached the goal in JADECARE. After JADECARE the focus continues on • male aged 20-45, who have an increased risk of absenteeism based on our AI model		
3. Discussion about **population approach in RND**	We have reached the goal in JADECARE. After JADECARE ends, we continue to maintain the network with the participation of municipalities, general practitioners, and other external partners		

Post-implementation

ITEM	ANSWER
Title and abstract	
Title	Strategic Used of Data in Steno Diabetes Centre NorthDemark (SDCN) in the Region of North Denmark (RND)
Abstract	The strategic use of data in SDCN has a dual focus in JADECARE **1: Further development of SDCN Data dashboards** SDCN already has a database, which, however, is very focused on activity and number of treatments. Through JADECARE, the desire was to switch to a focus on the population's approach and Risk Stratification. RND would like to do this by building new datareports QLIK with help from the JADECARE collaboration. **2: Strategic discussion of the population approach in RND** In addition to a number of new dashboards, it is important to have an organizational development project. Therefore, a network is planned to be established in RND together with a report and action plan for better use of data in the whole organization.
Why did you start?	
Problem description	In the earlier phases of the JADECARE project, it was clear that the Basque and German Good Practices had a different approach to data than SDCN. They focused more on the entire population, risk stratification and cross-sectoral strategic collaboration. Through JADECARE, SDCN investigated the possibility of integrating parts of data work from the German and Basque Good Practices into RND database.
Available knowledge	SDCN already had a program for data analysis (Qlik sense) and a large number of hospital data sources. These are clinical values from "*Labka*", activities from "Bookplan", discharges from "PAS" and medicinal information from the "medicinal module". During the project, these data sources were transferred to NordEPJ The aim of the work in JADECARE was therefore not about the purchase of software, but instead dialogue about further development and new perspectives on the existing database.
Rationale	The actual rationale behind the project was that SDCN is part of Danish healthcare law and therefore cannot create the same financial incentives and incentives and calculations as primary Germany. But SCDN can be inspired by their strategies and program descripted in the original good practises. Although SDCN does not directly lose funds due to patient absences or geographical health problems, SDCN nevertheless had an interest in optimizing in these areas.
Specific aims	Building new Dashboard, use Risk Stratification on patient absences and having a strategical discussion about how to obtain useful insights from it
What did you do?	
Context	This short version of the project's SWOT analysis shows that the working group assesses that in Denmark we are strong in data and that there is a very large potential in cross-sector collaboration around data. Conversely, GDPR and new data systems present a number of challenges. Precisely for this reason, RND would like to be part of the JADECARE collaboration, to learn from oGPs about how they have met these challenges. **Strengths** • RND has a large Data pool, which will be collected in the new NordEPJ • We have a mutual ambition to use data • The staff has a generally high level of competence in relation to data and IT • (almost) Realtime Data on patients

	Weaknesses • DO!!! (it is sometimes difficult to get things done even though data supports new initiatives) • Data across sectors is very difficult • Lack of quality in registration **Opportunities** • Data-driven competence development - adaptative services for patients • Cross-sectoral - exchange data and knowledge with other health actors • Patient empowerment **Threats** • Inappropriate breaches of data definitions and data flows associated with new EHR and other new systems • It is difficult to change the habits within the health field • GDPR
Intervention(s)	The purpose of the LGP was to build a number of dashboards and work more strategically with data. To achieve this there has actually been a large working team (Next Adopter Working Group, NAWG, as it is named) involved. It consisted of 12 participants with a mixed health professional background. This includes a "Core" NAWG of six experts that has participated more actively in some implementation activities such as theme days and thematic workshops: • Head of Digitalization: Tina Heide - Tah@rn.dk • Strategical innovation consultant: Bente Koch bente.p@rn.dk • Data manager: Søren From Knudsen / vacant (Substitute Ulrik Appel) • Quality manager: Amar Nikontovic a.nikontovic@rn.dk • Project manager: Ulrik Appel u.appel@rn.dk • Ceo Steno: Poul Erik Jakobsen poul.erik.jacobsen@rn.dk **1: Building the Dashboard** To build the new dashboard, a large number of data reports from the German and Basque Good Practices have been collected. Their reports are turned into a series of mockups (hand drawings of desired new dashboards) in an internal SDCN workshop. Next, there was a dialogue with healthcare professionals about these mockups before the Business Intelligence unit built the reports for us. Subsequently, there have been renewed discussions with health professionals of the German and Basque Good Practices and version 2.0 of the reports is already planned. Data on patient absences (Risk factors) There have been meetings with both the Basque and German Good Practices about working more risk-based. However, SDCN only focuses on diabetes patients and many risk stratification tools focus on all diseases and risk on another level. Therefore, analysis had to be done in a different way. Together with the German Good Practice leaders, the focus on "absences" and „diabetes“ was selected. The final risk analysis was developed together with the "Alexandra Institute", who has a number of programs for artificial intelligence. The-Alexandra-Institute received data on 2,649 patients and 31,248 post-ambulatory activities. Based on AI calculations, SDCN has received a proposal to work with different groups with different risk profiles. **2: Strategical discussion about population approach in RND** A network has been set up with participation from:

<table>
<tr><td></td><td>

Department for Regional Development
The Department for International Cooperation
The department for BI and analysis
"The Idea Clinic"
The Department for Quality and the Working Environment
Danish Centre for Health Research
Telecare Nord
Department of Intersectoral Health
"The health profile"
The practice unit (GPs)
Psychiatry
Aalborg University
Institute for Public Health
Institute for Medicine and Health Technology
Centre for general medicine
Aalborg municipality
Frederikshavn Municipality

Five meetings have been held with up to 30 participants and between the meetings a Report (50 pages) has been prepared for political processing
A political decision is expected to be taken after JADECARE is completed and the expectation is that the network will continue.
</td></tr>
<tr><td>Study of the Intervention(s)</td><td>No internal follow-up research has been associated with the project.
However, the effects of the project can be seen in the fact that the activities would not have been carried out without JADECARE</td></tr>
<tr><td>Measures</td><td>
<table>
<tr><th>Activity</th><th>KPI</th><th>Actual value</th></tr>
<tr><td>Dashboard: Mockup</td><td>6</td><td>6 Mockups maded</td></tr>
<tr><td>Dashboard: Prototype meeting</td><td>3</td><td>3 meeting held</td></tr>
<tr><td>Dashboard: Building</td><td>6</td><td>6 dashboards builded</td></tr>
<tr><td>Dashboard: Final dialogue</td><td>1</td><td>1 Final dialogue meeting held</td></tr>
<tr><td>Patient absence: Data Transfer</td><td>1</td><td>1dataset transfed</td></tr>
<tr><td>Patient absence: Report</td><td>1</td><td>1 Report maded</td></tr>
<tr><td>Patient absence: Mockup</td><td>1</td><td>1 model for stratification maded</td></tr>
<tr><td>Population approach: Strategic paper</td><td>1</td><td>1strategic paper written</td></tr>
<tr><td>Population approach: Action plan</td><td>1</td><td>1 Action plan maded</td></tr>
<tr><td>Population approach: Mapping</td><td>1</td><td>1 mapping maded</td></tr>
<tr><td>Population approach: Morning conference</td><td>1</td><td>1 discussen about use of data on morning conference held.</td></tr>
</table>
</td></tr>
<tr><td>Analysis</td><td>Nothing</td></tr>
<tr><td colspan="2">What did you find?</td></tr>
<tr><td>Results</td><td>
1: Building the Dashboard
We have reached the goal in JADECARE.
We are continuously expanding the database with new data sources and reports - also after JADECARE ends.
In the future, SDCN will run a dedicated "data track" in the digital health department.
2: Data on patient absences (Risk factors)
We have reached the goal in JADECARE.
After JADECARE the focus continues on

male aged 20-45, who have an increased risk of absenteeism

</td></tr>
</table>

	based on our AI model 3: Discussion about **population approach in RND** We have reached the goal in JADECARE. After JADECARE ends, we continue to maintain the network with the participation of municipalities, general practitioners, and other external partners
What does it mean?	
Summary	RND started the project with a number of clear objectives developed in collaboration with the Basque and German Good Practices. Along the way, the project was affected by COVID-19, replacement of core staff and new EPJ in RND. However, JADECARE has achieved the desired results for RND, which is largely due to a flexible and adaptable approach from the Basque and German Good Practices. RND has had their data area expanded. Both in the form of new dashboards, but also in the form of new discussions around the strategic use of data. **1: Building the Dashboard** Before JADECARE, we had activity data on patients, but did not use it for prevalence or the population approach We have built a number of new dashboards with input from the Basque and German Good Practices, as well as had a good dialogue with health professionals and other end users about the application. Reports are both a good basis for expanding with more data in the area of diabetes, as well as expanding to other areas of health. Data on patient absences (Risk factors) We have got a good overview of which groups are absent. We can use this risk stratification together with health professionals to create a more targeted organization of appointments **2: Strategical discussion about population approach in RND** Before JADECARE, we lacked a network where we could work strategically with data. We have now started a good discussion with a wide range of health actors within the field of diabetes and have reached an agreement that in the future RND must have more focus on data and diabetes
Interpretation	The above work will form the basis for RND to be able to work more strategically with data in the area of diabetes in the future. JADECARE has contributed with new perspectives, networks and concrete input to give RND a solid foundation for this work. Compared to other projects, JADECARE has worked well. This is due to the high level of knowledge at the Basque and German Good Practices and their flexible approach.
Limitations	There have been 3 major limitations in JADECARE Firstly, COVID-19 caused problems with holding physical meetings and, in addition, made it impossible to involve healthcare professionals to the same degree as expected. Second, RND changed their Electronic Patient Journal (EPJ). So, for most of the second year of the project, 2022, there was no access to data. Furthermore, the BI of SDCN unit was to focus on ensuring the operation of the new system rather than developing new dashboards. Finally, the data engineer in the project got a new job and the position had been vacant in the project.
Conclusions	JADECARE has been very useful for SDCN and is sustainable after the project ends, as datadash is rooted in SDCN's core activities.

	In addition, there is an opportunity to spread the thinking to other areas, as "diabetes diagnosis code" can relatively easily change to other diagnosis codes However, the data can eventually be expanded with more socio-economic data (income, employment and level of education) and PRO data. Both parts will provide a better approach to population data and risk stratification Finally, future projects can benefit from working with artificial intelligence. The upcoming work in 2023 and 2024 will build on experiences, networks and knowledge gained through JADECARE
Other information	
Funding	The main funding of the project has been EU funds through JADECARE, which has primarily gone to working hours and conferences Besides that a large number of expenses (for example the Alexandra Institute) have been paid directly by Steno. Steno is financed by Region Nordjylland and the Novo Nordisk Foundation

Local Health Authority (USL Umbria 1)

Pre-implementation

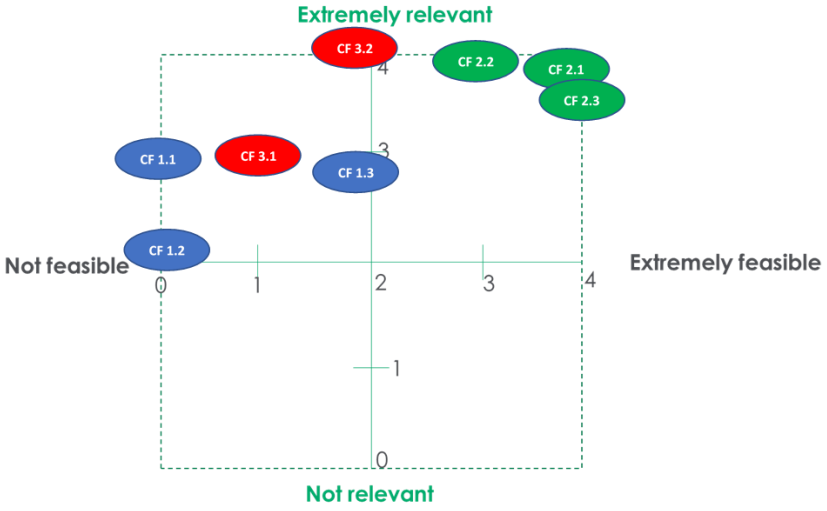
Scope definition

Identified and prioritized needs

Block	Prioritized needs
B1 Risk stratification	6 N1: Utilization of the health risk of the population aggregated by a pyramid (it will be done by the regional administration)
B2 Integrated care	1 N4: Sharing of the data health between GPs and other settings (Residential homes, district services, hospitals) thanks to Electronic Health Folder
	2 N3: Standards definition and scope definition of the telemedicine tools into the Organization (organizational, technological and normative standards)
	3 N2: Telemedicine's using diffusion
	4 N5: Strengthening of the Territorial Operative Central: definition of its activities and staff and technological (dashboard of residential beds, integration with the future European non-emergency call service 116117)
	5 N6: Job description of the Community and family nurse into the Health District and into the Territorial Functional Aggregations
B3 Patient Empowerment	7 N7: self-care courses (aimed to chronic patients) to be organized in the territorial area of the health district, also involving the third-sector associations
	8 N8: Health promotion campaigns (aimed to healthy people) also using the ICT tools (socials, web tv…)

Assessment of Core Features

Core feature	Relevance	Feasibility
CF 1.1 Stratification data extraction and construction of dashboards	2	0
CF 1.2 Classification of patients	3	0
CF 1.3 Stratification in the framework contract	3	2
CF2.1 Creation of integrated healthcare organization	4	4
CF2.2 Deployment of integrated communication and information systems	4	3
CF2.3 Care coordination and communication between providers	4	4
CF3.1 Deployment of school health	3	1
CF3.2 Empowerment programmes for chronic and/or multimorbid patiens	4	2



Final Core Features selected

CF 1.3 – Stratification in the Framework Contract
CF 2.1- Creation of integrated healthcare organization
CF 2.2 – Deployment of integrated communication and information systems
CF 2.3 – Care coordination and communication between providers
CF 3.1 – Deployment of school health
CF 3.2 – Empowerment programmes for chronic and/or multimorbid patients

Situation analysis

Internal

Strengths	Weaknesses
• Capillarity of general medicine in the territory and relationship of trust with the carers • National legislation that introduced the figure of the Family Nurse in the NHS • Strengthening nursing staff • Computerized tracking of the protected discharge path thanks to the Atlante system • COT as a tool to facilitate communication between hospital and territory • COT reduces waiting times for post-hospital target setting • Sharing the hospital-territory pathway • Complete computerization of most business health processes • Interoperability between the main hospital clinical software (reports, First Aid, EHR) • Increased public awareness of digital health thanks to the pandemic • Use of Atlante software for chronic management (home assistance, residential structures, mental health) • Computerization of Mechanomyography clinical activity • Start-up of television testing for certain disciplines	• Difficulty of interaction between GPs and hospital doctors • Low use/knowledge of digital health tools • For the Territorial Operative Central (COT): poor professional integration between hospital and territorial teams • Poor coordination of assistance activities within the company • Fragmentation of the care path • Low involvement of ICT's role in decision-making and strategic processes • Inadequate medical, technical and computer equipment, infirmity • Unavailability of internal staff with specific IT technical skills • Poor awareness of top management on potential and risks in the use of social media in healthcare • Organizational model that provides patient care for performance instead of path • Inadequacy of resources dedicated to the use of digital tools for patient empowerment • Poor education of citizens in the self-management of chronic diseases • Low access of older people to digital tools

	• Electronic Health Folder (FSE) active for the entire adult population • Excellent degree of maturity of the communication system (website, Facebook page) • Start interactive digital tool experiences for citizen empowerment • Excellent network of voluntary associations that collaborate with the company • Formalised operating procedures for the management of chronic diseases	• Poor implementation of DTCPs • Poor quality management and monitoring activities in operating units • Flexibility of software to mobile device
	Opportunities	**Threats**
External	• Class between colleagues for the use of IT tools • Generational turnover of GPs in the short/medium term • Excellent degree of maturity of the information system • Widespread implementation of the chronic care model • Extension of the COT scope to the whole company • Extension of COT functions through IT tools (bed dashboard, ESF, remote monitoring) • Development of integrated care focused on the entire care path rather than the individual performance • Extensive use of digital tools in the young and adult population • Reactivation of the institutional accreditation path of business structures and services • Funding for digital health and home assistance planned into the Italian recovery plan (PNRR) - Next generation EU	• Excessive bureaucratization in operation (red recipe for prosthetics and supplementary care) • Outdated organisational model in the management of territorial services (mental health, social services, ADI) • Difficulties in the management of long term care by territorial assistance • Recruitment/staffing of the PA based on role and not on skills

Strategic Intervention Areas

Strategic intervention area	Priority	Ranking
Tele-monitoring of chronic patients with wearable devices	9	4
Medical/patient tele-visit	7	3
Tele-counseling among professionals	9	8
Residential beds dashboard	8	7
Prescription of automated repetitive drugs	8	9
Introduce the family nurse to the AFT (territorial functional organization)	9	2
Expanding the scope of the COT to the whole company, strengthening its staff	8	5
Single number activation for non-urgent medical care	8	6
Central nursing activation for proactive chronic management	9	1
Greater integration between accredited private residential, public and private outpatient specialists and MMG	7	11
Patient data sharing between SSR companies	10	10
ECDL Health training courses aimed at company staff	8	9

Implementation of business intelligence tools for the processing and representation of data collected with digital health tools in order to improve patient care and corporate health planning	9	12
Experimentation with a digital tool for patient empowerment	7	13

Definition of the LGP and LAP

Local Good Practice

Local Good Practice	Integrated management of heart failure patients in the *Media Valle del Tevere* district
Target population	**Setting(s)**
Patients who are carriers of known structural heart disease at high risk of evolution towards Heart Failure (HF) or are already suffering from HF	• Perugia Hospital • *Media Valle del Tevere* Hospital • Specialist cardiological clinics of the AO of Perugia • Outpatient clinics of the GPs of the *Media Valle del Tevere* District

Main aim
Implement the integrated treatment / assistance pathway for patients with known structural heart disease at high risk of evolution towards HF or already suffering from Heart Failure, according to the provisions of the DTCP on heart failure using the ICT tools, also by promoting patient compliance, through telemedicine systems

Outcomes	**Local Core Features and their Components**	**Inputs**
• Ensure continuity of care for the patient • Enable multidisciplinary telecollaboration between healthcare professionals • Improve the activity of the territorial Operations Centre	Improve interoperability between existing applications software • Implement the integration between the telemedicine software and the patient management software used by General Medicine • Implement the integration between the Electronic Hospital Medical Record software and the Territorial Medical Record • Implement the integration between telemedicine software and the Territorial Medical Record • Implement check-up booking agendas at the Perugia Hospital for patients suffering from heart failure that must be followed by local structures of the USL Umbria 1 Company in the *Media Valle del Tevere* District.	• IT staff USL Umbria 1 • Communications staff USL Umbria 1 • District staff USL Umbria 1 • Cardiology staff of *Media Valle del Tevere* hospital • JADECARE funding • Internal budget • Telemedicine software provider • Electronic medical record software provider • Software Territorial Folder Provider • General medicine software provider • CUP software provider • Interoperability middleware software provider • HF DTCP project • Communication provider

	• Implement integration between FSE Repository and telemedicine software Coordination of care and communication between operators (GPs, hospital and outpatient specialists, family nurses) and with the patient and the caregiver in patients carriers of known structural heart disease at high risk of evolution towards HF or who already suffer from HF • Application of the DTCP by the actors of the path To achieve a structured and standard corporate programme for the individual empowerment of the patient with Heart Failure (HF) and / or caregiver, based on the model of the KronikON programme Definition of structured and standard company programme for individual empowerment of the patient with heart disadvantage • Development of information materials on line (adaptation of Basque materials) • Training of the staff of the interested services	

General description
It is estimated that in Italy there are 1.2 million people affected by heart failure, with a prevalence of 2% in the general population; the prevalence significantly increases in subjects> 65 years of age, becoming 10%. The prevalence of asymptomatic left ventricular dysfunction is also high and similar to that of clinical decompensation: 1.5% of the general population. The project aims to integrate the care of HF patients through the integration of existing software, the application of the HF DTCP and them the patient empowerment pathways
Local Core Feature 1
Improve interoperability processes between hospital and territorial healthcare applications software (With reference to the Basque oGP B2 - CF2 - Development of integrated information and communication systems)
Local Core Feature 2
Coordination of care and communication between operators (GPs, hospital and outpatient specialists, family nurses) and with the patient and the caregiver in patients carriers of known structural heart disease at high risk of evolution towards HF or who already suffer from HF

(With reference to the Basque oGP B2 - CF3 - Coordination of care and communication between care providers)
Local Core Feature 3
To achieve a structured and standard corporate programme for the individual empowerment of the patient with Heart Failure (HF) and / or caregiver, based on the model of the KronikON programme (With reference to Basque oGP B3 - CF2 - Self-care and empowerment programmes for chronic and / or mulitmorbidity patients)

Local Action Plan

Local Good Practice	**Integrated management of heart failure patients in the *Media Valle del Tevere* district**

Target population	**Setting**
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Related oGPs and CFs	Basque oGP B2 - CF2, B2 – CF3, B3 – CF2
Local Core Feature 1	**Improve interoperability processes between hospital and territorial healthcare applications software**

SMART objective
By the end of JADECARE (Jan 2023) the USL Umbria 1 will integrate an HL7 channel for the interoperability of the GALILEO CCE and ATLANTE software. GALILEO CCE will send through the channel the information set relating to the nursing history also present in ATLANTE.

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
GALILEO EHR > ATLANTE HER integration	• IT staff USL Umbria 1 • Studio Vega srl staff • Dedalus spa staff	• IT staff USL Umbria 1 • Subcontractor for technical development • Galileo software • Atlante software • Picasso software	• Health information system USL Umbria 1	Sep 2023	• Development of integration channels • Testing

HEALTH-MEETING > ATLANTE integration	• IT staff USL Umbria 1 • Studio Vega srl staff • Wezen srl staff • Dedalus spa staff	• IT staff USL Umbria 1 • Subcontractor for technical development • Health-meeting software • Atlante software • Picasso software			
HEALTH-MEETING > ECWMED integration	• IT staff USL Umbria 1 • System Technology srl staff • Wezen srl staff • Dedalus spa staff	• IT staff USL Umbria 1 • Subcontractor for technical development • Health-meeting software • ECWMED software • Picasso software			
FSE > HEALTH-MEETING integration	• IT staff USL Umbria 1 • Umbria Digitale staff • Wezen srl staff • Dedalus spa staff	• IT staff USL Umbria 1 • Subcontractor for technical development • FSE software • Health-meeting software • Picasso software			
Local Core Feature 2	**Coordination of care and communication between operators (GPs, hospital and outpatient specialists, family nurses) and with the patient and the caregiver in patients' carriers of known structural heart disease at high risk of evolution towards HF or who already suffer from HF**				
SMART objective					
Implement the integrated treatment / assistance pathway for patients with known structural heart disease at high risk of evolution towards HF or already suffering from Heart Failure, according to the provisions of the DTCP on heart failure referred to in DDG using the ICT tools referred to in LCP2, also by promoting patient compliance, through telemedicine systems.					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Creation of 2nd level CUP agendas at the Cardiology Unit of the Perugia Hospital to allow the booking of follow-up visits to patients suffering	• IT Staff USL Umbria 1 • Umbria Salute Staff • Personnel of the Cardiology Unit of the Perugia Hospital	ISES Web software	• UO Cardiology Hospital of Perugia • UO Cardiology *Media Valle del*	Sep 22	• Development agendas • Activate DTCP • Activate multidisciplinary groups

from heart failure already in hospital discharge	• Staff of the Cardiology Unit of the *Media Valle del Tevere* Hospital • IT Staff USL Umbria 1		*Tevere* Hospital		
Activation of multidisciplinary groups through the HM software between the aggregations of general practitioners, specialists and hospital doctors to allow collaboration between professionals from different care settings	• Health-meeting software • IT Staff USL Umbria 1 • GP • Staff of the Cardiology Unit of the *Media Valle del Tevere* Hospital • IT Staff USL Umbria 1	Health-meeting software	• GP • UO Cardiology *Media Valle del Tevere* Hospital	Dec 22	
Implementation of Heart Failure DTCP	• Management USL Umbria 1 • Management Hospital of Perugia	HF DTCP document	• COT • GP • Hospital of Perugia	May 23	
Local Core Feature 3	**To achieve a structured and standard corporate programme for the individual empowerment of the patient with Heart Failure (HF) and / or caregiver, based on the model of the KronikON programme**				
SMART objective					
Help target patients and their caregivers to become more active and more literate about their health by improving their ability to adopt appropriate lifestyles, compliance with self-monitoring and treatments, as well as capacity overall to make decisions and consciously manage their disease					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Definition of structured and standard company programme for individual empowerment of the patient with heart failure (four	JADECARE USL Umbria 1 working group	JADECARE USL Umbria 1 working group	UO Cardiology *Media Valle del Tevere* Hospital	May 23	Number of patients trained

sessions, one session per week and one reminder session 2 months, each 20-30 minute session, developed once a week for four weeks consecutive at the health centre or at the patient's home)					
Development of information materials online. Production of printable information materials and publication on-line on schedule, adapting to the local reality those foreseen in the oGP of the Basque countries	• JADECARE USL Umbria 1 working group • Communication provider	• USL Umbria 1 website • Communication provider	UO Cardiology *Media Valle del Tevere* Hospita	May 23	
Training of the staff of the interested services. Design and implementation of a training course on the engagement of patients with known structural heart disease at high risk of evolution towards HF or already suffering from HF	• JADECARE USL Umbria 1 working group • Cardiology USL Umbria 1 staff	JADECARE USL Umbria 1 working group	UO Cardiology *Media Valle del Tevere* Hospital	May 23	

Implementation

1st PDSA Cycle

Plan

LCF1	Improve interoperability processes between hospital and territorial healthcare applications software							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
HEALTH-MEETING > ECWMED integration	Define the information set to be transferred from Health-meeting to ECWMED and the technological characteristics	• 2 USL Umbria 1 IT Staff • 1 System Technologies s.r.l. IT Expert • 1 Wezen S.r.l. IT Expert	01/03/2022 to 31/03/2022	Approval of the integration project	Project manager	31/03/2022	Project approval	100%
	Ordering activities to the suppliers	• 2 USL Umbria 1 IT Staff • 1 System Technologies s.r.l. IT Expert • 1 Wezen S.r.l. IT Expert	01/04/2022 to 08/04/2022	Order to the supplier		08/04/2022	Order	Yes

	Implement integration	• 2 USL Umbria • 1 IT Staff • 1 System Technologies s.r.l. IT Expert • 1 Wezen S.r.l. IT Expert • 1 Dedalus S.p.A. 1 IT Expert	01/04/2022 to 30/06/2022	Implementation of integration channels, creation of the new form in ECWMED		30/06/2022	Monitoring during the monthly follow-up meetings	100%
	Test integration	• 2 USL Umbria • 1 IT Expert	01/07/2022 to 15/07/2022	Testing		15/07/2022		Yes
FSE > HEALTH-MEETING integration	Health- meeting will display all the information present in the FSE; the technologic al characteristi cs and the manageme nt of privacy must be defined	• 2 USL Umbria • 1 IT Staff • 1 PuntoZer o Scarl IT Expert • 1 Wezen S.r.l. IT Expert	01/02/2022 to 30/06/2022	Approval of the integration project	Project manager	31/03/202 2	Project approval	100%
	Ordering activities to the suppliers	• 2 USL Umbria 1 IT Staff • 1 System Technolo	01/04/2022 to 08/04/2022	Order to the supplier			Order	Yes

		gies s.r.l. IT Expert • 1 Wezen S.r.l. IT Expert						
	Implement integration	• 2 USL Umbria • 1 IT Staff • 1 System Technolo gies s.r.l. IT Expert • 1 Wezen • S.r.l. IT Expert • 1 Dedalus S.p.A. 1 IT Expert	01/04/2022 to 30/06/2022	Implementation of integration channels, creation of the new form in ECWMED		30/06/202 2	Monitoring during the monthly follow-up meetings	100%
	Test integration	• 2 USL Umbria • 1 IT Expert	01/07/2022 to 15/07/2022	Testing		15/07/2022		Yes
FSE > HEALTH-MEETING integration	Health- meeting will display all the information present in the FSE; the technologic al characteristi cs and the manageme nt of privacy must be defined	• 2 USL Umbria • 1 IT Staff • 1 PuntoZer o Scarl IT Expert • 1 Wezen S.r.l. IT Expert	01/02/2022 to 30/06/2022	Approval of the integration project	Project manager	31/03/2022	Project approval	100%

	Ordering activities to the suppliers	• 2 USL Umbria • 1 IT Staff • 1 System Technologies s.r.l. IT Expert • 1 Wezen S.r.l. IT Expert	01/04/2022 to 08/04/2022	Order to the supplier		08/04/2022	Order	Yes
	Implement integration	• 2 USL Umbria • 1 IT Staff • 1 System Technologies s.r.l. IT Expert • 1 Wezen S.r.l. IT Expert • 1 Dedalus S.p.A. IT Expert	01/04/2022 to 30/06/2022	Implementation of integration channels, creation of the new form in ECWMED		30/06/2022	Monitoring during the monthly follow-up meetings	100%
	Test integration	• 2 USL Umbria • 1 IT Expert	01/07/2022 to 15/07/2022	Testing		15/07/2022		Yes

LCF2	Coordination of care and communication between operators (GPs, hospital and outpatient specialists, family nurses), with the patient in patients with known structural heart disease at high risk of evolution towards HF or who already suffer from HF							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Activation of multidisciplinary groups through the Herald- meeting software between the aggregations of general practitioners, specialists and hospital doctors to allow collaboration between professionals from different care settings	Define the working group	• Project manager • District management • Hospital management • General practitioners	01/03/2022 to 30/04/2022	Business agreement	Project manager	30/04/2022	In the internal montly follow up meetings	100%
	Implement the multidisciplinary group in Health-meeting	• 2 USL Umbria • 1 IT Staff	01/05/2022 to 13/05/2022	Online multidisciplinary team		15/05/2022	Data in the Health meeting system	Yes
	Training of working group in the use of Health-meeting multidisci plinary group and use of the system	• 2 USL Umbria • 1 IT Staff	16/05/2022 to 03/06/2022	Entry at least 1 multidisciplinary meeting		30/06/2022		Yes

LCF3	To achieve a structured and standard corporate program for the individual empowerment of the patient with Heart Failure (HF) and / or caregiver, based on the model of the *KronikON* program							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Development of information materials online. Production of printable information materials and publication on- line on schedule, adapting to the local reality those foreseen in the oGP of the Basque countries	Define the contents to be published in the information material	• 2 USL Umbria 1 communication staff	01/03/2022 to 30/04/2022	Information sheets	Project manager	30/04/2022	In the internal montly follow up meetings	100%
	Ordering material to the supplier and publish online	• 2 USL Umbria • 1 IT Staff • 1 communication supplier	01/05/2022 to 30/06/2022	Informative material online		30/06/2022		Yes
Training of the staff of the intested services. Design and implementation of a training course on the engagement of patients with known structural heart disease at high risk of evolution towards HF or already suffering from HF	Design a training course on the engagement of patients with known structural heart disease at high risk of evolution towards HF or already suffering from HF	• 1 USL Umbria 1 communication staff	01/03/2022 to 30/06/2022	Approval of the training project		30/06/2022		100%

Do

Cycle number	1	
Activity	**KPI**	**Actual value**
LCF1: **HEALTH-MEETING > ECWMED integration**	Approval of the integration project	100%
	Order to the supplier	Yes
	Implementation of integration channels, creation of the new form in ECWMED	80%
	Testing	No
LCF1: **FSE > HEALTH-MEETING integration**	Approval of the integration project	100%
	Order to the supplier	Yes
	Implementation of integration channels, creation of the new form in ECWMED	80%
	Testing	No, 50%
LCF2: **Activation of multidisciplinary groups through the Heralth-meeting software between the aggregations of general practitioners, specialists and hospital doctors to allow collaboration between professionals from different care settings**	Business agreement	80%
	Online multidisciplinary team	Yes
	Entry at least 1 multidisciplinary meeting	no
LCF3: Development of information materials online. Production of printable information materials and publication on-line on schedule, adapting to the local reality those foreseen in the oGP of the Basque countries	Information sheets	70%
	Informative material online	No, 80%
LCF3: **Training of the staff of the interested services. Design and implementation of a training course on the engagement of patients with known structural heart disease at high risk of evolution towards HF or already suffering from HF**	Approval of the training project	90%

QUESTIONS	ANSWERS
What was actually implemented? Any deviation from the planned actions	We are implementing the integrations between software included in cycle 1, the dissemination material and we have already implemented the multi-disciplinary group "SCOMPESO CARDIACO *Media Valle del Tevere* - AFT Marsciano"

Problems? Unexpected findings? Please describe	No

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
		X	

Study

Cycle number		**1**				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
B2 - CF2 – Activity 1: HEALTH-MEETING > ECWMED integration	KPI1 Approval of the integration project	100%	100%	-	-	-
	KPI2 Order to the supplier	Yes	Yes	-	-	-
	KPI3 Implementation of integration channels, creation of the new form in ECWMED	100%	100%	-	-	-
	KPI4 Testing	Yes	Yes	-	-	-
B2 - CF2 – Activity 2: FSE > HEALTH-MEETING integration	KPI1 Approval of the integration project	100%	100%	Problems during the testing phase of the channel that prolonged the activity	The timeline for this activity will be extended in the second PDSA cycle	No relevant impact in the implementation pace
	KPI2 Order to the supplier	Yes	Yes			
	KPI3 Implementation of integration channels	100%	100%			
	KPI4 Testing	Yes	No			

B2- CF3 – Activity1: Activation of multidisciplinary groups through the Health-meeting software between the aggregations of general practitioners, specialists and hospital doctors to allow collaboration between professionals from different care settings	KPI1 - Business agreement	100%	100%	Lack of time to train all participants of the multidisciplinary team	The timeline for this activity will be extended in the second PDSA cycle.	No relevant impact in the implementation pace
	KPI2 – Online multidisciplinary team	Yes	Yes			
	KPI3 - Entry at least 1 multidisciplinary meeting	Yes	No			
B3 - CF2- Activity 1: Development of information materials online. Production of printable information materials and publication on-line on schedule, adapting to the local reality those foreseen in the oGP of the Basque countries	KPI1 - Information sheets	100%	100%	-	-	-
	KPI2 – Informative material online	Yes	Yes			
B3 - CF2- Activity 2: Training of the staff of the interested services. Design and implementation of a training course on the engagement of patients with known structural heart disease at high risk of evolution towards HF or	KPI1 - Approval of the training project	100%	100%	-	-	-

already suffering from HF						

Act

Cycle number	1		
Activity	**Maintain**	**Adapt**	**Abandon**
B2 - CF2 – Activity 1: HEALTH-MEETING > ECWMED integration	This activity has been successfully completed		
B2 - CF2 – Activity 2: FSE > HEALTH-MEETING integration		Extend the deadline of this activity at 31/07/2022	
B2- CF3 – Activity1: Activation of multidisciplinary groups through the Health-meeting software between the aggregations of general practitioners, specialists and hospital doctors to allow collaboration between professionals from different care settings		Extend the deadline of this activity at 31/08/2022	
B3 - CF2- Activity 1: Development of information materials online. Production of printable information materials and publication on-line on schedule, adapting to the local reality those foreseen in the oGP of the Basque countries	This activity has been successfully completed.		
B3 - CF2- Activity 2: Training of the staff of the intested services. Design and implementation of a training course on the engagement of patients with known structural heart disease at high risk of evolution towards HF or already suffering from HF		Extend the deadline of this activity at 31/08/2022	

QUESTIONS	**ANSWERS**
Any new proposed action for the future?	**-**

2nd PDSA Cycle

Plan

LCF1	Improve interoperability processes between hospital and territorial healthcare applications software							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
GALILEO EHR > ATLANTE EHR integration	Define the information set to be transferred from Galileo EHR to Atlante EHR and the technological characteristics	• 3 USL Umbria 1 IT Staff • 1 Studio Vega IT Expert • 1 Dedalus IT Expert • 1 Nurse	01/07/2022 to 15/09/2022	Approval of the integration project	Project manager	15/09/2022	Project approval	Yes
	Ordering activities to the suppliers	• 2 USL Umbria 1 IT Staff • 1 Studio Vega S.r.L. IT Expert • 1 Dedalus S.P.A. IT Expert	15/09/2022 to 15/10/2022	Order to the supplier		15/10/2022	Order	Yes
	Implement integration	• 3 USL Umbria 1 IT Staff	15/10/2022 to 30/01/2023	Implementation of integration channels		30/11/2022	Monitoring during the monthly	100%

		• 1 Studio Vega IT Expert • 1 Dedalus IT Expert • 1 Nurse					follow-up meetings	
	Test integration	2 USL Umbria 1 IT Expert	30/01/2023to 28/02/2023	Testing		31/12/2022		Yes
HEALTH-MEETING > ATLANTE integration	Atlante EHR will display the information present in GALILEO HER about nursing management	• 3 USL Umbria 1 IT Staff • 1 PuntoZero Scarl IT Expert • 1 Dedalus SPA IT Expert • 1 Studio Vega S.r.L. IT Expert	01/07/2022 to 15/09/2022	Approval of the integration project	Project manager	15/09/2022	Project approval	100%
	Ordering activities to the suppliers	• 2 USL Umbria 1 IT Staff • 1 System Technologies s.r.l. IT Expert • 1 Wezen S.r.l. IT Expert	15/09/2022 to 15/10/2022	Order to the supplier		15/10/2022	Order	Yes

	Implement integration	• 2 USL Umbria 1 IT Staff • 1 System Technologies s.r.l. IT Expert • 1 Wezen S.r.l. IT Expert • 1 Dedalus S.p.A. IT Expert	15/10/2022 to 30/01/2023	Implementation of integration channels		30/11/2022	Monitoring during the monthly follow-up meetings	100%
	Test integration	• 2 USL Umbria 1 IT Expert	30/01/2023to 28/02/2023	Testing		31/12/2022		Yes

LCF2	Coordination of care and communication between operators (GPs, hospital and outpatient specialists, family nurses), with the patient in patients with known structural heart disease at high risk of evolution towards HF or who already suffer from HF							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Implementation of the HF DTAP (Diagnostic Therapeutic Assistance Path)	Define the working group	• Project manager • District management • Hospital management	01/07/2022 to 31/08/2022	working group definition document	Project manager	31/08/2022	document production	100%

		• General pratictioners • Nurse manager						
	Design the workflow	• Project manager • District management • Hospital management • General pratictioners • Nurse manager • 2 USL Umbria • 1 IT Staff	01/09/2022 to 15/10/2022	Workflow definition document		30/11/2022	document production	100%
	Implement the HF DTAP workflow	• Project manager • District management • Hospital management • General pratictioners • Nurse manager • 2 USL Umbria • 1 IT Staff	15/10/2022 To 30/01/2023	Management of at least 1 patient using the HF DTAP workflow		31/12/2022	Monthly meeting monitoring	Yes
Activate Level II CUP agendas at Cardiology	Agreement between USL	• Project manager	01/07/2022 to 30/11/2022	Signing of the agreement	Project manager	30/11/2022	document production	100%

Unit of the Perugia Hospital to allow the booking of follow-up visits in USL Umbria 1 ambulatory	Umbria 1 and Perugia Hospital	• District management • Hospital management (USL Umbria 1) • Hospital management (*Azienda Ospedaliera di Perugia*)						
	Creation of the CUP agenda	• Project manager • *Azienda Ospealiera di Perugia* cardiology staff • *Azienda USL Umbria 1* cardiology staff • 1 PuntoZero SCARL IT Staff	01/12/2022 to 31/12/2022	Creation of at least 1 CUP agenda		15/10/2022	Document production	Yes
	Patients booking	• *Azienda Ospealiera di Perugia* cardiology staff	01/01/2023 to 30/01/2023	Booking of at least 1 patient using the CUP Agenda from *Azienda Ospedaliera di*		31/12/2022	Booking	yes

				Perugia to USL Umbria 1 ambulatory				

LCF3	To achieve a structured and standard corporate program for the individual empowerment of the patient with Heart Failure (HF) and / or caregiver, based on the model of the *KronikON* program							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Training of the staff of the interested services. Design and implementation of a training course on the engagement of patients with known structural heart disease at high risk of evolution towards HF or already suffering from HF	Training of medical and nursing staff of the *Media Valle del Tevere* District to improve the empowerment of patients with heart failure disease	• Project manager • Communication and quality manager • 2 Engage minds Hub (Sacro Cuore University) Professors	01/09/2022 to 31/12/2022	Training of at least 5 nurses and 5 doctors	Project manager	31/12/2022	In the internal montly follow up meetings	100%

Do

Cycle number	**2**	
Activity	**KPI**	**Actual value**
Hospital Electronic Medical Record (Galileo) > Regional Primary Care Management (Atl@nte)	Approval of the integration project	100%
	Order to the supplier	No
	Implementation of integration channels, creation of the new form in ECWMED	0%
	Testing	No
Telemedicine Platform (Health-meeting) > Regional Primary Care Management (Atl@nte)	Approval of the integration project	100%
	Order to the supplier	No
	Implementation of integration channels, creation of the new form in ECWMED	0%
	Testing	No
"Fast-track" booking agenda for heart failure desease in *Media Valle del Tevere* District through the regional booking system SAR	Signing of the agreement	100%
	Creation of at least 1 CUP agenda	Yes
	Training of at least 5 nurses and 5 doctors	Yes
Training course "Empowerment of the chronic patient suffering from heart failure"	Training of at least 5 nurses and 5 doctors	80%
Implementation of the HF DTAP (Diagnostic Therapeutic Assistance Path)	Working group definition document	100%
	Workflow definition document	100%
	Management of at least 1 patient using the HF DTAP workflow	60%

QUESTIONS	**ANSWERS**
What was actually implemented? Any deviation from the planned actions	We have made available to GPs a clinical information set that was not available before the JADECARE project, allowing for better treatment of the clinical case. We have speeded up the management of patients with the principle of heart failure by creating a direct channel between the GP and the hospital cardiologist.
Problems? Unexpected findings? Please describe	

	We have trained the professionals who participate in the treatment of heart failure on the empowerment techniques to be transferred to patients. **Deviations**: About the integrations with the Regional Primary Care Management Software (Atl@nte), we had to interrupt the activities due to financing problems but we will proceed with the order in the coming months. About the intervention "Activate Level II CUP agendas at Cardiology Unit of the Perugia Hospital to allow the booking of follow-up visits in USL Umbria 1 ambulatory" in preliminary phase, the agenda was to connect the GPs of the pilot district with the cardiology department of the Perugia hospital. We thought it more useful to implement the connection between the GPs of the pilot district with the cardiology department of the *Media Valle del Tevere* hospital because there is a more exchange of patients between primary care and the hospital. About the Implementation of the HF DTAP, the direct booking by the GP in the hospital cardiology is a part of the path. The 60% rate was estimated because more patients were booked through the fast-track schedule.

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
			X

Study

Cycle number		**1**				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Hospital Electronic Medical Record (Galileo) > Regional Primary Care Management (Atl@nte)	KPI1: Approval of the integration project	100%	100%	We had to interrupt the activities due to financing problems but we will proceed with the order in the coming months	We will use the 2023 budget	The intervention will be carried out but the delivery times will go beyond the JADECARE deadline
	KPI2: Order to the supplier	Yes	No			
	KPI3: Implementation of integration channels, creation of the	100%	0%			

	new form in Atl@nte					
	KPI4: Testing	Yes	No			
Telemedicine Platform (Health-meeting) > Regional Primary Care Management (Atl@nte)	KPI1: Approval of the integration project	100%	100%	We had to interrupt the activities due to financing problems but we will proceed with the order in the coming months	We will use the 2023 budget	The intervention will be carried out but the delivery times will go beyond the JADECARE deadline
	KPI2: Order to the supplier	Yes	No			
	KPI3: Implementation of integration channels, population of the target fields	100%	0%			
	KPI4: Testing	Yes	No			
Implementation of the HF DTAP (Diagnostic Therapeutic Assistance Path)	KPI1: Working group definition document	100%	100%	We changed the KPI3 target type, from "Yes/No" to "0-100%" because the implementation of DTAP cannot be explained with discrete measurement but continuous. We achieved 60% of the KPI3 target as a result of the implementation of the "Fast-track" booking agenda and Multidisciplinary group	Implementation of the HF DTAP (Diagnostic Therapeutic Assistance Path)	KPI1: Working group definition document KPI2: Workflow definition document KPI3: Management of at least 1 patient using the HF DTAP workflow
	KPI2: Workflow definition document	100%	100%			
	KPI3: Management of at least 1 patient using the HF DTAP workflow	100%	60%			
"Fast-track" booking agenda for heart failure desease in *Media Valle del Tevere* District through the regional booking system SAR	KPI1: Implementation booking agenda	Yes	Yes	-	-	-
	KPI2: Entry at least 1 fast-track booking beetween GP and Hospital	Yes	Yes			
Training course "Empowerment	KPI1: Participation of	100%	100%	-	-	-

of the chronic patient suffering from heart failure"	at least 1 mmg, 1 cardiologist, 1 nurse of *Media Valle del Tevere* District					

Act

Cycle number	2		
Activity	**Maintain**	**Adapt**	**Abandon**
Hospital Electronic Medical Record (Galileo) > Regional Primary Care Management (Atl@nte)		Extend the deadline of this activity beyond JADECARE end	
Telemedicine Platform (Health-meeting) > Regional Primary Care Management (Atl@nte)		Extend the deadline of this activity beyond JADECARE end	
"Fast-track" booking agenda for heart failure desease in *Media Valle del Tevere* District through the regional booking system SAR	This activity has been successfully completed		
Training course "Empowerment of the chronic patient suffering from heart failure"	This activity has been successfully completed		

QUESTIONS	**ANSWERS**
Any new proposed action for the future?	**-**

Post-implementation

ITEM	ANSWER
Title and abstract	
Title	Integrated management of heart failure patients in the *Media Valle del Tevere* district
Abstract	It is estimated that in Italy there are 1,2 million people affected by heart failure, with a prevalence of 2% in the general population; the prevalence significantly increases in people> 65 years of age, becoming 10%. In the *Media Valle del Tevere* district, compared to the population served by the USL Umbria 1, there is: • the lowest population density (73,48 people/sq km) • the highest percentage of people over 75 years (14,1%) • the highest old age index (200.95) • high incidence of chronic patients due to the high old age The project aims to integrate the care of HF patients through the integration of existing software, the application of the HF PDTA and them the patient empowerment pathways in *Media Valle del Tevere* district
Why did you start?	
Problem description	The NAWG identified 3 main problems: • Corporate heart failure Diagnostic and Therapeutic Care Pathways (PDTA) approved for years but never implemented • Non-sharing of information between the hospital care pathway and primary care • Lack of culture in target patients on the management of chronic disease
Available knowledge	The population scenario of the *Media Valle del Tevere* District, the state of the art of the integrations in USL Umbria 1 and the will to implement sustainable and lasting interventions were the elements that led to the development of the Local Good Practice
Rationale	• "Deployment of integrated communication and information systems" intervention The AGENAS guidelines describe how the management of primary care should be organised. With this intervention we want to make available to health professionals as much of the patient's clinical information. • "Care coordination and communication between health providers" intervention The Diagnostic and Therapeutic Care Pathways (PDTA) for Heath failure disease of USL Umbria 1 describes how the care of the chronic patient must be organized in an integrated way. With this intervention we wanted to make the request for specialist visits more efficient. • "Empowerment programs for chronic and or multimorbid patients" intervention Kronikgune's experience with patient empowerment was the model for this intervention
Specific aims	Implement the integrated treatment / assistance pathway for patients with known structural heart disease at high risk of evolution towards HF or already suffering from Heart Failure, according to the provisions of the PDTA on heart failure using the ICT tools, also by promoting patient compliance, through telemedicine systems
What did you do?	
Context	During the pre-implementation phase the working group identified the following main elements that show the context: Streghts: • Capillarity of general medicine in the territory and relationship of trust with the carers • Complete computerization of most business health processes end full interoperability between the hospital clinical software • Regional Electronic Health Folder (FSE) active for the entire adult population

	Weaknesses: • Difficulty of interaction between primary care and hospital doctors • For the Territorial Operative Central (COT): Poor professional integration between hospital and territorial teams Opportunities: • Extension of cot functions through IT tools (bed dashboard, ESF, remote monitoring) • Strengthening of company operations centres Threats • Outdated organisational model in the management of territorial services • Excessive bureaucratization in operation
Intervention(s)	Target population: patients who are carriers of known structural heart disease at high risk of evolution towards Heart Failure (HF) or are already suffering from HF NAWG is made up of 11 elements of USL Umbria 1 company: • *Media Valle del Tevere* Hospital Director • *Media Valle del Tevere* District Director • 2 coordinator territorial operations center • DPO • 5 IT Staff comonents • Financial Staff component • Training Staff component • Communication Staff component Interventions: 1. **Deployment of integrated communication and information systems** In the last 10 years, USL Umbria 1 has invested many human and economic resources in the digitization of hospital care pathways. The hospital software ecosystem involves all the departments of the 5 company hospitals and all the strategic software applications are integrated with each other. However, this digital transition process has not involved primary care with the same impact, at the moment in fact, it is not possible to access all the necessary clinical information from primary care software applications. In this scenario, we have chosen to use the JADECARE joint action to allow professionals who participate in the chronic patient care path in the local area to be able to access all the clinical information created in our hospitals, through 4 software integrations: a. Regional Electronic Health Folder (FSE) > Telemedicine Platform b. Telemedicine Platform > GP'S Portal c. Hospital Electronic Medical Record > Regional Primary Care Management d. Telemedicine Platform > Regional Primary Care Management 2. **Care coordination and communication between health providers** In addition to allowing the sharing of information, we have deemed it necessary to provide healthcare professionals with tools that favor collaboration and communication between the local area and the hospital. To achieve this we have implemented two new tools: a. Multidisciplinary Group Heart Failure *Media Valle del Tevere* through the corporate telemedicine platform b. "Fast-track" booking for heart failure desease in *Media Valle del Tevere* District through the regional booking system SAR 3. **Empowerment programs for chronic and or multimorbid patients** In order to improve the empowerment of patients suffering from heart failure we have carried out the following activities:

	a. Training course "Empowerment of the chronic patient suffering from heart failure". We have engaged two teachers from the EngageMinds HUB of the Sacro Cuore University of Milan with the aim of providing healthcare professionals with the notions of empowerment to be transferred to patients during the treatment process. b. We have developed educational materials for distribution to heart failure patients.
Study of the Intervention(s)	a. Regional Electronic Health Folder (FSE) > Telemedicine Platform integration (Health-meeting) Qualitative analysis: assessment of the correct functioning of the new software integration b. Telemedicine Platform (Health-meeting) > GP'S Portal (ECWMED) Qualitative assessment of the correct functioning of the new software procedure Quantitative analysis: number of accesses to the new function made by GPs c. Hospital Electronic Medical Record (Galileo) > Regional Primary Care Management (Atl@nte) Qualitative analysis: assessment of the correct functioning of the new software procedure d. Telemedicine Platform (Health-meeting) > Regional Primary Care Management (Atl@nte) Qualitative analysis: assessment of the correct functioning of the new software procedure Quantitative analysis: number of accesses made by health professionals to the new functionality included in the Atl@nte software e. Multidisciplinary Group „Heart Failure *Media Valle del Tevere*" through the corporate telemedicine platform (Health-meeting) Quantitative analysis: number of patients managed through the multidisciplinary team f. "Fast-track" booking agenda for heart failure desease in *Media Valle del Tevere* District through the regional booking system SAR Quantitative analysis: number of patients managed through the multidisciplinary team g. Training course "Empowerment of the chronic patient suffering from heart failure" Quantitative analysis: number of partecipants h. Developed educational materials for distribution to heart failure patients Qualitative analysis: publication of the material
Measures	a. Regional Electronic Health Folder (FSE) > Telemedicine Platform integration (Health-meeting) KPI1: Approval of the integration project KPI2: Order to the supplier KPI3: Implementation of integration channels KPI4: Testing b. Telemedicine Platform (Health-meeting) > GP'S Portal (ECWMED) KPI1: Approval of the integration project KPI2: Order to the supplier KPI3: Implementation of integration channels, creation of the new form in ECWMED KPI4: Testing c. Hospital Electronic Medical Record (Galileo) > Regional Primary Care Management (Atl@nte) KPI1: Approval of the integration project KPI2: Order to the supplier KPI3: Implementation of integration channels, creation of the new form in ECWMED KPI4: Testing

	d. Telemedicine Platform (Health-meeting) > Regional Primary Care Management (Atl@nte) KPI1: Approval of the integration project KPI2: Order to the supplier KPI3: Implementation of integration channels, creation of the new form in Atl@nte KPI4: Testing e. Multidisciplinary Group „Heart Failure *Media Valle del Tevere*“ through the corporate telemedicine platform (Health-meeting) KPI1: Business agreement KPI2: Online multidisciplinary team KPI3: Entry at least 1 multidisciplinary meeting f. "Fast-track" booking agenda for heart failure desease in *Media Valle del Tevere* District through the regional booking system SAR KPI1: Implementation booking agenda KPI2: Entry at least 1 fast-track booking beetween GP and Hospital g. Training course "Empowerment of the chronic patient suffering from heart failure" KPI1: participation of at least 1 mmg, 1 cardiologist, 1 nurse of *Media Valle del Tevere* District h. Developed educational materials for distribution to heart failure patients KPI1: Information sheets KPI2: Informative material online
Analysis	The study of the results will be carried out in the coming months, when we will have more information available
What did you find?	
Results	a. Regional Electronic Health Folder (FSE) > Telemedicine Platform integration (Health-meeting) The intervention was completed and tested. By accessing the corporate telemedicine platform, it is possible to view all the patient's clinical information present in the regional FSE repository b. Telemedicine Platform (Health-meeting) > GP‘S Portal (ECWMED) The intervention was completed and tested. By accessing the company platform of general practitioners, it is possible to open the telemedicine application software in context, which allows access to the patient's clinical data. We have not yet deployed to all GPs but only to the test group because we need to regulate privacy access and we have to train GPs. c. Hospital Electronic Medical Record (Galileo) > Regional Primary Care Management (Atl@nte) d. Telemedicine Platform (Health-meeting) > Regional Primary Care Management (Atl@nte) We drafted the project and the supplier made the economic proposal for the construction. We had to interrupt the activities due to financing problems but we will proceed with the order in the coming months e. Multidisciplinary Group „Heart Failure *Media Valle del Tevere*“ through the corporate telemedicine platform (Health-meeting) We have created the multidisciplinary group, trained the staff, the GP is enrolling patients in this period

	f. "Fast-track" booking agenda for heart failure desease in *Media Valle del Tevere* District through the regional booking system SAR We have created the booking agendas, trained the staff, the GP is enrolling patients in this period g. Training course "Empowerment of the chronic patient suffering from heart failure" We carried out the training course with the identified personnel h. Developed educational materials for distribution to heart failure patients We have produced and published the information material online
What does it mean?	
Summary	We have made available to GPs a clinical information set that was not available before the JADECARE project, allowing for better treatment of the clinical case. We have speeded up the management of patients with the principle of heart failure by creating a direct channel between the GP and the hospital cardiologist. We have trained the professionals who participate in the treatment of heart failure on the empowerment techniques to be transferred to patients.
Interpretation	The project tried to solve some shortcomings of the Local Health Authority Umbria 1 in terms of information sharing. Clearly the interventions carried out do not solve all the problems but go in the direction indicated by the national guidelines on primary care, territorial operations centres, interoperability of application systems. The improvement of communication between professionals and the fast track for bookings represent a model to be followed in similar cases for the management of chronic diseases.
Limitations	All interventions were chosen to be replicable on all corporate structures. Project sustainability was our main guideline in the pre-implementation phase. The fast-track experiment for direct access from GP to hospital is working. In order for it to be deployed to the other USL Umbria 1 structures, two availability are required: • Hospital doctors must make available a time slot to be dedicated to visits booked by GPs • GPs, who need to learn and use the new function for the direct booking of visits
Conclusions	The USL Umbria 1 is one of the very few healthcare companies in Italy that allows GPs to access all the historical clinical information of the patients from within their own EHR management system. We think this feature can help spread the use of the Regional Health File and help GPs in teh patient care.
Other information	
Funding	The funds used to develop integrations and training courses selected from the annual budget of the USL Umbria 1 company

Regional Health Agency Tuscany (ARS Tuscany)

Pre-implementation

Scope definition

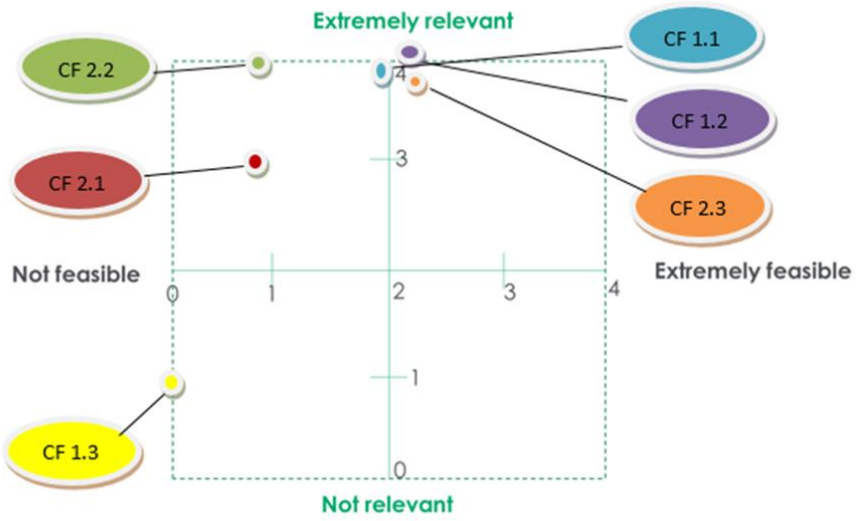
Identified and prioritized needs

Block	Prioritized needs
B1 Risk stratification	Specific actions / initiatives for population groups at risk
	Proactive and coordinated Personalized Healthcare Plans for patients with different risks and care needs
	Prioritize use of resources (resource allocation)

	Evaluation system based on quality and/or result indicators
B2 Integrated care	Integrated care along the entire assistance for both primary and hospital health care
	Effective interdisciplinary team work and primary care support in decision making
	Universal Electronic Health Record within unified platforms for easy access

Assessment of Core Features

Core feature	Relevance	Feasibility
CF1.1 Stratification data extraction process and construction of dashboard	4	2
CF1.2 Classification of patients	4	2
CF1.3 Stratification in the framework contract	1	0
CF2.1 Creation of integrated healthcare organizations	3	1
CF2.2 Deployment of integrated communication and information systems	4	1
CF2.3 Care coordination and communication between health providers	4	2



Final Core Features selected

CF1.1 - Stratification Data extraction process and construction of dashboard
CF1.2 - Classification of patients
CF2.3 - Care coordination and communication between health providers

Situation analysis

Risk stratification

	Strengths	Weaknesses
Internal	• Availability of current good quality amministrative health data (with the exception of data from GPs) • Availability of a Regional Health Agency Tuscany with expertise in current data analysis	• Lack of local expertise for the use of IT resources • Current lack of experience and skills to use the outputs of stratification • Lack of data from Primary Care • Lack of dedicated financial resources • IT infrastructure of the District-Zone currently not ready to use outputs

	• Consolidated organisation of general practice in AFTs (functional territorial aggregation) • Presence of the Family and Community Nursing Project ready to use the outputs of the system to be proactive • Participation model that can enabled the involvement of associations in the use of outputs for some chronic pathologies • Leadership open to innovation	
External	**Opportunities**	**Threats**
	• Supporting the use of stratification systems in the National Chronicity Plan • Population stratification in the recent Regional Law on Health Care Initiative • Stratification system already used by some Italian Regions • Recent developments in ITC for epidemic control • Some potentially useful components of the current IT infrastructure • Availability of free stratification systems	• Health professionals involved in current COVID-19 crisis • National working table for identifying unique stratification system at a deadlock • Confusion on purpose of use • Possible inertia in the reorganisation of the Regional Health System in the face of stratification in the local context • Heterogeneity of the professionals involved in terms of system culture and inertia to innovation • Persistence of privacy problems • Some stratification systems are expensive

Strategic Intervention Areas

Strategic intervention area	Priority	Ranking
Need for financial resources	3	1
Need to find a way to make clinicians aware of the outputs of stratification and thereby identifying patients with the highest needs	3	2
Need to standardize the way professionals use ICT tools and develop their ICT skills and use of stratification outputs	2	3
Need to get access to data gathered by Primary Care	2	4

Integrated care

	Strengths	Weaknesses
Internal	• Previous experience of team work (GPs and nurses) in the context of “Proactive Health Care” • Community and Family Nurse with possible role of Care Manager • Development of «GPs Team Practice» • Presence of Hospital-territory continuity project (ACOT)	• Enabling ICT: heterogeneity of electronic health records and lack of interoperability between hospital health and nursing and GP records, between outpatient specialist records and GP record • Lack of dedicated financial resources • Lack of a population stratification system • Poor development of the «Community Health Centres»

	• Use of electronic health records by general practitioners, district nurses and specialist doctors • Leadership open to innovation	• Difficulty of communication between GPs, outpatient specialists and hospital specialists • Not full recognition of the GP as Case Manager • Not full recognition of PC nurse as Care Manager • Not full recognition of the Internist as reference specialist for the complex patient with multimorbidity • Lack of a "nursing discharge letter"
	Opportunities	**Threats**
External	• Presence of AFT (functional territorial aggregation) • Model planned in the "New Proactive Health Care" (DGR 650 / 2016) whose implementation is envisaged in the current PISSR Regional Plan (operative section no. 14 DGR 273 / 2020) • Increase in the development of ICT tools as a result of the emergency situation • IDEA Project about patient empowerment (training on self-management of chronic diseases)	• Health professionals involved in current COVID-19 crisis • Resistance of IT companies to integrate different records • Lack of strong regional governance for developing integrated models of "Proactive Health Care" • Privacy issues

Strategic intervention area	**Priority**	**Ranking**
Need to acquire and use a population-based stratification system	3	1
Redefining the roles of the GP, the PC nurse, and the Internist as figures simultaneously necessary for the care of the complex patient	3	2
Adapting and enhancing the ICT tools already in use in order to redefine access to the different health records and promote integrated patient care	3	3
Need to foster communication between professionals both vertically and horizontally	3	4

Definition of the LGP and LAP

Local Good Practice

Local Good Practice	*Piana di Lucca* District Zone's approach to taking care of complex patients by integrating hospital and primary care	
Target population		**Setting(s)**
Complex patients with multi-chronicity and management difficulties		*Piana di Lucca* District Zone
Main aim		
Identifying the population of complex patients and improving their care through enhanced integration and proactivity of primary and hospital care		
Outcomes	**Local Core Features and their Components**	**Inputs**
• Identification of the complex patient population	**Developing a population risk stratification process (LCF1)** • Identification of criteria for local stratification model	• Funding • Time needed

• Enabling communication among healthcare professionals • Providing timely and integrated care to the population of complex patients • Guaranteeing the continuity of complex patients' care	• Training for health personnel who will perform and benefit from the results of population stratification • Identification by GPs of complex patients utilizing the identified criteria • Utilization of ACG system to support the stratification process providing the local privacy issue is resolved **Enhancing proactivity and integration of care pathways for complex patients with multi-chronicity and management difficulties (LCF2)** • Developing new roles of primary and hospital care professionals in an integrated care perspective • Fostering communication and shared decision-making within multi-disciplinary team through sharing of Personalized Care Plan • Adaptation of existing ICT tools to promote integrated care • Enrollment of the identified complex patients and acquisition of informed consent	• Willingness of primary and hospital care professionals to participate with involvement of at least 1/5 of the local AFT with 50% participating GPs • Availability of enabling rules for population stratification • Technical assistance for Integration of ICT systems

General description

Piana di Lucca District Zone's approach proposes a variety of interventions promoting enhanced integration and proactivity of care for complex patients. These interventions include identifying chronic patients through a stratification process and fostering communication and sharing of care plans among health professionals. Our strategy takes place in a context where the increasing number of patients with multi-chronicity and management difficulties has become a public health priority, and because of this our approach is aligned with the National Chronicity Plan and the Health Care Initiative Model. The practice represents an opportunity to integrate and coordinate the efforts for providing timely and integrated care and it is built on the "Basque health strategy in ageing and chronicity: integrated care". Factors that might have a negative impact on our objectives are the non-participation of clinical professionals in the process, impediments due to privacy issues and difficulties in tackling communication obstacles.

Local Core Feature 1

Developing a population stratification process

Local Core Feature 2

Enhancing proactivity and integration of care pathways for complex patients with multi-chronicity and management difficulties

Local Action Plan

Local Good Practice	***Piana di Lucca* District Zone's approach to taking care of complex patients by integrating hospital and primary care**	
Target population		**Setting**
Complex patients with multi-chronicity and management difficulties		*Piana di Lucca* District Zone
Main aim		
Identifying the population of complex patients and improving their care through enhanced integration and proactivity of primary and hospital care		
General description		
Piana di Lucca District Zone's approach proposes a variety of interventions promoting enhanced integration and proactivity of care for complex patients. These interventions include identifying chronic patients through a stratification process and fostering communication and sharing of care plans among health professionals. Our strategy takes place in a context where the increasing number of patients with multi-chronicity and management difficulties has become a public health priority, and because of this our approach is aligned with the National Chronicity Plan and the Health Care Initiative Model. The practice represents an opportunity to integrate and coordinate the efforts for providing timely and integrated care and it is built on the "Basque health strategy in ageing and chronicity: integrated care". Factors that might have a negative impact on our objectives are the non-participation of clinical professionals in the process, impediments due to privacy issues and difficulties in tackling communication obstacles.		
Related oGPs and CFs	Basque oGP; CF 1.1, 1.2 and 2.3	
Local Core Feature 1	**Developing a population stratification process**	
SMART objective		
Piana di Lucca District Zone will develop a local stratification system to support identification of complex patients		

Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Create within the NAWG a Specific Working Group (SWG) for the local stratification model	Members of the NAWG: • 2 GPs and AFT Coordinators (Functional Territorial Aggregation) • 1 Coordinator of Internal Medicine Unit • 1 Coordinator of Primary Care Unit • 1 Coordinator	Experts	Tuscany Region	1-15 Nov 2021 (fortnight)	• SWG formed (Y/N) • N° and profile of the members

	of Territorial Nursing Care • Director of Piana di Lucca District • 1 GP and ARS Tuscany consultant • Coordinator of Citizen Participation Committee • Coordinator of Health Services Unit in ARS Epidemiology Observatory • 1 Project Manager				
Literature review for identifying complex patients' criteria	ARS Tuscany "Documentation Center"	Time	ARS Tuscany	1-15 Nov 2021 (fortnight)	• N° of articles collected • N° of articles selected • N° of databases consulted
Establish criteria and methods for GPs to identify complex patients using the outpatient EHR	SWG	• Time • Stratification criteria used in the ACG System Available literature	*Piana di Lucca* District Zone	15 Nov -15 Dec 2021 (1 month)	• N° of SWG meetings • N° and type of criteria to be used • List of criteria available (Y/N) • Type of identification method selected
GPs identification, aiming at least 10 GPs identified	Members of the NAWG: • 2 GPs and AFT Coordinators • Director of *Piana di*	• Time	*Piana di Lucca* District Zone	1 Nov– 15 Dec 2021 (1 and a half months)	• N° of GPs identified • N° of GPs identified for each AFT

	Lucca District				
Establish procedures and providing the assistants to the GPs	Members of the NAWG: • 2 GPs and AFT Coordinators • Director of *Piana di Lucca* District • 2 administrative officers for legal and financial affairs	• Assistants of the GPs available • Financial resources	*Piana di Lucca* District Zone	1 Nov– 15 Dec 2021 (for definition: 1 and a half months) 1 Jan-31 Oct 2022 (for delivery: 10 months)	• Type of procedures used • N° of assistants • N° of assistants work hours • Descriptive document about the incentive system (Y/N) • Incentive system implemented (Y/N)
Train all identified GPs on the methods to be used to identify complex patients	SWG	Time	*Piana di Lucca* District Zone	15 Dec -31 Dec 2021 (fortnight)	• N° of training performed • N° hours spent for training • N° of identified GPs trained
Identify at least 100 complex patients and including them in the "ICP Folder" of the outpatient EHR	Identified GPs	Time	*Piana di Lucca* District Zone	1 Jan-28 Feb 2022 (2 months)	• N° of patients identified • N° of patient lists completed
Support and monitoring activities	Members of the NAWG: • Coordinator of Health Services Unit in ARS Epidemiology Observatory • 1 Project Manager	Time	*Piana di Lucca* District Zone	1 Nov 2021-31 Oct 2022 (12 months)	• Types of support and monitoring activities performed • Level of perceived satisfaction with support activities • Report about support and monitoring activities available (Y/N)
Use the ACG system to support the local stratification process	SWG	Availability of privacy policies that	Tuscany Region	1 Mar-31 Oct 2022 (8 months)	• Use of the ACG System to support data

		allow ACG to be used for clinical purposes			acquired with the local stratification model (Y/N) • N° of cases where it is used and % of agreement
Local Core Feature 2	**Enhancing proactivity and integration of care pathways for complex patients with multi-chronicity and management difficulties**				
SMART objective					
Piana di Lucca District Zone will foster communication among health care providers and promote the sharing of individual care plans tailored to the needs of complex patients					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Define modalities for nurse involvement to encourage adherence to the project	Members of the NAWG: • 1 Coordinator of Territorial Nursing Care • Coordinators of Nursing Units	Time	*Piana di Lucca* District Zone	1 Nov – 15 Dec 2021 (1 and a half months)	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)
Define modalities for specialists' involvement to encourage adherence to the project	Members of the NAWG: • -1 Coordiantor of Internal Medicine Unit • 1 Coordinator of Primary Care Unit • Coordinators of Medical Specialist Units	Time	*Piana di Lucca* District Zone	1 Nov– 15 Dec 2021 (1 and a half months)	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)
Define the roles and functioning of the integrated clinical network	All Members of the NAWG	Time	*Piana di Lucca* District Zone	1 Nov –15 Dec 2021 (1 and a half months)	• N°, types and frequency of activities to be performed • Descriptive document about roles and

					functioning available (Y/N)
Define the multidimensional assessment system for complex patients and follow-up tools	Members of the NAWG: • 1 Coordinator of Territorial Nursing Care • Coordinator of Citizen Participation Committee • 1 GG and AFT Coordinator • 1 Coordinator of Primary Care Unit	• Assessment scales • Follow-up questionnaires available • Time	ARS Tuscany	1 Nov – 15 Dec 2021 (1 and a half months)	• N° and type of assessment tools • N° and type of follow up tools
Identification of the professionals within integrated and structured clinical network including: • GPs • Family and Community nurses • Specialists	Members of the NAWG: • 2 GPs and AFT Coordinators • 1 Coordinator of Territorial Nursing Care • 1 Coordiantor of Internal Medicine Unit	Willingness of professionals	*Piana di Lucca* District Zone	15 Dec 2021-31 Jan 2022 (1 and a half months)	Document describing the composition of the integrated clinical network reporting: • N° of GPs • N° of Family and Community Nurses • N° and type of Specialists
Conduction of Consensus Conference upon the roles and functioning of the integrated clinical network to multiprofessional teams	Members of the NAWG: • 2 GPs and AFT Coordinators • 1 Coordinator of Territorial Nursing Care • 1 Coordiantor of Internal Medicine Unit	• Time • Multiprofessional teams identified	*Piana di Lucca* District Zone	15 Dec 2021 – 31 Jan 2022 (1 and a half months)	• N° of meetings performed • N° of hours spent for meetings • N° of professionals attended

Adaptation of outpatient EHR for ICP management and teleconsultation platform use	• ICT Experts • Specific Companies	• Time • Availability of tools for ICP management • Availability of the Regional teleconsultation platform	*Piana di Lucca* District Zone	• 1 Nov – 31 Dec 2021 (for ICP management: 2 months) • 1 Nov 2021-31 Jan 2022 (for teleconsultation platform: 3 months)	• ICP tool activated in the outpatient EHR (Y/N) • Regional teleconsultation platform linked to the outpatient EHR (Y/N)
Definition of informed consent for enrollment of complex patients	Experts administrative officers for legal affairs	Time	ARS Tuscany	1 -15 Nov 2021 (fortnight)	Informed consent defined (Y/N)
Enrollment of at least 100 complex patients previously identified by GPs and signing of informed consent	Identified GPs	• Time • GPs assistants available • Informed consent defined	*Piana di Lucca* District Zone	1 Feb – 31 Mar 2022 (2 months)	• N° of complex patients enrolled • N° informed consents signed
Multidimensional assessment of enrolled complex patients	• Identified GPs • Identified Family and Community nurses	• Time • Multidimensional assessment scales defined	*Piana di Lucca* District Zone	1 Feb-30 Apr 2022 (3 months)	N° of complete multidimensional assessment performed
Definition of a “medical ICP” and “nursing ICP” and sharing with multiprofessional teams	Multiprofessional team (GPs, Nurses, Specialists)	• ICT tools • Time	*Piana di Lucca* District Zone	1 Feb -30 Apr 2022 (3 months)	N° of ICPs defined and shared
Development of a integrated software for the management of medical and nursing ICPs	ICT Experts Specific Companies	• ICT tools • Time • Financial resources	*Piana di Lucca* District Zone	1 Feb -31 Oct 2022 (9 months)	Unified software for the management of medical and nursing ICPs implemented (Y/N)

Periodic telephone, outpatient and/or home-based follow-up for complex patients	Identified Family and Community nurses	• Time • Follow-up question naires defined	*Piana di Lucca* District Zone	1 Apr-31 Oct 2022 (7 months)	• N° of follow-up activities performed for each patient • Monitoring of the "Care intensity coefficient" (Y/N)
Periodic sharing and review of ICPs	Multiprofessional team (GPs, Nurses, Specialists)	• Time • ICT tools	*Piana di Lucca* District Zone	1 Apr-31 Oct 2022 (7 months)	• N° of ICPs reviewed • N° of times each ICP has been reviewed • N° of ICPs adjustments
Support and monitoring activities	Members of the NAWG: • Coordinator of Health Services Unit in ARS Epidemiology Observatory • 1 Project Manager	Time	*Piana di Lucca* District Zone	1 Nov 2021-31 Oct 2022 (12 months)	• Types of support and monitoring activities performed • Level of perceived satisfaction with support activities • Report about support and monitoring activities available (Y/N)

Implementation

1st PDSA Cycle

Plan

LCF1	Developing a population stratification process							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Create within the NAWG a Specific Working Group (SWG) for the local stratification model	Organize meetings dedicated to the selection of the SWG	Project Manager	1-7/11/21	• SWG formed (Y/N) • N° and profile of the members	Project Manager	15/11/21	During the meeting	• Yes • N° >2 with expertise
	Create the SWG for local stratification model	NAWG	8-15/11/21					
Literature review for identifying complex patients' criteria	Contact the "ARS Tuscany Documentation Center"	Project Manager	1-7/11/21	• N° of articles collected • N° of articles selected • N° of databases consulted	Project Manager	15/11/21	During the update meetings	• N°≥10 • N°≥3 • N°≥1
	Collect articles related to methods of identifying complex patients	ARS Tuscany "Documentation Center"	8-15/11/21					
Establish criteria and methods for GPs to identify complex patients using the outpatient EHR	Organize meetings with SWG to share selected articles/documents	Project Manager	15/11-15/12/21	• N° of SWG meetings • N° and type of criteria to be used • List of criteria available (Y/N)	Project Manager	15/12/21	During the update meetings	• N°≥2 • N°≥2 (type=health data) • Yes • Yes
	Establish criteria to identify complex patients	• SWG	15/11-15/12/21					
	Automating data extraction from outpatient EHR: getting a valid PoC	ICT Experts; • GPs	15/11-5/12/21					

	test in 1 PC of a participating GP			• Valid PoC test (Y/N)				
	Share the automatic data extraction method with all participating GPs	ICT Experts; • GPs	6/12-15/12/21					
GPs identification	Contact and identify GPs	• 2 GPs-AFT Coordinators; • Director of *Piana di Lucca* District	1/11-15/12/21	• N° of GPs identified • N° of GPs identified for each of the two AFT	Project Manager	15/12/21	During the update meetings	• N°≥10 • N°≥5
	Organize meetings with GPs to encourage participation in the project	Project Manager	1/11-15/12/21					
	After identification, provide the names of the GPs to the ICT experts in order to include the ICP Folder App+ Telec. platform in their software system.	Project Manager	15/12/21					
Establish administrative procedures and providing the assistants to the GPs	Organize meetings with: -2 GPs-AFT Coordinators; - Director of *Piana di Lucca* District; -administrative officers for legal and financial affairs: -Project Scientific Coordinator -Project Manager	Project Manager	1/11-15/12/21	• N° of assistants • Descriptive document about the incentive system (Y/N) • Incentive system	Project Manager	15/12/21 31/5/22	During the update meetings	• N°=1 for each GP • Yes • Yes

	Establish administrative procedures and focus on their sustainability	• 2 GPs-AFT Coordinators • Director of *Piana di Lucca* District • Administrative officers for legal and financial affairs • Project Scientific Coordinator • Project Manager	1/11–15/12/21	implemented (Y/N)				
	Contact the GPs assistants	• Project Manager; • GPs	1/11–15/12/21					
	Provide service	GPs assistant	1/01-15/12/22					
Train all identified GPs on the methods to be used to identify complex patients	Organize training with all identified GPs	Project Manager	15/12 - 31/12/21	• N° of training performed • N° hours spent for training • N° of identified GPs trained	Project Manager	31/12/21	Check data after the training day	• N°≥1 • N°≥2 h • All the identified GPs
	Train all identified GPs	SWG	15/12 - 31/12/21					
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR	Identify complex patients according to selected criteria and method	GPs; GPs assistants	1/01-28/2/22	• N° of patients identified • N° of patient lists completed	Project Manager	28/2/22	During the update meetings	• N°≥100 • N°=1 for each GP

LCF2	Enhancing proactivity and integration of care pathways for complex patients with multi-chronicity and management difficulties							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Define modalities for nurse involvement to encourage adherence to the project	Organize meetings with: Coordinator of Territorial Nursing Care; Coordinators of Nursing Units Project Scientific Coordinator; Project Manager	Project Manager	1/11–15/12/21	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)	Project Manager	15/12/21	During the update meetings	• N=1 modality for each needed aspect • Yes
	Define a descriptive document for nurse involvement containing: legal and administrative aspects, number of patients to be monitored, activities, potential incentives	• Coordinator of Territorial Nursing Care • Coordinators of Nursing Units • Project Scientific Coordinator; • Project Manager	1/11–15/12/21					
Define modalities for specialists' involvement to encourage adherence to the project	Organize meetings with: Coordiantor of Internal Medicine Unit Coordinator of Primary Care Unit; Coordinators of Medical Specialist Units	Project Manager	1/11–15/12/21	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)	Project Manager	15/12/21	During the update meetings	• N°=1 modality for each needed aspect • Yes

	(Hospital and Outpatients specialists); Project Scientific Coordinator; Project Manager							
	Define a descriptive document for specialist involvement containing: legal aspects, number of patients to be monitored, activities, potential incentives	• Coordinator of Internal Medicine Unit; • Coordinator of Primary Care Unit; • Coordinators of Medical Specialist Units (Hospital and Outpatients specialists); • Project Scientific Coordinator; • Project Manager	1/11–15/12/21					
Define the roles and functioning of the integrated clinical network	Organize meetings with all members of NAWG	Project Manager	1/11 – 15/12/21	Descriptive document about roles and functioning available (Y/N)	Project Manager	15/12/21	During the update meetings	Yes
	Define a descriptive document for specialists' involvement containing: • Role and activities for each profile professional • Methods to define multidisciplinary	NAWG	1/11 – 15/12/21					

	team for each enrolled patient • Contact modalities among professionals according to the patient clinical situation							
Define the multidimensional assessment system for complex patients and follow-up tools	Identify the tools used in the oGP and already in use in the *Piana di Lucca* and select among them those that will be used in the project	Coordinator of Territorial Nursing Care; Coordinator of Citizen Participation Committee; 1 GP and AFT Coordinator; Coordinator of Primary Care Unit	1/11 – 15/12/21	• N° and type of assessment tools • N° and type of follow up tools	Project Manager	15/12/21	During the update meetings	• N°=1 for each domain analyzed • N°=1 for each domain analyzed
Identification of the professionals within integrated and structured clinical network including: • GPs • Family and Community nurses • Specialists	Organize meetings with GPs/Nurses/Specialists to encourage participation in the project	Project Manager	15/12/21-31/01/22	Document describing the composition of the integrated clinical network reporting: • N° of GPs • N° of Family and Community Nurses • N° and type of Specialists	Project Manager	31/01/22	During the update meetings	• N° of GPs ≥10 • N° of Family and Community Nurses ≥2 • N° and type of • Specialists ≥1 for each selected medical specialty
	Identify the professionals	• 2 GPs-AFT Coordinators; • Coordinator of Territorial Nursing Care;	15/12/21-31/01/22					

		• Coordiantor of Internal Medicine Unit; • Coordinator of specialists-AFT						
Conduction of Consensus Conference on the roles and functioning of the integrated clinical network to multiprofessional team	Organize and execute a Consensus Conference with the multiprofessional team	• Project Manager; • Project Scientific Coordinator; • 2 GPs-AFT Coordinators; • Coordinator of Territorial Nursing Care; • Coordiantor of Internal Medicine Unit; • Coordinator of specialists-AFT	15/12/21-31/01/22	• N° of meetings performed • N° of hours spent for meetings • N° of professionals attended	Project Manager	31/01/22	During the update meetings	• N° ≥1 • N° ≥2 h • All identified professionals
Adaptation of outpatient EHR for ICP management and teleconsultation platform use	Share with experts the technical specifications of the regional teleconsultation platform	• Project Manager; • Region ICT Experts	1/11/21-15/11/21	• ICP tool activated in the outpatient EHR (Y/N) • Regional teleconsultation platform linked to the outpatient EHR (Y/N)	Project Manager	15/11/21 15/12/21 31/12/21 31/01/22	During the update meetings	• Yes • Yes
	Provide the names of the GPs to the ICT experts in order to include the ICP Folder App/Teleconsultation Platform in their software system.	• Project Manager	15/12/21					

	Make ICP Folder App available	ICT Experts	1/11 – 31/12/21					
	Make teleconsultation platform available	ICT Experts	1/11/21-31/01/22					
Definition of informed consent for enrollment of complex patients	Contact experts' administrative officers for legal affairs and describe them the project	Project Manager	1-7/11/21	Informed consent defined (Y/N)	Project Manager	15/11/21	During the update meetings	Yes
	Define the informed consent	Administrative officers for legal affairs	8-15/11/21					
Enrollment complex patients previously identified by GPs and signing of informed consent	Enroll complex patients	• GPs • Assistants GPs	1/02-31/03/22	• N° of complex patients enrolled • N° informed consents signed	Project Manager	31/03/22	During the update meetings	• N° ≥100 • N°=1 informed consent signed for each enrolled patient
Multidimensional assessment of enrolled complex patients	Assess each enrolled patients using the previously defined assessment tools	• GPs • Family and Community nurses	1/02-30/04/22	• N° of complete multidimensional assessment performed	Project Manager	30/04/22	During the update meetings	• N°=1 assessment for each enrolled patient
Definition of a "medical ICP" and "nursing ICP" and sharing with multiprofessional teams	Define and share the "medical ICP" and "nursing ICP" for each enrolled patient	Multiprofessional team (GPs, Nurses, Specialists)	1/02-30/04/22	N° of ICPs defined and shared	Project Manager	30/04/22	During the update meetings	• N=1 medical ICP defined and shared for each

								enrolled patient • N=1 nursing ICP defined and shared for each enrolled patient
Periodic telephone, outpatient and/or home-based follow-up for complex patients	Elaborate a monitoring schedule for professionals to fill out	Project Manager	1/11 – 15/12/21	• N° of follow-up activities performed for each patient • Monitoring of the "Care intensity coefficient" (Y/N)	Project Manager	15/12/21 31/05/22	During the update meetings	• N° ≥1 for each enrolled patient • Yes
	Follow up of each enrolled patient using the previously defined follow up tools	Family and Community nurses	1/04-15/12/22					
Periodic sharing and review of ICPs	Periodic sharing and review of ICPs	• Multiprofessional team (GPs, Nurses, Specialists)	1/04-15/12/22	• N° of ICPs reviewed • N° of times each ICP has been adjusted	Project Manager	31/05/22	During the update meetings	• N° ≥1 for each enrolled patient • N° ≥1 for at least 50% enrolled patients

Do

Cycle number	**1**	
Activity	**KPI**	**Actual value**
Create within the NAWG a Specific Working Group (SWG) for the local stratification model	• SWG formed (Y/N) • N° and profile of the members	• Yes • N°=8 experts
Literature review for identifying complex patients' criteria	• N° of articles collected • N° of articles selected • N° of databases consulted	• N°=15 • N°=3 • N°=1
Establish criteria and methods for GPs to identify complex patients using the outpatient EHR	• N° of SWG meetings • N° and type of criteria to be used • List of criteria available (Y/N) • Valid PoC test (Y/N)	• N°=5 • N°=4 • Yes • Yes
GPs identification	• N° of GPs identified • N° of GPs identified for each of the two AFT	• N°=10 • N° 2 for AFT Francigena/N° 8 for AFT Capannori
Establish administrative procedures and providing the assistants to the GPs	• N° of assistants • Descriptive document about the incentive system (Y/N) • Incentive system implemented (Y/N)	• N°=1 for each GP • Yes • Yes
Train all identified GPs on the methods to be used to identify complex patients	• N° of training performed • N° hours spent for training • N° of identified GPs trained	• N°=2 • N°= 2h30min • N°= 10
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR	• N° of patients identified • N° of patient lists completed	• N°= 75 • N°= 8
Define modalities for nurse involvement to encourage adherence to the project	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)	• All necessary aspects are set • Yes
Define modalities for specialists' involvement to encourage adherence to the project	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)	• N°=0 • No

Define the roles and functioning of the integrated clinical network	Descriptive document about roles and functioning available (Y/N)	No
Define the multidimensional assessment system for complex patients and follow-up tools	• N° and type of assessment tools • N° and type of follow up tools	• All necessary aspects are set (N°=1 for each domain analyzed) • All necessary aspects are set (N°=1 for each domain analyzed)
Identification of the professionals within integrated and structured clinical network including: • GPs • Family and Community nurses (FCNs) • Specialists	Document describing the composition of the integrated clinical network reporting: • N° of GPs • N° of Family and Community Nurses (FCNs) • N° and type of Specialists	• N° of GPs=10 • N° of FCNs=17 • N° and type of Specialists= availabilty of at least 1 doctor for the following Operative Units: pulmonology, cardiology, diabetology and nephrology
Conduction of Consensus Conference on the roles and functioning of the integrated clinical network to multiprofessional team	• N° of meetings performed • N° of hours spent for meetings • N° of professionals attended	• N°=0 • N°=0 • N°=0 •
Adaptation of outpatient EHR for ICP management and teleconsultation platform use	• ICP tool activated in the outpatient EHR (Y/N) • Regional teleconsultation platform linked to the outpatient EHR (Y/N)	• Yes • No
Definition of informed consent for enrollment of complex patients	Informed consent defined (Y/N)	Yes
Enrollment complex patients' previously identified by GPs and signing of informed consent	• N° of complex patients enrolled* • N° informed consents signed	• N°=0 (*the "enrollment" takes place only when the consesus is signed) • N°=0
Multidimensional assessment of enrolled complex patients	N° of complete multidimensional assessment performed	N°=0
Definition of a "medical ICP" and "nursing ICP" and sharing with multiprofessional teams	• N° of ICPs defined and shared	• N°=0 • N°=0
Periodic telephone, outpatient and/or home-based follow-up for complex patients	• N° of follow-up activities performed for each patient • Monitoring of the "Care intensity coefficient" (Y/N)	• N°=0 • No
Periodic sharing and review of ICPs	• N° of ICPs reviewed	• N°=0

	• N° of times each ICP has been adjusted	• N°=0

QUESTIONS	ANSWERS
What was actually implemented? Any deviation from the planned actions	As for LCF1, most of the planned activities have been implemented meeting the KPIs. The composition of GPs according to the AFT they belong to and the number of patients identified are the only two activities that have not met the established criteria. As for LCF2, we have encountered more difficulties. So far, we have performed: the activities related to the nurses' participation, namely the document defining their involvement and the assessment and follow-up system, the finalization of the informed consent and the possibility to use the planned IT tools. Moreover, we have managed to define some aspects of the integrated clinical network functioning: once the identification and enrolment process has been performed, the patients' lists are sent both to the nursing coordinator of the Family and Communicaty Nurses (FCNs) and to the coordinator of the Primary Care functional unit. The former will activate the FCN, who will perform the multidimensional assessment, and in the meantime the latter will coordinate the organisation and the schedule to perform the teleconsultation. However, due to the difficulties in defining the involvement modality for the specialists, it has not been possible to complete the document for the functioning of the 'integrated clinical network'. It is assumed that the document will be finalised at the beginning of the second PDSA cycle, since an agreement seems to be being reached. Due to delays in these 'preparatory' activities, we are going to test the care model and the functioning of the clinical network during the second PDSA. Shifting the start of this activity means that the multidisciplinary team will define both the clinical and nursing ICPs for everyone once and then review them for selected specific cases after a few months (in the original idea they had all to be reviewed after 6 months).
Problems? Unexpected findings? Please describe	As for LCF1, the identification of criteria for complex patients has been a challenging task: the working group has performed a demanding task by merging selected oGP criteria, literature data and availability of information in the outpatient EHR or through GPs. It has been crucial to always keep in mind the importance of sustainability of the criteria and to avoid criteria that could lead to fragmentation of care. Given these difficulties, the final document has been drafted with a slight delay. The GPs' group composition is not equally distributed between the two AFTs, however we assume that this will not have a negative impact on the project. Moreover, two GPs have not sent their lists in time for this first cycle, so we expect to receive them at the beginning of the second one.

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
		X	

Study

Cycle number	**1**					
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Create within the NAWG a Specific Working Group (SWG) for the local stratification model	• SWG formed (Y/N) • N° and profile of the members	• Yes • N° >2 experts	• Yes • N°=8 experts	No deviation from the planned activity	No mitigation action was needed	/
Literature review for identifying complex patients' criteria	• N° of articles collected • N° of articles selected • N° of databases consulted	• N°≥10 • N°≥3 • N°≥1	• N°=15 • N°=3 • N°=1	No deviation from the planned activity	No mitigation action was needed	/
Establish criteria and methods for GPs to identify complex patients using the outpatient EHR	• N° of SWG meetings • N° and type of criteria to be used • List of criteria available (Y/N) • Valid PoC test (Y/N)	• N°≥2 • N°≥2 • Yes • Yes	• N°=5 • N°=4 • Yes • Yes	No deviation from the planned activity	No mitigation action was needed	/
GPs identification	• N° of GPs identified • N° of GPs identified for each of the two AFT	• N°≥10 • N° ≥5	• N°=10 • N° 2 for AFT Francigena/N° 8 for AFT Capannori	Slight deviation regarding the combination of the GPs' group according to the AFT they belong to	No mitigation action: we have assumed that this would not have had a negative impact on the project.	/

				because there has been no availability		
Establish administrative procedures and providing the assistants to the GPs	• N° of assistants • Descriptive document about the incentive system (Y/N) • Incentive system implemented (Y/N)	• N°=1 for each GP • Yes • Yes	• N°=1 for each GP • Yes • Yes	No deviation from the planned activity	No mitigation action was needed	/
Train all identified GPs on the methods to be used to identify complex patients	• N° of training performed • N° hours spent for training • N° of identified GPs trained	• N°≥1 • N°≥2h • All of the identified GPs	• N°=2 • N°= 2h30min • N°= 10 (all identified GPs)	No deviation from the planned activity	No mitigation action was needed	/
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR	• N° of patients identified • N° of patient lists completed	• N°≥100 • N°= 1 for each GP	• N°= 75 • N°= 8/10	Slight deviation regarding the number of identified patients due to lack of time	We have urged the two doctors who still have to send their lists to deliver them as soon as possible during the second PDSA cycle	This means that these patients will be enrolled and will probably enter into the process of being taken care of by the multidisciplinary team after those already identified. We assume that this does not lead to a relevant negative impact
Define modalities for nurse involvement to encourage adherence to the project	• N° and type of selected modalities • Descriptive document about	• N°=1 modality for each needed aspect • Yes	• All necessary aspects are set (1 modality for each needed aspect) • Yes	No deviation from the planned activity	/	/

	modalities available (Y/N)					
Define modalities for specialists' involvement to encourage adherence to the project	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)	• N=1 modality for each needed aspect • Yes	• N°= 0 • No	Difficulties in defining a sustainable and replicable modality for the involvement of specialists	We have set up different scenarios to combine the hourly availability of specialists with planned activities in order to facilitate the choice. In addition, we are finalising the agenda according to actual demand based on the identified patient lists. The timeline of this activity will be extended in the second PDSA cycle.	Shifting this activity means that also the final document concerning roles and functioning of the integrated clinical network will be postponed. It implies issues related to the pace of the project
Define the roles and functioning of the integrated clinical network	Descriptive document about roles and functioning available (Y/N)	Yes	No	It has not been possible to finalise the document due to difficulties and delays in defining how to involve specialists	We have attempted to facilitate the involvement of specialists by drafting different scenarios of involvement. However, due to lack of time, the timeline of this activity will be extended in the second cycle	Ending this activity in the second PDSA implies the testing of the process of taking care by the multidisciplinary team will also be postponed to the second PDSA cycle. This has an impact on the project's pace but it should not have too much of a negative impact on the overall objective of the project, namely to start and foster communication among professionals to elaborate ICPs for complex patients

Define the multidimensional assessment system for complex patients and follow-up tools	• N° and type of assessment tools • N° and type of follow up tools	• N°=1 for each domain analyzed • N°=1 for each domain analyzed	• All necessary aspects are set (1 modality for each domain analyzed) • All necessary aspects are set (1 modality for each domain analyzed)	No deviation from the planned activity	No mitigation action was needed	/
Identification of the professionals within integrated and structured clinical network including: GPs, Family and Community nurses, Specialists	Document describing the composition of the integrated clinical network reporting: • N° of GPs • N° of Family and Community Nurses (FCNs) • N° and type of Specialists	• N° GPs≥10 • N° FCNs ≥2 • N° and type of Specialists ≥1 for each selected medical specialty	• N° GPs=10 • N° FCNs=17 • N° and type of Specialists= availability of each of the following Operative Units*: pulmonology, cardiology, diabetology and nephrology *it is not possible to indicate the name or actual n° because it depends on the team agenda	It has not been possibile to involve internal medicine specialists, because they don't provide currently outpatient care but only inpatient care	Currently, we have to abandon the intention of including the internist. It will be the GP, as case manager, who will coordinate the contributes of the specialist doctors	The impossibility of including the internist will take away an important added value to the functioning of the multidisciplinary team.
Conduction of Consensus Conference on the roles and functioning of the integrated	• N° of meetings performed • N° of hours spent for meetings	• N° ≥1 • N° ≥2 h • All identified professionals	• N° =0 • N° =0 • N° =0	Due to difficulties in defining the draft document concerning the roles and functioning of	The timeline of this activity will be extended in the second cycle	Like a domino effect, postponing this activity implies that the testing of the process of taking care by the multidisciplinary

clinical network to multiprofessional team	• N° of professionals attended			the integrated clinical network it has not be possible to complete this activity		team will also be postponed to the second PDSA cycle. This has an impact on the project's pace but it should not have too much of a negative impact on the overall objective of the project, namely to start and foster communication among professionals to elaborate ICPs for complex patients
Adaptation of outpatient EHR for ICP management and teleconsultation platform use	• ICP tool activated in the outpatient EHR (Y/N) • Regional teleconsultation platform linked to the outpatient EHR (Y/N)	• Yes • Yes	• Yes • No	Due to lack of time and professional resources has not be possible to link the regional teleconsultation platform to the outpatient EHR	We have produced two simple guides to facilitate the use and connection to the platform: one guide is for the meeting organiser (GPs) and the other one for participants (Nurses and Specialists). Once delivered, we have performed a test with some professionals in order to verify the usability and the ease of connection to the platform. Professionals have successfully used the platform and have reported its usability. The guides developed have been useful.	The guides developed have been useful. Consequently, the lack of the link has not had a negative impact in the project

Definition of informed consent for enrollment of complex patients	Informed consent defined (Y/N)	Yes	Ye	No deviation from the planned activity	No mitigation action was needed	/
Enrollment complex patients previously identified by GPs and signing of informed consent	• N° of complex patients enrolled • N° informed consents signed	• N° ≥100 • N°=1 informed consent signed for each enrolled patient	• N°=0 • N°=0	Due to lack of time and some delays in identification process it has not been possible to get the informed consent	We have tried to urge the identification process. However, due to lack of time, the timeline of this activity will be extended in the second PDSA cycle	This has an impact only on the pace of the project, because during the second PDSA there will be time to conclude the enrollment of all identified patients
Multidimensional assessment of enrolled complex patients	N° of complete multidimensional assessment performed	N°=1 assessment for each enrolled patient	N° =0	Since the document concerning the roles and functioning of the integrated clinical network has not been completed it has not been possible to undertake this activity	We have tried to urge and facilitate the completion of the activities that would have allowed the undertaking of this activity. However, due to lack of time, the timeline of this activity will be extended in the second cycle	This has an impact only on the pace of the project, because during the second PDSA there will be time to carry out all required assessments
Definition of a “medical ICP” and “nursing ICP” and sharing with multiprofessional teams	N° of ICPs defined and shared	• N=1 medical ICP defined and shared for each enrolled patient • N=1 nursing ICP defined and shared for each enrolled patient	• N° =0 • N° =0	Since the document concerning the roles and functioning of the integrated clinical network has not been completed it has not been possible to undertake this activity	We have tried to urge and facilitate the completion of the activities that would have allowed the undertaking of this activity. However, due to lack of time, the timeline of this activity will be extended in the second cycle	This has an impact only on the pace of the project, because during the second PDSA there will be time to performe for all the first definition of ICPs

Periodic telephone, outpatient and/or home-based follow-up for complex patients	• N° of follow-up activities performed for each patient • Monitoring of the "Care intensity coefficient" (Y/N)	• N° ≥1 for each enrolled patient • Yes	• N° =0 • No	Since the document concerning the roles and functioning of the integrated clinical network has not been completed it has not been possible to undertake this activity	We have tried to urge and facilitate the completion of the activities that would have allowed the undertaking of this activity. However, due to lack of time, the timeline of this activity will be extended in the second cycle	This has an impact only on the pace of the project, because during the second PDSA there will be time to performe all follow-up so as to meet KPIs.
Periodic sharing and review of ICPs	• N° of ICPs reviewed • N° of times each ICP has been adjusted	• N° ≥1 for each enrolled patient • N° ≥1 for at least 50% enrolled patients	• N° =0 • N° =0	Since the document concerning the roles and functioning of the integrated clinical network has not been completed it has not been possible to undertake this activity	We have tried to urge and facilitate the completion of the activities that would have allowed the undertaking of this activity. However, due to lack of time, the timeline of this activity will be extended in the second cycle	Starting this activity later implies that there will not be time to perform for all patients both an initial definition of ICPs and a second revision after 6 months: the initial definition will be for all but the revision will be performed after a few months only for a few specific selected patients. This this has an impact on the project's pace but it should not have too much of a negative impact on the overall objective of the project, namely to start end foster communication among professionals to elaborate ICPs for complex patients

Act

Cycle number	1		
Activity	**Maintain**	**Adapt**	**Abandon**
Create within the NAWG a Specific Working Group (SWG) for the local stratification model	This activity has been successfully completed		
Literature review for identifying complex patients' criteria	This activity has been successfully completed		
Establish criteria and methods for GPs to identify complex patients using the outpatient EHR	This activity has been successfully completed		
GPs identification	This activity has been successfully completed with a slight deviation regarding the combination of the GPs' group according to the AFT they belong to		
Establish administrative procedures and providing the assistants to the GPs	This activity has been successfully completed		
Train all identified GPs on the methods to be used to identify complex patients	This activity has been successfully completed		
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR		Extend the deadline to the end of September 2022.	
Define modalities for nurse involvement to encourage adherence to the project	This activity has been successfully completed		
Define modalities for specialists' involvement to encourage adherence to the project		Extend the deadline to the end of July 2022	

Define the roles and functioning of the integrated clinical network		Extend the deadline to the end of July 2022	
Define the multidimensional assessment system for complex patients and follow-up tools	This activity has been successfully completed		
Identification of the professionals within integrated and structured clinical network including: GPs, Family and Community nurses, Specialists	This activity has been completed apart from the inclusion of internist doctors.		
Conduction of Consensus Conference on the roles and functioning of the integrated clinical network to multiprofessional team			Although it would have been desirable to organise a consensus conference with all the health professionals involved in the project, it is believed that this activity may result in a slowdown of activities and an overload for the health professionals. During the activities of the first implementation cycle, we planned the activities in collaboration with both health professionals and their coordinators: as a result, a Consensus has been achieved albeit “separate” for different professionals.
Adaptation of outpatient EHR for ICP management and teleconsultation platform use		Extend the deadline to December 2022 to link the regional teleconsultation platform to the oupatient EHR	
Definition of informed consent for enrollment of complex patients	This activity has been successfully completed		
Enrollment complex patients previously identified by GPs and signing of informed consent		Extend the deadline to the end of September 2022. New Target value: • N° ≥50% of identified patients	

Multidimensional assessment of enrolled complex patients		Extend the deadline to December 2022 New Target value: • N ≥80% of enrolled patients	
Definition of a "clincal ICP" and "nursing ICP" and sharing with multiprofessional teams		Extend the deadline to December 2022 New Target value: • N =100% of enrolled patients with multidimensional assessement completed	
Periodic telephone, outpatient and/or home-based follow-up for complex patients		Extend the deadline to December 2022 New Target value: N° ≥80% of enrolled patients with ICPs alredy shared	
Periodic sharing and review of ICPs		Extend the deadline to December 2022. New KPIs and target value: • N° of ICPs reviewed ≥ 10% of enrolled patients with at least one follow up performed	

QUESTIONS	ANSWERS
Any new proposed action for the future?	In our original idea in the second PDSA cycle we wanted to perform the following activities: • "Use the ACG system to support the local stratification process": we have to abandon this activity due to the shortage progress in the regulation of risk stratification. Therefore, we want to change this activity in "Actions to support the Health Department in the process of solving privacy issues". According to this activity, the new KPI will be a descriptive document of the undertaken actions. • "Development of an integrated software for the management of medical and nursing ICPs": as highlighted during TWs it is necessary to define realistic objectives within realistic timeframe and unfortunately this activity is too complex to be completed by this implementation year. Therefore, we want to change this activity in "Actions to support the Health Department in the development of an integration process between the EHR of the GP and the FCN". According to this activity, the new KPI will be a descriptive document of the undertaken actions. In accordance with the findings of the workshops, we want to add the following activity to our second plan: "Communication plan addressed to regional and national stakeholders"

2nd PDSA Cycle

Plan

LCF1	Developing a population stratification process							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR	Identify complex patients according to selected criteria and method	• GPs • GPs assistants	15/07-30/09/22	• N° of patients identified • N° of patient lists completed	Project Manager	30/09/22	During the update meetings	• N°≥100 • N°=1 for each GP
Support and monitoring activities	Support and monitoring each activity to be carried out through meeting organization, updates, materials	Project Manager	15/07-15/12/22	• Types of support and monitoring activities performed • Level of perceived satisfaction with support activities • Report about support and monitoring activities	Project Manager	15/12/22	During the update meetings	• Meetings, email support, materials • >70% • Yes
	Elaborate a brief satisfaction questionnaire	Project Manager	01/09-15/09/22					
	Completion of the questionnaire by the NAWG and professionals involved	NAWG Healthcare rofessionals involved	01-15/12/22					

				available (Y/N)				
Communication plan addressed to regional and national stakeholders	Define and perform activities to communicate and disseminate our results	Project Manager Project Scientific Coordinator	15/07-15/12/22	• Webinar in November (Y/N) • N° of meetings with Regional stakeholders • N° of meetings with National stakeholders	Project Manager	15/12/22	During the update meetings	• Yes • N°≥1 • N°≥1
Actions to support the Health Department in the process of solving privacy issues	Actions to support the Health Department in the process of solving privacy issues	Project Manager Project Scientific Coordinator Regional Stakeholders	15/07-15/12/22	Descriptive document of the undertaken actions (Y/N)	Project Manager	15/12/22	During the update meetings	• Yes

LCF2	Enhancing proactivity and integration of care pathways for complex patients with multi-chronicity and management difficulties							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
	Organize meetings with:	Project Manager	15-30/07/22		Project Manager	30/07/22	During the	

Define modalities for specialists' involvement to encourage adherence to the project	• Coordinator of Primary Care Uni • Coordinators of Medical Specialist Units (Hospital and Outpatients specialists) • Project Scientific Coordinator • Project Manager			• N° and type of selected modalities • Descriptive document about modalities available (Y/N)			update meetings	• N°=1 modality for each needed aspect • Yes
	Define a descriptive document for specialist involvement containing: legal aspects, number of patients to be monitored, activities, potential incentives	• Coordinator of Primary Care Unit • Coordinators of Medical Specialist Units (Hospital and Outpatients specialists) • Project Scientific Coordinator • Project Manager						
Define the roles and functioning of the integrated clinical network	Organize meetings with all members of NAWG	Project Manager	15-30/07/22	Descriptive document about roles and functioning available (Y/N)	Project Manager	15/12/21	During the update meetings	Yes
	Define a descriptive document containing:	NAWG						

	• Role and activities for each profile professional • Methods to define multidisciplinary team for each enrolled patient • Contact modalities among professionals according to the patient clinical situation							
Adaptation of outpatient EHR for ICP management and teleconsultation platform use	Connection of the Regional teleconsultation platform to the GPs' outpatient EHR	• Project Manager; • ICT Experts	15/07-15/12/22	Regional teleconsultation platform linked to the outpatient EHR (Y/N)	Project Manager	15/12/22	During the update meetings	Yes
Enrollment complex patients previously identified by GPs and signing of informed consent	Enroll complex patients	• GPs • Assistants GPs	15/07-30/09/22	• N° of complex patients enrolled • N° informed consents signed	Project Manager	30/09/22	During the update meetings	• N° ≥50% of identified patients • N°=1 informed consent signed for each enrolled patient
Multidimensional assessment of enrolled complex patients	Assess each enrolled patient using the previously defined assessment tools	• Family and Community nurses • GPs	15/07-15/12/22	N° of complete multidimensional assessment performed	Project Manager	15/12/22	During the update meetings	N ≥80% of enrolled patients

Definition of a "clinical ICP" and "nursing ICP" and sharing with multiprofessional teams	Define and share the "medical ICP" and "nursing ICP" for each enrolled patient	Multiprofessional team (GPs, Nurses, Specialists)	15/07-15/12/22	• N° of ICPs defined and shared	Project Manager	15/12/22	During the update meetings	N =100% of enrolled patients with multidimensional assessement completed
Periodic telephone, outpatient and/or home-based follow-up for complex patients	Follow up of enrolled patients using the previously defined follow up tools	Family and Community nurses	15/08-15/12/22	• N° of follow-up activities performed for each patient • Monitoring of the "Care intensity coefficient" (Y/N)	Project Manager	15/12/22	During the update meetings	• N° ≥80% of enrolled patients with ICPs alredy shared • Yes
Review of ICPs	Share and review ICPs	Multiprofessional team (GPs, Nurses, Specialists)	01-15/12/22	N° of ICP reviewed	Project Manager	15/12/22	During the update meetings	N° of ICPs reviewed ≥ 10% of enrolled patients with at least one follow up performed
Actions to support the Health Department in the development of an integration process between the EHR of the GP and the FCN	Actions to support the Health Department in the development of an integration process between the EHR of the GP and the FCN	• Project Manager • Project Scientific Coordinator • ICT Experts	15/07-15/12/22	Descriptive document of the undertaken actions (Y/N)	Project Manager	15/12/22	During the update meetings	Yes

Do

Cycle number	**2**	
Activity	**KPI**	**Actual value**
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR	• N° of patients identified • N° of patient lists completed	• N°= 76 • N° =4
Support and monitoring activities	• Types of support and monitoring activities performed • Level of perceived satisfaction with support activities • Report about support and monitoring activities available (Y/N)	• Meetings, email, support materials • Survey not submitted • Yes
Communication plan addressed to regional and national stakeholders	• Webinar in November (Y/N) • N° of meetings with Regional stakeholders • N° of meetings with National stakeholders	• Yes (08/11 with 143 attendees) • N°=1 (26/09) • N°=2 (26/09,15/09)
Actions to support the Health Department in the process of solving privacy issues	Descriptive document of the undertaken actions (Y/N)	No
Define modalities for specialists' involvement to encourage adherence to the project	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)	• All necessary aspects are set • Yes
Define the roles and functioning of the integrated clinical network	Descriptive document about roles and functioning available (Y/N)	Yes
Adaptation of outpatient EHR for ICP management and teleconsultation platform use	Regional teleconsultation platform linked to the outpatient EHR (Y/N)	No
Enrollment complex patients previously identified by GPs and signing of informed consent	• N° of complex patients enrolled • N° informed consents signed	• N°= 54% (41 tot) • N°=41
Multidimensional assessment of enrolled complex patients	N° of complete multidimensional assessment performed	N=88% (36 tot)
Definition of a "clinical ICP" and "nursing ICP" and sharing with multiprofessional teams	N° of ICPs defined and shared	N =100% (36 tot)
Periodic telephone, outpatient and/or home-based follow-up for complex patients	• N° of follow-up activities performed for each patient • Monitoring of the "Care intensity coefficient" (Y/N)	• N°= 92% (33 tot) • Yes
Review of ICPs	N° of ICP reviewed	N°= 3% (1 tot)
Actions to support the Health Department in the development of an	Descriptive document of the undertaken actions (Y/N)	No

integration process between the EHR of the GPs and the FCNs		

QUESTIONS	ANSWERS
What was actually implemented? Any deviation from the planned actions	As for LCF1 and LCF2, most of the planned activities have been implemented meeting the KPIs and target values. We have managed to define and implement a workable model of taking care for complex patients by enrolling complex patients and identifying professionals to be included in a multidisciplinary team. The functioning of the model is as follows: • Identification of complex patient by an automatic extraction string, containing specific criteria, uploaded to the GPs' HER • Selection and enrollment (signing an informed consent) of complex patients by GPs • Drafting of clinical ICP by GPs and sending of their patients lists to the Coordinator of Family and Community Nurses and the Coordinator of Primary Care • Performing a multidimensional assessment and drafting a nursing ICP by Family and Community Nurse (FCN) previously selected by the Coordinator of Family and Community Nurses • Performing a teleconsultation, arranged by the Coordinator of Primary Unit, with professionals belonging to the multidisciplinary team to discuss and share both the ICPs. • Performing monthly follow up assessments by FCN • Reviewing of ICPs by means of a second teleconsultation As for deviations from planned activities, we have not been able to: • Support the Health Department in the processes both of solving privacy issues and integration between the EHRs of the GPs and the FCN s. • Connect the Regional Teleconsultation Platform to the outpatient EHR. • Finally, we opted not to send a satisfaction survey to our NAWG but preferred to acquire this information through the usual meetings.
Problems? Unexpected findings? Please describe	As for deviations from planned activities, we have encountered difficulties to fulfil the actions related to the Health Department because they are out of our reach: likely a wider-ranging action involving more Regions and Departments would be needed. Moreover, even though we achieved the target value related to the number of patients enrolled, we had a significant drop out of GPs. We intend to go through this phenomenon and understand the reasons for it so as to improve this aspect of the model. Likewise, we have had difficulties on some functional and organizational aspects of the model of taking care, such as the arrangement of the agenda, the drafting of ICP, and communication/updating among professionals on some activities. All these aspects are listed in the act document in more detail and we plan to address and improve them in next months. In addition, during this cycle other areas of the three Tuscan Health Authorities have shown interest in transferring and implementing some components of our model in their sites. Currently, we have been working with them to facilitate this transfer.

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
			X

Study

Cycle number (1or 2)		**2**				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR	• N° of patients identified • N° of patient lists completed	• N°≥100 • N°=1 for each GP	• N°= 76 • N° =4	For this activity we have received just 4 lists of 10 expected due to a significant drop out of GPs.	We have contacted GPs by email trying to foster and encourage their enagment.	The mitigation action was not effective.
Support and monitoring activities	• Types of support and monitoring activities performed • Level of perceived satisfaction with support activities • Report about support and monitoring activities available (Y/N)	• Meetings, emails, support materials • >70% • Yes	• Meetings, email, support materials • Survey not submitted • Yes	No deviation from the planned activity except for not submitting a formal satisfaction survey to our NAWG.	As for the level of satisfaction we opted to collect all inputs, comments and suggestiongs during the usual meeting and contacts.	This methodology still allowed us to collect information concerning satisfaction: overall, we found a high satisfaction and involvement among our group which can be inferred from the achievements and obtained results
Communication plan addressed to regional and national stakeholders	• Webinar in November (Y/N) • N° of meetings with Regional stakeholders	• Yes • N°≥1 • N°≥1	• Yes (08/11 with 143 attendees) • N°=1 (26/09) • N°=2 (26/09,15/09)	No deviation from the planned activity	No mitigation action was needed	/

	• N° of meetings with National stakeholders					
Actions to support the Health Department in the process of solving privacy issues	Descriptive document of the undertaken actions (Y/N)	Yes	No	This activity is out of our reach	We contacted and met with expert professionals in this field	-The mitigation action was not effective: we couldn't define specific supporting actions
Define modalities for specialists' involvement to encourage adherence to the project	• N° and type of selected modalities • Descriptive document about modalities available (Y/N)	• N°=1 modality for each needed aspect • Yes	• All necessary aspects are set • Yes	No deviation from the planned activity	No mitigation action was needed	/
Define the roles and functioning of the integrated clinical network	Descriptive document about roles and functioning available (Y/N)	Yes	Yes	No deviation from the planned activity	No mitigation action was needed	/
Adaptation of outpatient EHR for ICP management and teleconsultation platform use	Regional teleconsultation platform linked to the outpatient EHR (Y/N)	Yes	No	There were not enough time and conditions to perform this activity	No specific mitigation action was performed, as our professionals were able to use the platform without the "direct connection" with the outpatient EHR.	/

Enrollment complex patients previously identified by GPs and signing of informed consent	• N° of complex patients enrolled • N° informed consents signed	• N° ≥50% of identified patients • N°=1 informed consent signed for each enrolled patient	• N°= 54% (41 tot) • N°=41	No deviation from the planned activity since the patient included into the sent lists have been enrolled and we have achieved the targe value. However, this resuls is negatively affected by the drop out of GPs already explained above.	No mitigation action was needed	/
Multidimensional assessment of enrolled complex patients	N° of complete multidimensional assessment performed	N ≥80% of enrolled patients	N=88% (36 tot)	No deviation from the planned activity	No mitigation action was needed	/
Definition of a “clinical ICP” and “nursing ICP” and sharing with multiprofessional teams	N° of ICPs defined and shared	N =100% of enrolled patients with multidimensional assessement completed	N =100% (36 tot)	No deviation from the planned activity	No mitigation action was needed	/
Periodic telephone, outpatient and/or home-based follow-up for complex patients	• N° of follow-up activities performed for each patient • Monitoring of the “Care intensity coefficient” (Y/N)	• N ≥80% of enrolled patients • Yes	• N= 92% (33 tot) • Yes	No deviation from the planned activity	No mitigation action was needed	/

Review of ICPs	N° of ICP reviewed	N° of ICPs reviewed ≥ 10% of enrolled patients with at least one follow up performed	N=3% (1 tot)	No enough time to perform thi activity	No specific mitigation action was performed	/
Actions to support the Health Department in the development of an integration process between the EHR of the GP and the FCN	Descriptive document of the undertaken actions (Y/N)	Yes	No	This activity is out of our reach	We contacted and met with expert professionals in this field, but we have not been able to define specific supporting actions.	The mitigation action was not effective: we couldn't define specific supporting actions
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR	• N° of patients identified • N° of patient lists completed	• N°≥100 • N°=1 for each GP	• N°= 76 • N° =4	For this activity we have received just 4 lists of 10 expected due to a significant drop out of GPs.	We have contacted GPs by email trying to foster and encourage their enagment.	The mitigation action was not effective.

Act

Cycle number	2		
Activity	**Maintain**	**Adapt**	**Abandon**
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR		We plan to better engage GPs during this phase and to provide our professionals with an easier method to draft/obtain the clinical ICP making the most of the EHR's functions	
Support and monitoring activities	This activity has been successfully completed		
Communication plan addressed to regional and national stakeholders	This activity has been successfully completed		

Actions to support the Health Department in the process of solving privacy issues			We plan to abandon this activity until something changes in the National Policy
Define modalities for specialists' involvement to encourage adherence to the project	This activity has been successfully completed		
Define the roles and functioning of the integrated clinical network		This activity has been successfully completed, but in order to improve the model is necessary: • To review the role and activities of the community physician/primary care coordinator	
Adaptation of outpatient EHR for ICP management and teleconsultation platform use			We plan to abandon the "direct connection" between the outpatient EHR and the teleconsultation platform. This connection seemed not to be central to the successful functioning of the model
Enrollment complex patients previously identified by GPs and signing of informed consent		This activity has been successfully completed but in order to improve the model is necessary: • To identify an easier method to get informed consent	
Multidimensional assessment of enrolled complex patients	This activity has been successfully completed		
Definition of a "clinical ICP" and "nursing ICP" and sharing with multiprofessional teams		This activity has been successfully completed but in order to improve the model is necessary: • To collaborate with decision-makers to formalize and recognize the teleconsultation activity as a "routine work activity" • To collaborate with decision-makers to identify an information system to facilitate, monitor and make teleconsultations sustainable	

		• To collaborate with decision-makers to identify an appropriate method for reporting teleconsultations	
Periodic telephone, outpatient and/or home-based follow-up for complex patients		This activity has been successfully completed but in order to improve the model is necessary: • To improve communication of follow up results towards multidisciplinary team • To balance the follow up actions according to patient care needs	
Review of ICPs	This activity has not been successfully completed due to shortage of time but it will be included in next plan		
Actions to support the Health Department in the development of an integration process between the EHR of the GP and the FCN		We plan to cooperate with regional professionals who are already involved in similar projects (ex. Projects under the Action Plan M6C2 addressing the interconnection and interoperability of existing systems)	

QUESTIONS	ANSWERS
Any new proposed action for the future?	We plan to add the following actions divided into different "macro areas": 1. Actions to better understand and gain more information about the critical issues and strengths of the model using a retrospective method: • Identify the problems and reasons that led GPs to abandon the project and how to address them • Assessment of the whole process and its usefulness/added value along with the professionals involved 2. Actions to address critical issues already emerged and shared during implementation: • Identify method/s of managing patients whose referring specialists are from private clinics/practices • Identify an easier and workable method to draft/obtain clinical ICP • Identify an easier and workable method to obtain informed consent • Review the role and activities of the community physician/primary care coordinator

	• Collaborate with decision-makers to formalize and recognize the teleconsultation activity as a “routine work activity” • Collaborate with decision-makers to identify an information system to facilitate, monitor and make teleconsultations sustainable • Collaborate with decision-makers to identify an appropriate method for reporting teleconsultations • Identify a method to improve the communication of follow up results to the multidisciplinary team 3. Actions to strengthen the evidence of the model and its dissemination: • Estimate the impact of the model results and test the model with higher numbers closer to the current demand of the local site (What would happen if you scaled up the model to the whole system? What is the required workload?) • Foster and support new implementations within the three Tuscan Health Authorities • Foster the “network & communication” side by disseminating the project to wider audience

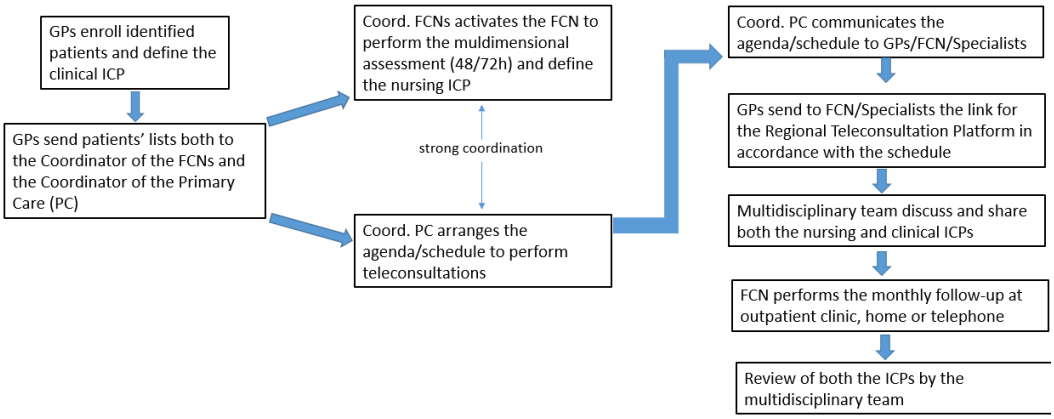
Post-implementation

ITEM	ANSWER
Title and abstract	
Title	*Piana di Lucca* District Zone's approach to taking care of complex patients by integrating hospital and primary care
Abstract	*Piana di Lucca* District Zone's approach proposes a variety of interventions promoting enhanced integration and proactivity of care for complex patients. These interventions include the identification of chronic patients and the promotion of communication and sharing of care plans among healthcare professionals. Our strategy takes place in a context where the increasing number of patients with multi-chronicity and management difficulties has become a public health priority, and because of this our approach is aligned with the National Chronicity Plan of Italy and the Health Care Initiative Model. The practice represents an opportunity to integrate and coordinate the efforts for providing timely and integrated care and it is built on the "Basque health strategy in ageing and chronicity: integrated care" in the framework of the Joint Action JADECARE.
Why did you start?	
Problem description	The increasing number of chronic diseases and the frequent presence of multimorbidity represent a public health priority and a shared challenge in both the Italian and European contexts. In particular, the situation of the complex patient, often characterized by fragmentation of care, polypharmacotherapy and a lack of reconciliation of individual DTCPs (Diagnostic and Therapeutic Care Paths) into one ICP, underlines the urgency of providing efficient, personalized and integrated care that promotes an improvement in the quality of services. As of 2010, both at national and regional level, the need and urgency of defining a functioning and sustainable management model for complex patients has been repeatedly emphasized. Several national and regional healthcare plans, healthcare programs and regional laws have been issued but a specific and pragmatic response on how to manage these patients is still lacking. Our project takes inspiration from the Health Care Initiative Model developed in Tuscany in 2016, focusing in particular on patients belonging to "target A", namely complex patients. In this perspective, the project intents to provide a model of taking care of complex patient that is workable and sustainable.
Available knowledge	
Rationale	
Specific aims	Identifying the population of complex patients and improving their care through enhanced integration and proactivity of primary and hospital care
What did you do?	
Context	Main output of the SWOT Analysis: As for the "Strengths" the availability of current good quality administrative health data, a consolidated organization of General Practice in Functional Territorial Aggregations, the presence of the Family and Community Nurses, the presence of Hospital-territory continuity project (ACOT), the use of electronic health records by general practitioners, nurses and specialist, a well-coordinated and consolidated outpatient specialist care at corporate level and leadership open to innovation have been crucial. Likewise, external "Opportunities" have been: National/Regional plans, laws and initiative supporting the topic of chronicity and the increased development of ICT tools as a result of the emergency situation. As for "Weaknesses" the heterogeneity and lack of interoperability between hospital, nursing and GP EHRs, shortage of time, professional and financial resources, communication difficulties between healthcare professionals have been challenging factors. Likewise, external "Threats" have been: healthcare professionals overwhelmed by COVID-19 pandemic, resistance of IT companies to integrate different EHRs, possible inertia in the reorganization of the Regional Health System, lack of strong

	regional governance for developing integrated models of "Proactive Health Care", National working table for identifying unique stratification system at a deadlock, privacy issues.
Intervention(s)	• Target population: complex patients with multi-chronicity and management difficulties • NAWG: 14 professionals, 5 from ARS Tuscany, such as project managers (PM), Scientific Project Manager, Administrative officer, Consultants, and 9 from Piana di Lucca District Zone, such as Director, Coordinator of Primary Care, Coordinator of Territorial Nursing Care, Coordinator of Family and Community Nurses, general practitioners (GPs) and Coordinators of two Functional and Territorial Aggregations, Coordinator of Internal Medicine Unit-San Luca Hospital, Coordinator of specialists' Functional and Territorial Aggregations, Coordinator of Citizen Participation Committee. • Intervention: We have defined and implemented a workable model of taking care for complex patients by enrolling complex patients and identifying professionals to be included in a multidisciplinary team. The functioning of the model is as follows: 1. Identification of complex patient by an automatic extraction string, containing specific criteria, uploaded to the GPs' EHR. Main inclusion criteria consist of: having ≥18y and 2 or more chronic conditions among IHD/CHF, CKD, COPD, DM. Furthermore, we have included additional criteria to enrich clinical information and a preferential criterion whereby priority for the enrolment has been given to the patients who are followed on an outpatient care level by the specialists of the O.U. of *Piana di Lucca* District. 2. Selection and enrolment (signing an informed consent) of complex patients by GPs 3. Drafting of a clinical ICP, containing at least medical history, therapies and diagnostic follow up exams, by GPs and sending of their patients lists to the Coordinator of Family and Community Nurses and the Coordinator of Primary Care 4. Carrying out a multidimensional assessment and drafting of a nursing ICP by Family and Community Nurse (FCN) previously selected by the Coordinator of Family and Community Nurses 5. Performing a teleconsultation, arranged by the Coordinator of Primary Unit, with professionals belonging to the multidisciplinary team to discuss and share both the ICPs. The multidisciplinary team consists of GP, FCN and from 2 to 5 specialists in accordance with the pathologies of the patient. In order to carry out the teleconsultations the Regional Platform for the Teleconsultation has been provided and used. 6. Performing monthly follow up assessments by FCN. The follow up can be carried out at outpatient clinic, home or by telephone 7. Review of ICPs by means of a second teleconsultation
Study of the Intervention(s)	We plan to study the impact of model qualitatively through a retrospective analysis of the process and the added value produced. To this end, three surveys, one for each participating professional (GP, FCN, Specialist) have been drafted. After the filling in, three focus groups will be carried out in order to examine results in more detail. We do not consider a quantitative impact survey to be feasible and meaningful due to privacy problems and the small sample size, which would generate results with background noise and statistically invalid data.

Measures	Main KPIs for the main actions: 1. Establish criteria and methods for GPs to identify complex patients using the outpatient EHR: N° and type of criteria to be used, List of criteria available (Y/N), Valid PoC test (Y/N) 2. GPs identification: N °of GPs identified, N° of GPs identified for each of the two FTA 3. Train all identified GPs on the methods to be used to identify complex patients: N° of training performed, N° hours spent for training, N° of identified GPs trained 4. Identify complex patients and including them in the "ICP Folder" of the outpatient EHR: N° of patients identified, N° of patient lists completed 5. Define modalities for nurses and specialists' involvement to encourage adherence to the project: Descriptive document about modalities available (Y/N) 6. Define the roles and functioning of the integrated clinical network: Descriptive document about roles and functioning available (Y/N) 7. Define the multidimensional assessment system for complex patients and follow-up tools: N° and type of assessment and follow up tools 8. Identification of the professionals within integrated and structured clinical network including (multiprofessional team): Document describing the composition of the integrated clinical network reporting (N° of GPs, Nurses and Specialists) 9. Enrollment complex patients previously identified by GPs and signing of informed consent: N° of complex patients enrolled, N° informed consents signed 10. Multidimensional assessment of enrolled complex patients: N° of complete multidimensional assessment performed 11. Sharing within multiprofessional team of the "clinical ICP" and "nursing ICP": N° of ICPs defined and shared 12. Periodic telephone, outpatient and/or home-based follow-up for complex patients: N° of follow-up activities performed for each patient, Monitoring of the "Care intensity coefficient" (Y/N) 13. Review of ICPs: N° of ICPs reviewed 14. Communication plan addressed to regional and national stakeholders: Webinar (Y/N), N° of meetings with Regional stakeholders, N° of meetings with National stakeholders 15. Actions to support the Health Department in the process of solving privacy issues: Descriptive document of the undertaken actions (Y/N) 16. Actions to support the Health Department in the development of an integration process between the EHR of the GP and the FCN: Descriptive document of the undertaken actions (Y/N)
Analysis	Not applicable
What did you find?	
Results	Main results for the main actions: 1. Establish criteria and methods for GPs to identify complex patients using the outpatient EHR: an automatic extraction string, containing specific criteria, has been elaborated and uploaded to the GPs' HER. The string consists of 3 inclusion criteria (mandatory, preferential and additional) and 2 exclusion criteria. 2. GPs identification: At the beginning, 10 GPs have been successfully identified to join the project, with a slight deviation concerning the composition of the group according to the AFT they belong to. 3. Train all identified GPs on the methods to be used to identify complex patients: 2 training sessions (2h30) have been carried out and all identified GPs have attended. 4. Identify complex patients and including them in the "ICP Folder" of the outpatient EHR: there has been a slight deviation from the number of patients identified (76/100) due to

a lack of time. However, the most important issue has been that we have just received 4 patients' lists of 10 expected due to a significant drop out of GPs (6/10).
5. Define how to involve nurses and specialists to encourage adherence to the project: these activities, due to lack of time and professional resources have taken longer than expected.
6. Define the roles and functioning of the integrated clinical network:



*Coordinator of Family and Community Nurses (Coord. FCNs)

7. Define the multidimensional assessment system for complex patients and follow-up tools: all assessment and follow up tools have been set for each relevant aspect. It has been decided to maintain the tools already in use by the FCNs to which the following tools have been added on the basis of the oGP Basque: Up&Go Test and Follow up questionnaire. Moreover, a flow chart defining the modalities on how to carry out the follow up has been elaborated.
8. Identification of the professionals within integrated and structured clinical network including (multiprofessional and multidisciplinary team): 4 GPs, 5 Specialists (Coordinators of Cardiology, Pulmonology, Nephrology, Diabetology, Internist Medicine) and 12 FCNs have actually participated. Internist Medicine has encountered more difficulties to take part in teleconsultations as it doesn't provide currently outpatient care.
9. Enrollment complex patients previously identified by GPs and signing of informed consent: 41 patients have been enrolled.
10. Multidimensional assessment of enrolled complex patients: from 01/08/2022 to 19/12/2022, 36 multidimensional assessments have been performed
11. Sharing within multiprofessional team of the "clinical ICP" and "nursing ICP": from 05/08/2022 to 21/12/2022, 36 teleconsultations have been carried out
12. Periodic telephone, outpatient and/or home-based follow-up for complex patients: from 26/08 to 18/01, 33 patients have received at least 1 follow up. Among them, 6 patients have received 2 follow ups, 3 patients up to 3 follow ups and 11 patients up to 4 follow ups.
13. Review of ICPs: Just 1 review has been performed due to lack of time
14. Communication plan addressed to regional and national stakeholders: several meetings and webinars concerning the dissemination of the project have been successfully performed. Thanks to these communication activities other Tuscan sites intend to implement our project in their contexts. An intense supportive work to foster these "branching activities" is already in place.

	15. Actions to support the Health Department in the process of solving privacy issues: attempts to solve this aspect have been tried. However, this activity seems out of our reach, an intervention from the National level is needed. 16. Actions to support the Health Department in the development of an integration process between the EHR of the GP and the FCN: this activity due to its complexity has not been fully addressed. It is planned to work together with the regional professionals already involved in these activities under the NRRP
What does it mean?	
Summary	Professionals belonging to the ARS Tuscany and *Piana di Lucca* District Zone have outlined and implemented a viable model of taking care of complex patients characterized by an integration between territorial and hospital health services that results into the identification of multiprofessional and multidisciplinary teams. The team consists of the following professionals: General Practitioner (GP), Family and Community Nurses (FCN) and Specialists. The project, implemented in the *Piana di Lucca* District Zone, is divided into two main phases. The first phase consists in the identification of complex patients by means of an extraction string uploaded to GPs EHR, and the enrolment, after signing the informed consent, of the patients selected by them. By sending of patients' lists to the Coordinator of Primary Care and to the Coordinator of Family and Community Nurses (FCN), the second phase begins, denoted by: execution of a multidimensional assessment by FCN, carrying out of a teleconsultation of the multidisciplinary team in which both the clinical and nursing ICPs are outlined and shared, and finally a monthly structured follow-up system conducted by the FCN. Results: from 1/08/2022 to 18/01/2023 the involved professionals performed 36 multidimensional assessments, carried out 36 teleconsultations and performed 33 follow-up assessments.
Interpretation	The project has been developed under the European Project JADECARE, which intends to reinforce the capacity of health authorities to successfully address important aspects of health system transformation, in particular the transition to digitally enabled, integrated, person-centred care. To this end, it supports the knowledge transfer from “Original Good Practices” into the healthcare systems of the participating partners. The support has been structured and concretized in a series of planning, execution, reflection and evaluation processes that have allowed to build a solid management ground for the implementation of our “Model of taking care of complex patients”. In particular, the Model has sought to respond to the needs, emphasized at both regional and national level, on the importance of outlining a management model for the complex patient. The emerged model, based on improving communication between professionals and on overcoming the fragmentation of care, has provided the Region of Tuscany with valuable elements that can be used to improve the pathway for the management and care of complex patients.
Limitations	The generalizability of the project is influenced by the Tuscan context in which it has been developed. In fact, our context, thanks to the numerous projects, models and programs proposed over the years to tackle chronicity, has proved fertile ground for this project. Moreover, privacy problems and COVID pandemic have put a strain on implementation, requiring greater efforts from both management and healthcare professionals
Conclusions	The project has produced valuable elements that can be used to improve the pathway for the management and care of complex patients. Evidence of this is that other Local Health Authorities of Italy have also requested to implement the project (without funding) on their sites. So far, five new implementations are sprouting up and ARS Tuscany has been working with them to foster and enhance these processes. Moreover, ARS Tuscany, in order to foster a better replicability and sustainability, has confirmed its commitment to implement and develop new actions to improve the

	model.
Other information	
Funding	The project did not provide funding for its development. However, the project took place in the framework of the European Project JADECARE, which financed the transfer of knowledge.

Central Administration of the Health System Portugal (ACSS)

Pre-implementation

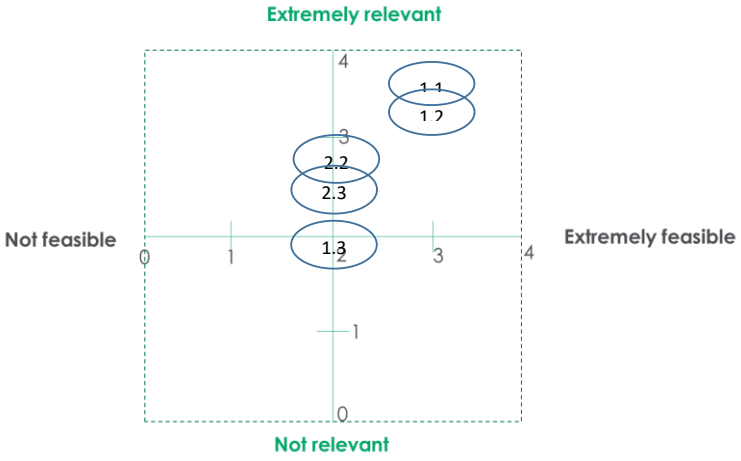
Scope definition

Identified and prioritized needs

Block	Prioritized needs
B1 Risk stratification	Classify and identify the patients (1,3)
	Predict needs of care (2,4,12)
	Performance assessment, commissioning and financing (6,7)
	Qualification of the prescription (10)
B2 Integrated care	Build information systems' adaptations to take advantage of risk adjustment (5,8)
	Management of integrated pathways (9,11)
	Qualification of the prescription (10)

Assessment of Core Features

Core feature	Relevance	Feasibility
CF1.1 Stratification data extraction process and construction of dashboard	4	3
CF1.2 Classification of patients	4	3
CF1.3 Stratification in the framework contract	2	2
CF2.2 deployment of integrated communication and information systems	3	2
CF2.3 Care coordination and communication between health providers	3	2



Final Core Features selected

CF1.1 - Risk stratification
CF1.2 - Classification of patients

CF1.3 - Stratification in the Framework Contract
CF2.2 - Deployment of integrated communication and information systems
CF2.3 - Care coordination and communication between health providers

Situation analysis

	Strengths	Weaknesses
Internal	• We have a great amount of data about care provision • The information can be transformed into the variables needed to be incorporated into the stratification instrument; • Some information about the patients is already shared between levels of care • Good integration practices are already in place - case management programs, therapeutic conciliation programs, integrated care pathways, telehealth program, antibiotic prescription program between inpatient and outpatient settings (including primary care); Hospital telepharmacy, among others • There are management autonomy projects in some Groups of primary care centers (ACeS) • There is an alignment of the professional discourse on integration of care, inside the institutions, and availability to discuss the topic • Leaderships at the local level, committed to the integration of care • Several tools are available to facilitate these care models (teleconsultation, electronic prescription, telemonitoring, etc…)	• Our data is not information, it is not organized so that it can be used by professionals • Information on risk, as well as other information useful for clinical governance, is not available to professionals • The information currently shared between levels of care is insufficient (e.g. nursing, individual care plan) • The shared personal electronic health record is not in place • Information management tools are lacking • Currently existing ISs do not respond to the needs of patient-centred practice, they were not built for this purpose • Professionals are not motivated to register the coded / standardized information, necessary for stratification • The data used to stratify may no longer be updated at the time of the intervention and impair its effectiveness. The user may have different needs than those foreseen • Lack of a culture of evaluation of local good practices that are already in place in order to improve them • Lack of providers autonomy • Difficulties in allocating resources within the scope of information and communication systems and lack of timely planning
	Opportunities	**Threats**
External	• The Recovery and Resilience Plan foresees 345M € for digital transformation in health • The Recovery and Resilience Plan includes the definition of a strategy for risk stratification and financing to increase the capacity of primary health care to provide care in the community / home • The Directorate General of Health (DGS) already has work done on care pathways • The pandemic was a leverage of interprofessional and interinstitutional work and increased the need for integration and coordination of care	• Absence of a MOH strategy for Integration of Care / patient-centered care • The care pathways produced by the DGS are not user friendly • Lack of data connection from all care areas, per patient • Lack of funding alignment with patient-centered care models / care integration • Lack of objectives alignment between levels of care

• The pandemic has leveraged the use of tools that facilitate integration and patient-centered care, namely telehealth. • There are 2 Business Intelligence softwares in operation - hospital and primary health care – and the possibility of having a platform that aggregates both. • Shared Services of the Ministry of Health (SPMS) has experience with other IS international projects • SPMS can take advantage of international funds to leverage local projects, in terms of IS, • It is possible to use artificial intelligence algorithms that can facilitate coding • Support from the Basque Country to improve our practice • Existence of some Local Health Units (ULS), organizations that are already integrated (hospital and primary care)	

Strategic Intervention Areas

Strategic intervention area	Priority	Ranking
Classification and identification of patients through a population, systematic and predictive risk approach is to be done	5	1
Unresolved continuity of care between levels	4	2
We still need to adapt information systems to allow all professionals and patients to access shared information, including information on risk stratification	3	3
Lack of care needs prediction, based on risk	2	4
The inclusion of the risk stratification results in commissioning and financing is to be done	1	5

Definition of the LGP and LAP

Local Good Practice

Local Good Practice	Implementation of population risk stratification in Portugal and improvement of continuity of care	
Target population	**Setting(s)**	
Pilot in 5 providers (1.004.546 inhabitants)	National Health Service. In three regions of the country (Norte, Centro e Alentejo) different in population and density.	
Main aim		
Improve citizens quality of life, continuity of care and system efficiency, based on risk stratification		
Outcomes	**Local Core Features and their Components**	**Inputs**

• Population groups and it´s needs identified and risk stratified • Comunication among professionals facilitated • Timely and adequate provision of care, according to the needs • Adjusting financing and commissioning to the population needs • Health system sustainability	**To develop a population approach based on risk stratification** • Training on risk stratification • Implementation of the risk stratification instrument • Data extraction and processing mechanisms • Classification and stratification of the population • Identification of needs • Dashboards for data visualization and analysis • Explore other possible uses for the stratification outputs that could come up after the implementation of the risk stratification and that we do not know at the moment **Propose changes to commissioning and financing risk adjusted** • Local health Units Risk adjusted financing • Indicators to include in the commissioning **Develop instruments that facilitate the coordination of care and communication among professionals** • New Care pathways for the main chronic diseases (multimorbidity, COPD, CHF, diabetes) • Programs targeted at different risk strata (Case manager, expansion of the discharge management teams, reference internist) **Integrate information systems in the electronic health record** • Shared electronic health record as central point of the clinical process • Integration of the individual plan of care in the electronic health record	• Human resources (health and IS, local managers) • Local leaders • Investment • Information systems (IS) • Stratification instrument • Training • citizens • Decision makers

	• Integration of the care pathways in the electronic health record • Area for the management of the chronic prescription	

General description
Implementation of risk stratification as a basis for identifying needs by population groups that will allow the adaptation of care models, using information and communication systems, as well as financing and commissioning as facilitators.
Local Core Feature 1
Develop a population approach based on risk stratification
Local Core Feature 2
Propose changes to the commissioning and financing based on population risk stratification
Local Core Feature 3
Integrate the information systems in the Electronic Health Record
Local Core Feature 4
Develop instruments that facilitate the coordination of care communication among professionals

Local Action Plan

Local Good Practice	**Implementation of risk stratification in Portugal and improvement of continuity of care**
Target population	**Setting**
Pilot in 5 providers (1.004.546 inhabitants)	National Health Service. National Health Service. In three regions of the country (Norte, Centro e Alentejo) different in population and density
Main aim	
Improve the citizens quality of life of citizens, increase the continuity of care and the efficiency of the system, based on risk stratification	
General description	
Implementation of risk stratification as a basis for identifying needs by population groups that will allow the adaptation of care models, using information and communication systems, as well as financing and commissioning as facilitators.	
Related oGPs and CFs	Basque oGP CF 1.1, 1.2, 1.3, 2.2 and 2.3
Local Core Feature 1	**Develop a population risk stratification approach**
SMART objective	
By the end of JADECARE (dec 2022), ACSS will have defined a national approach for population risk stratification that will contribute to a more people-centered system, supporting clinical and management decision-making, with an impact on the sustainability of the NHS.	

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
Training of healthcare professionals on risk stratification	• National School of Public Health (ENSP)	• Professors • Specialists on the dashboards of the chosen instrument	• The National School of Public Health, ACSS and/or IASIST or 3M will train	2 month Starting in December 2021	• Nº of training sessions • Nº and profile of the trained professionals

	• 3M or IASIST or ACSS	• Study Visits to the Basque Country oGP	professionals from the 5 pilots.		
Decide the risk stratification instrument to be implemented	ACSS	ACSS	The instrument will be implemented in the 5 pilots	1 month Starting in november 2021	Decision about the instrument (Y/N)
Configure data extraction and processing mechanisms	• ACSS • 3M or IASIST or ACSS	ACSS experts	This will be done at the central level (ACSS)	6 months Starting in february 2022	• Database creation (Y/N) • % of technical execution completed • % of functional execution completed
Classify and stratify the population	• ACSS • Pilots	ACSS experts	Pilot project Local health unit *Litoral Alentejano* (ULSLA) and Local health unit *Alto Minho* (ULSAM)	1 month Starting in september 2022	• Nº of criteria used in stratification • Population stratified (Y/N)
Design and adapt the dashboards	• ACSS • Pilots • ENSP	• ACSS experts • Primary care and hospital doctors • Primary care and hospital nurses • Managers • Other professionals	Pilot project Local health unit *Litoral Alentejano* (ULSLA) and Local health unit *Alto Minho* (ULSAM)	3 months Strating in october 2022	• % completeness
Local Core Feature 2	**Propose changes to the commissioning and financing risk adjusted**				

SMART objective					
By the end of JADECARE (dec 2022), ACSS will have defined a proposal to risk adjust financing and commissioning					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Test several scenarios for the risk adjusted financing in the local Health units	• ACSS • Local Health Units	• Professionals from ACSS • Risk stratification instrument	Pilot project Local health unit *Litoral Alentejano*	6 months Starting in march 2022	• Proposal for the local health units risk adjusted financing (Y/N)
Define measurable indicators for risk adjusted performance assessment, to promote integration of care	• ACSS • ENSP • Managers from primary care and hospitals	Several professionals	Pilot project Local health unit *Litoral Alentejano*	10 months Starting in december 2022	• Nº and profile of the professionals involved • Nº of measurable indicators for risk adjusted performance assessment, to promote integration of care
Local Core Feature 3	**Develop instruments that facilitate the coordination of care communication among professionals**				
SMART objective					
By the end of JADECARE (dec 2022), the group will have designed a set of instruments to facilitate the coordination of care and communication among professionals, contributing to more integrated and patient-centred care					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Define care pathways for each chronic disease – multimorbidity, CHF, Diabetes, COPD,	• Primary care and hospital doctors • Primary care and hospital nurses • Professionals from the social sector • SPMS • Patients • DGS	• Professionals from the different levels of care • Basque Country oGP clinical pathways	• Pilot project ACeS *Póvoa Varzim/Vila do Conde* (Diabetes) • Pilot project ACeS *Porto Oriental* • Pilot project Hospital da *Figueira da Foz* (HDFF) (COPD and CHF)	10 months Starting in november 2021	• Nº and profile of the professionals involved in the design of the multimorbidity care pathway • Nº and profile of the professionals involved in the design of the CHF care pathway

			• Pilot project Local Health Unit *Litoral Alentejano* (ULSLA) (multimorbidity and CHF)		• Nº and profile of the professionals involved in the design of the diabetes care pathway • Nº and profile of the professionals involved in the design of the COPD care pathway • Proposal for multimorbidity care pathway (Y/N) • Proposal for the CHF care pathway (Y/N) • Proposal for the diabetes care pathway (Y/N) • Proposal for the COPD care pathway (Y/N)
Define programs for the different risk strata (case manager, expansion of discharge management team's role, reference internist)	• Primary care and hospital doctors • Primary care and hospital nurses • Professionals from the social sector • SPMS	• Professionals from the different levels of care • Basque Country oGP study visits • Session of liason nurse from the Basque Country	• Pilot project ACeS *Porto Oriental* • Pilot project Local Health Unit *Litoral Alentejano* (ULSLA)	13 months Starting in november 2021	• Nº and profile of the professionals involved in the design of the case management program • Nº and profile of the professionals involved in the design of the expansion of the discharge

					management teams roles • Nº and profile of the professionals involved in the design of the role of the reference internist • Nº of criteria for admission in each program • Programs final proposal (Y/N)

Local Core Feature 4	**Integrate the information systems in the Electronic Health record**

SMART objective

By the end of JADECARE (dec 2022), the ACSS will have defined an action plan, to be implemented by the SPMS, for the remodeling of the single shared electronic health record, including the integration of the designed instruments, which will facilitate the coordination of care and communication among professionals, with an impact on the continuity of care and sustainability of the health system.

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
Define the set of additional information to be shared in the electronic health record (for example, prescriptions, assessment scales, medical tests)	• Primary care and hospital doctors • Primary care and hospital nurses • Professionals from the social sector • SPMS	• Information System experts • Professionals of the different levels of care • Basque Country oGP study visit	• Pilot project ACeS *Baixo Mondego* • Pilot Project *Hospital da Figueira da Foz* (HDFF) • Pilot project Local Health Unit *Litoral Alentejano* (ULSLA)	5 months Starting in november 2021	• Nº and profile of the professionals involved in the definition of the set of information to be shared in the electronic Health record • Nº of itens to be shared in the electronic Health record (Y/N)
Design an electronic chart for the management of chronic medicines	• Primary care and hospital doctors • Primary care and	• Information System experts • Professionals from different	Pilot project ACeS *Baixo Mondego*	5 months Starting in november 2021	• Nº and profile of the professionals involved • Proposal for an area for

based on the dosage guide	hospital nurses • Professionals from the social sector • SPMS	levels of care			the management of chronic medicines (Y/N)
Define the Plan for the implementation of the electronic health record as the core of the patient process, including the instruments designed in the LCF3	• Primary care and hospital doctors • Primary care and hospital nurses • Professionals from the social sector • SPMS	• Information System experts • Professionals from the different levels of care • Basque Country oGP study visit	• Pilot project ACeS *Baixo Mondego* • Pilot project Local Health Unit *Litoral Alentejano* (ULSLA)	6 months Starting in december 2021	• Implementation Plan (Y/N) • Nº of goals covered by the plan

Implementation

1st PDSA Cycle

Plan

LCF1	Develop a population risk stratification approach							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Training of health care professionals on risk stratification	Define the contents	• 1 expert on the risk stratification instrument (ACSS) • 1 academic expert on risk stratification (ENSP) • 1 medical doctor (ULSAM)	1/12/2021 to 31/12/2021	• Nº of training sessions • Nº and profile of the trained professionals	Project manager ENSP	31/1/2022	Sent by email	• 3 sessions • 20 professionals in each pilot
	Schedule the training sessions	1 assistant (ENSP)	1/12/2021 to 31/12/2021					
	Do the training sessions	• 1 expert on the risk stratification instrument (ACSS)	1/1/2022 to 31/1/2022					

		• 1 academic expert on risk stratification (ENSP)						
Decide the risk stratification instrument to be implemented	Compare risk stratification instruments	• 2 experts on the risk stratification instrument (ACSS) • 1 decision maker (ACSS)	1/11/2021 to 30/11/2021	Decision about the instrument (Y/N)	Project manager (ACSS)	30/11/2021	Follow up meeting	yes
Configure data extraction and processing mechanisms	Public tender for license purchasing	• 1 technical officer (ACSS) • 1 expert on risk stratification instruments (ACSS)	1/2/2022 to 30/4/2022	• Database creation (Y/N) • % of technical execution completed	Project manager (ACSS)	3/8/2022	Monitoring during the monthly follow up meting	• Yes • 100%
	Prepare the databases to feed the grouper	2 information technologies experts (SPMS)	1/4/2022 to 31/7/2022					

LCF2	Propose changes to the commissioning and financing risk adjusted			
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**

				KPI	Who	When	How	Target
Test several scenarios for the risk adjusted financing in the local Health units	Select other adjustment criteria besides risk	• 2 Financing and commissioning experts (ACSS) • 1 managers (ULS)	1/3/2022 to 30/4/2022	Proposal for the local health units risk adjusted financing (Y/N)	Project manager (ACSS)	3/9/2022	Monitoring during the monthly follow up meting	yes
	Compare scenarios for risk adjusted financing	• 2 Financing and commissioning experts (ACSS) • 1 managers (ULS)	1/5/2022 to 30/8/2022					
Define measurable indicators for risk adjusted performance assessment, to promote integration of care	Create a group to define measurable indicators for risk adjusted performance assessment, to promote integration of care	• 1 manager (ACSS) • 1 manager (ULSLA)	1/12/2021 to 31/12/2021	• Nº and profile of the professionals involved • Nº of measurable indicators for risk adjusted performance assessment, `to promote integration of care`	Project manager (ACSS)	5/1/2022	Monitoring during the monthly follow up meting	• 2 comissioning experts (ACSS) • 1 academic expert (ENSP) • 2 Managers from primary care and hospitals (ULSLA) • 2 health professionals from primary care and hospitals (ULSLA) • 4
	Define a set of measurable indicators for risk adjusted performance assessment, to promote integration of care	• 2 comissioning experts (ACSS) • 1 academic expert (ENSP) • 2 Managers from primary care and hospitals (ULSLA) • 2 health professionals from primary care and hospitals (ULSLA)	1/1/2022 to 30/9/2022					

LCF3	Develop instruments that facilitate the coordination of care communication among professionals							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Define care pathways for each chronic disease – multimorbidity, CHF, Diabetes, COPD,	Create groups to define care pathways	• 4 Managers from primary and hospital care • 1 Manager from SPMS • 1 Representative from Patient association • 1 Manager from DGS	1/11/2021 to 30/11/2021	For each clinical pathway (CHF, Diabetes, COPD, multimorbidity): • Nº and profile of the professionals involved in the design of the care pathway • Proposal for each care pathway (Y/N)	Representative from each pilot in the NAWG	2/12/2021 7/9/2022	Sent by email	For each clinical pathway, at least: • 1 manager • 2 medical doctors from primary and hospital care • 2 nurses from primary care and hospital care • 1 patient • 1 social assistant For each care pathway: Yes
	Training session in co production	7/9/22	To be defined					
	Write a care pathway document for each chronic disease	1 group member from each pilot	1/12/2021 to 31/8/2022					
Define programs for the different risk strata (case manager,	Create groups to define programs for	2 managers	1/11/2021 to 30/11/2021	For each program:	Representative from each pilot in the NAWG (Aces	2/12/2021 5/1/2023	Sent by email	For each program, at least:

expansion of discharge management teams role, reference internist)	the different risk strata			• Nº and profile of the professionals involved • Nº of criteria for admission in each program • Programs final proposal (Y/N)	*Porto Oriental*, ULSLA)			• 1 manager • 2 medical doctors from primary and hospital care • 2 nurses from primary care and hospital care • 1 patient • 1 social assistant • At least 3 criteria
	Write a proposal for each program	• 2 Primary care and hospital doctors • 2 Primary care and hospital nurses • 2 Professionals from the social sector	1/12/2021 to 31/12/2022					Yes

LCF4	Integrate the information systems in the Electronic Health record							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Define the set of additional information to be shared in the	Create a group to define the set of additional information to be shared in the	5 managers (ACesBM, HDFF, ULSLA, SPMS, ACSS)	1/11/2021 to 30/11/2021	• Nº and profile of the professionals involved in the	Representative from each organization in the NAWG (ACesBM,	2/12/2021 6/4/2022	Monitoring during the monthly follow up meting	Yes

electronic health record (for example, prescriptions, assessment scales, medical tests)	electronic health record			definition of the set of information to be shared in the electronic Health record • Nº of itens to be shared in the electronic Health record (Y/N)	HDFF, ULSLA, SPMS, ACSS)			
	Define the set of additional information to be shared in the electronic health record	• 2 Primary care and hospital doctors • 2 Primary care and hospital nurses • 2 Professionals from the social sector • 4 information system experts (SPMS, ACSS ULSLA)	1/12/2021 to 30/3/2022					
Design an electronic chart for the management of chronic medicines based on the dosage guide	Create a group to design an area for the management of chronic medicines based on the dosage guide	1 manager (ACeSBM)	1/11/2021 to 30/11/2021	• Nº and profile of the professionals involved • Proposal for an area for the management of chronic medicines (Y/N)	Group leader (ACeS BM)	2/12/20216/4/2022	Monitoring during the monthly follow up meting	• 2 Primary care and hospital doctors (ACeS *Baixo Mondego*, HDFF) • 1 information technologies
	Design a mock up of the area for the	• 2 Primary care and hospital	1/12/2021 to 30/3/2022					

	management of chronic medicines based on the dosage guide	doctors (ACeS *Baixo Mondego*, HDFF) • 1 information technologies expert (SPMS)						expert (SPMS) • Yes
Define the Plan for the implementation of the electronic health record as the core of the patient process, including the instruments designed in the LCF3	Define the Plan for the implementation of the electronic health record as the core of the patient process, including the instruments designed in the LCF3	• 2 Primary care and hospital doctors (ACeS *Baixo Mondego*, HDFF) • 2 Primary care and hospital nurses • 1 information system expert (ULSLA) • 1 information system expert (ACSS)	1/12/2021 to 30/5/2022	• Implementation Plan (Y/N) • Nº of goals covered by the plan	Project manager (SPMS)	1/6/2022	Sent by email	• Yes • At least 3

		• 2 information system experts (SPMS) • 1 inernational projects manager (SPMS)						

Do

Cycle number	**1**	
Activity	**KPI**	**Actual value**
LCF1-Develop a population risk stratification approach		
Training of health care professionals on risk stratification	• Nº of training sessions • Nº and profile of the trained professionals	• 0 • 0
Decide the risk stratification instrument to be implemented	Decision about the instrument (Y/N)	N
Configure data extraction and processing mechanisms	• Database creation (Y/N) • % of technical execution completed	• Y • 70%
***LCF2*- Propose changes to the commissioning and financing risk adjusted**		
Test several scenarios for the risk adjusted financing in the local Health units	Proposal for the local health units risk adjusted financing (Y/N)	N
Define measurable indicators for risk adjusted performance assessment, to promote integration of care	• Nº and profile of the professionals involved • Nº of measurable indicators for risk adjusted performance assessment, to promote integration of care	• 0 • 0
LCF3-Develop instruments that facilitate the coordination of care communication among professionals		
Define care pathways for each chronic disease – multimorbidity, CHF, Diabetes, COPD,	• For each clinical pathway (CHF, Diabetes, COPD, multimorbidity): • Nº and profile of the professionals involved in the design of the care pathway • Proposal for each care pathway (Y/N)	**Diabetic foot** (ACeS PVVC) 8 professionals: 2 primary care doctors, 2 interns primary care doctors, 2 primary care nurses, 1 internal medicine hospital doctor, 1 hospital nurse **Multimorbidity** (ULSLA) 9 professionals: 3 primary care doctors, 2 internal medicine hospital doctors, 1 primary care nurse, 1 emergency care hospital nurse, 1 hospital social worker, 1 primary care social worker **Chronic heart failure** (ULSLA) 9 professionals: 3 internal medicine hospital doctor, 2 primary care doctors, 2 primary care nurses, 1 hospital nurse, 1 primary care social worker **Chronic heart failure** (HDFF) 9 professionals: 3 hospital medical doctors, 4 hospital nurses, 2 hospital

		technicians, 1 hospital pharmacist, 1 hospital social worker, 1 hospital nutritionist, 1 hospital psychologist, 1 hospital administrative. **COPD:** 3 hospital medical doctors (pneumology), 1 hospital psychiatrist, 2 hospital nurses, 2 technicians, 1 hospital social worker, 1 hospital nutritionist, 1 hospital psychologist, 1 hospital administrative, 2 primary care doctors **Chronic heart failure** (ACeS *Porto Oriental)* N
Define programs for the different risk strata (case manager, expansion of discharge management team's role, reference internist)	For each program: • Nº and profile of the professionals involved • Nº of criteria for admission in each program • Programs final proposal (Y/N)	**Case management programme (ULSLA) –** 5 (1 internal medicine hospital doctor, 2 primary care doctor, 2 primary care nurses) **Expansion of discharge management team's role (ULSLA) -** 4 (1 hospital nurse, 1 internal medicine hospital doctor, 2 primary care nurses) **Medication reconciliation in mental health (ACeS *Porto Oriental*)** 0 N
LCF4-Integrate the information systems in the Electronic Health record		
Define the set of additional information to be shared in the electronic health record (for example, prescriptions, assessment scales, medical tests)	• Nº and profile of the professionals involved in the definition of the set of information to be shared in the electronic Health record • Nº of itens to be shared in the electronic Health record	• 1 primary care manager, 5 information system experts (ULSLA, ACSS, SPMS), 1 hospital medical doctor, 1 hospital manager, 1 primary care nurse (ULSLA) • 0
Design an electronic chart for the management of chronic medicines based on the dosage guide	• Nº and profile of the professionals involved • Proposal for an area for the management of chronic medicines (Y/N)	• 1 primary care manager, 5 information system experts (ULSLA, ACSS, SPMS), 1 hospital medical doctor, 1 hospital manager • Y
Define the Plan for the implementation of the electronic health record as the	• Implementation Plan (Y/N)	• Y • 0

core of the patient process, including the instruments designed in the LCF3	• Nº of goals covered by the plan	

QUESTIONS	ANSWERS
What was actually implemented? Any deviation from the planned actions	We have the databases prepared to feed the groupers (ACG and CRG). The groups that were created in each pilot are working in the clinical pathways. It was defined a National strategy for the electronic health record. There were deviations in time and approach regarding the risk stratification implementation. We planned 1 month to decide the instrument. However, the ACSS´s Executive board decision was to test several instruments before deciding, according to a National strategy for the implementation of population risk stratification. This study will take one year after the license purchasing of ACG and CRG. The training in risk stratification is delayed because it only makes sense close to the moment of making the tool available for health professionals. All the activities regarding the risk adjusted financing and indicators was delayed because it depends on the results of the risk stratification that is delayed. Regarding the electronic health record activities, there was the need to wait for a National Strategy for the EHR that was not expected, in order to match, as far as possible, the work done in JADECARE with the strategy.
Problems? Unexpected findings? Please describe	Changes in the approach to implement risk stratification tool delayed our activities. Instead of implementing one tool as planned, there was a decision at the national level to compare 3 tools to support the decision making. The public tender is a very complex and slow process, more than we expected. The inclusion of the patient perspective in the clinical pathways was not planned in a structured way. However, we realized that the pilots were in different levels of involving patients, therefore we decided to do training in coproduction. COVID was a major factor to delay the work on clinical pathways because they are being done by health professionals that were overwhelmed Clinical pathway for HF will have implementation problems since there is a medical test essential for the diagnosis in primary care that is not reimbursed when prescribed in that context (NT ProBNP).

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
	X		

Study

Cycle number		1				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
LCF1-Develop a population risk stratification approach						

Training of health care professionals on risk stratification	• Nº of training sessions • Nº and profile of the trained professionals	• 3 sessions • 20 professionals in each pilot	• 0 • 0	The training in risk stratification is delayed because it only makes sense after making the tool available for health professionals	Reschedule for September 2022	
Decide the risk stratification instrument to be implemented	Decision about the instrument (Y/N)	Yes	N	There was a decision to test several risk stratification tools to support decision making, according to a National strategy for the implementation of population risk stratification	It will be made available one of the tools until the study of the 3 is finished.	The health professionals can start using a risk stratification tool despite the final decision
Configure data extraction and processing mechanisms	• Database creation (Y/N) • % of technical execution completed	• Yes • 100%	• Y • 70%			
LCF2-Propose changes to the commissioning and financing risk adjusted						
Test several scenarios for the risk adjusted financing in the local Health units	Proposal for the local health units risk adjusted financing (Y/N)	Yes	N	This activity depends on the risk stratification tool	Organization of a national event, in September 2022, about financing and commissioning models including discussion of proposals	The financing model has other adjustments besides risk stratification that we could start working on

					from the providers	
Define measurable indicators for risk adjusted performance assessment, to promote integration of care	• Nº and profile of the professionals involved • Nº of measurable indicators for risk adjusted performance assessment, to promote integration of care	• 2 comissioning experts (ACSS) • 1 academic expert (ENSP) • 2 Managers from primary care and hospitals (ULSLA) • 2 health professionals from primary care and hospitals (ULSLA) • 4	• 0 • 0	This activity depends on the risk stratification tool		
LCF3-Develop instruments that facilitate the coordination of care communication among professionals						
Define care pathways for each chronic disease – multimorbidity, CHF, Diabetes, COPD,	For each clinical pathway (CHF, Diabetes, COPD, multimorbidity): • Nº and profile of the professionals involved in the design of the care pathway • Proposal for each care pathway (Y/N)	For each clinical pathway, at least: • 1 manager • 2 medical doctors from primary and hospital care • 2 nurses from primary care and hospital care • 1 patient	**Diabetic foot** (ACeS PVVC) 8 professionals: 2 primary care doctors, 2 interns primary care doctors, 2 primary care nurses, 1 internal medicine hospital doctor, 1 hospital nurse **Multimorbidity** (ULSLA) 9 professional	None at this moment, but expected to be delayed because of the training in coproduction		

		• 1 social worker For each care pathway: Yes	s: 3 primary care doctors, 2 internal medicine hospital doctors, 1 primary care nurse, 1 emergency care hospital nurse, 1 hospital social worker, 1 primary care social worker **Chronic heart failure** (ULSLA) 9 professionals: 3 internal medicine hospital doctor, 2 primary care doctors, 2 primary care nurses, 1 hospital nurse, 1 primary care social worker **Chronic heart failure** (HDFF) 9 professionals: 3 hospital medical doctors, 4 hospital nurses, 2 hospital techniciens, 1 hospital pharmacist, 1 hospital social			

			worker, 1 hospital nutricionist, 1 hospital psychologist, 1 hospital administrative. **DPOC:** 3 hospital medical doctors (pneumology), 1 hospital psychiatrist, 2 hospital nurses, 2 technicians, 1 hospital social worker, 1 hospital nutricionist, 1 hospital psychologist, 1 hospital administrative **Chronic heart failure** (ACeS *Porto Oriental*) N			
Define programs for the different risk strata (case manager, expansion of discharge management team's role, reference internist)	For each program: • Nº and profile of the professionals involved • Nº of criteria for admission in each program • Programs final proposal (Y/N)	For each program, at least: • 1 manager • 2 medical doctors from primary and hospital care • 2 nurses from primary care and	**Case management programme (ULSLA) –** 5 (1 internal medicine hospital doctor, 2 primary care doctor, 2 primary care nurses) **Expansion of discharge managemen**	none		

		hospital care • 1 patient • 1 social worker • • At least 3 criteria yes	**t teams role (ULSLA) -** 4 (1 hospital nurse, 1 internal medicine hospital doctor, 2 primary care nurses) **Medication reconciliation in mental health** 0 N			
LCF4-Integrate the information systems in the Electronic Health record						
Define the set of additional information to be shared in the electronic health record (for example, prescriptions, assessment scales, medical tests)	• Nº and profile of the professionals involved in the definition of the set of information to be shared in the electronic Health record • Nº of itens to be shared in the electronic Health record	• 1 manager • 2 medical doctors from primary and hospital care • 2 nurses from primary care and hospital care • 1 social worker • 2 information system experts 3	1 primary care manager, 5 information system experts (ULSLA, ACSS, SPMS), 1 hospital medical doctor, 1 hospital manager 0			
Design an electronic chart for the management of chronic medicines	• Nº and profile of the professionals involved	• 2 Primary care and hospital doctors (ACeS *Baixo*	1 primary care manager, 5 information system experts (ULSLA,			

based on the dosage guide	• Proposal for an area for the management of chronic medicines (Y/N)	*Mondego*, HDFF) • 1 information technologies expert (SPMS) Yes	ACSS, SPMS), 1 hospital medical doctor, 1 hospital manager Y			
Define the Plan for the implementation of the electronic health record as the core of the patient process, including the instruments designed in the LCF3	• Implementation Plan (Y/N) • Nº of goals covered by the plan	• Yes • At least 3	• Y • 0			

Act

Cycle number	1		
Activity	**Maintain**	**Adapt**	**Abandon**
Training of health care professionals on risk stratification	X	Reschedule	
Decide the risk stratification instrument to be implemented	X	Reschedule the decision for after the study that will compare the 3 tools	
Configure data extraction and processing mechanisms	X		
Test several scenarios for the risk adjusted financing in the local Health units	X	Reschedule for after the study of the risk stratification tools	
Define measurable indicators for risk adjusted performance assessment, to promote integration of care			X

Define care pathways for each chronic disease – multimorbidity, CHF, Diabetes, COPD,	X	Reschedule for the end of 2022 to allow training for coproduction	
Define programs for the different risk strata (case manager, expansion of discharge management team's role, reference internist)	X		
Define the set of additional information to be shared in the electronic health record (for example, prescriptions, assessment scales, medical tests)	X		
Design an electronic chart for the management of chronic medicines based on the dosage guide	X		
Define the Plan for the implementation of the electronic health record as the core of the patient process, including the instruments designed in the LCF3		Match with the national strategy for the HER Focus on the implementation of clinical pathways in the information systems	

QUESTIONS	ANSWERS
Any new proposed action for the future?	• Training health professionals in coproduction to include the patient perspective in the care pathways • Make a risk index available for health professionals • Meeting with oGP to discuss criteria for population risk stratification • Do a communication Plan • Organize an international meeting to discuss risk adjusted financing models • Bilateral meeting with oGP experts to discuss other adjustment criteria besides risk (context costs, for example • In person meeting to share the work developed by the pilots

2nd PDSA Cycle

Plan

LCF1	Develop a population risk stratification approach							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Training of health care professionals on risk stratification	• Schedule the training sessions		1/07/2022 to 30/07/2022	• Formative path (Y/N) • Nº and profile of the trained profesisonals	SPMS	1/10/2022	Sent by email	• Yes • 20 professionals in each pilot
	Do the training sessions	• 1 expert on the risk stratification instrument (ACSS) • 1 academic expert on risk stratification (ENSP)	15/07/2022 to 30/9/2022					
Make a risk index available for health professionals	Make a risk index available for health professionals	Tool´s developer (ACSS)	1/9/2022 to 30/9/2022	Index available (Y/N)	Project manager (ACSS)	5/10/2022	During the monthly meeting	yes
Configure data extraction and processing mechanisms	Public tender for license purchasing	• 1 technical officer (ACSS) • 1 expert on risk stratification instruments (ACSS)	1/2/2022 to 31/12/2022	• Database creation (Y/N) • % of technical execution completed	Project manager (ACSS)	3/1/2023	Monitoring during the monthly follow up meting	• Yes • 100%

	Meeting with oGP to discuss criteria for population risk stratification	• oGP experts • 1 patient grouping tools expert	1/10/2022 to 30/10/2022	1 meeting minute (Y/N)	1 patient grouping tools expert	2/11/2022	Follow up meeting	Yes
Decide the risk stratification instrument to be implemented	Compare risk stratification instruments	• 2 experts on the risk stratification instrument (ACSS) • 1 decision maker (ACSS)	2/01/2023 to 28/02/2023	Decision about the instrument (Y/N)	Project manager (ACSS)	01/03/2023	Follow up meeting	Yes
Do a communication Plan	Do a communication plan with different messages for different targets	• 2 communication experts (ACSS) • 1 risk stratification expert (ACSS)	1/7/2022 to 30/7/022	Communication Plan (Y/N)	Project manager (ACSS)	3/8/2022	Follow up meeting	Yes

LCF2	Propose changes to the commissioning and financing risk adjusted							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Organize an international meeting to discuss risk adjusted financing models	International meeting to discuss risk adjusted financing models	• Executive board members of the Local Health Units • 3 moderators • 2 International experts in risk adjusted financing and commissioning models	1/7/2022 to 30/9/2022	Meeting report (Y/N)	Project manager (ACSS)	31/10/2022	email	Yes

Test several scenarios for the risk adjusted financing in the local Health units	• Bilateral meeting with oGP experts to discuss other adjustment criteria besides risk (context costs, for example) • Select other adjustment criteria besides risk	• 2 Financing and commissioning experts (ACSS) • 1 managers (ULS)	1/3/2023 to 30/4/2023	Proposal for the local health units risk adjusted financing (Y/N)	Project manager (ACSS)	3/5/2022	Monitoring during the monthly follow up meting	yes
	Compare scenarios for risk adjusted financing	• 2 Financing and commissioning experts (ACSS) • 1 managers (ULS)	1/4/2023 to 30/6/2023					

LCF3	Develop instruments that facilitate the coordination of care communication among professionals							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Define care pathways for each chronic disease – multimorbidity, CHF, Diabetes, COPD,	• Training session in co design	• 5 Primary care and hospital doctors • 5 Primary care and hospital nurses • 3 Professionals from the social sector	1/09/2022 to 30/09/2022	Nº and profile of the trained professionals	Professor in co design (ENSP)	26/10/2022	Sent by email	At least 10 professionals in each pilot • Primary care doctors • Hospital doctors • Primary care nurses • Hospital nurses

								• Other professionals
	In person meeting to share the work developed by the pilots	All professional involved in the design of the care pathways	1/11/2022 to 30/11/2022	• Group photo • Presentations	Communication team (ACSS)	2/12/2022	Sent by email	• 1 group photo • 5 presentations
	Write a care pathway document for each chronic disease	1 group member from each pilot	1/12/2021 to 31/12/2022	Proposal for each care pathway (Y/N)	Lider of the care pathway in each pilot	4/1/2023	Sent by email	For each care pathway: Yes
Define programs for the different risk strata (case manager, expansion of discharge management team's role, reference internist)	Create groups to define programs for the different risk strata	2 managers	1/11/2021 to 30/11/2021	For each program: • Nº and profile of the professionals involved • Nº of criteria for admission in each program Programs final proposal (Y/N)	Representative from each pilot in the NAWG (Aces *Porto Oriental*, ULSLA)	• 2/12/2021 5/1/2023	Sent by email	For each program, at least: • 1 manager • 2 medical doctors from primary and hospital care • 2 nurses from primary care and hospital care • 1 patient • 1 social assistant • At least 3 criteria
	Write a proposal for each program	• 2 Primary care and hospital doctors • 2 Primary care and hospital nurses • 2 Professionals from the social sector	1/12/2021 to 31/12/2022					

								• Yes

LCF4	Integrate the information systems in the Electronic Health record							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Define the Plan for the improvement of the electronic health record, including the instruments designed in the LCF3	Define the Plan for the improvement of the electronic health record, including the instruments designed in the LCF3	• 2 Primary care and hospital doctors (ACeS *Baixo Mondego*, HDFF) • 2 Primary care and hospital nurses • 1 information system expert (ULSLA) • 1 information system expert (ACSS) • 2 information system experts (SPMS) • 1 inernational projects manager (SPMS)	1/7/2022 to 31/12/2022	• Implementation Plan (Y/N) • Nº of goals covered by the plan	Project manager (SPMS)	3/1/2023	Sent by email	• Yes • At least 3

Do

Cycle number	**2**	
Activity	**KPI**	**Actual value**
Schedule the training sessions	Formative path (Y/N)	Y (SPMS - eStudo - Estratificação da população pelo risco - Percursos Formativos (min-saude.pt))
Do the training sessions	• Nº and profile of the trained professionals	• Y • 262 professionals, 162 from pilots (doctors, nurses, managers, primary care, hospital, public health).
Make a risk index available for health professionals	• Index done (Y/N) • Index available (Y/N)	• Y (power BI) • N
Public tender for license purchasing	• Database creation (Y/N) • % of technical execution completed	• Y • 100%
Prepare the databases to feed the grouper		
Meeting with oGP to discuss criteria for population risk stratification	1 meeting minute (Y/N)	Y
Compare risk stratification instruments	Decision about the instrument (Y/N)	N
Do a communication plan with different messages for different targets	Communication Plan (Y/N)	y
International meeting to discuss risk adjusted financing models	Meeting report (Y/N)	Y
Bilateral meeting with oGP experts to discuss other adjustment criteria besides risk (context costs, for example) Select other adjustment criteria besides risk Compare scenarios for risk adjusted financing	Proposal for the local health units risk adjusted financing (Y/N)	N
Training session in co design	Nº and profile of the trained professionals	• ACeS PVVC: 3 primary care and hospital nurses, 4 primary care and hospital medical doctors. • ULS LA: 7 primary care and hospital nurses, 1 hospital medical doctor. • HDFF: 5 hospital medical doctors, 1 social orker.

In person meeting to share the work developed by the pilots	• Group photo • Presentations	• N • Y
Write a care pathway document for each chronic disease	Proposal for each care pathway (Y/N)	Y • Diabetic foot (ACeS PVVC) • Multimorbidity (ULSLA) • Chronic heart failure (ULSLA) • Chronic heart failure (HDFF) • DPOC (HDFF)
• Create groups to define programs for the different risk strata • Write a proposal for each program	For each program: • Nº and profile of the professionals involved • Nº of criteria for admission in each program Programs final proposal (Y/N)	**Case management programme (ULSLA)** – 5 (1 internal medicine hospital doctor, 2 primary care doctor, 2 primary care nurses) **Expansion of discharge management teams role (ULSLA) -** 4 (1 hospital nurse, 1 internal medicine hospital doctor, 2 primary care nurses) 0 0
Define the Plan for the improvement of the electronic health record, including the instruments designed in the LCF3	• Implementation Plan (Y/N) • Nº of goals covered by the plan	• Y • 4

QUESTIONS	ANSWERS
What was actually implemented? Any deviation from the planned actions	We did the training sessions in risk stratification. Despite the public tender is finished and we finally have the risk stratification tools license (ACG and CRG), we didn´t finish the study to choose the one we are going to use. Meanwhile, we made available a risk stratification tool made in house, for the professionals start to use. We did a communication plan and an international meeting to discuss risk adjusted financing models. We did an in-person meeting for the groups to share the work done about the care pathways. It is still missing meetings with oGP experts to discuss: financing adjustment criteria besides risk (context costs, for example) It is still missing a proposal for risk adjusted financing because we only can do that after deciding which risk stratification tool are we going to use. The definition of programmes for the different risk strata were abandoned, because in the absence of time we prioritized the care pathways.
Problems? Unexpected findings? Please describe	Changes in the approach to implement risk stratification tool delayed our activities. Instead of implementing one tool as planned, there was a decision at the national level to compare 3 tools to support the decision making. The public tender was a very complex and slow process, more than we expected. The inclusion of the patient perspective in the clinical pathways was not planned in a structured way. However, we realized that the pilots were in different levels of involving patients, therefore we decided to do training in coproduction.

	Professionals complained about the lack of time to work on the care pathways. Clinical pathway for HF will have implementation problems since there is a medical test essential for the diagnosis in primary care that is not reimbursed when prescribed in that context (NT ProBNP). The organization in charge of the implementation of health information system in Portugal sees JADECARE just as project, rather than something to be implemented effectively, improving our health information systems.

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
		X	

Study

Cycle number		**2**				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Schedule the training sessions	Formative path (Y/N)	Yes	Yes			
Do the training sessions	Nº and profile of the trained professionals	20 professionals in each pilot	262 professionals trained (162 in the pilots) In 2 pilots <20 In 3 pilots>20 Doctors, nurses, managers, primary care, hospital, public health			
Make a risk index available for health professionals	Index available (Y/N)	Yes	No (it is fully prepared but not available at the moment)	We developed and made available one of the tools until the study of the 3 is finished, however because of GDPR issues we were forced to	We are doing a protocol with the pilots ensuring GDPR issues and we are going to make available just aggregated data	The health professionals can start using a risk stratification tool despite the final decision

				block the access	until the health unit level.	
Public tender for license purchasing Prepare the databases to feed the grouper	• Database creation (Y/N) • % of technical execution completed	• Yes • 100%	• Y • 100%			
Meeting with oGP to discuss criteria for population risk stratification	1 meeting minute (Y/N)	Yes	Yes			
Compare risk stratification instruments	Decision about the instrument (Y/N)	No	No	The public tender to purchase the tools was longer than expected, delaying the comparison study		
Do a communication plan with different messages for different targets	Communication Plan (Y/N)	Yes	Yes			
International meeting to discuss risk adjusted financing models	Meeting report (Y/N)	Yes	Yes			
Bilateral meeting with oGP experts to discuss	Proposal for the local health units risk adjusted financing (Y/N)	No	No	Scheduled for the 10th February 2023		

other adjustment criteria besides risk (context costs, for example) Select other adjustment criteria besides risk Compare scenarios for risk adjusted financing				We are doing a tender to purchase consultancy services to do a financing model		
Training session in co design	Nº and profile of the trained professionals	• At least 10 professionals in each pilot • Primary care doctors • Hospital doctors • Primary care nurses • Hospital nurses • Other professionals	• ACeS PVVC: 3 primary care and hospital nurses, 4 primary care and hospital medical doctors • ULS LA: 7 primary care and hospital nurses, 1 hospital medical doctor. • HDFF: 5 hospital medical doctors, 1 social worker			
In person meeting to share the work developed by the pilots	• Group photo • Presentations	• 1 group photo • 5 presentations	5 presentations			
Write a care pathway document for each chronic disease	Proposal for each care pathway (Y/N)	For each care pathway: Yes	• Yes **Diabetic foot** (ACeS PVVC) **Multimorbidity** (ULSLA)			

			Chronic heart failure (ULSLA) **Chronic heart failure** (HDFF) • **COPD** (HDFF)			
Create groups to define programs for the different risk strata Write a proposal for each program	For each program: • Nº and profile of the professionals involved • Nº of criteria for admission in each program Programs final proposal (Y/N)	For each program, at least: • 1 manager • 2 medical doctors from primary and hospital care • 2 nurses from primary care and hospital care • 1 patient • 1 social assistant • At least 3 criteria • Yes	**Case management programme (ULSLA) –** 5 (1 internal medicine hospital doctor, 2 primary care doctor, 2 primary care nurses) **Expansion of discharge management teams role (ULSLA) -** 4 (1 hospital nurse, 1 internal medicine hospital doctor, 2 primary care nurses) • 0 • No	We decided to abandon these actions since in the absence of availability fro professionals to do the care pathways and the programmes, we privileged the care pathways		
Define the Plan for the improvement of the electronic health record, including the instruments designed in the LCF3	• Implementation Plan (Y/N) • Nº of goals covered by the plan	• Yes • At least 3	• Yes • 4: 1. Reinforce interoperability among information systems 2. Optimize patient summary 3. Optimize information systems for medication management			

			4. Reinforcement of referrals in the the information systems			

Act

Cycle number	2		
Activity	**Maintain**	**Adapt**	**Abandon**
Compare risk stratification instruments		Reschedule the study deadline	
Make a risk index available for health professionals	X		
Compare scenarios for the risk adjusted financing in the local Health units		Reschedule for after the study of the risk stratification tools. Do a tender to purchase consultancy services to do a financing model to be put in place in 2024	
Define programs for the different risk strata (case manager, expansion of discharge management team's role, reference internist)			X

QUESTIONS	**ANSWERS**
Any new proposed action for the future?	Define measurable indicators for risk adjusted performance assessment, to promote integration of care

Post-implementation

ITEM	ANSWER
Title and abstract	
Title	Implementation of population risk stratification in Portugal and improvement of continuity of care
Abstract	Implementation of risk stratification as a basis for identifying needs by population groups that will allow the adaptation of care models, using information and communication systems, as well as financing and commissioning as facilitators.
Why did you start?	
Problem description	More than a local problem there is a National problem of fragmented care and hospital centric that do not fit people needs, specially those with complex needs. Since we are the third country in Europe with the highest percentage of elderly population this a concern.
Available knowledge	Multiomorbidity affects more than 1/3 of the Portuguese population, according to the National Health inquiry 2019, being more prevalent among women, elderly, in some regions and with a lower education. Healthy life expectancy at 65 is 7,3 years, lower than EU average (Statistics of Portugal). Only half of the population reports its health status as good or very good, the 4th worse among OECD countries (2019).
Rationale	Several studies concluded that fragment healthcare lead to delay in diagnosis, specially in the most prevalent chronic diseases, to care multiplication, avoidable hospital admissions, worse quality of life and higher costs.
Specific aims	Improve citizens quality of life, continuity of care and system efficiency, based on risk stratification
What did you do?	
Context	We have a great amount and quality of data, at the national level that can be used to stratify the population (all episodes coded with ICD10 in hospitals and ICP in primary care, all the pharmaceuticals bought by patients in the pharmacies also coded, costs with hospital episodes, primary care episodes, pharmaceuticals ad medical tests, all of it desagregated at the patient level). Current information systems do not respond to the needs of patient-centered practice. There is lack of information sharing. It is a challenge to allocate Iinformation technologies' resources. There are good practices already in place in some locals (Local health units, case managers, hospital at home) and there are several tools to support the practices like telemedicine, electronic prescription, among others. The Recovery and resilience plan has goals aligned with patient centered integrated care. Leaderships at the local and national level are committed.
Intervention(s)	**Description** Implementation of risk stratification as a basis for identifying needs by population groups that will allow the adaptation of care models, using information and communication systems, as well as financing and commissioning as facilitators. Four LCF were planned: 1. To develop a population approach based on risk stratification. This included training health professionals on risk stratification, purchasing risk stratification tools and comparing them to support the decision about which one to adopt. 2. To develop instruments to facilitate communication among health professionals. This included creating groups to design care pathways at the local level, training in codesign to include the patient perspective.

	3. To propose changes in the financing and comissioning model-based population´s risk. That inlcudes to define indicators for comissioning and test several scenarios for risk adjusted financing in integrated care organizations. 4. Improve the information systems, including the definition of the minimum set of information to share among professionals, design a chronic medication chart and incorporate the care pathways in the information system. **Specifics of the team** The team included several organizations at the National and local level (administration of the health system, shared services of the ministry of health, national school of public health, 5 pilots among hospitals, primary care and local health units) • **Administration of the Health System (ACSS)** 1 project manager, 1 grouping tools expert, 1 IT expert • **National School of Public Health (NOVA/ENSP)** 2 professor • **Shared Services of the Ministry of Health (SPMS)** 1 International projects coordinator, 1 International project manager • **Local Health Unit *Alto Minho* (ULSAM)** 1 primary care doctor, head of family unit and advisor of the executive board • 1 nurse member of the clinical coucil • **Group of Health Centres *Póvoa de Varzim/Vila do Conde* (ACeS *Póvoa de Varzim/Vila do Conde*)** 1 primary care doctor, president of the clinical council, 1 primary care doctor • **Group of Health Centres *Porto Oriental* (ACeS *Porto Oriental*)** 1 primary care doctor, presidente of the clinical council, • 1 director of goup of healthcare centers • **Group of Health Centers *Baixo Mondego* (ACeS do *Baixo Mondego*)** 1 director of goup of healthcare centres, 1 head of primary care unit • **Hospital *Figueira da Foz* (HDFF)** 1 member of the executive board, 1 head of planning and management control • **Local Health Unit *Litoral Alentejano* (ULSLA)** 1 primary care doctor - director of primary care, 1 hospital doctor, 1 clinical director – hospital, 1 case manager (Nurse) • **1 MoH representative**
Study of the Intervention(s)	We will do an impact assessment after JADECARE, as planned in our population risk stratification strategy. The plan includes a study by an academic partner to look at some indicators (to be defined) before and after the implementation of the population risk stratification.
Measures	• Nº of training sessions for health care professionals on risk stratification • Nº and profile of the trained professionals on risk stratification • Decision about the instrument to be used for stratification • Database creation • % of functional execution of data extraction and processing mechanisms • Nº of criteria used in stratification • Population stratified • Proposal for the local health units risk adjusted financing • Nº and profile of the professionals involved in the codesign training sessions • Nº of measurable indicators for risk adjusted performance assessment, to promote integration of care • Nº and profile of the professionals involved in the design of the multimorbidity care pathway

	• Nº and profile of the professionals involved in the design of the CHF care pathway • Nº and profile of the professionals involved in the design of the diabetes care pathway • Nº and profile of the professionals involved in the design of the COPD care pathway • Proposal for multimorbidity care pathway • Proposal for the CHF care pathway • Proposal for the diabetes care pathway • Proposal for the COPD care pathway • Nº and profile of the professionals involved in the design of the case management program • Nº and profile of the professionals involved in the design of the expansion of the discharge management teams' roles • Nº and profile of the professionals involved in the design of the role of the reference internist • Nº of criteria for admission in each program • Programs final proposal • Nº and profile of the professionals involved in the definition of the set of information to be shared in the electronic Health record • Nº of itens to be shared in the electronic Health record • Proposal for an area for the management of chronic medicines • Implementation Plan for the improvement of the Information systems • Nº of goals covered by the plan This measures where choosen beacuse they are simple to collect and can give an objective picture of what has been acomplished
Analysis	Not applicable in our case
What did you find?	
Results	In the first planning phase we were very ambitious, but during the project we had the need to drop or change actions. 262 professionals, 162 from pilots (doctors, nurses, managers, primary care, hospital, public health) were trained in risk stratification, through a e learning platform (SPMS - eStudo - Estratificação da população pelo risco - Percursos Formativos (min-saude.pt). Changes in the approach to implement risk stratification. Instead of choosing one tool, there was a decision to compare 3 of them, to support the decision. Because the public tender for purchasing risk stratification tools was delayed, we developed a home made risk stratification tool (power BI) to make it available until the final decision about which tool we are going to use. The home-made tool is not yet available because of GDPR issues. We are doing protocols with the pilots for that purpose. We have the databases to feed the tools fully completed and we are analysing the outputs of one tool. We did a communication plan for different targets to engage stakeholders. This action was not planned in the first cycle, however trough the project we felt that need. We did a bilateral meeting with Basque Country oGP to discuss technical details about risk stratification. We did an international meeting to discuss risk adjusted financial models with other countries/regions. 143 members of providers executive boards participated and the level of satisfaction was 4,4/5. Besides the meeting we also organized a workshop with 36 participants about the financing of integrated care organizations. These actions were not planned in the first cycle but we felt that it was necessary to raise awareness among the hospitals and primary care boards. 21 Professionals (primary care and hospital nurses, primary care and hospital medical doctors social worker) were trained in co-design in order to provide them with the tools

	needed to include patients in the definition of the care pathways. This action was not initially planned, however, after a comment from JADECARE, it was considered relevant to include. 4 care pathways were designed (COPD, Heart failure, diabetic foot and multimorbidity). One of the providers managed to digitalize the care pathways. We did an in-person meeting for the groups to share the work done about the care pathways. A plan for the improvement of the electronic health record, including the care pathways was designed, aligned with the RRF. Covering 4 goals: 1. Reinforce interoperability among information systems; 2. Optimize patient summary; 3. Optimize information systems for medication management; 4.Reinforcement of referrals in the information systems The main problems were the professionals' availability to work beyond their usual works (either health professionals and professionals working on risk stratification), changes in decision at a high level and lack of commitment of some staff in charge of the information systems. However, all the process had the support and commitment of ACSS and the Ministry of Health and the leadership in each pilot was a success factor to achieve the goals
What does it mean?	
Summary	Having the professionals trained in risk stratification make them capable of using risk stratification information which will have impact in the change for a population approach. Training on codesign was relevant for the professionals to include the patient perspective in the development of future care pathways and adaptation of those designed during JADECARE. The design of care pathways had as unexpected consequence to improve the communication among teams, specially between hospital and primary care, improving care coordination and communication among professionals.
Interpretation	The project was very important to support the change for a population approach based on risk stratification. We wouldn´t go so far without JADECARE. It helped to structure. In this sense, all the project helped to improve capacity building especially in terms of planning. This was a solid step for moving to a population-based approach, increasing access and quality of care as well as sustainability of the system. Leadership in the pilots, high level commitment with population risk stratification and the support of oGP were particular strengths of the project. The approach joining the national level with local level implementation was also a strength, aligning professionals working for a common goal.
Limitations	We took a National approach with local pilot implementation, so the generalizability and scale up could be done. Limits: • GDPR issues. • resistance of some professionals to use risk stratification information. • lack of time of professionals, either healthcare professionals or professionals to work on risk stratification. • lack of commitment/time of the professionals in charge of the information systems. The estimation of time and resources needed was imprecise. The first plan was very ambitious, but over time we found that the public tender was longer than expected and all the actions took more time than expected. Most of the efforts to minimize or adjust was to reschedule the actions and drop some of them. Regarding the risk stratification tool, to mitigate we developed a home-made tool to be used until the decision of which tool we are going to implement at a national

	level. To make the information available we are doing protocols with the pilots and making available aggregated data. It was planned to test several scenarios for risk adjusted financing, but because it will only be possible after the decision of the tool, we did at least a rising awareness international event.
Conclusions	The work was useful to structure the National approach to population risk stratification and to technically support the implementation with the oGP experience. Having a risk stratification tool implemented is a sustainability key factor, since it will be used to help professionals on decision making, in resource allocation (human resources and financing) and performance assessment. We are now starting a public tender to do a new financing model for integrated care organizations, capitation adjusted by risk. Also, we are participating in a Joint Action – CIRCE with the aim to develop a personalized plan of care for complex chronic patients that will be identified through the risk stratification. Besides the care pathways, this will be another relevant instrument to improve the coordination of care and communication among professionals. The aim of a national approach with pilot implementation was to test the pilots and then spread all over the country. We started the risk stratification in the pilots, but we are going to make the information available for all providers until the end of 2023 and to introduce risk adjusted financing in all integrated care organizations
Other information	
Funding	Recovery and resilience facility for buying the risk stratification tools.

University Hospital Olomouc (UHO)

Pre-implementation

Scope definition

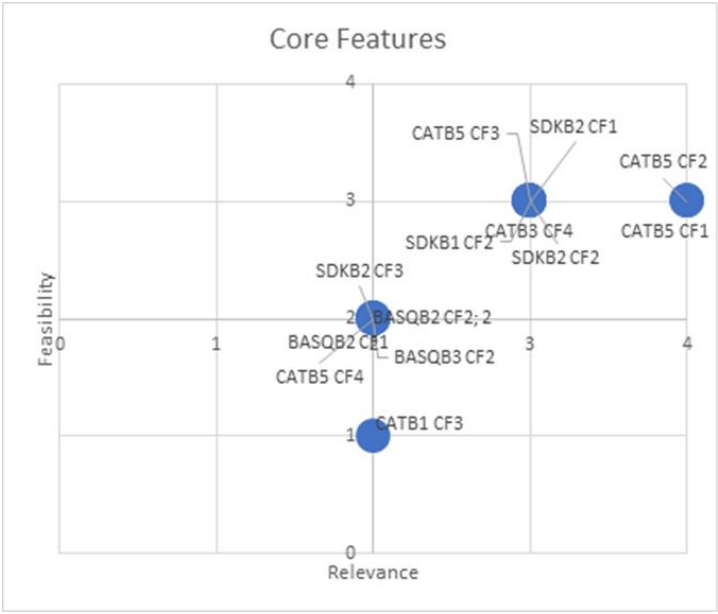
Identified and prioritized needs

Block	Prioritized needs
Basque Good Practice	
B2 - Integrated care	In connection with the strategy of electronic healthcare of the Olomouc Region, which is also in line with the strategy of the Czech Republic, the digitization of health records and the subsequent provision of these records to patients themselves, but also to attending physicians and specialists is inevitable.
	These days, there is an almost urgent need in the region to connect online with both patients and specialists, especially in more remote places where professional health care is not so much available. UHO has created a TM application that it would like to distribute to more remote health facilities and general practitioners in these regions.
B3 - Patient empowerment	The planned portal of the Olomouc Region for patients will also include an information portal section, especially for patients with chronic problems. Through the TM portal, basic recommendations based on collected physiological values (fitness data) will be available to patients.
Catalan Good Practice	
B1 - Health risk assessment: population-based and enhanced clinical decision making	The planned electronic EHR / PHR in UHO and the involvement of other providers in the Olomouc region will bring with it far wider possibilities of data analysis, use of BigData and AI tools, which could categorize the severity

	of multimorbid chronic patients with prediction of more personalized treatment and associated costs.
B3 - Vertical and Horizontal integration experiences adopted in Catalonia	With regard to the electronic health record in the region, electronic communication of subsequent post-hospital care and more accurate planning is also offered. The Olomouc Region strongly supports and welcomes this initiative. This task will be a great challenge for the region also due to the quite widespread spa care in the Jeseník region and its surroundings.
B5 - Digital support of integrated care services	The planned eHealth platform of the Olomouc Region, which UHO is building, can subsequently be extended from primary care to providers of subsequent integrated care. As part of building a patient portal and merging with an existing telemedicine portal, it would be possible to build a dashboard for patients, who could thus access their online health records extended by online monitoring of physiological values.
Danish Good Practice	
B1 - Cross sectorial digital communication: standards and agreements	To define technical specification for messages transmitted in the regional integration platform based on one internationally proven standard applicable in Czech conditions.
B2 - Cross sectorial digital communication: Additional solutions to support complex disease areas	To improve accessibility of health service in the microregion. To improve quality of care of chronic patients by implementation of innovations based on digital technologies. To reduce unnecessary trips of patients to hospitals, where possible.

Assessment of Core Features

Core Features	Relevance	Feasibility
Basque Good Practice		
CF2.1- Creation of Integrated Healthcare Organizations	2	2
CF2.2- Deployment of integrated communication and information systems	2	2
CF3.2- Empowerment programs for chronic and/or multimorbid patients	2	2
Catalan Good Practice		
CF1.3- Development of enhanced risk prediction modelling for health policy purposes and/or clinical risk prediction	2	1
CF3.4- Integrated Care for admission avoidance of subacute and frail patients (PS Pere Virgili, Barcelona)	3	3
CF5.1- Regional information exchange platform (HC3)	4	3
CF5.2- Primary Care electronic Medical Record (eCAP) and Electronic Prescription	4	3
CF5.3- Personal Health Folder (La Meva Salut)	3	3
CF5.4- ICT tools supporting adaptive case management & col·laborative work	2	2
Danish Good Practice		
CF1.2- Messaging Standards	3	3
CF2.1- Tele-COPD	3	3
CF2.2- Tele-psychiatry	3	3
CF2.3- My Patient Journey	2	2



Final Core Features selected

Basque Good Practice CF2.2 - Deployment of integrated communication and information systems
Danish Good Practice CF2.2 - Tele-psychiatry

Situation analysis

	Strengths	Weaknesses
Internal	• Existing adequate network of health services in the Olomouc region. • High professional capacity in UHO. • Developing platform of digital integrated care in UHO. • Available ICT in the Olomouc Region and sufficient internet coverage except for peripheral parts, eg Jesenik district. • Established contacts and specific outlines of cooperation with representatives of the Olomouc Region and the city of Jesenik. • Existing European projects that offer inspiration from abroad to take over. • Cooperation with Ministry of Health in the field of digital services; UHO is competence centre of Ministry of Health for telemedicine. • Participation of the Olomouc Region and UHO in the National Action Plan for Mental Health. • Existence of the National Telemedicine Centre at UHO.	• Lack of eHealth legislation. • Worse availability of care in the peripheral parts of the Olomouc Region (Jesenik district), for example due to specific geographical accessible. • Contractually unsecured relationship with health insurance companies regarding eHealth as well as uncertain financing of future costs related to eHealth. • Insufficient personnel coverage of specialist services in the peripheral parts of the Olomouc Region. Specifically, Jesenik district (for example clinical pharmacologist, neurologist, etc.). Unoccupied doctor´s offices by outpatient specialists, general practitioners, paediatricians and dentists (not only in the Jesenik region). Long order deadlines (rheumatology, urology, oncology, problematic travel for irradiation). • Long duration of the introduction of innovations (technologies) into common practice as well as their acceptance and sustainability. • Modern ICT technologies are usually used only for simpler purposes. Weaker user knowledge of ITC tools.

	• Faculty of Medicine within Palacky University of Olomouc.	• Lack of connection between the social and health sectors. • Insufficient level of health literacy of citizens. • Weak activity of health insurance companies in introducing innovations, not only within the project. • Fragmentation of health care services.
	Opportunities	**Threats**
External	• Using experts from UHO for other subjects (Jesenik Hospital). The emerging platform for the digitization of integrated patient care, including shared documentation. • More effective care solutions, saving time for clients, simplifying some processes. Better coordinated care. • Individuals' interest in innovation, quality and availability of care, integration (Jesenik Hospital, regional politicians). • The possibility of sharing information about patients between UHO and Jesenik, ideally also other providers of health services. • Integrated healthcare, digitization of healthcare, etc. as a suitable political topic. • Transfer of innovations from abroad and within the Czech Republic. • Connecting actors in social and health services (including field services), where it makes sense in client care. • The possibility of increasing the health literacy of the citizen and strengthening his position in the health system. • Improving the health of the population of the distant region - by enabling access to locally limited specialized care: distant consultation and direct detection and monitoring of patients requiring specialized care. Care will be more effective and can bring further savings through correct diagnosis - well-targeted treatment - preventing unnecessary transfers between IB providers. Enabling efficient and coordinated use of bed stock capacity. • Distance education, training and deepening of competencies of medical staff, who due to staff need have a very limited opportunity to intern at other workplaces. Maintaining the level of care. Establishing the necessary	• Cyber security of healthcare providers (mainly those not yet covered by the Cyber Security law). Especially in connection with eHealth projects, where there is an appeal to secure shared health data. • Rigid system of health care financing. • Reduction of the number of general practitioners, especially in the peripheral parts of the Olomouc Region. The increasing average age of general practitioners. Also, a declining number of specialists (cardiologists, nephrologist, gastroenterologist, ENT doctor, rheumatologist, oncologist, vascular specialist). • Insufficient replacement of doctors and occupation of surgeries, imminent lack of general practitioners and outpatient specialists in the Jesenik region in the next 10 years. • Insufficient PR (information) on innovation and integrated care. • Insufficient involvement of health insurance companies. • Insufficient involvement of general practitioners. • Insufficient involvement of specialists (outpatient specialists). • Coordination, communication and cooperation of care is not at the required level and does not have sufficient support. • Misinformation and concerns preventing the spread of innovation. • Shift in the priorities of political topics in the Czech Republic affecting regions. • Ensuring long-term sustainability

friendly and collegial cooperation of health care professionals. • Existence of a service organization that will solve onsite problems with telemedicine from the beginning, also as a prevention of possible non-adoption of technologies.	

Strategic Intervention Areas

Strategic intervention area	Priority	Ranking
Need for tools for individualized and comprehensive care for patients in their general health status, proper TM tool	3	1
Need to improve the disease self-management by patient and their caregivers	2	2
Strengthening continuity of care between care levels (inter/intra level)	2	3
Improvement of coordination, cooperation and data (information) sharing between healthcare and social services	1	4

Definition of the LGP and LAP

Local Good Practice

Local Good Practice	Support program in tele-psychiatry\psychology and cooperation between health providers	
Target population		**Setting(s)**
Patients, seniors in homes for the elderly, shelter house clients, people with life-threatening, life-limiting illnesses. Staff of the facilities concerned. For pilot with at least 3 organizations.		Olomouc region (UHO, ambulances, social care facilities, Jesenik hospital)
Main aim		
Olomouc University Hospital and the National Telemedicine Centre propose a number of interventions to support better integration and proactivity of patient care through modern technologies. These interventions include the identification of appropriate practices and solution proposals and collaboration with the Ministry of Health. Our strategy is taking place in a context where we have a significant shortage of specialist (psychiatrists) and, on the other hand, there are repeated examinations due to non-cooperation and sharing of documentation between health care providers. Our approach anticipates some areas of the new Healthcare Computerisation Act and points the way. The practice presents an opportunity to use the Basque experience regarding the sharing of health documentation and cooperation between social service providers and to introduce Telepsychiatry based in the experience of the South Denmark area. Factors that could have a negative impact on our goals are the lack of involvement of clinical experts in the process, barriers caused by privacy issues and difficulties in addressing communication barriers. Personnel changes due to post-election negotiations, etc. The need is to obtain a consensus from multiple stakeholders, especially the willingness of professionals to engage and persist in new approaches, support from health insurance to include these approaches in the payment of medical procedures, modification of existing and creation of new legislation based on project outputs. The main objective is to improve care for the target group, increase access to psychiatric/psychological care and provide opportunities for collaboration through documentation sharing (collaboration).		
Outcomes	**Local Core Features and their Components**	**Inputs**

• Facilitate the availability of psychiatric/psychologic assessment for target groups in accordance with care needs. • Develop a tele-psychiatry/psychology programme via IT aimed also at people in social care institutions. • Increase care for patients with mental illness and cognitive-functional disorders in residential care and guarantee continuity of care. • Improve the knowledge of the processes of cognitive-functional deterioration and mental illness among social care workers in social care institutions. • Improve communication between the psychiatric team of the University Hospital Olomouc, patients (clients of social care facilities), their families and guardians and professional teams of social health care units, general practitioners, Jesenik Hospital, etc. • Reduce the commuting from social care facilities to hospital medical facilities for regular consultations. • Facilitate various online bureaucratic and administrative tasks for seniors, families, caregivers and professional social health services' staff. • Provide an online space as an alternative to the traditional interview format, which may be more acceptable to some groups of people. • Due to all these outcomes shape a change in thinking	1. Tele-Psychiatry\psychology online. 2. Online management of the psychological and behavioral disorders. 3. Online access to documentation (awareness of medication and medical treatment process). • Contact with the socio-sanitary professionals of the social care facilities to provide information on the program and the various technological aspects used. • Preparation of psychiatric program adapted to the different evolutionary moments of mental illnesses and the functional cognitive situation of the elderly or homeless in social care facilities. • Possible online communication channels between the elderly, family members, socio-health professionals and some of the psychiatric team (nurse or physician). • Development of application for tele-psychiatry/psychology for electronic medical documentation of the UHO. • Development of the Application for mobile devices. • Online questionnaires to assess progress. • Online Tele-psychiatric/psychologic consultations.	• Financing • Staff time for the design, development and implementation of the tele-psychiatric/psychologic program. • IT experts • Computer system: improvement of web applications in electronic medical records. • Creation of simple manuals for an application used to share documentation. • Hardware for the development and usage of the program • Training and technical assistance

towards mental health care and their patients.		
General description		
The main goal is to develop an online tele-psychiatry/psychology program focused on the health care of a selected group of patients, designed to facilitate access to specialized care without the need for travel. Through patient-centered care and a patient-centered environment, better symptom control, diagnosis of psychiatric disorders, improved health outcomes, and reduced direct and indirect costs can be achieved. This mode of online service delivery encompasses a wide range of care services, from assessment and diagnosis to pharmacological and psychosocial interventions, follow-up and residential care, and the development of clinical care plans. Sharing documentation will increase collaboration and coordination among health care providers. The outcome sets the stage for the development and expansion of case management, crisis intervention, liaison services for other medical specialties, nursing care, etc. Sharing medical records is also a relief for social service facilities, especially homes for the elderly, for caregivers, reducing the number of trips and paper transfers between patients and physicians. Finally, sharing documentation will facilitate better delivery of health services to patients who are referred to UHOs from other facilities for specialist examinations, or who attend here while receiving outpatient (ambulatory) care.		
Local Core Feature 1		
Tele-Psychiatry/psychology online		
Local Core Feature 2		
Online management of the psychological and behavioral disorders		
Local Core Feature 3		
Online access to documentation (awareness of medication and medical treatment process)		

Local Action Plan

Local Good Practice	Support program in tele-psychiatry\psychology and cooperation between health providers
Target population	**Setting**
Selected patients requiring specialist care	Cooperation UHO with Jesenik district (also with other subjects)
Main aim	
Identifying the population of convenient patients and improving their care through enhanced integration and proactivity of primary and hospital care	
General description	
The UHO proposes a number of interventions to promote better integration and proactive care for patients from more remote parts of the county. These interventions include identifying appropriate patients through the process and promoting communication and sharing of care plans and documentation among health care professionals. Our strategy is taking place in a context whit an increasing number of patients, coupled with an ageing population and a decreasing numbers of medical staff. Our approach is in line with the MoH' plans and the new Health Electronicisation Act. The practice presents an opportunity to integrate and coordinate efforts to provide timely and ideally integrated care in the future, when fragmentation of the health care system complicates and makes the entire system more expensive. Factors that could negatively impact our goals are the lack of participation of clinical experts in the process, barriers caused by privacy issues, difficulties in addressing communication barriers, the reluctance of individuals to change established practices and, last but not least, the increasing age of professional staff.	

Related oGPs and CFs	B2 - CF3 (Basque Country), B2 - CF2 (Southern Denmark) Telepsychiatry
Local Core Feature 1	**Tele-Psychiatry\psychology online**
SMART objective	
Description, identification and set up Tele-Psychiatry\psychology	

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
Create a Specific Working Group (SWG) for the local model	NAWG (1 GP, 1 coordinator for computering health care from MoH, 1 pychiatric, 1 psychologist, 1 project manager, 1 deputy director of UHO, 1 office worker from municipality, 1 social worker)	Experts	Olomouc Region	1-30 October 2021	SWG formed (N° of memebers)
Literature, law etc. review for identifying possibilities in Tele-Psychiatry\psychology	UHO	Time	CZE	1-30 October 2021	Literature reviewed (Y/N)
Establish criteria and methods for GPs, social care institution to identify suitability of Tele-Psychiatry\psychology	SWG	• Time • Identification criteria • Available literature	Olomouc Region	15 October -30 November 2021	• List of criteria to be used for stratification (Y/N) • Identification method detected (Y/N)
GPs, psychiatric, psychologist identification	NAWG	Time	Olomouc Region	1 October – 30 November 2021	• At least 4 identified specialists (Y/N)
Establish procedures and providing the assistants to the specialists	NAWG	• Assistance for the specialists available • Financial resources	Olomouc Region	• 1 October – 30 November 2021 • 1 December 2021-30 September 2022	• Descriptive document about the sustainable incentive system (Y/N) • Incentive system implemented (Y/N)
Train identified specialists on the methods to be used for	• NAWG • SWG	• Time	Olomouc Region	15 November -30	• Training performed (Y/N)

Tele-Psychiatry\psychology. Define modalities for nurse involvement to encourage adherence to the project.		• Trainers available		November 2021 (fortnight)	• Trained identified specialists (N° of trained staf) • Trained identified nurse (N° of trained staf)
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR. EHR not in the strict sense, but appropriate and realistic implementation in an application that allows secure sharing.	• SWG • GP	Time	Olomouc Region	1 December 2021-28 February 2022	Complex patient lists defined with at least 10 identified patients (Y/N)
Support and monitoring activities	NAWG	Time	Olomouc Region	1 October 2021-30 September 2022	Support and monitoring activities performed (Y/N)
Local Core Feature 2	**Online management of the psychological and behavioral disorders**				
SMART objective					
Creation of a basic description of the problem, appropriate labeling and proposal of the reimbursement for the health insurance company					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Definition of the most common cases to solve	• Members of the NAWG: (1 Coordinator, 1-2 specialist) • Coordinators of Nursing Units	Time	Olomouc district	1 October – 30 December 2021	Document (analysis) about common cases (Y/N)
Adaptation of the application for the needs of psychiatry, psychology	Members of the NAWG: (coordinator, IT specialist)	• Time • Financial resources	Olomouc district	• 1 November – 30. December 2021 • 1. December 2021-30 September 2022	• Basic modification (Y/N) • Continuous modifications (N° of modifications)
Approval of acts for health insurance companies used for	NAWG (coordinator, deputy director of UHO,	Time	Olomouc district	1 December 2021-28	Descriptive document about

reimbursement of care by the health insurance company.	MoH, insurance company)			February 2022	aproved codes available (Y/N)
The system enables a secure online call between the doctor and the patient, patient's representative, consular consultation, etc.	Members of the NAWG: (coordinator, IT specialist)	• Time • Financial resources	Olomouc district	1 October – 30 December 2021	Modification done (Y/N)
Local Core Feature 3	**Online access to documentation (awareness of medication and medical treatment process)**				
SMART objective					
Creating and setting up a system that will enable the sharing of documentation between health care providers, including those provided in social service facilities. Facilitating access to health records as a step towards integrated care, which will lighten the burden on the system in terms of making duplicate copies of health records, physically sending records (which also takes place between other entities, caregivers, etc.)					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Setting the conditions and operation of shared documentation via a secure server on the UHO network.	NAWG (UHO)	• Time • Financial resources	Olomouc district	1 October – 30 December 2021	Document (analysis) about common cases (Y/N)
Adaptation of the application for the needs of other organisations involved.	Members of the NAWG: (coordinator, IT specialist)	• Time • Financial resources	Olomouc district	• 1 November – 30. December 2021 • 1. December 2021-30 September 2022	• Basic modification (Y/N) • Continuous modifications (N° of modifications)
Support and monitoring activities	Members of the NAWG: (coordinator, IT specialist)	• Time • Financial resources	Olomouc district	1 November – 30. December 2021 1. December 2021-30 September 2022	• Basic modification (Y/N) • Continuous modifications (N° of modifications)

Increasing the number of organisations and documents in data sharing through a secure application	UHO	Time	Olomouc district	1. December 2021-30 September 2022	Data shared via app (N° of saved data for sharing, N° of real shared descripted data)

Implementation

1st PDSA Cycle

Plan

LCF1	Tele-Psychiatry\psychology online							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Create a Specific Working Group (SWG) for the local model	Securing specific members of the group, securing rewards for those where desirable.	• 1 GP • 1 coordinator from MoH • 1 pychiatric • 1 psychologist • 1 project manager • 1 deputy director of UHO • 1 office worker from municipality • 1 social worker • 1 IT expert	1/12/2021 to 31/12/2021	• SWG created • Results from meetings • No. of members (contact list) • No of minutes of the meetings	Project manager	28.2.2022	Monitoring during monthly follow-up meetings	• Yes • 7 members • planning further procedures as a result of the negotiations • 2 minutes of outputs
	Informing the wider interest group, reports	Project manager	1/12/2021 to 31/12/2022	No. of posts, emails, etc		Every 6 months		

	for local politicians, information from the social media group.							
Literature, law etc. review for identifying possibilities in Tele-Psychiatry\psychology.	• Define sources, changes in legislation (also from oGP) • Preparation of material for the MoH as a basis for the explanatory report for possible shifts in legislation.	SWG	1/12/2021 to 28.2.2022	• Database created for continuous updating (≥10 relevant and usable sources concerning, also, study visits presented by the oGP on the topic) • 1 draft explanatory memorandum for the Ministry of Health to be prepared for the attention of the Minister	Project manager	30.3.2022	Study of available resources, discussion with SWG members	• Yes ≥ 7 of sources used for further processing
Establish criteria and methods for GPs, social care institution to identify suitability Tele-Psychiatry\psychology.	• Set criteria for the appropriate introduction of the Tele-Psychiatry\psychology practice into mainstream care	• Members of SWG • Representative of a health insurance company	1.12.2021 – 28.3.2022	Design of Tele-Psychiatry\psychology	Project manager	30.4.2022	Interview	Yes

	provision with a view to sustainability • Design the proposed service that will be used for the most part in practice for the pilot and subsequent use.							
GPs, psychiatric, psychologist identification	Formation of a group of specialists with active involvement	• Project manager • 4 specialists • IT specialist	1.12.2021 – 28.2.2022	No of specialists of the group ≥ 4 identified specialists	Project manager	28.2.2022	Special group established	Yes (≥ 4 members identified)
Establish procedures and providing the assistants to the specialists	• Special group meetings to offer good practice in the provision of video consultations in pschiatry and their validation in practice	• Project manager • 4 specialists • IT specialist	1.12.2021 – 28.3.2022	• Setting up procedures and providing assistance to specialists (The work focused also on the search for a sustainable system in the area and how to motivate specialists to participate.)	Project manager	30.4.2022	Monitoring during monthly follow-up time	Yes procedures setted, specialists found

	• Support from project manager and IT specialist							
Train identified specialists on the methods to be used for Tele-psychiatry\psychology. Define modalities for nurse involvement to encourage adherence to the project.	• Support from project manager and IT specialist. • Creating easy manual to developed app.	• Project manager • 4 specialists • IT specialist	1.12.2021 – 28.3.2022	• No of trained identified specialists trained ≥ 4 • No of trained identified psychiatric nurse ≥ 1 • Existing manual	Project manager	10.4.2022	• Monitoring during monthly follow-up time • Monitoring the outputs from the first pilots	N° of specialists at least four an all of them trained in TM • = 4 • = 1 • Yes, but not final version
Identify complex patients and include them in the "ICP Folder" of the outpatient EHR. EHR not in the strict sense, but appropriate and realistic implementation in an application that allows secure sharing.	• General agreement on the appropriate patient typology • General conformity of the appropriate recording method	• Project manager • 4 specialists • IT expert	1.12.2021 – 28.3.2022	Complex patient lists defined ≥ 10 identified patients)	Project manager	10.4.2022	• Monitoring during monthly follow-up time • Interview	8 patients identified

Support and monitoring activities	Support for the groups involved	• Project manager • IT expert	1.12.2021 – 28.3.2022	No. of intervensions, feedbacks and IT changes (Support and monitoring activities performed - number of feedbacks from coordinator and IT specialist to specialists and back, number of IT adjustments)	• Project manager • IT expert	10.4.2022	Monitoring during monthly follow-up time	>20

LCF2	Online management of the psychological and behavioral disorders							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Definition of the most common cases to solve	Analysis of the current most common cases.	• Project manager • 4 specialists	1.12.2021 – 28.2.2022	• Created analysis (Y/N) • Questionnaires completed and feedback received (Y/N)	Project manager	10.3.2022	Questionnaire, interview	• Yes • Yes
Adaptation of the application for the needs of psychiatry, psychology	Modification of the application for the needs of project activities.	• Project manager • IT specialist	1.12.2021 – 28.2.2022	Modificated app.	• Project manager • IT expert	10.3.2022	Processing the feedback during the pilot, processing the output of the monitoring of telepsychiatry functioning in order to modify the application	Yes (the application will be continuously modified, supplemented and extended with additional functions)

Approval of acts for health insurance companies used for reimbursement of care by the health insurance company.	Communication with representatives of selected health insurance companies.	• SWG	1.12.2021 – 28.3.2022	Existing code for treatment.	Project manager	10.4.2022	Meetings, Interview, online communication	Yes
The system enables a secure online call between the doctor and the patient, patient's representative, consular consultation, etc.	• Modification of the application for the needs of project activities. • Appropriate promotion of a new way of relating to clients.	• Project manager • IT expert	1.12.2021 – 28.3.2022	• Modificated app. • No. of articles about videokonzultation, telemedicine apps etc. ≥ 6	Project manager IT expert	10.4.2022	Meetings, Interview, online communication and propagation	• Yes • ≥ 6 (articles, social media, etc.)

LCF3	Online access to documentation (awareness of medication and medical treatment process).							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Setting the conditions and operation of shared documentation via a secure server on the UHO network.	Modification of the application for the needs of project activities.	• Project manager • IT expert	1.12.2021 – 28.2.2022	Existing features to enable secure data sharing (Y/N)	• Project manager • IT expert	10.3.2022	Data from doctors included in the app, ready to be shared.	Yes the application is ready to be adapted for documentation (data) sharing (

Adaptation of the application for the needs of other organisations involved.	Modification of the application for the needs of project activities.	• Project manager • IT expert (also partner IT experts)	1.12.2021 – 28.2.2022	Modificated app. (ensuring mutual communication between health service providers)	• Project manager • IT expert	10.3.2022	Meetings, Interview, online communication	Yes
Support and monitoring activities	Support of all parties involved	• Project manager • IT expert	1.12.2021 – 28.3.2022	Modificated app (number of feedbacks from coordinator and IT specialist to specialists and back, number of IT adjustments)	Project manager	10.4.2022	Meetings, Interview, online communication	Larger quantity of interventions, feedbacks among all representatives(specialists – coordinator – IT department)
Increasing the number of organisations and documents in data sharing through a secure application	Communication with partners, GPs, representatives from external social services, health services, in order for them to use shared patient data as a step towards integrated care.	• Project manager • IT expert	1.12.2021 – 28.3.2022	Data shared via app	• Project manager • IT expert	10.4.2022	Meetings, Interview, online communication and propagation	N° of real shared descripted data

Do –

Cycle number	1	
Activity	**KPI**	**Actual value**
LCF1-Tele-Psychiatry\psychology online		
Create a Specific Working Group (SWG) for the local model	• SWG formed (Y/N) • Results from meetings • N° and profile of the members • No. of post, emails, meetings etc.	We have compiled a list of contacts with experts from the UHO, the Mental Health Centre, municipal authorities, district authorities, social services, etc. The group continuously varied the number, the average number was around 7. Most of the contacts are made by phone. Several on-site meetings have taken place, e.g. at the hospital for the mentally ill. A sub-group is being formed with, among others, representatives of local politicians dealing with SMART solutions in health care, e.g. eHealth. As a result of the meeting, we defined some important topics to address, gaps in practice, etc.
Literature, law etc. review for identifying possibilities in Tele-Psychiatry\psychology.	N° of sources (books, laws, articles) collected	Preparation of theoretical documents, offer of possible solutions, information from oGP, etc. All this as an important information package for negotiations
Establish criteria and methods for GPs, social care institution to identify suitability Tele-Psychiatry\psychology.	Design of Tele-Psychiatry\psychology (Y/N)	We are currently ahead of a pilot to test data sharing and coordination between GPs and UHOs. However, this is not taking place in the psychiatry sector but in the ophthalmology sector. This point was inappropriately chosen for telepsychiatry, and will not be relevant to GPs until much later. Pilot validation within another specialty will facilitate the introduction of future communication with the field of psychiatry as well.
GPs, psychiatric, psychologist identification	No. of specialists of the group	Yes. Instead of GPs, others were identified. 4 members of group
Establish procedures and providing the assistants to the specialists	• Descriptive document about the sustainable incentive system (Y/N) • Incentive system implemented (Y/N)	Procedures have been established. Psychiatric clinic staff involved in the project were trained. We are piloting video consultation procedures in psychiatry and modifying our telemedicine application to make it easier to use and provide better feedback. As part of the discussions and

	(Setting up procedures and providing assistance to specialists. The work focused also on the search for a sustainable system in the area and how to motivate specialists to participate.)	modifications, we are coming up with new needs and solutions beyond the JADECARE system. The final product, the manual, is not finished just because of the modifications. Training has been offered to other entities involved in the care of psychiatric patients.
Train identified specialists on the methods to be used for Tele-Psychiatry\psychology. Define modalities for nurse involvement to encourage adherence to the project.	• No of trained identified specialists trained ≥ 4 • No of trained identified psychiatric nurse ≥ 1 • Existing manual (Y/N)	Training for the UHO clinic psychiatrist and psychiatric nurse was conducted. Education was provided for the staff of the Mental Health Centre and the psychiatric hospital in Šternberk. Several psychologists were also trained to provide psychological support to patients in the terminal stage of illness within the framework of telepalliative care. The manual has not yet been implemented due to permanent modifications to the system.
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR. EHR not in the strict sense, but appropriate and realistic implementation in an application that allows secure sharing.	Complex patient lists defined (N° of patients identified N°>10)	The system is still in pilot from the beginning of DO step. During the pilot, the telepsychiatry application is being adapted, working closely with the psychiatric nurse and psychiatric. We are also trying to involve another entity (psychiatric hospital) in the process. In pilot we have now above 10 patients.
Support and monitoring activities	No. of intervensions, feedbacks and IT changes (Support and monitoring activities performed - number of feedbacks from coordinator and IT specialist to specialists and back, number of IT adjustments)	A very important part of all. Close coordination with IT allows us to meet the requirements for improving the telemedicine application. Quite a lot of adjustments have been made and are still ongoing. We use communication through Teams for monitoring and tasking, there are regular meetings and contact between the psychiatry clinic team, IT, coordinator.
LCF2-Online management of the psychological and behavioral disorders		
Definition of the most common cases to solve	Created analysis (Y/N)	Yes. Based on the experience and study of the oGP materials, a working group meeting followed. As a result, a basic typology of patients involved in the pilot validation was proposed. These are patients who are treated and compensated. With regard to the diagnoses that

		best accept video consultation in psychiatry, patients with anxiety disorders are selected. The feedback so far is good, patients accept and praise the solution. The aim is to try to expand the group to include milder forms of depression.
Adaptation of the application for the needs of psychiatry, psychology	Modificated app	The telemedicine application is at the stage of validation and modification. The working group meets regularly to address changes, issues and improvements at the level of doctor, nurse, coordinator, IT specialist, etc. The application is for computers and a mobile application is also being developed. Within the application and the set processes, it is necessary to solve, for example, reactions to emergencies, connection problems, outages, patient unresponsiveness, etc. This is something the oGP has also struggled with and has processes in place to address. They need to be adapted to our conditions.
Approval of acts for health insurance companies used for reimbursement of care by the health insurance company	Existing code for treatment	For example, one of the big insurance company doesn't have code for video consultation for specialists. Pilot validation will demonstrate the value of re-establishing a code that was routinely reimbursed by the insurance company during the covid pandemic. In discussions on this topic with stakeholders, we have gained support for open negotiations. Communication with the Ministry of Health, which is planning to support the development of telemedicine, shows that the largest health insurer is also preparing the development of eHealth.
The system enables a secure online call between the doctor and the patient, patient's representative, consular consultation, etc.	Modificated app (Y/N)	Yes, system allows that. We are planning a two-factor authentication system as well using new integration platform. Our app provides a stable and encrypted connection that is both secure for doctors and patients.
LCF3-Online access to documentation (awareness of medication and medical treatment process)		
Setting the conditions and operation of shared documentation via a secure server on the UHO network.	Existing features to enable secure data sharing (Y/N)	Yes, the app makes it easy to share data and messages, what highlights the importance of being able to send messages and share information in a simpler way than some existing systems.

Adaptation of the application for the needs of other organisations involved.	Modificated app. (ensuring mutual communication between health service providers) (Y/N)	No, It has not yet been possible to engage another healthcare entity in targeted communication using our system.
Support and monitoring activities	• Modificated app (Y/N) • N° of feedbacks from co-ordinator and IT specialist to specialists and back • N° number of IT adjust-ments	• Yes • N° ≥10 • N ≥10 IT adjustments: The possibility to adjust is important and it is necessary to make the adjustments in accordance with the set procedure and within the agreed time.
Increasing the number of organisations and documents in data sharing through a secure application	• Data shared via app (Y/N) • N° involved organizations (GP, other hospital)	• Yes • N°=1 Sharing data with GP from rural area of regio has been set up.

QUESTIONS	ANSWERS
What was actually implemented? Any deviation from the planned actions	Development of telemedicine app with secure online call between the doctor and the patient was modified, shaped and launched. Setting up a video consultation process for telepsychiatry was set up and launched.Telepsychiatry is already in pilot testing. We continue to raise awareness of these opportunities. Data sharing and collaboration between medical parties is set up in the application and ready for pilot testing. Not only In telepsychiatry, we are extending this good practice to other sectors of telemedicine. This validation will enable better collaboration between regions and will be able to replace missing specialist capacities. This is also an important step how to connect primary care and hospital. In the case of LCF3, most of the planned activities were implemented in line with the key indicators. The aim was to share data, especially with another hospital in the periphery of the district. As part of the pilot testing, we have chosen the path of gradual collaboration with GPs. Vverifying the practice will improve the negotiation conditions, while research on the whole process, verification of functionality, set up of communication, etc. is ongoing. Modifications to the application were made to enable data sharing between social and health care bodies as well. Smaller research has demonstrated the usefulness of links between, for example, hospital, home care and GP.
Problems? Unexpected findings? Please describe	There is still big reluctance to share information mainly because of privacy concerns. Therefore, all patients in the pilot have signed informed consent. Any change takes quite a long time and doctors willing to pilot test are not patient and want a solution right away, this is what we cannot offer. Very different cultures in Primary Care and Hospital Care, social care, there is no single force that can easily connect all of them, it is necessary to go “from the bottom and from the side.” The data recording systems between the health and social systems are not interoperable. This also happens often even between health care providers itself so we need to offer a third-party system, which is another system to manage until everything is unified.

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
		X	

Study

Cycle number	**1**					
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
LCF1-Tele-Psychiatry\psychology online						
Create a Specific Working Group (SWG) for the local model	• SWG formed (Y/N) • N° and profile of the members	• Yes • N° >7 experts	• Yes • N°=7 experts	No deviation from the planned activity	No mitigation action was needed	
Literature, law etc. review for identifying possibilities in Tele-Psychiatry\psychology.	N° of sources (books, laws, articles) collected	N°≥10	N°=7	No great deviation from the planned activity	No mitigation action was needed	
Establish criteria and methods for GPs, social care institution to identify suitability Tele-Psychiatry\psychology.	• N° of SWG meetings • N° and type of criteria to be used • List of criteria available (Y/N)	• N°≥2 • N°≥2 • Yes	• N°=2 • N°=4 • No	Especially for general practitioners, telepsychiatry in the Czech Republic has no more significance than as a referral institution. Patients go directly to psychiatrists and do not need to be referred by a GP. Social care institutions define the need for collaboration but face a	We focus on elements of telemedicine that can be used to work with GPs.	No.

				shortage of specialists.		
GPs, psychiatric, psychologist identification	• N° of GPs identified • N° of specialists identified	• N°≥2 • N°≥3	• N°≥1 • N°=4	Slight variation in terms of the mix of GP and specialist groups. GPs were not involved right for telepsychiatry for the reason already mentioned. Therefore, only one was involved, and a specialist was involved instead.	No mitigation action.	We assumed that this don´t have negative impact on the project.
Establish procedures and providing the assistants to the specialists	• N° of assistants • Descriptive document about the sustainable system (Y/N) • Incentive system implemented (Y/N)	• N°≥4 • Yes • Yes	• N°=4 • Yes • No	The incentive system in place is not yet at the required level. It will depend on the approach of the largest health insurance company. Sustainable system will be important in terms of encouraging health insurance to maintain recognition of videoconferencing in the points system as a telemedicine act (telepsychiatry).	As a mitigating action, we anticipated the forthcoming call for telemedicine interventions from the National Recovery Plan..	/
Train identified specialists on the methods to be used for Tele-Psychiatry\psycholo	• N° of training performed	• N°≥4 • N°≥1 • Existing	• N°=4 • N°=1 • Yes	No deviation from the planned activity	No mitigation action was needed	/

gy. Define modalities for nurse involvement to encourage adherence to the project.	• N° hours spent for training • N° of modalities • N° of nurses involved	manual				
Identify complex patients and including them in the "ICP Folder" of the outpatient EHR. EHR not in the strict sense, but appropriate and realistic implementation in an application that allows secure sharing.	N° of patients identified	N°≥8	• N°= 22 • N°= 0	Slight deviation in the implementation of the ICP component. It is necessary to proceed gradually. No willingness to share this specific data yet. Our telemedicine is prepared to share data (discharge report for example).	Verification of interoperability between the UHO and surrounding health facilities was provided through a different approach.	We assumed that this would not have a negative impact on the project. We just need to adjust the strategy.
Support and monitoring activities	No. of interversions, feedbacks and IT changes	N°=1 per month	Yes	No deviation from the planned activity	\	\
LCF2-Online management of the psychological and behavioral disorders						
Definition of the most common cases to solve	Created analysis (Y/N)	Yes	Yes	No deviation from the planned activity	Partly as a suggestion of the basic typology of patients involved in the pilot validation.	\
Adaptation of the application for the needs of psychiatry, psychology	Modificated app (Y/N)	Yes	No	The app could not be finalized due to ongoing modifications, so there is a basic manual that will be completed when the portal is more finalized.	The application is being used and modified as feedback from pilot validations comes in.	To be completed during the 2nd PDSA. This has not impact on the project.

Approval of acts for health insurance companies used for reimbursement of care by the health insurance company.	N° Existing code for treatment	N°=1 for each health insur-ance com-pany	Partly	6 of the seven health insurance companies have an established and valid code for telemedicine (video consultations). The largest insurance company does not have one. Insurance company codes, where they exist, are under-reimbursed.	Continue to put pressure on insurance companies. Asked help of the hospital department dealing with reimburseme nt by insurance companies.	In the case of not increasing the amount for telemedicine and not introducing a code for the largest health insurance company, the project's output is at risk due to the lack of motivation for clincians.
The system enables a secure online call between the doctor and the patient, patient's representative, consular consultation, etc.	Existing features to enable secure data sharing	Yes	Yes	No deviation from the planned activity	\	\
LCF3-Online access to documentation (awareness of medication and medical treatment process)						
Setting the conditions and operation of shared documentation via a secure server on the UHO network.	Existing features to enable secure data sharing	• Yes	• Yes	There are diffi-culties in defin-ing a draft docu-ment on the roles and func-tioning of an in-tegrated clinical network to ena-ble peer-to-peer sharing. A basic version exists and al-lows sharing of the patiente summary within the citi-zen portal. It only applies to large hospitals in the country. The telemedi-cine portal al-lows sharing of	The timeline of this activity will be extended in the second cycle	The overall aim of the project is to initiate and promote communicati on between professionals in order to improve efficiency (the care) of common patients.

				documentation, but so far it has encountered legislative problems and reluctance. Pilot testing of documentation sharing between GP and UHO is underway.		
Adaptation of the application for the needs of other organisations involved.	Modificated app. (ensuring mutual communication between health service providers. (Y/N)	Yes	Partly	The UHO telemedicine portal is ready for the involvement of other organisations, GPs, clinics. There is a problem with their active involvement. Information learned from the project have been used for the tender documentation for the new hospital information system.	Demonstrate the benefits of joint communication between UHO and GP in a pilot validation and clinical trial.	The info gained have been useful.
Support and monitoring activities	• Modificated app (Y/N) N° of feedbacks from coordinator and IT specialist to specialists and back, N° number of IT adjustments	• Yes N° ≥ 20	• Yes N° ≥ 20	No deviation from the planned activity		
Increasing the number of organisations and documents in data	Data shared via app (Y/N)	• Yes	• Yes	Not much organization was involved, One GP	Although it has not been introduced in large	We are continuing to adjust the integration

sharing through a secure application				ambulance was practically involved in the data exchange. On the theoretical side it was more.	numbers, it has had an impact on the next shift. As a result of the validation, we now have a contract with the aftercare hospital regarding the sharing of documentation.	platform for sharing and transferring more data among more healthcare providers with the political and official representatives of the region. Nursing service organizations have also been engaged regarding sharing, and data is being shared between the hospital and them as a part of small research. We proposed a digital solution

Act

Cycle number	1		
Activity	**Maintain**	**Adapt**	**Abandon**
LCF1-Tele-Psychiatry\psychology online			
Create a Specific Working Group (SWG) for the local model	it is advisable to keep group in process. We will continue the work of the group established within the region on eHealth to disseminate lessons learned in the region and beyond.		
Literature, law etc. review for identifying possibilities in Tele-Psychiatry\psychology.	Because of the renewal of docu-		

	ments, new literature it is necessary to keep up to date. Continuing not only to study and research sources on a continuous basis, but also to adapt procedures appropriately.		
Establish criteria and methods for GPs, social care institution to identify suitability Tele-Psychiatry\psychology.			This point has not been fully met, there is a change, and we are abandoning it as set up.
GPs, psychiatric, psychologist identification	Thanks to the enthusiasm of colleagues from the clinic, it was possible to reach out to other doctors, it is necessary to further push good practice from pilot verifications, to involve more doctors, to work on the involvement of expert committees. In the future, link primary care with more GPs involvement.		
Establish procedures and providing the assistants to the specialists		Incentive system wasn't implemented. We must keep pushing to change approach of the largest health insurance company.	
Train identified specialists on the methods to be used for Tele-Psychiatry\psychology. Define modalities for nurse involvement to encourage adherence to the project.	Training, education, is a way of showing that change is possible and in many ways necessary because		

	it can make work easier. We will make more use of already trained colleagues for further training, modification of manuals, etc.		
Identify complex patients and including them in the "ICP (Individual Care Plan) Folder" of the outpatient EHR. EHR not in the strict sense, but appropriate and realistic implementation in an application that allows secure sharing.	Appropriate setup of patient summary formats for sharing and opening a platform for patients to access the data, e.g. via e-identity. Further work is needed towards a true EHR, which is also a defined gap from primary care that does not have sufficient access to data.	There is a long way to go in the Czech Republic, but the perception of computerisation of healthcare is changing, hospital systems are being upgraded and integration platforms are being created to enable data sharing in the form of patiente summary between hospitals and other entities.	
Define modalities for nurse involvement to encourage adherence to the project	Having nurses involved in the process as the physician's right-hand man proved essential. We will continue to recruit nurses for better adaptation by physicians.		
Support and monitoring activities	A crucial activity to continue, without process monitoring, support, important changes or early interventions that could lead to gradual rejection do not occur.		
LCF2-Online management of the psychological and behavioral disorders			

Definition of the most common cases to solve	For current practice, we have defined. It needs to be introduced into wider practice, only then will it be possible to expand the target group.		
Adaptation of the application for the needs of psychiatry, psychology	This is going to be a never-ending story. The app needs to be updated, modernized, made graphically more attractive, etc. We assume need rewriting the application into another programming language in future (for example kotlin, flutter).	There are still changes in app so in the descriptive document.	
Approval of acts for health insurance companies used for reimbursement of care by the health insurance company.	Almost done, only one insurance company doesn't have a code. Also the remaining codes have low performance, need to push for change.		
The system enables a secure online call between the doctor and the patient, patient's representative, consular consultation, etc.	It is also related to the modernization of the application, even video consultations can be extended with additional activities, notification of scheduled consultations, more native environment.	Offer solutions to other organisations, to spread the idea.	
LCF3-Online access to documentation (awareness of medication and medical treatment process)			
Setting the conditions and operation of shared documentation via a secure server on the UHO network.	The development of an integration platform will enable sharing between healthcare organizations that have different	Minor modifications and dissemination of good practice will be needed. We have an	

	systems. This is the goal of our next focus to make communication between healthcare providers as easy as possible.	integration platform allowing sharing of patient summary, we will take advantage of this.	
Adaptation of the application for the needs of other organisations involved.		Bigger involvement of other organisations will be within the framework of the 2nd PDSA.	
Support and monitoring activities	Continued monitoring and support, which often yielded interesting ideas and reflection.	Extend the deadline to December 2022 New Target value: • N ≥80% of enrolled patients	
Increasing the number of organisations and documents in data sharing through a secure application	Disseminate more information and look for willing actors to disseminate good practice.	We foresee the involvement of other entities as the systems are developed.	

QUESTIONS	ANSWERS
Any new proposed action for the future?	Advocating for changes in health insurance companies. Support activities at the Ministry of Health by engaging in the National Recovery Plan. Under this activity, all key performance indicators will be reviewed. We are piloting the use of software e.g. to manage communication between the ambulance service and the hospital: we want to extend this activity to communication between the hospital, primary care and nursing as a further step towards integrated care.

2nd PDSA Cycle

Plan

LCF1	Tele-Psychiatry\psychology online							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Continue the work of SWG.	• Securing specific members of the group, securing rewards for those where desirable. • Setting up regular reports, information. • Member updates	• 1 coordinator from MoH • 1 pychiatric • 1 project manager • 1 deputy director of UHO • 1 office worker from municipality • 1 social worker/psychiatric nurse • 1 IT expert	1.7.-31.12.2022	• Results from meetings • No. of members (contact list)	Project manager		Monitoring during monthly follow-up meetings	• Yes • 5-7 members
Improving awareness of telepsychiatry	Informing the wider interest group, reports for local politicians, information from the social media group. clinical trials	Project manager	1.7.-31.12.2022	No. of posts, emails, lectures at the University for future doctors etc. Evidence from clinical studies.	Project manager	Every 3 months	Minutes Preparation of the study	N ≥ 10 Prepared study

Finding resources to support sustainability, development of telepsychiatry	Continue discussions with MoH, preparation for national recovery programme where psychiatry is planned as a project for implementation.	SWG	1.7.-31.12.2022	Existence of a suitable subsidy programme	Project manager	Continuously	Minutes	Project prepared for submission
Adaptation of the methodology in the field of telepsychiatry to the conditions of the CZE and preparation for their adoption at the level of the MoH and subsequently health insurance companies.	Adaptation of the new provided theory, introduction of the methodology/rules of video consultation in psychiatry. Possible subsequent modification.	• Members of SWG • Representative of a MoH and health insurance company	1.7.-31.12.2022	Design of guidelines of video consultation in Tele-Psychiatry\psychology	Project manager and member of SWG	Continuously	• Interview • Correspondence	A set procedure for the creation of a new strategy document or the completion of an existing one.
Continuing the pilot, tracking statistics	Anonymous records of patient checks, results, finding differences, satisfaction…	Psychiatric clinic	1.7.-31.12.2022	• Simple monitoring of the pilot progress • Improving access to quality treatment services	• Project manager • Representatives of the clinic of psychiatry	Every month	Data	Changes made on the basis of monitored KPI parameters, i.e. on the basis of monitoring to facilitate service delivery

Providing the assistants to the specialists	• Special group meetings to offer good practice in the provision of video consultations in psychiatry and their validation in practice • Support from project manager and IT specialist	• Project manager • Specialists • IT specialist	1.7.-31.12.2022	Established procedures and providing the assistants to the specialists	Project manager	Continuously	Monitoring during monthly follow-up time	Yes. Service implemented through a telemedicine approach. Communication system in place for support in this area. -
Train identified specialists to encourage easier adoption of video consultation methods for psychiatry.	• Support from project manager and IT specialist. • Updating manual to developed app.	• Project manager • 4 specialists • IT specialist	1.7.-31.12.2022	• Training performed • Trained identified specialists • Trained identified nurse • Existing updated manual	Project manager	Continuously	• Monitoring during monthly follow-up time • Monitoring the outputs from the first pilots	• At least one Training conducted • Minimum 2 Designated experts trained • Minimum 1 Identified nurse trained • Existing updated manual
Identification of complex patients Comparison with data from pilot testing.	• General agreement on the appropriate patient typology • General conformity of the appropriate recording method	• Project manager • 2 specialists • IT expert	1.7.-31.12.2022	Complex patient lists defined (about 10 identified patients)	Project manager	Continuously	• Monitoring during monthly follow-up time • Interview	No ≥ 10 patients
Support and monitoring activities	• Support for the groups involved • Responding to new needs	• Project manager • IT expert	1.7.-31.12.2022	Support and monitoring activities performed (number of feedbacks from coordinator and IT	• Project manager	Continuously	Monitoring during monthly follow-up time	No ≥ 10 intervensions, feedbacks and IT changes

				specialist to specialists and back, number of IT adjustments)	• IT expert			
Efforts to minimize duplicate records, simplify the application to a minimum, or move to a single platform.	Adapting the app for the need and offering it for free as an incentive to use it.	• Project manager • IT expert	1.7.-31.12.2022	Expansion of external ambulances in the system.	• Project manager • IT expert	Continuously		No ≥ 1 health care provider using our system

LCF2	Online management of the psychological and behavioral disorders							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Incorporation of questionnaires and data collection from patients directly in the telemedicine application.	Modifying the application, collecting and working with data	• Project manager • specialists	1.7.-31.12.2022	Available in the app. (Y\N) No of completed questionnaires and received feedback and here set a target value	Representatives of the clinic of psychiatry	Continuously	Questionnaire, interview	Yes 60 (completed questionnaires and feedback from patients)
Adaptation of the application for the needs of psychiatry, psychology	Modification of the application for	• Project manager	1.7.-31.12.2022	• Modificated app. (Y\N)	• Project manager • IT expert	Continuously	Processing the feedback during the pilot, processing the output of the	Yes (the application will be continuously modified,

(it is a work in progress) *Demonstration of the usefulness of telepsychiatry as a system for implementation in general practice*	the needs of project activities.	• IT specialist • Representatives of the clinic of psychiatry		• More flexibility for patient (Y\N) • Less time spent travelling to and from the outpatient clinic (Y\N) • Fewer cancelled appointments (Y\N) • Less time spent with the patient (Y\N)			monitoring of telepsychiatry functioning in order to modify the application	supplemented and extended with additional functions) Yes (the application will be modified to make it more flexible for patients) Yes (for patients, access will be desirable for travel time savings) Yes (there will be fewer cancellations of consultations arranged through the online tool) Yes (saving approx. 10 min per patient in preparation and leaving the surgery versus video consultation)
Approval of acts for health insurance companies used for reimbursement of	• Communication with representatives of se-	• MoH • Project	1.7.-31.12.2022	Existing and functional code for treatment (Y\N)	Project manager	Continuously	Meetings, Interview, online (email) communication	Y\N Renewed reimbursement of video consultations

care by the health insurance company.	lected health insurance companies. • Setting at least the signal code	manager						for all 7 insurance companies.
Using patient experience, needs and feedback to advocate for change	Appropriate articles, outreach to stakeholders, communication with patients, data collection and feedback	• Project manager • Representatives of the clinic of psychiatry	1.7.-28.2.2022	Article, clinical study, etc.	Project manager		Meetings, Interview, online communication and propagation	Yes At least two published articles, two social media messages, a message on the hospital intranet

LCF3	Online access to documentation (awareness of medication and medical treatment process).							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Preparation of a project on social innovation as evidence of the appropriateness of health and social sector linkages, integrated care,	• Preparation and submission of interdepartmental cooperation projects for chronic patient care. • Communication with stakeholders	Project manager	1.7.-28.2.2022	Prepared project	Project manager	Continuously	Meetings, Interview, online communication	Yes, a ready-made project that keeps pushing the set parameters

	(social service provider, technology company, hospital)							
Adaptation of the application for the needs of other organisations involved.	• Set up of external ambulances in the system, collaboration on care of common patients, test validation of data sharing and processing • Approval by the Ethics Committee of UHO • Possibility to send data from mobile devices for evaluation in UHO, feedback and possible follow-up in UHO • Data collection and processing, validation of care for shared patients between primary care and hospital	Project manager	1.7.-31.12.2022	Modificated app. (ensuring mutual communication between health service providers)	Project manager	Continuously	• Meetings, Interview, online communication • Data • Analysis	Yes
Preparation for a single patient record within the UHO	Setting conditions, application modification, testing, evaluation	Project manager	1.7.-31.12.2022	Modified application, set rules for	Project manager		Meetings, Interview, online communication, regulations	Yes/No

		Deputy director for IT in UHO		implementation in the hospital system				
Increasing the number of organisations and documents in data sharing through a secure application	• Regular communication with partners, GPs, representatives from external social services, health services • Setting up cooperation with the nursing service, preparation for the extension of modalities to include telenursing	• Project manager • Other organisations	1.7.-31.12.2022	Two-way communication between subjects	Project manager	Continuously	Meetings, Interview, online communication and propagation	N° ≥ 30 patients (real shared descripted data)
Establishing collaboration with the National Center for Nursing and Non-Medical Health Professions for collaboration and new projects to enhance chances of success	• preparation of joint projects • finding external resources and partners • persuading stakeholders	Project manager	1.7.-30.3.2022	Established cooperation		Continuously	Meetings, Interview, online communication and propagation	Yes, preparation of a joint project to further advance integrated care in the Czech Republic
Strengthening stakeholder support	Setting up regular information reports	Project manager	1.7.-30.3.2022	Raising awareness of the project and its objectives	Project manager	Continuously	Meetings, Interview, online communication and propagation	N° of partners found to help advance telemedicine and its potential in

								integrated care, etc.

Do

Cycle number	2	
Activity	**KPI**	**Actual value**
Preparation of a project on social innovation as evidence of the appropriateness of health and social sector linkages, integrated care. Searching for cooperation with other organization.	• Prepared project (Y/N) • Contract with some other organization about cooperation (Y/N) > 2 organizations involved • > 1 suitable subsidy title found	No cooperation agreement has been signed yet. Sharing and cooperation is in pilot testing. A suitable grant is being sought to blend the field with the hospital, where we have already identified some topics.
Adaptation of the application for the needs of other organisations involved.	Modificated app. (ensuring mutual communication between health service providers) (Y/N)	The application is gradually adapted to our needs and suitably supplemented. Communication with other entities in terms of coordination and cooperation through the application is ongoing. Setting up collaboration also in terms of data sharing. Validation of processes, in preparation for pilots in a possible National recovery project.
Preparation for a single patient record within the UHO	• Modified application, set rules for implementation in the hospital system. (Y/N) • Prepared system for health information exchange etc. (Y/N)	Setting conditions, application modification, testing, evaluation. Using the lessons learned from JADECARE for further development of the hospital system. Core of Integration platform and engine for patient and clinical portal in University Hospital Olomouc is based on HealthShare (Intersystems) technology. HealthShare includes health information exchange, data aggregation, workflow, text analysis, and analytics technology. It connects to internal and external systems for HIE, and offers an integrated, universal view of all the data. HealthShare enables healthcare professionals to leverage their existing systems and the vast amounts of untapped health information contained within them to support secure data exchange and messaging and connections to other HIEs. The software also offers a real-time analytics component, called Active Analytics, that continuously collects, aggregates, normalizes, and presents data from across and beyond the organization. Because it is designed as a series of components that work securely together, HealthShare can be configured in a variety of ways, from clinical document sharing to fully integrated private or public health information exchange.HealthShare components include: • Foundation • Composite Health Record

		• Clinician Viewer • Patient Index • Provider Directory • Terminology Engine • Consent Management • Clinical Message Delivery • Active Analytics Architecture The HealthShare standards-based interoperability framework provides a scalable, foundation for health information exchange. It connects data, applications, processes, and users internally and externally of an organization. Supported standards include: • HL7 • FHIR • IHE • CDA • CCD • DICOM • X12 • Czech DASTA standard • etc...
Increasing the number of organisations and documents in data sharing through a secure application	• Two-way communication between subjects > 2 organizations involved • N° of data shared	Finding suitable partners for collaborative settings, improving data availability in an appropriate way, as a next step towards integrated care.
Establishing collaboration with the National Center for Nursing and Non-Medical Health Professions for collaboration and new projects to enhance chances of success	• Established cooperation. (Y/N) • > 4 meetings leading to a possible joint project further developing the themes developed during the JC	
Strengthening stakeholder support	• Raising awareness of the project and its objectives > 4 meetings with stakeholders • N° of partners found to help advance telemedicine and its potential in integrated care, etc.	Given the cultural background of society in the Czech Republic and its distrust of new things, it is necessary to constantly draw attention to the necessary changes in the system, implement them in small steps and draw attention to them.

QUESTIONS	**ANSWERS**

What was actually implemented? Any deviation from the planned actions	The oGP experience has provided knowledge for the creation of systems suitable for use in integrated care, a patient record within a hospital system, preparations for a new hospital system, and valuable experience for application to the National Recovery Plan.
Problems? Unexpected findings? Please describe	Resilience of insurance companies, cultural practices and societal settings in the Czech Republic

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
		X	

Study

Cycle number	**2**					
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Preparation of a project on social innovation as evidence of the appropriateness of health and social sector linkages, integrated care.	• Prepared project (Y/N) • Contract with some other organization about cooperation	• (Y/N) • (Y/N) > 2 organizations involved • > 1 suitable subsidy title found	• Yes • N°= 1 • N°= 2	Contract negotiations are lengthy and must go through the legal departments of the parties. At least one contract is about to be signed and the signature will be realized by February at the latest. This will give us another collaborating entity using our platform for shared patient care. With one other party, there is no exact contract, but agreement about cooperation (GP).	No mitigation action was needed	It will be slightly postponed, what is important is the actual setting up of cooperation and the contractual one, which will open the way for other negotiations, as proof that it is possible also in the Czech Republic.
Adaptation of the application for the needs of	Modificated app. (ensuring mutual communication	(Y/N)	Yes	No deviation from the planned activity,	No mitigation action was needed.	100% usability is not yet possible.

other organisations involved.	between health service providers)			app is ready to do so.	However, we need to push for a change in legislation. This is also what the Association of Social Service Providers in the Czech Republic is trying to do. The setting of some laws is unsustainable.	
Preparation for a single patient record within the UHO	Modified application, set rules for implementation in the hospital system Prepared system for health information exchange ect.	• (Y/N) • (Y/N)	• Yes • Yes	The second item will be ready with a slight delay, expected by the end of January, but it is at such a stage that we can consider it ready.	No mitigation action was needed.	
Increasing the number of organisations and documents in data sharing through a secure application.	• Two-way communication between subjects • N° of data shared	• > 2 organizations involved • N° of data shared	• N°= 2 • Yes • > 4	Sharing and mutual communication has been tested with one entity, the other entity is preparing to set up cooperation and will be contractually resolved using or providing our application.	No mitigation action was needed	
Establishing collaboration with the National Center for Nursing and Non-Medical Health Professions for collaboration and new projects to enhance	• Established cooperation. • N° of meetings to certain topic	• (Y/N) • > 4 meetings leading to a possible joint project further developing the	• Yes • > 4	Thanks to regular contacts, cooperation has been established and discussions are ongoing regarding a joint application to the Social Innovation Programme. In addition, we are testing a solution to share selected		

chances of success.		themes developed during the JC has been made		image documentation via an application that will allow to monitor wounds appropriately and focus on their treatment in a hospital-field collaboration.		
Strengthening stakeholder support	• Raising awareness of the project and its objectives • N° of partners found to help advance telemedicine and its potential in integrated care, etc.	• > 4 meetings with stakeholders • N° of partners	• Yes • > 7			
Preparation of a project on social innovation as evidence of the appropriateness of health and social sector linkages, integrated care.	• Prepared project (Y/N) • Contract with some other organization about cooperation	• (Y/N) • (Y/N) > 2 organizations involved • > 1 suitable subsidy title found	• Yes • N°= 1 • N°= 2	Contract negotiations are lengthy and must go through the legal departments of the parties. At least one contract is about to be signed and the signature will be realized by February at the latest. This will give us another collaborating entity using our platform for shared patient care. With one other party, there is no exact contract, but agreement about cooperation (GP).	No mitigation action was needed	It will be slightly postponed, what is important is the actual setting up of cooperation and the contractual one, which will open the way for other negotiations, as proof that it is possible also in the Czech Republic.

Act

Cycle number	2		
Activity	**Maintain**	**Adapt**	**Abandon**
Preparation of a project on social innovation as evidence of the appropriateness of health and social sector linkages, integrated care.	Part of the solution should be maintained, contacts have been established with big players in the field of field services, home care services etc.	Prepare a project application for the National Recovery Plan on eHealth and telemedicine interventions to ensure subsequent scale-up and sustainability of the JC. Prepare a social invocation project extending integrated care to outreach care or social services.	Preparation of a project on social innovation as evidence of the appropriateness of health and social sector linkages, integrated care.
Adaptation of the application for the needs of other organisations involved.			Adaptation of the application for the needs of other organisations involved.
Preparation for a single patient record within the UHO	Core of Integration platform and engine for patient and clinical portal in University Hospital Olomouc is based on HealthShare (Intersystems) technology. In addition, patient charting, preparation for patient summary and sharing via the integration platform across the EU is possible while maintaining the necessary security standards. The system needs to be further built, not just maintained.		Preparation for a single patient record within the UHO
Increasing the number of organisations and documents in data sharing through a secure application.		Currently, a contract is ready to be signed for cooperation and joint use of the application enabling data sharing, video consultations, consilial meetings over patient data, etc. between two entities. The application shows the way to go in terms of building or adapting the	Increasing the number of organisations and documents in data sharing through a secure application.

		purchased more robust application usable at national level. This is what the National Recovery Plan is supposed to help with, where we expect at least active participation.	
Establishing collaboration with the National Center for Nursing and Non-Medical Health Professions for collaboration and new projects to enhance chances of success.		It is another larger body that can help with the dissemination and retention of lessons learned. It is not just the possibility of submitting a joint project.	Establishing collaboration with the National Center for Nursing and Non-Medical Health Professions for collaboration and new projects to enhance chances of success.
Strengthening stakeholder support	It is not only about stakeholalders but also about current and future clients of services, health professionals, etc. There is a need for systemicity and conceptualisation at national level. I think that the upcoming subsidy programme is an understanding of this. However, the management of our hospital is also a stakeholder, which is increasingly interested in the development in the field of digital health.	The hospital management involves our centre in other projects using the acquired experience, such as COPD, tele-rehabilitation with telecardiology, etc., some of these interventions were also presented in the so-called “study visits” in JC, so there is certainly a great importance of the JC in terms of the contacts acquired.	Strengthening stakeholder support

QUESTIONS	ANSWERS
Any new proposed action for the future?	How to ensure the continuation of communication between partners in terms of sustainability? The view of oGP and other partners and NA will be important for us in the future, we would hate to lose this opportunity

Post-implementation

ITEM	ANSWER
Title and abstract	
Title	Tele-Psychiatry\psychology online, Online management of the psychological and behavioral disorders and Online access to documentation (awareness of medication and medical treatment process).
Abstract	UHO proposes a number of measures to promote better integration and proactive patient care in the region. These interventions include identifying appropriate patients through a stratification process and promoting communication and sharing of care plans, documentation among health professionals. Our strategy is taking place against a backdrop of increasing number of patients coupled with an ageing population and declining numbers of healthcare staff. Our approach is in line with the plans of the Ministry of Health (MoH) and the new law on the digitalisation of the healthcare system. The practice presents an opportunity to integrate and coordinate efforts to provide timely and ideally integrated care in the future as fragmentation of the healthcare system complicates and makes the entire system more expensive. Factors that could negatively impact our goals are the lack of participation of clinical experts in the process, barriers caused by privacy issues, and difficulties in addressing communication barriers. Also, the reluctance of people to change established practices and, last but not least, the increasing age of professional staff and cultural resistance to digitalisation.
Why did you start?	
Problem description	In the earlier stages of the JadeCare project, it was evident that a new law on digitalisation in healthcare would be passed in the Czech Republic, moving us closer to new practices and approaches in ICT-enabled healthcare delivery. Until then, the improvements in this field 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 pandemic. The overall situation in general in the Czech Republic in terms of eHealth has been delayed, both in terms of training programmes, laws, and actual services provided. The Czech Republic is at the lower half of the digitalisation 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.
Available knowledge	Already 2 years before JADECARE, UHO prepared the change to a new hospital system (NIS) by implementing an integration platform to unify the various clinical systems and codebooks. The integration platform also serves as the core for interoperability and today we are able to exchange electronic health records also within the EU NCPeH project. In this prepared environment, it became clear that the old system no longer met the requirements for interoperability, modern 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. For that reason, we are now selecting a suitable NIS that will significantly enhance our interoperability capabilities and whose exchange will be much easier than without the integration platform. We have adapted the IP for connecting the new NIS inspired by the JC project so that we are able to set up an efficient data standard and more advanced interoperability features.

<table>
<tr><td></td><td>The competent (for digitalization in health) MoH department wanted to put more pressure on education, experience and dissemination of best practices in digital health care. Until then, one of the few areas where telemedicine was actually being used was, for example, 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.</td></tr>
<tr><td>Rationale</td><td>The real reason for the project was that the 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 telemedicine basically started in UHO with cardiac patients and now this method is common practice in this particular target group, the experience helps us to expand the possibilities of telemedicine in other fields, such as palliative care and psychosocial support, or video consultations in psychiatry. At the same time, as UHO is the largest and most modern health centre in the region, we could expect that UHO would be an inspiration for others and, as a result, the new approaches would help to spread further.
So we have launched a pilot validation in the field of telepsychiatry based on WP 8 experience, but also in other fields, using digital tools, information and data sharing, collaboration and communication between entities working in the field of health services (hospital, GP, long-term care hospital).</td></tr>
<tr><td>Specific aims</td><td>• Improve communication between health organisations
• Introduce video consultations as a normal part of practice, including consultations between doctors
• Preparations for introducing video consultations as a normal part of psychiatric practice (including a set of appropriate patient groups).
• Create and update online space as a solution for more effective data sharing, communication, etc.
• Creation of a new application, modification of NIS, IT communication model, etc.</td></tr>
<tr><td colspan="2">What did you do?</td></tr>
<tr><td>Context</td><td>
<table>
<tr><td>INTERNAL</td><td>STRENGTHS</td><td>WEAKNESSES</td></tr>
<tr><td></td><td>1. Adequate network of health services in place.
2. High professional capacity in the UHO.
3. Existence of the National Telemedicine Centre at the UHO.
4. Available ICT in the Czech Republic and in the Olomouc region sufficient internet coverage (coverage is not sufficient).
5. Existing European projects that offer inspiration from abroad for adoption.
6. Developing digital integrated care platform within the UHO.
7. Cooperation with the MoH in the field of digital services; UHO is the MoH competence centre for telemedicine.</td><td>1. Poorer access to care in peripheral parts of the country.
2. Technologies are used at a lower user level. Weaker user knowledge of ITC tools.
3. Duration of introduction of innovations (technologies) into routine practice as well as their acceptance and sustainability!!!!!!!
4. Uncertain financing of future eHealth related costs.
5. Uncontracted relationship with health insurance companies regarding eHealth.
6. Lack of eHealth legislation. Lack of a county health policy.
7. Weak activity of health insurance companies in the implementation of innovations, not only in the framework of the project.</td></tr>
</table>
</td></tr>
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	EXTERNAL

OPPORTUNITIES	THREATS
1. Use of UHO experts for other entities. 2. Integrated healthcare, digitalization of healthcare, etc. as a suitable political topic. 3. Emerging platform for digitalization of integrated patient care including shared documentation. 4. Transfer of innovations from abroad and within the Czech Republic. 5. More efficient care solutions, time savings for clients, simplification of some processes. Better coordinated care. 6. The need to connect actors in social and health services where it makes sense in client care. 7. Individual interest in innovation, quality and accessibility of care, integration. 8. The possibility of sharing information about patients.. 9. Opportunity to improve health literacy and increase the status of the citizen in the health system.	1. Complicated health financing system. 2. Insufficient involvement of health insurance companies. 3. Insufficient involvement of health practitioners. 4. Insufficient involvement of health professionals (willingness and motivation?). 5. Coordination, communication and collaboration of care is not at the required level and does not have sufficient support. 6. Fake news and fears arising from various unverified sources. 7. Insufficient PR (awareness) regarding innovation and integrated care. 8. Decreasing number of GPs especially in peripheral parts of the country. Increasing average age of GPs. Shift in priorities of political issues in the country. 9. Within 10 years Jesenice will lack a cardiologist, nephrologist, gastroenterologist, ENT doctor, rheumatologist, oncologist, vascular specialist - these doctors are around 60 years old, no replacement is being prepared.

This abbreviated version of the SWOT analysis of the project shows that the working group believes that we are strong in terms of introducing new procedures, offering specialised care, etc.

New data systems, procedures, etc. present a number of challenges.

Intervention(s)

The NAWG is composed with multiple expertise and the number and membership of the "core" NAWG, which has participants in theme days and theme workshops, has varied from time to time:

- Head of Digitization: Antonín Hlavinka
- Strategic Innovation Consultant: Zdeněk Gutter
- Researcher and academic from Palacky University Olomouc: Michal Štýbnar
- Regional policy representative for the social area: Michal Majer
- Project Manager: Zdislav Doleček
- UHO medical specialists: Jakub Vaněk, Tomáš Galíček
- UHO specialist: Jana Chudobová
- IT project support: Tomáš Vohralík, David Škoda
- MoH representative: Petr Struk and Zdeněk Gutter
- UHO Management: Čeněk Merta
- Involved politicians and officials: representatives of the city and the region
- Selected members of the eHeatlh working group within the SMART Region Committee

The intervention has different meanings depending on the context. In our case, it was an intervention to influence the development of the eHealth in our region and influence

	others. In meaning to be well prepared for selected changes in the health sector in the country. Thanks to the pressure from our management (Čeněk Merta), a group (eHealth working group) within the Olomouc Region "eHealth" was created to prepare a reservoir of project fiches in the field of eHealth and to propose them for implementation with contributions from the Olomouc Region budget. The group is composed of both officials and politicians of the Olomouc Region. Thanks to the work of this group, last year for the first time in history a subsidy title in the field of eHealth was announced in the Olomouc Region. It was announced this year as well.
Study of the Intervention(s)	The project had a number of specific key performance indicators (introduction of a new approach in the clinic, creation of new SW with the possibility of mutual communication, communication through an app, a cooperation agreement between two entities providing health services, etc.). A clear evaluation outcome is also the creation of a grant project that will sustain and further enhance the knowledge gained in the JC. The evaluation was carried out by counting whether the objectives were achieved or not. Evaluation calls were made, procedures were evaluated in meetings, consultations at the ministry, and also within the regional policy framework. The structure of the PDSA was helpful in its instructional approach.
Measures	Specific Working Group (SWG) formed: Nº of members: up to 13 plus up to 12 from Olomouc region, eHealth Smart region committee, this group was also participating on some JC interventions. The working group would be selected to cover the important roles with the expectation that it will provide feedback and suggestions on the selected issues in the JC project. Literature, law etc. review for identifying possibilities in Tele-Psychiatry\psychology: books and especially laws and guidelines from oGP were studied, also different forms of questionnaires, etc., database of useful literature and texts created. Establish criteria and methods for GPs, social care institution to identify suitability Tele-Psychiatry\psychology: Design of Tele-Psychiatry\psychology created for pilot testing as proof of as evidence for adoption into common practice. GPs, psychiatric, psychologist identification: Nº specialists 2 instead of 4 most of the time of the project. But thanks to the interest of specialists throughout the project, others have become interested, and we are currently discussing the involvement of others in psychiatry and psychology using a telemedicine application. Establish procedures and providing the assistants to the specialists: Within the framework of the project, materials were prepared to support telepsychiatry (video consultations), contacts were established with various practitioners, however, a document on a sustainable incentive system was not prepared, only in the form of preparation of the National Recovery Programme, telepsychiatry is being prepared as one of the interventions. This is particularly important for sustainability. The incentive system in place is another KPI, there is a need for insurance companies to belong, it has not been met but again will be addressed within the above. • Train identified specialists on the methods to be used for Tele-Psychiatry\psychology. Define modalities for nurse involvement to encourage adherence to the project: • Training performed (Y/N) • Trained identified specialists trained (N° of trained staf) • Trained identified nurse (N° of trained staf) • Existing manual

	Education of employees and creation of manuals, dissemination of good practice among users and other subjects is also part of the creation of SW, which is also part of this solution. Identify complex patients and including them in the "ICP Folder" of the outpatient EHR. EHR not in the strict sense, but appropriate and realistic implementation in an application that allows secure sharing. • Complex patient lists defined with at least 10 identified patients (Y/N) Support and monitoring activities Support and monitoring activities performed (number of feedbacks from coordinator and IT specialist to specialists and back, number of IT adjustments) (Y/N)
Analysis	Not Applicable
What did you find?	
Results	Initially, the plan was to transfer three good practices of WP 5, 6 and 8. Considering the non-functionality of integrated care within the Czech Republic, we chose interoperability, sharing of documentation and collaboration, especially within WP 5, inspired also by the possibilities of WP 6, especially health circuit etc., which also address continuity, access to data and their analysis. Within this point, software will be further developed both for the needs of the patient portal and for the sharing of information needed for integrated patient care with a high emphasis on interoperability Very interesting and important for us was solution dealing with telepsychiatry (WP8) which clearly declares the fact that it is possible to implement telemedicine even in sectors where we do not necessarily have a number of external measuring devices, such as cardiology. In WP 8 we have adopted video consultations in psychiatry as part of psychiatric practice. This solution was largely piloted during JadeCare and validated. Within the outputs, telepsychiatry is planned as one of the specific telemedicine outputs (of the National recovery grant programme), one of the main interventions, for further development in collaboration with professional societies and chambers, etc. 1 : Creating a new approach to ICT • Create a new approach and expand it in the future, push for faster approval of changes in the law. • A large amount of information, experience, data and concrete outputs were collected from RSD (WP8), Kronigune (WP5) and Catalonia (WP6). • With sufficient concrete information, preparations were initiated for the gradual transition and adaptation of existing hospital systems, creating a custom telemedicine application as an input experience to the new more robust ICT systems Dialogue with health professionals within the county, entities that have a national scope and can be valuable companions in terms of pressure for change, its implementation and also e.g. success in case of new project submissions, which in turn are important for sustainability. 2: Foreign experience and pilot testing in the Czech Republic Discussions were held with representatives of WP 5, 6 and 8 regarding the transfer of experience, WP5 and 8 were chosen for pilot testing. These are possibilities of sharing documentation, integrated approach in patient care, cooperation between different health care entities.

The possibility of video consultations in psychiatry as part of the development of tele-psychiatric care was also piloted, using oGP resources from WP 8.

The validation and analysis of the lessons learned 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.

3: Strategic discussion on future approach.

Through experience, e.g.:

- Video consultation in psychiatry
- Sharing of documentation and collaboration on patient care (GP - hospital)
- Sharing documentation, collaborative consular consultation over patient images etc. (GP – hospital - long-care term hospital)

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, we 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 goal is to connect healthcare providers/healthcare facilities to eHealth services according to interoperability rules and to fully operate the eHealth portal, ideally with enhanced functionality and a catalogue of services.

Setting up the conditions and operation of shared documentation via a secure server in the UHO network, involvement of other organisations, consular teleconferences, etc.

1: Creation of software (custom solution for telemedicine application, integration platform for documentation sharing meeting interoperability conditions) We have reached the goal in JadeCare.

We are continuously extending the SW with new data sources and reports, features, the selection of the supplier of the new hospital system is completed and the focus will be on system interconnection - this will continue after the JadeCare project is over.
Education of employees and creation of manuals, dissemination of good practice among users and other subjects is also part of the creation of SW, which is also part of this solution.
2: Adaptation of the application for the needs of psychiatry, psychology
We have reached the goal in JadeCare.

	Within the framework of the forthcoming national project, this is planned to be further addressed. 3: Video consultation as a valid part of psychiatry. We have reached the goal in JadeCare. 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.) After the end of the JadeCare project, we continue to maintain this intervention, which is to be further developed in the framework of the upcoming national project. 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). It will be further developed with the participation of a network of physicians and professional societies in psychiatry.
What does it mean?	
Summary	As a result of the intervention built in JADECARE, we have created new dashboards inspired by Kronikgune. It is our own ICT solution (telemedicine app – web platform, and also mobile platform in development) thanks to other investments from different budgets. We also had a good dialogue about the telemedicine app with health professionals and other end users (patients). In this case too, by means of funding opportunities from other sources, we also used a UX approach to design the app, etc. The dashboard was developed in two phases: the first, Info review, included an overview of good practice; the second phase involved the development of a tool based on this information. First product was web app (for telemedicine). After the review, the first phase involved selection for evaluation and assessment of risk stratification models in defined patient groups. In this selection, we kept future predictive ability in mind. Artificial intelligence and machine learning was deployed in collaboration with the Brno University of Electrical Engineering, where we developed covid prediction in another project CovidStop. This is a learning experience applicable to other groups, and data needs to be appropriately determined. The second phase is to create a user-friendly and ideally native application that is structured to allow users to interact with the healthcare facility, between healthcare facilities. It contains certain data, collects selected data (e.g. from telemonitoring, questionnaires, etc.) and system responses - alerts - can be set. The system is still under development and is gathering experience to build a larger and more comprehensive system with solid database. The telemedicine apps developed have been used for communication with patients (report writing, consultation requests, questionnaires, etc.) as well as video consultations in psychiatry, consultations between medical facilities, data sharing, etc. The system is not complete, but it is operational and is used by other hospitals under contract in the care of palliative patients. It is a 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.

	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.
Interpretation	The above-mentioned work will be the basis for UHO to work more effectively with data in the future in the field of communication with patients, scientific and clinical studies, to expand the possibilities of telemonitoring, to consider other good practices, e.g. the Catalan practice of Hospital at home, which would not be feasible at all without a properly chosen ICT. JadeCare contributed new perspectives, networks and concrete inputs to give UHO a solid foundation for this work. We 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.
Limitations	There are some limitations in the JadeCare system: Covid19, which caused problems in arranging physical meetings and also prevented the involvement of health professionals to the extent expected. This was particularly the case at the beginning of the project. However, the study visits in particular were so complex that it would have been better to separate and present them on site with more active NA involvement at the very beginning of the project. It was more complicated for the UHO to ensure the development of dashboards, SW... that were needed to justify and implement changes in the health system (sharing data, preparing for patient summary as a step towards EHR, preparing for patient portal as a step towards patient empowerment, etc.). It would be useful to have an amount in the budget for an IT expert directly paid for by the project. In general, it is very difficult to get an IT expert because the hospital cannot compete with private companies that offer completely different terms. Problems more typical of cultural settings and historical practices are in the adoption of new approaches by financial and some political authorities. In the Czech Republic, concerns about GDPR are so great that they often inhibit development due to unreasonable fears about privacy breaches, data loss, etc., not accepting the fact that many current practices, particularly in the field, may be potentially more dangerous than the threat of cybercrime.
Conclusions	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. 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. There is also interest in the system within other clinics in the hospital. During the project, a working group has been formed and expanded with outputs from another working groups, which is part of the Olomouc Region called “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. 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, teleophthalmology, 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 we will continue to build and improve the system, as we 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.
Other information	
Funding	Part of the expenses needed for the implementation were covered e.g. by the project of the Regional Authority (e.g. development of some interventions using an integrated approach for joint patient care), but also by the operating funds of the hospital IT department, programming of the telemedicine application, etc.

Croatian Institute of Public Health (CIPH)

Pre-implementation

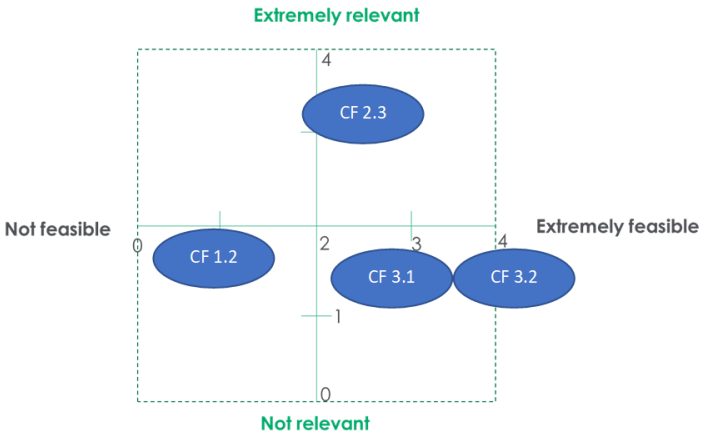
Scope definition

Identified and prioritized needs

Block	Prioritized needs
B1 Risk stratification	Analysis of clinical and socio-economical variables, using all available information on patients from reliable sources
	Special attention to GDPR during the stratification process
	Identify patients at risk to help maintain their condition, and prevent further health complications and comorbidities
B2 Integrated care	Care coordination and communication between health care providers
B3 Patient empowerment	Provide relevant information on their current health status, by using multi-modality approach in patient-health provider communication
	Organizing life-style interventions focused on decreasing risk factors for NCDs, and encourage them to implement life-style changes in their everyday life
	Organize peer-support groups for people with specific health conditions
	Provide age-appropriate educational materials

Assessment of Core Features

Core Features	Relevance	Feasibility
CF1.2 Classification of patients	3	1
CF2.3 Care coordination and communication between health providers	4	2
CF3.1 Deployment of a School of Health	3	3
CF3.2 Empowerment programs for chronic and/or multimorbid patients	3	4



Final Core Features selected

CF1.2 - Classification of patients

CF2.3 - Care coordination and communication between health providers

CF3.1 - Deployment of a School of Health

CF3.2 - Empowerment programs for chronic and/or multimorbid patients

Situation analysis

	Strengths	Weaknesses
Internal	• Long standing tradition of public health and health promotion • Universal healthcare coverage for all citizens • The Central Health Information System of the Republic of Croatia (CEZIH) - integrally built system for a standardized exchange of health data and information • Implementation of the EHR (in Croatian: eKarton) portal -the central electronic health record, e-Referrals and e-Prescription • Zdravlje.net, web portal for patient- primary healthcare doctor communication • Primary care sector is well-organized, covering a wide variety of health needs of the population • Family medicine specialists trained in the field of chronic disease management • Field nurse network; work on education and patient empowerment • Croatian Institute of public health with network of county institutes of public health • Action plan for prevention and control of chronic noncommunicable diseases 2015-2020, with new plan underway for the 2021-2026 period • Healthy living program • Institutional leadership	• Differences in availability of healthcare, due to sociodemographic differences • Lack of human resources in healthcare (too many patients covered by a family medicine specialist) • Lack of financial resources for prevention • Poor health literacy • Lack of digital support for patients • Lack of integration of information systems between primary care providers and hospitals and across different platforms • e Health portal does not operate in full capacity • Zdravlje.net portal is used by a minority of primary healthcare doctors • No adequate monitoring of patient's outcomes • No specific strategy for complex chronic patients • No adequate multidisciplinary approach to complex chronic patients

	Opportunities	Threats
External	• Variety of patient organizations and • professional associations • Partnerships in various EU projects • Current trends in digitalization of health services, already underway • Strengthening preventive activities • Global trends toward patient empowerment and patient centred integrated care • Global trends toward prevention measures and activities • Improving cooperation with other sectors	• COVID-19 pandemic and subsequent burden on the health systems • Economic recession due to COVID-19 pandemic • Possible changes in priorities due to changes in political surroundings • Resistance to organizational changes • The health system sustainability is under increased burden due to the aging population

Strategic Intervention Areas

Strategic intervention area	Priority	Ranking
Need to improve health literacy with disease specific materials and workshops	3	1
Improve digital support for patients, increase the use and functionality of e-Health portal and Zdravlje.net portal	2	3
Need for specific strategy for complex care patients (multimorbidity)	3	2

Definition of the LGP and LAP

Local Good Practice

Local Good Practice	Croatian approach on an Integrated Healthcare Sector- (New media use in GP-patient communication and disease management materials with the Digital Health Centre)

Target population	**Setting(s)**
Patients with leading chronic non-communicable diseases (NCDs) (COPD, hypertension, diabetes mellitus, multimorbidity) with special accent on patients with Diabetes mellitus	Croatian National Health System

Main aim
Improve health and quality of life of the patients with leading chronic noncommunicable diseases (NCDs) (COPD, hypertension, diabetes mellitus etc). Enhance the health system quality by enabling better communication for patients and their GPs. Target is on digital communication and education by providing user friendly materials

Outcomes	**Local Core Features and their Components**	**Inputs**
• Provide timely and more appropriate personalized care for NCDs patients based on their care needs • Enable better and more efficient communication among healthcare professionals and patients with focus on digital communication • Patient empowerment by providing user friendly	**Promotion of central e-health digital platfom (CEZIH) -"Portal zdravlje" use** • Encourage GPs to introduce their patient to central e-health portal • Encourage the use of central e-health portal for both GPs and patients **Disease management materials**	• IT staff • IT systems • Program managers • Healthcare providers

educational materials, in both digital and paper form • Improve the time dedicated to each patient, by providing ready-made materials and resources for patients	• Recommendations on diet, physical activity, stress management, sleep hygiene, smoking cessation and alcohol intake reduction etc • Pharmacotherapy schedule/calendar templates **Digital Health Centre** • Identification of healthcare professionals connected on digital platform (e-health) • Identification of Diabetes mellitus patients' users of digital platform (e-health) • Communication channel through digital platform (e-health) • Web page creation • e-learning about diabetes mellitus for patients	

General description
Improvement of health, disease management and quality of life for patients with NCDs through online education and digital communication with healthcare providers and other health professionals included in the care of patients NCDs.
Local Core Feature 1
Promotion of central e-health digital platfom (CEZIH) -"Portal zdravlje" use and disease management materials provision. Promote the use of central e-health platform for both GPs and patients; Enhance input of information regarding NCDs on existing website and improve efficiency of GP-patient contact/visit
Local Core Feature 2
Digital Health Centre Enhance input of information regarding Diabetes mellitus on existing digital platform and broaden the extent of communication between health care providers and patients.

Local Action Plan

Local Good Practice	**Media use in GP-patient communication and disease management materials**
Target population	**Setting**
Patients with leading chronic noncommunicable diseases (diabetes mellitus, COPD, hypertension)	The National Health System
Main aim	
Improve health and quality of life of the patients with leading NCDs. Enhance the health system quality. Target is on digital communication and education.	
General description	
Improve health and quality of life of the patients with leading chronic noncommunicable diseases (NSD) (COPD, hypertension, diabetes mellitus etc). Enhance the health system quality by enabling better communication quality for patients and their GPs. Target is on digital communication and education by providing user friendly materials.	

Related oGPs and CFs	Basque Health strategy; CF2.2., CF3.1; CF3.2 Denmark oGP; CF B1-CF3, B1-CF1, B1-CF2, B2-CF5
Local Core Feature 1	**Promotion of central e-health digital platform CEZIH, Portal zdravlje use and disease management materials provision**

SMART objective

By the end of JADECARE (December 2022) Croatian Institute of Public Health will:

- Conduct a questionnaire for GPs on the use of the central e-health portal app (e-health portal is an application for communication between the doctor and the patient that allows faster, timely and complete care of the patient)
- Promote the use of central e-health platfom (CEZIH) - "Portal zdravlje" among the GPs (education, encouragement)
- Establish a sustainable web page with relevant disease management materials on NCDs, and will disseminate print friendly materials to GPs

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
Questionnaire conduction use of central e-health platfom (CEZIH) - "Portal zdravlje"	• IT experts • Project manager • Researchers • GPs	• MoH • CHIF • CIPH	CHIF	January 1-February 15, 2022.	• N° of questionnaires sent • N° of questionnaires received
central e-health platfom (CEZIH) - "Portal zdravlje" promotion	• Project manager • GPs	• MoH • CHIF • CIPH	CHIF	February 15--December 31,2022	• % of GPs using the app • N of patients using the app
Web page creation	• IT experts • project manager	• CIPH • www.hzjz.hr	CIPH	January 1-February 15, 2022	Web page is online (Y/N)
Materials on NCDs	• Project manager • Medical doctors • IT experts • Patients	• CIPH	CIPH	February 15 - December 31,2022	N of produced: web articles, online leaflets
Dissemination of produced materials (GPs, their respective patients, and visitors of the web page)	• GP • Patients • Project manager • NGO	• CIPH • CHIF •	CHIF CIPH	May 1-December 31, 2022	N of GPs introduced to materials, web campaign
Monitoring	• GP • Project manager • IT experts	CIPH	CIPH	May 1-December 31 monthly	N of monthly web page visits

Local Core Feature 2	**The Digital Health Centre**

SMART objective

By the end of JADECARE (December 2022) Croatian Institute of Public Health will contribute to the transition to digitally enabled integrated person-centred care, by establishing Digital Health Centre with special emphasis on sustainability

Activities	Actors	Resources	Setting(s)	Timeline	KPIs

Identification of healthcare professionals connected on digital platform and e-letter of invitation	• IT experts • project manager • GP • researchers	• Croatian Health Insurance Fund registry • Ministry of Health	• Croatian Health Insurance Fund • Croatian Institute of Public Health	January 1-February 28, 2022	• N of healthcare professionals' users of digital platform • N° of e-letters sent; • N° of e- letters received
Identification of Diabetes mellitus patients' users of digital platform	• General practitioners (GP) • IT experts	Medical records from GP	GP office	January 1-May 31, 2022	• N of patients with Diabetes mellitus users of digital platform •
Communication channel through digital platform	• GP • IT experts • patients	Central e-health platform CEZIH	• Croatian Health Insurance Fund • Ministry of Health	January 1-December 31, 2022	• availability of digital communication (Y/N)
Preparation of materials for web page	• IT experts • Project manager • healthcare professionals • researchers • patients • NGO	www.hzjz.hr website	Croatian Institute of Public Health	February 15-May 31, 2022	• Materials prepared for upload on web page • (Y/N)
e-learning about diabetes mellitus for patients	• GP • patients • IT experts • other healthcare professionals • NGO	www.hzjz.hr website	Croatian Institute of Public Health	June 1-December 31 2022	• N of articles and courses on the website • N of visits to the website • N of filled-in questionnaires

Implementation

1st PDSA Cycle

Plan

LCF1	Promotion of central e-health digital platform CEZIH, Portal zdravlje use and disease management materials provision							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Questionnaire conduction (use of central e-health platfom (CEZIH) - "Portal zdravlje")	Questionnaire creation	• CIPH • CHIF MoH • (IT experts, project manager, researchers	January 1-15 2022	N° of questionnaires sent; N° of questionnaires received	CHIF	February 1-15	CHIF E-platform	2000 GPs in Croatia
	Questionnaire conduction	• CHIF • IT experts • Project manager	January 15-31 2022					
	Data collection and analysis	• CHIF • CIPH • MoH • researchers • IT experts • Project manager	February 1 - 15 2022					
	Data interpretation and report	• CHIF • MoH • CIPH	February 1-15 2022					
Central e-health platfom (CEZIH) -	Promotion notification creation	• MoH • CIPH		% of GPs using the app (comparison of	• CIPH	September 30, 2022		5% of new GPs using the

"Portal zdravlje" promotion		• CHIF	February 15 –December 31 2022	GPs using the app after the promotion)	MoH		Monthly follow-up meetings	app after the promotion
	Promotion notification dissemination via CEZIH	CHIF						
Web page creation	Creation and launch of a dedicated webpage on the CIPHs official website	• CIPH • Project manager • researchers • healthcare professionals	January 1-February 15,2022	Web page is online (Y/N)	CIPH	February 15,2022	N/A	Yes
Materials on NCDs	Creation of the materials on NCDs (diabetes mellitus, COPD, and hypertension) for the dedicated webpage (leaflets, templates for medication use, infographics, videos…)	• CIPH • Project manager • researchers • healthcare professionals • GPs • IT experts • Patients	February 15 to December 31 2022	N of produced: web articles, online leaflets	CIPH	December 31,2022	In an internal monthly follow-up meeting	10 web articles, 5 leaflets
	Creation of printable patient materials on NCDs (for GPs via CEZIH)	CIPH	February 15 to December 31 2022					7 printable materials
Dissemination of produced materials (GPs, their	Dissemination online materials via dedicated	CIPH	May 1 – December 31,2022	N of GPs introduced to	• CIPH • CHIF	May 31 – December	N/A	Yes/No

respective patients, and visitors of the web page)	webpage and CIPHs social media			materials, web campaign		31 (monthly)		
	Dissemination of printable patient materials via CEZIH	CHIF	May 1 – December 31,2022	N of printable materials	• CIPH • CHIF	May 1 to December 31, 2022	internal monthly follow-up meeting	7
Monitoring	Web page monitoring	CIPH	May 1-December 31	N of monthly web page visits	CIPH	May 1-December 31 (monthly)	Google Analytics	200 visitors per month

LCF2	The Digital Health Centre							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Identification of healthcare professionals connected on digital platform and e-letter of invitation	Identify healthcare professionals connected on digital platform	• IT experts • project manager	January 1-January 15, 2022	N of healthcare professionals' users of digital platform	Project manager	January 31, 2022	Monthly follow-up meetings	1000
	Creation of e-letter of invitation	• IT experts • project manager • Researchers	January 1-January 15, 2022	N° of e-letters sent	Project manager	January 31, 2022	Monthly follow-up meetings	20
	Send e-letters of invitation	• IT experts • project manager • GP	January 15- January 31,2022					

	Received responds	• IT experts • project manager • GP	February 1-February, 28, 2022	N° of e-letters received	Project manager	February	Monthly follow-up meetings	5
Identification of Diabetes mellitus patients' users of digital platform	Identify patients with Diabetes mellitus who are users of digital platform	• General practitioners (GP) • IT experts	January 1-May 31, 2022	N of patients with Diabetes mellitus users of digital platform	Project manager	May 31, 2022	Monthly follow-up meetings	25
Communication channel through digital platform	Establish communication channels on digital platform	• GP • IT experts • patients	January 1vDecember 31 2022	Availability of digital communication (Y/N)	Project manager	June 30, 2022	Monthly follow-up meetings	Yes
Preparation of materials for web page	Prepare educational materials in form of digital leaflets, articles, interactive webinars	• IT experts • Project manager • researchers • healthcare professionals • patients	February 15-May 31, 2022	Materials prepared for upload on a web page (Y/N)	Project manager	May 31, 2022	Monthly follow-up meetings	Yes
e-learning about diabetes mellitus for patients	Upload on the web page	• IT experts • Project manager	June 1-December 31 2022	N of articles and courses on the web site	Project manager	June 30, 2022	Monthly follow-up meetings	Articles 2 Courses 1

Do

Cycle number	**1**	
Activity	**KPI**	**Actual value**
Questionnaire conduction (use of central e-health platfom (CEZIH) - "Portal zdravlje")	• N° of question-naires sent • N° of question-naires received	• 2330 GP Teams (target group) • 141
Central e-health platfom (CEZIH) -"Portal zdravlje" promotion	Promotion notifica-tion creation	Under development
Web page creation	Web page is online	No (planned by the end of June/early of July)
Identification of healthcare professionals connected on digital platform and e-letter of invitation	• N of healthcare professionals' users of digital platform • N° of e-letters sent • Received responds	• 1927 • 2330 (Due to the use of several different digi-tal service providers in the primary health care system in Croatia, it is still unclear how many GPs received the questionnaire through their service provider.) • 141 received questionnaires (18 GPs ex-pressed interest in additional participation in the project and education on the use of the Health portal)
Identification of Diabetes mellitus patients' users of digital platform	N of patients with Dia-betes mellitus users of digital platform	No data collected
Communication channel through digital platform	Yes	No
e-learning about diabetes mellitus for patients	N of articles and courses on the web site	No (Articles and courses are in preparation)

QUESTIONS	**ANSWERS**
What was actually implemented? Any deviation from the planned actions	Invitation letter and questionnaire was constructed and sent out to GPs. We made some preliminary analysis on the received data, but are still waiting for clarification on some technical aspects. Due to the use of several different digital service providers in the primary health care system in Croatia, it is still unclear how many GPs received the questionnaire through their service provider. As for the web page creation, basic concept was sent to the designers and web developers, and the page is under construction. It will be online by the end of June/early July.
Problems? Unexpected findings? Please describe	The COVID-19 pandemic affected the implementation of planned activities. The project team (CIPH) has been very much engaged in controlling the COVID-19 pandemic activities including continuous vaccination. Family physicians had also been extremely engaged and it was agreed that a questionnaire should be sent later when the pandemic slows down. The questionnaire had to pass the permission of the Ministry of Health and the Croatian Health Insurance Fund, which took longer due to the administrative procedures. Major problem in the questionnaire conduction is that it is unclear how many GPs received the

	questionnaire through their service provider. Nevertheless, we believe that this number is sufficient for analysis, although it is not representative. 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 we had to organize our own funding in the CIPH on a very short notice. This has slowed down the process.

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
X			

Study

Cycle number	**1**					
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Questionnaire conduction (use of central e-health platfom (CEZIH) - "Portal zdravlje")	• N° of questionnaires sent • N° of questionnaires received	2330	TBD	Due to the use of several different digital service providers in the primary health care system in Croatia, it is still unclear how many GPs received the questionnaire through their service provider.	None to date	
Central e-health platfom (CEZIH) -"Portal zdravlje" promotion	Promotion notification creation	5% of new GPs using the app after the promotion	Materials for promotion drafted			
Web page creation	Web page is online	Yes	No	Major issue in the web page creation was a financing problem; namely, the funds for the web page were not allocated in	We organized our own funding in the CIPH on a very short notice. This has slowed down the process	Web page creation is underway

				the project budget		
Identification of healthcare professionals connected on digital platform and e-letter of invitation	• N of healthcare profession-als' users of digital plat-form • N° of e-let-ters sent; • N° of e-let-ters received	• 1000 • 20	• 1927 • TBD • 141 re-ceived ques-tion-naires (18 GPs ex-pressed interest in addi-tional partici-pation in the project and ed-ucation on the use of the Health portal)	Due to the use of several different digital service providers in the primary health care system in Croatia, it is still unclear how many GPs received the questionnaire through their service provider.	None to date	
Identification of Diabetes mellitus patients' users of digital platform	N of patients with Diabetes mellitus users of digital platform	25	No data collected	Work-overload of GPs'due to COVID-19 pandemic	Establish better communication With GPs' to provide needed data needed	
Communication channel through digital platform	availability of digital communication (Y/N)	Yes	No	Work-overload of GPs'due to COVID-19 pandemic	Establish better communication with GPs' to provide needed action	
Preparation of materials for web page	Materials prepared for upload on a web page (Y/N)	Yes	No	Work-overload and lack of staff due the involvement in COVID-19 pandemic crisis	Redistribution of COVID-19 work tasks and consequently better involvement of team members in the project	Articles and courses are been prepared
e-learning about diabetes mellitus for patients	N of articles and courses on the web site	Articles 2 Courses 1	None	Work-overload and lack of staff due the involvement	Redistribution of COVID-19 work tasks and consequently better	Articles and courses are being prepared

				in COVID-19 pandemic crisis	involvement of team members in the project	

Act

Cycle number	1		
Activity	**Maintain**	**Adapt**	**Abandon**
Questionnaire conduction (use of central e-health platfom (CEZIH) - "Portal zdravlje")	The questionnaire was conducted within timelines and results were presented. Due to the use of several different digital service providers in the primary health care system in Croatia, it is still unclear how many GPs received the questionnaire through their service provider. Therefore, this activity will be repeated in the second cycle.	-	-
Central e-health platfom (CEZIH) - "Portal zdravlje" promotion	Different activities pertaining to the promotion will be maintained and further developed.	-	-
Web page creation	-	This activity has been delayed due to unforeseen funding issue, human resources and vacation time. The basic concept was sent to the designers and web developers, and the page is under construction. New timelines need to be set.	-
Creation of materials on NCDs	This activity is underway and the materials are planned to be published and provided to end users via dedicated web page.	-	-
Dissemination of produced materials (GPs, their respective patients, and visitors of the web page)	-	Due to the delay in web page creation, this activity has been delayed.	-
Identification of healthcare professionals connected on digital platform and e-letter of invitation	The letter was sent within timelines and results were presented. Due to the use of several different digital service providers in the primary health care system in Croatia, it is still unclear how many GPs received		Number of healthcare professionals' users of digital platform is detected

	the letter through their service provider. Therefore, this activity will be repeated in the second cycle.		
Identification of Diabetes mellitus patients' users of digital platform	Identification of patients is in progress.		
Communication channel through digital platform		Investigate the possibilities of different ways of communication due to limited two-way communication through digital platform	
Preparation of materials for web page	This activity is underway and the materials are planned to be published and provided to end users via dedicated web page.		
e-learning about diabetes mellitus for patients	This activity is underway and the materials are planned to be published and provided to end users via dedicated web page.		

QUESTIONS	ANSWERS
Any new proposed action for the future?	The Questionnaire on the use of central e-health platform (CEZIH) - "Portal zdravlje") will be conducted again with the aim of reaching more GPs.

2nd PDSA Cycle

Plan

LCF1	Promotion of central e-health digital platform CEZIH, Portal zdravlje use and disease management materials provision							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Questionnaire conduction (use of central e-health platfom (CEZIH) - "Portal zdravlje")	Questionnaire creation	• CIPH • CHIF MoH • (IT experts, project manager, researchers	NA (questionnaire already created in cycle 1)	N° of questionnaires sent; N° of questionnaires received	CHIF	October 2022	CHIF E-platform	2000 GPs in Croatia
	Questionnaire conduction	• CHIF • IT experts • Project manager	September 2022					
	Data collection and analysis	• CHIF • CIPH • MoH • researchers • IT experts • Project manager	October 2022					
	Data interpretation and report	• CHIF • MoH • CIPH	October/November 2022					
Central e-health platfom (CEZIH) -	Promotion notification creation	• MoH • CIPH • CHIF	July 1 -December 31 2022	% of GPs using the app (comparison of GPs using the	• CIPH • MoH	December 31, 2022	Monthly follow-up meetings	5% of new GPs using the app

"Portal zdravlje" promotion	Promotion notification dissemination via CEZIH	CHIF		app after the promotion)				after the promotion
Web page creation	Creation and launch of a dedicated webpage on the CIPHs official website	• CIPH • Project manager • researchers • healthcare profession-als	July 1- September 2022	Web page is online (Y/N)	CIPH	September 2022	N/A	Yes
Materials on NCDs	Creation of the materials on NCDs (diabetes mellitus, COPD, and hypertension) for the dedicated webpage (leaflets, templates for medication use, infographics, videos…)	• CIPH • Project manager • researchers • healthcare profession-als • GPs • IT experts • Patients	• February 15 (I cycle) to December 31 2022 • July- December 31 2022	N of produced: web articles, online leaflets	CIPH	December 31 2022	In an internal monthly follow-up meeting	10 web articles, 5 leaflets
	Creation of printable patient materials on NCDs (for GPs via CEZIH)	• CIPH	February 15 to December 31 2022					7 printable materials
Dissemination of produced materials (GPs, their respective patients, and visitors of the web page)	Dissemination of online materials via dedicated webpage and CIPHs social media	CIPH	October –December 31,2022	Produced materials are online (Y/N)	• CIPH • CHIF	October – December 31,2022	N/A	Yes/No
	Dissemination of printable patient materials	CIPH	October –December 31,2022	N of printable materials	• CIPH • CHIF	October – December 31,2022	internal monthly	7

							follow-up meeting	
Monitoring	Web page monitoring	CIPH	September - December 31, 2022	N of monthly web page visits	CIPH	September - December 31 2022	Google Analytics	200 visitors per month

LCF2	**The Digital Health Centre**							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
e-letter of invitation	Send e-letters of invitation	• IT experts • project man-ager • GP	July 1-September 30,2022	N° of e-letters sent	project manager	October 15, 2022	Monthly follow-up meetings	20
	Received responds	• IT experts • project man-ager • GP	July 1-October, 15, 2022	N° of e-letters received	project manager	October 31, 2022	Monthly follow-up meetings	5
identification of Diabetes mellitus patients' users of digital platform	Identify patients with Diabetes mellitus who are users of digital platform	• General practitioners (GP) • IT experts	July 1-September 30, 2022	N of patients with Diabetes mellitus users of digital platform	project manager	September 30, 2022	Monthly follow-up meetings	25
Communication channel through digital platform	Establish communication channels on digital platform	• GP • IT experts • patients	July1-December 31, 2022	availability of digital communication (Y/N)	project manager	December 31, 2022	Monthly follow-up meetings	Yes

Preparation of materials for web page	Prepare educational materials in form of digital leaflets, articles, interactive webinars	• IT experts • Project manager • researchers • healthcare professionals	July 1-December 31, 2022	Materials prepared for upload on a web page	project manager	December 31, 2022	Monthly follow-up meetings	Yes

Do

Cycle number	**2**	
Activity	**KPI**	**Actual value**
Questionnaire analysis (use of central e-health platfom (CEZIH) - "Portal zdravlje")	N° of questionnaires analysed	250
Central e-health platfom (CEZIH) -"Portal zdravlje" promotion using the results of questionnaire analysis	Report on the results of the questionnaire analysis	*Under development*
Web page creation	Finished demo version	Yes
e-letter of invitation	• N° of e-letters sent • Received responds	• 10 • 7
Identification of Diabetes mellitus patients' users of digital platform	N of patients with Diabetes mellitus users of digital platform	No Data Collected (GP will provide information about patients)
Communication channel through digital platform	Yes	No
Preparation of materials for webpage	Materials prepared for upload on a web page	Yes (4 articles for diabetes and 16 articles on NCDs prepared)

QUESTIONS	**ANSWERS**
What was actually implemented? Any deviation from the planned actions	Questionnaire was sent again to GPs. Analysis on the received data was conducted. Invitation letter was sent to GPs, reference center for diabetes, Croatian Federation of Diabetic Associations. Educational materials were prepared and are now ready for upload. As for the web page creation, basic concept was sent to the designers and web developers, and the demo version is finished.
Problems? Unexpected findings? Please describe	Family physicians had also been extremely engaged and were not interested in new obligations such as participating in this project. We discovered that planned two-way communication is currently unavailable (due to some security issues and future upgrades) so new, alternative ways of passing information and communication had to be established. Due to the summer holidays, collaboration with the web designers took longer than expected. Also, the preparation of the materials for the webpage was time-consuming, and the workload regarding other day-to-day activities unrelated to the project made it more difficult to prepare everything in time for the web page to be online as planned. Currently, we are agreed on the demo version of the page, most of the materials are ready, but we are still deciding on webpage features as they depend on the financing.

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
			X

Study

Cycle number		**2**				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Questionnaire analysis (use of central e-health platfom (CEZIH) - "Portal zdravlje")	N° of questionnaires analysed	2330	250	Due to the use of several different digital service providers in the primary health care system in Croatia, it is still unclear how many GPs received the questionnaire through their service provider.	The questionnaire was sent again to reach a larger number of GPs	
Central e-health platfom (CEZIH) - "Portal zdravlje" promotion	Promotion notification creation	5% of new GPs using the app after the promotion	Undetermined			
Web page creation	A demo version of the web page is available	Yes	Yes	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	We organized our own funding in the CIPH on a very short notice. This has slowed down the process	
e-letter of invitation	• N° of e-letters sent;	• 20 • 5	• 10 • 7	Due to heavy work load, many GPs are	In order to obtain optimal	Optimal response

	• N° of e-letters received			not interested or are not available for additional engagement	response, we have sent targeted letters of invitation	
Identification of Diabetes mellitus patients' users of digital platform	N of patients with Diabetes mellitus users of digital platform	25	No data collected	GP are in process of finding Diabetes mellitus patients	Communication With GPs' is establish to provide needed data and they will have the information in time when web page is going to be realised	N of patients mellitus users of digital platform
Communication channel through digital platform	availability of digital communication (Y/N)	Yes	No	Current digital healthcare system cannot withhold desired two-way communication	Investigate the possibilities of different ways of communication due to limited two-way communication through digital platform	Establish alternative ways of communication to achieve desired goals
Preparation of materials for web page	Materials prepared for upload on a web page (Y/N)	Yes	Yes			

Act

Cycle number	2		
Activity	**Maintain**	**Adapt**	**Abandon**
Questionnaire analysis (use of central e-health platfom (CEZIH) - "Portal zdravlje")	The questionnaire was conducted and analysed within timelines and results were presented. Due to the use of several different digital service providers in the primary health care system in Croatia, it is still unclear how many GPs received the questionnaire	-	-

	through their service provider. Therefore, this activity was repeated in the second cycle.		
Central e-health platfom (CEZIH) - "Portal zdravlje" promotion	Different activities pertaining to the promotion will be maintained and further developed.	-	-
Web page creation	-	This activity has been delayed due to unforeseen funding issue, human resources and vacation time. The demo version is available. New timelines need to be set.	-
Creation of materials on NCDs	This activity is underway and some of the materials are prepared and available on the demo version of web page. Materials are planned to be published and provided to end users via dedicated web page.	-	-
Dissemination of produced materials (GPs, their respective patients, and visitors of the web page)	-	Due to the delay in web page creation, this activity has been delayed, but is underway.	-
Communication channel through digital platform			We have chosen to prioritize resources to achieve other features such as alternative ways of communication for addressing targeted group.
Preparation of additional materials for web page	This activity is underway and the materials are planned to be published and provided to end users via dedicated web page.		

QUESTIONS	ANSWERS
Any new proposed action for the future?	No

Post-implementation

ITEM	ANSWER
Title and abstract	

Title	Croatian approach on an Integrated Healthcare Sector (New media use in GP-patient communication and disease management materials with the Digital Health Centre)
Abstract	The main aim of the intervention of the CIPH is to improve the level of health, disease management and quality of life for patients with NCDs through online education and digital communication with healthcare providers and other health professionals included in the care of patients NCDs.
Why did you start?	
Problem description	Lack of patient oriented, trustworthy content on chronic diseases, low health literacy, increased workload of GPs resulting in less time available for the patients, also low rate of health digitalization amongst general population
Available knowledge	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. https://www.telegram.hr/pitanje-zdravlja/proveli-smo-prvo-istrazivanje-o-zdravstvenoj-pismenosti-u-hrvatskoj-stanje-jednostavno-nije-dobro/. 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.
Rationale	It is highly likely that the creation of a webpage that would be tailored to patients' needs, and written in collaboration with health care providers would help in overcoming everyday problems that patients with chronic diseases face. We also contacted patient groups and advocates to evaluate the webpage content for easy-to-use suggestions as well as new ideas from the patient's point of view. This will make this specific intervention more efficient. One part of the content of the website will contain information on the most frequent risk factors for non-communicable diseases and will be focused on prevention. 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). 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.
Specific aims	Improve health literacy and through that increase efficacy of the healthcare system especially in the population with chronic diseases and therefore improve health outcomes, reduce the workload of GPs regarding informing patients on the specifics of their conditions, and also reduce the time needed for the care of chronic patients (regarding drug prescription for chronic conditions) through digital means and tools.
What did you do?	
Context	Main problems: lack of human and financial resources in healthcare, poor health literacy, no specific, multidisciplinary approach to complex chronic patients; COVID-19 interruption in healthcare, increased burden of NCDs due to aging population. Opportunities: collaboration with patient organizations and professional associations, EU projects and global trends toward prevention and patient empowerment;
Intervention(s)	Target population: 1. Patients with leading chronic non-communicable diseases (NCDs) (COPD,

	hypertension, diabetes mellitus, multimorbidity) with special accent on patients with Diabetes mellitus 2. Physicians (general practitioners) Interventions: 1. Conducting an on-line survey on the use of the **Health Portal** (Portal zdravlja) for active communication between physicians (general practitioners) and patients (questionnaire creation, survey conduction, data collection and analysis) 2. Promotion of the Health Portal ("Portal zdravlja") use • Encourage GPs to introduce their patient to the Health Portal • Encourage the use of the Health Portal for GPs for active communication with their patients • Encourage the use of the Health Portal for patients 3. Creation of Website (webpage) intended primarily for patients with leading non-communicable diseases, but also for the general public • Disease management materials (creation of the materials on NCDs: Diabetes mellitus, COPD, hypertension etc) • Recommendations on diet, physical activity, stress management, sleep hygiene, smoking cessation and alcohol intake reduction 4. Improvement of disease management for patients with diabetes mellitus using digital tools • Identification of healthcare professionals connected on digital platform (e-health) • Identification of Diabetes mellitus patients • Web page creation • e-learning about diabetes mellitus for patients Excepted outcomes: • Provide timely and more appropriate personalized care for NCDs patients based on their care needs • Enable better and more efficient communication among healthcare professionals and patients with focus on digital communication • Patient empowerment by providing user friendly educational materials, in both digital and paper form • Improve the time dedicated to each patient, by providing ready-made materials and resources for patients NAWG consists 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).
Study of the Intervention(s)	Quantitative analysis will be performed to see the increase in Portal zdravlja app use, and also to track web page visits and material downloads. Special emphasis will be on data analysis regarding Diabetes mellitus.
Measures	Data on the current use, level of information and interest in using the Portal Zdravlja app, N of GPs using the app, functional web page, N of produced materials, N of monthly web page visits, N of printed materials, N of downloads
Analysis	Descriptive statistical analysis of the QA and of the web page metrics
What did you find?	
Results	Questionnaire on the use of the Portal zdravlja application. Online QA was disseminated to all the GPs in Croatia. Results were analyzed, and a short education was held in order to promote the app.

	Patient oriented, evidence-based web page with information on most common chronic diseases was created. Target group are patients with leading chronic noncommunicable diseases (COPD, hypertension, diabetes mellitus…multimorbidity). Educational materials have been created on NCD'S (diabetes, hypertension, COPD, osteoporosis etc.) WEB page has been designed and demo version is available. Since there was an emphasis on digital health promotion and disease management of Diabetes mellitus, an invitation letter was sent to GPs, National Reference Center for diabetes and Croatian Federation of Diabetic Associations.
What does it mean?	
Summary	QA results showed a low proportion of the GPs uses the Portal zdravlja app. As the web page is not online yet, we do not have data on its usage. Key findings: we identified GPs that are ready for cooperation and have patients with Diabetes mellitus. We also prepared materials for webpage that will be uploaded and renewed periodically.
Interpretation	As digital literacy is increasing, we expect many more people, even in the older age groups, will be willing to use the web page and the Portal zdravlja app, which will help the disease management and make the GP-patient communication more efficient. We established communication with GPs that are willing to use educational materials on webpage and we believe that with time more GPs will be interested in this content and encourage their patients to use webpage. We will also work on promotion of digital literacy amongst general population.
Limitations	A survey on the use of the Health Portal (Portal zdravlja) We are still not sure how many GPs have received the QA, and whether in some GP offices only nurses replied and even opened the QA. The sample of the GPs may be biased, with those using the app being more prone to answer the QA. Some GPs are not willing to participate due to other work-related obligations. The COVID-19 pandemic affected the implementation of planned activities. The project team (CIPH) has been very much engaged in controlling the COVID-19 pandemic activities including continuous vaccination. Family physicians had also been extremely engaged and it was agreed that a questionnaire should be sent later when the pandemic slows down. The questionnaire had to pass the permission of the Ministry of Health and the Croatian Health Insurance Fund, which took longer due to the administrative procedures. Due to the use of several different digital service providers in the primary health care system in Croatia, it is still unclear how many GPs received the questionnaire through their service provider.QA was sent out twice, so we believe that the majority of GPs received it. 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. 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 we had to organize our own funding in the CIPH on a very short notice. This has slowed down the process.
Conclusions	• A web page is a relatively low-cost, user-friendly way for patients with NCDs to obtain useful, evidence-based information on disease management. Also, it is sustainable as it will be easy to maintain, and it will be even more relevant as we expect an increase in the number of people with NCDs. Content of the webpage will be expanded, and we will include information on disease prevention, other health related topics such as pregnancy, vaccination, workplace disease management etc.

	• Digital tools use is increasing in people of all ages. Also, European commission focused its attention on the availability of their respective health data for the citizens, by establishing regulation to set up the European Health Data Space. Health portal app was established for patients to have access to their health data, and it also developed tools for communication with the GPs. Promotion of the app and education on its use will continue after the project, as the usefulness of such a tool is invaluable. We identified GPs through the letter of invitation in which we described the project itself and explained their role. Interested GPs then identified patients with enough digital literacy and compliance.
Other information	
Funding	Activities are funded by a combination of CIPH funds and JADECARE funds; human resources, represented as the NAWG salaries can be considered JADECARE funded during the duration of the project. The funding for other outputs such as digital tools: web domains, and maintenance of web page are funded by the CIPH. Due to the relevance and usefulness of the web page, we believe the CIPH funding for its maintenance will be continued.

Ministry of Health of the Republic of Serbia (MoHRS)

Pre-implementation

Scope definition

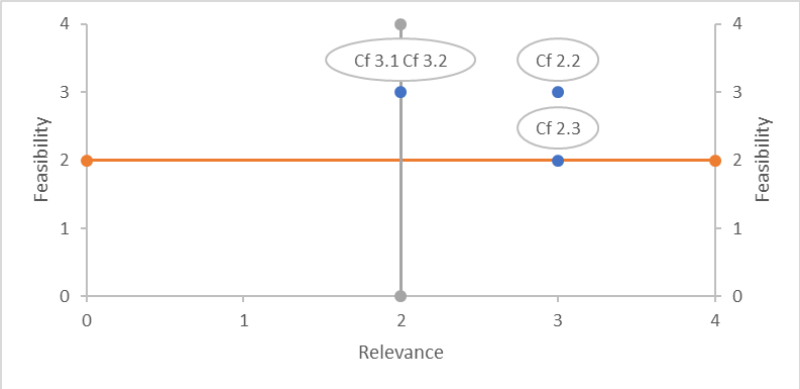
Identified and prioritized needs

Primary Healthcare Centre" Zemun", Primary Healthcare Centre "Novi Beograd"

Block	Prioritized needs
B2 Integrated care	Prioritized Need 1 Registry of patients with 2 and more chronic illnesses (Need 1)
	Prioritized Need 2 Clinical pathway for multimorbid patients driven through health integrated information system (Need 7)
	Prioritized Need 3: Grouped Need 3 Deployment of Integrated communication system (Needs 3 and 4)
	Prioritized Need 4 Standardization of health data and replication to central repository (where it is applicable) (Need 2)
	Prioritized Need 5 Access to health data by nurses in order to manage personalized care. (Need 5)
	Prioritized Need 6 E-integration of healthcare and social care institutions (Need 6)
B3 Patient empowerment	Prioritized Need 7 Grouped Need 7: On-line access to relevant programmes and information in order to improve patient care (Need 8,9,10)

Assessment of Core Features

Core Features	Relevance	Feasibility
CF2.2 Deployment of integrated communication and information systems	3	3
CF2.3 Care coordination and communication between health providers	3	2
CF3.1 Deployment of a School of Health	2	3
CF3.2 Empowerment programmes for chronic and/or multimorbid patients	2	3



Final Core Features selected

CF 2.2 - Deployment of integrated communication and information systems
CF 2.3 - Care coordination and communication between health providers
CF 3.1 - Deployment of a School of Health
CF 3.2 - Empowerment programmes for chronic and/or multimorbid patients

Gerontology Centre "Beograd"

Block	Prioritized needs
B2 Integrated care	Prioritized Need: E-integration of social care and health care institutions (Need 1)

Assessment of Core Features

Core Features	Relevance	Feasibility
CF2.2 Deployment of integrated communication and information systems	3	3

Situation analysis

	Strengths	Weaknesses
Internal	• There is clear support at the state level for improving the health care of patients suffering from chronic diseases. • There is a will of the management of the institutions to implement the defined needs. • There is a will of non-governmental organizations (professional associations and patient associations) to cooperate in projects of this type. • Health care workers are well educated and ready to improve their knowledge and skills. • Digitization in the health care system has been largely achieved through several different projects. • E-prescription is in application at the primary level of health care. • Electronic health record has been being implemented. • There are clinical pathways at primary health care level developed for 16 single	• Disparity in the needs for health care services in relation to the available staff. • Incomplete insight into the patient's health condition in terms of availability of medical reports. • Some services are unnecessarily duplicated. • Communication between health care services is not efficient both horizontally and vertically. • Clinical data are not fully standardized. • Healthcare workers are burdened with services that are performed face to face, and which can be performed at the level of consultation, e.g., by telephone. • Clinical pathways for multimorbidity have not been developed. • The introduction of certain programmes requires changes in the organization and planning of health care services. • Some services that are needed in order to improve prevention and treatment are not recognized in

	conditions/diseases and they are in the integrated information system. • The E-health portal could be improved and serve the general population to access information important for health care. • There is a National Program for Preservation and Improvement of the Health of the Elderly, with one of the goals to provide integrated protection of the elderly. • Nursing homes for the elderly founded by the Republic of Serbia have health care services within the institutions consisting of doctors, nurses, psychologists, physiotherapists, etc. • Nursing homes have access to E-prescription.	the system of financing by the National Health Insurance Fund. • Social care institutions in the current projects are not in the system of electronic health records. • Financial resources are not allocated for the implementation of all defined needs. • Insufficient communication between health care and social care services. • There is no single online source of information and programmes for patients whose content is created by experts or patient associations and which are relevant and safe.
	Opportunities	**Threats**
External	• Improvement of the E-health record in the part related to access to medical reports and data necessary for achieving continuity of treatment. • Creation of Registry of patients with 2 and more chronic diseases. • Realization of communication between health care workers at all levels of health care services for issues that can be resolved without visiting a doctor. • Possibility of consultations between patients and health care professionals online within the E-health portal or by phone call. • Development of clinical pathways for patients with several chronic diseases. • Standardization of health data. • Providing nursing homes access to E-health records. • Introduction of a comprehensive geriatric assessment in the E-health record. • Ability to access information that can strengthen patients' capacity to recognize disease and manage their own health through the E-health portal.	• Patients, especially the elderly, do not want to change the established approach to health services in achieving health care. • The pressure on the health system due to the occurrence of emergencies and the increase in the prevalence of chronic non-communicable diseases increases the pressure on the financial sustainability of the system. • The introduction of new services in the nomenclature of services financed by the NHIF in order to acquire the conditions for the implementation of certain solutions can take a long time.

Definition of the LGP and LAP

Local Good Practice

Local Good Practice	Improvement in integration of health information system; and patient empowerment
Target population	**Setting(s)**
360.000 adults	Primary Healthcare centres in two Belgrade municipalities pilot project sites: PHC „Zemun “, PHC „Novi Beograd “ Gerontology Centre „Beograd “(social care institution in Belgrade with primary healthcare service providing).
Main aim	

Improving health care in order to provide affordable, efficient, quality services with a sustainable continuity in their provision in the area of prevention and treatment of persons suffering from chronic diseases, and in accordance with their needs.		
Outcomes	**Local Core Features and their Components**	**Inputs**
• Providing more efficient healthcare services • Providing health services through the accomplishment of communication between GPs and specialists • Contribute to process for achieving sustainable continuity of healthcare providing for persons suffering from chronic diseases. • improvement of E-health portal with access to information relevant for health care	**Improvement in integration of health information system** • Developed E-health record • Ensure the conditions for establishing communication channels between health professionals on primary and hospital/clinical level **Patient empowerment through E health portal upgrade** • Portal E-health put in place • Ensure the setting for personalized access	• Funding • Working team • IT Staff • Decision makers • Training and technical assistance • IT infrastructure • IT Vendor
General description		
Aging and increase in prevalence of non-communicable diseases lead to a greater need for long-term care and optimization of the entire health care system. Introduction of digital communication between healthcare workers at all levels of health care should make the healthcare services more efficient and patients more satisfied. Improvements in coordination between health providers should contribute to continual health care and better quality of patient care. Deployment of relevant web-based health -information and access to them can strengthen patient capacity to recognize disease and manage their own health. Regulation on introduction of new services in the nomenclature of health services financed by state budget, financial resources limitations, organizational issues in healthcare institutions, as well as established patient access to health care which are difficult to change can influence the implementation and expected outcomes.		
Local Core Feature 1		
Improvement in integration of health information system		
Local Core Feature 2		
Patient empowerment through E health portal upgrade which will be used for patient access to information relevant for health management		

Local Action Plan

Local Good Practice	Improvement in integration of health information system; and patient empowerment
Target population	**Setting**
360.000 adults	Primary Healthcare centres in two Belgrade municipalities pilot project sites: PHC „Zemun“, PHC „Novi Beograd“ Gerontology Centre „Beograd“(social care institution in Belgrade with primary healthcare service providing).
Main aim	
Improving health care in order to provide affordable, efficient, quality services with a sustainable continuity in their provision in the area of prevention and treatment of persons suffering from chronic diseases, and in accordance with their needs.	

General description					
Aging and increase in prevalence of non-communicable diseases lead to a greater need for long-term care and optimization of the entire health care system. Introduction of digital communication between health care workers at all levels of health care should make the healthcare services more efficient and patients more satisfied. Improvements in coordination between health providers should contribute to continual health care and better quality of patient care. Deployment of relevant web-based health -information and access to them can strengthen patient capacity to recognize disease and manage their own health Regulation on introduction of new services in the nomenclature of health services financed by state budget, financial resources limitations, organizational issues in healthcare institutions, as well as established patient access to health care which are difficult to change can influence the implementation and expected outcomes					
Related oGPs and CFs	Basque oGPs: CF2.2, CF3.1				
Local Core Feature 1	**Improvement in integration of health information system**				
SMART objective					
(By December 2022) Ministry of Health will introduce e-health record in state social care institutions in Belgrade and e-consultation service between GPs and specialists.					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Integration the module of E-health record with local information system	• Healt care workers • IT vendors • IT staff • Patients	• Funds 10.000 EUR • IT infrastructure	Social care institution GC „Beograd“	3 months, starting from March 2022.	• Integration completed (Yes/ No) • Completeness (%)
Training of the health saff on access and use of E-health record	• Healt care workers • IT vendors • IT staff	• IT infrastructure • IT proffessionals	Social care Institution GC „Beograd“	2 months, starting from May 2022.	• Number of sites where the trainings were carried out. • % of trained staff
Amend the Rulebook on Nomenclature of Health Care Services on Introduction of E-consultation through E-Health portal	• Ministry of Health staff • Ministry of Finance staff • National Health Insurance Fund staff • GPs from NA sites	• Proffessionals in field of health insurance, IT, healthcare, finance)	Ministry of Health	3 months, starting from December 2021.	• Amendment of the Rulebook adopted: Yes/No • Rulebook takes into the force-date
Integration the module for e-consultations with local information system	• Healt care workers • IT vendors • IT staff	• Funds 10.000 EUR • IT infrastructure	• PHC „Zemun “ • PHC „Novi Beograd “	3 months, starting from March 2022.	Number of sites where the integration was completed

Training of users	• Health workers • IT vendors • IT staff	• IT infrastructure • IT proffessionals	• PHC „Zemun“ • PHC „Novi Beograd“	3 months, starting from September 2022.	• Number of sites where the training was carried out. • Number of trained staff
Application of non-face to face consultation trough E Health portal service	• Health workers • Patients	• IT infrastructure • Health proffessionals	• PHC „Zemun“ • PHC „Novi Beograd“	Starting from November 2022. (excl postpone appllication of regulation)	Number of performed consultations, monthly report
Local Core Feature 2	**Patient empowermentt through E health portal upgrade which will be used for patient access to information relevant for the health management**				
SMART objective					
(By December 2022.) Ministry of Health will introduce patient access to E-portal where patient can be informed about the illness regarding the better understanding of certain diseases and treatment.					
Activities	**Actors**	**Resources**	**Setting(s)**	**Timeline**	**KPIs**
Risk assessement regarding personal data protection	Institute for Public Health of Serbia staff	IT proffessionals	Institute for Public Health of Serbia	3 months, starting from December 2021.	Approved: Yes/No
Releasing mobile application E-health (Google play, IOS)	IT staff	IT infrastructure	E-administration	2 months, starting from April 2022.	Completed: Yes/No
Promotion	• Media proffessionals • Health proffessionals • IT staff	• Funds 5000 EUR • Proffessionals	• Institute for Public Health • Healthcare instituti ons • E-administration • Media	4 months, starting from June 2022.	• Number of different sources the promotion was performed through • Completness of promotion plans (%)
Issuing the autentication for personalized access to E- health portal	Post of Serbia staff	• IT Infrastructure • Postal staff	Public Company Post of Serbia	Starting from June 2022.	Number of issued autentications, quarterly report
Set up the working team for development	• Ministry of Health staff	• Health proffesionals	• Ministry of Health	2 months, starting	Working team established: Yes/ No

contents through the E-health portal relevant for patient empowermwnt	• Health proffessionals • IT staff • Patient associations	• IT proffessionals • Patients	• Institute for Public Health • Medical Chamber	from,January 2022.	
E-Health portal extention with introduction of relevant medical contents made by health proffessionals, publicly available	• Health proffessionals • IT staff	• IT infrastructure • Health proffessionals	• Institute for Public Health of Serbia • E-administration	10 months, starting from March 2022	• Information system upgrade set up: Yes/ No • Number of content publicly available. two-month reporting • Number of logins. two-month reporting

Implementation

1st PDSA Cycle

Plan

LCF1	Improvement in integration of health information system							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Integration the module of E-health record with local information system	Installation of web application firewall	• IT vendors • IT staff	01.03.2022-31.03.2022.	• Installation completed (Yes/ No) • Completeness (%)	Project manager	01.04.-31.05.2022.	Reporting during the monthly meeting	• Yes • 100
	Installation of web-service	• IT vendors • IT staff	01.04.2022-30.04.2022.	• Installation completed (Yes/ No) • Completeness (%)				• Yes • 100
Training of the health saff on access and use of E-health record	Conducting of training program	• Healthcare workers • IT vendor • IT staff	01.05.2022-30.06.2022.	• Number of sites where the trainings were carried out. • % of trained staff	Project manager	01.05-31.05.2022	Reporting during the monthly meeting	• 4 • 100
Amend the Rulebook on Nomenclature of Health Care Services on Introduction of E-	Establishing the Working group	• Ministry of Health staff • National Health	01.12.2021-10.12.2021.	Completed: Yes/No	Project manager	01.02.-31.03.2022.	Reporting during the monthly meeting	Yes

consultation through E-Health portal		Insurance Fund staff • GPs from NA sites						
	Drafting text	Working group	11.12.2021.-31.01.2022.	Completeness, %				100
	Obtaining opinions	• Ministry of Finance staff • Government Secretariat for Legislative affairs	01.02.2022-15.02.2022.	Amendment of the Rulebook adopted: Yes/No				Yes
	Procedure for publication in the "Official Gazette"	• Government Secretariat for Legislative affairs	15.02.2022-28.02.2022.	Entered into the force: Yes/No				Yes
Integration the module for e-consultations with local information system	Web service integration	• Health care workers • IT vendor • IT staff	01.03.2022-31.05.2022.	Number of sites where the integration was completed	Project manager	01.04.-31.05.2022.	Reporting during the monthly meeting	2

LCF2	Patient empowermentt through E health portal upgrade which will be used for patient access to information relevant for the health management							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**

Risk assessement on personal data protection	Establishing the working team	Institute for Public Health stafff	01.12.2021-10.12.2021	Completed: Yes/No	Project manager	01.01-31.03.2022	Reporting during the monthly meeting	Yes
	Assesement procedure	Institute for Public Health stafff	11.12.2021.-31.01.2022	Completeness %				100%
	Adoption of document	Comissioner for Personal Data Protection	01.02.2022-28.02.2022.	Completed: Yes/No				Yes
Releasing mobile application E-health (Google play, iOS)	Opening Google play and App store account	IT staff	01.04.-30.04.2022.	Completed: Yes/No	Project manager	01.05-31.05.2022	Reporting during the monthly meeting	Yes
	Testing	IT staff	01.05-31.05.2022.	Completed Yes/No				Yes
Set up the working team for development the contents through the E-health portal relevant for patient empowerment	Establishing the working team	• Ministry of Health staff • Health professionals • Patient representatives	01.01.2022.-31.01.2022.	Working team established: Yes/ No	Project manager	01.03.-30.04.2022	Reporting during the monthly meeting	Yes
	Set up the topics and form of contents	• Health professionals • Patient representatives	01.02.2022.-28.02.2022.	Completed Yes/No				Yes
E-Health portal extention with introduction of relevant medical contents made by health proffessionals, publicly available	Drafting the texts- 1. cycle	Health professionals	01.03.2022-31.05.2022.	Number of topics	Project manager	01.04.2022.-31.05.2022.	Reporting during the monthly meeting	>0

Do

Cycle number	**1**	
Activity	**KPI**	**Actual value**
Integration the module of E-health record with local information system	Installation completed (Yes/ No) Completeness (%)	Yes, 100%
Training of the health saff on access and use of E-health record	Number of sites where the trainings were carried out. % of trained staff	Project in GC „Beograd“ is completed. Project is expanded to 23 geronology centres, 5 nursing homes on teritory of Serbia 400%
Amend the Rulebook on Nomenclature of Health Care Services on Introduction of E-consultation through E-health portal	Completeness, % Entered into the force: Yes/No	20%, No Working group set up- completed Draft text completed Adoption of Amendment moved to the Cycle 2 of PDSA
Integration the module for e-consultations with local information system	Number of sites where the integration is completed	Integration is completed for e-consultations in field of diabetes: • 3 Healthcare Institutions on primary health care level; HI “ Zemun”, HI”Zvezdara”, HI ”Valjevo” • 1 General hospital on secondary health care level: GH “Valjevo” • 1 institution on tertiary health care level, clinical centre: University Clinical Centre of Serbia
Risk assessement on personal data protection	Completed: Yes/No	Yes
Releasing mobile application E-health (Google play, iOS)	Completed Yes/No	Yes
Set up the working team for development the contents through the E-health portal relevant for patient empowerment	Completed	Yes
E-Health portal extention with introduction of relevant medical contents made by health proffessionals, publicly available	Number of topics	14

QUESTIONS	ANSWERS
What was actually implemented? Any deviation from the planned actions	Implementation of all planned activities is completed, except the Rulebook on Nomenclature of Health Care Services
Problems? Unexpected findings? Please describe	The Rulebook was not implemented because of political circumstances (elections, technical government...)

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
		X	

Study

Cycle number		**1**				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
Integration the module of E-health record with local information system in social care institutions	Installation completed (Yes/ No) Completeness (%)	Yes 100%	Yes 100%	Fulfilled conditions for further implementation	-	Target value exceeded to more number of integrated institutions
Training of the health saff on access and use of E-health record	Number of sites where the trainings were carried out. % of trained staff	**1**-Gerontology Centre "Beograd"	Project is expanded to 23 geronology centres, 5 nursing homes on teritory of Serbia 400%	-	-	-
Amend the Rulebook on Nomenclature of Health Care Services on Introduction of E-	Complete-ness, % Entered into the force: Yes/No	100%, Yes	20%, No	Political circumstances	In order to implement the e-consultation between GPs and specialists,	Pilot fully implemented

consultation through E-health portal					regardless the regulation obstacles on service financing, MoHRS in cooperation with Novo-Nordisc started the pilot project "E-diabetes". 11 GPs (primary level) and 5 specialists from clinical and hospital level have been involved in the project.	
Integration the module for e-consultations with local information system	Number of sites where the integration is completed	3 healthcare institutions on primary level and 2 healthcare institutions on clinical-hospital level	100% in these 5 institutions .	-	-	-
Risk assessement on personal data protection	Completed: Yes/No	Yes	Yes	-	-	-
Releasing mobile application E-health (Google play, iOS)	Completed: Yes/No	Yes	Yes	-	-	-
Set up the working team for development the contents through the E-	Completed	Yes	Yes	-	-	-

health portal relevant for patient empowermen t						
E-Health portal extention with introduction of relevant medical contents made by health proffessionals , publicly available	Number of topics	>5	14	-	-	-

Act

Cycle number	1		
Activity	**Maintain**	**Adapt**	**Abandon**
Integration the module of E-health record with local information system in social care institutions	X		
Training of the health saff on access and use of E-health record	X		
Amend the Rulebook on Nomenclature of Health Care Services on Introduction of E-consultation through E-health portal		X Moved to the Cycle 2 PDSA	
Integration the module for e-consultations with local information system		X Introduced in 5 healthcare institutions as pilot project	
Risk assessement on personal data protection	X		
Releasing mobile application E-health (Google play, iOS)	X		
Set up the working team for development the contents through the E-health portal relevant for patient empowerment	X		
E-Health portal extention with introduction of relevant medical contents made by health proffessionals, publicly available	X		

QUESTIONS	ANSWERS
Any new proposed action for the future?	1. Set up coordination activities related to application of e-consultation between doctors 2. Activities on upgrading E-health portal. 3. Promotion activities related to using E-health portal 4. Regulatory changes on e-consultation services (moved to Cycle 2).

2nd PDSA Cycle

Plan

LCF1	Improvement in integration of health information system							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Amend the Rulebook on Nomenclature of Health Care Services on Introduction of E-consultation through E-Health portal	Preparing activities for adoption and publishing	• Ministry of Health, • Ministry of finance • Government	31.12.2022.	% of completeness Adopted: Yes/No	Project manager	31.12.2022.	Reporting during the monthly meeting	Yes, 100%
Training for using e-consultation	Conducting the trainings	• Healthcare workers • IT vendor • IT staff	01.09.-30.11.2022.	Number of sites where the training was carried out. Number of trained staff	Project manager			4
Application of non-face to face consultation trough E Health portal service	E-consulting through E-portal	Health workers	01.11.2022-	Nuber of performed consultations, monthly report	Project manager			>0

LCF2	Patient empowermentt through E health portal upgrade which will be used for patient access to information relevant for the health managment							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Issuing the autentication for personalized access to E- health portal	Issuing the autentication for personalized access to E-health portal	Post of Serbia staff	01.06.2021	Number of issued autentications, quarterly report	Project manager			>0
Promotion of using E-health portal	Presentation to health workers regarding the contents of the e-portal	• Health proffessionals • IT staff	01.06.-30.06. 2022	Completness of promotion (%)				100
	The promotion conducted by the doctors addressed to the patients	• Health proffessionals • Patients	01.07.-30.10.2022	Completness of promotion (%)				100
	Promotion in the media	Media staff	01.06.-30.10.2022	Completness of promotion (%)			Reporting during the monthly meeting	100

Do

Cycle number	**1**	
Activity	**KPI**	**Actual value**
Integration the module of E-health record with local information system in social care institutions	Installation completed (Yes/ No) Completeness (%)	Yes 100%
Training of the health saff on access and use of E-health record	Number of sites where the trainings were carried out. % of trained staff	Project is expanded to 23 geronology centres, 5 nursing homes on teritory of Serbia 400%
Amend the Rulebook on Nomenclature of Health Care Services on Introduction of E-consultation through E-health portal	Completeness, % Entered into the force: Yes/No	No
Integration the module for e-consultations with local information system	Number of sites where the integration is completed	100% in 5 institutions.
Risk assessement on personal data protection	Completed: Yes/No	Yes
Releasing mobile application E-health (Google play, iOS)	Completed: Yes/No	Yes
Set up the working team for development the contents through the E-health portal relevant for patient empowerment	Completed	Yes
E-Health portal extention with introduction of relevant medical contents made by health proffessionals, publicly available	Number of topics	14
Publication of instructions on using E-health portal,	Completeness (%)	100
Media promotion	Completeness (%)	60%
Preparing the text of the Rulebook on e-consultation services for obtaining opinions	Completed: Yes/No	No
Procedure for publication in the “Official Gazette”	Completed: Yes/No	No
Issuing the autentication for personalized access to E- health portal	Number of issued autentications, quarterly report	200.000

QUESTIONS	ANSWERS
What was actually implemented? Any deviation from the planned actions	Activity: Adoption of Rulebook on nomenclature of health services (amendment on e-health consultation) Problem: Political circumstance- waiting for Government constitution constrains the performance of this activity on time. Mitigation actions implemented: In order to implement the e-consultation between GPs and specialists, regardless the regulation obstacles on service financing, MoHRS conducted the pilot project "E-diabetes". 11 GPs (primary level) and 5 specialists from clinical and hospital level have been involved in the project.
Problems? Unexpected findings? Please describe	

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**

Study – The information will be completed along the project

Act – The information will be completed along the project

Aristotle University of Thessaloniki (AUTH)

Pre-implementation

Scope definition

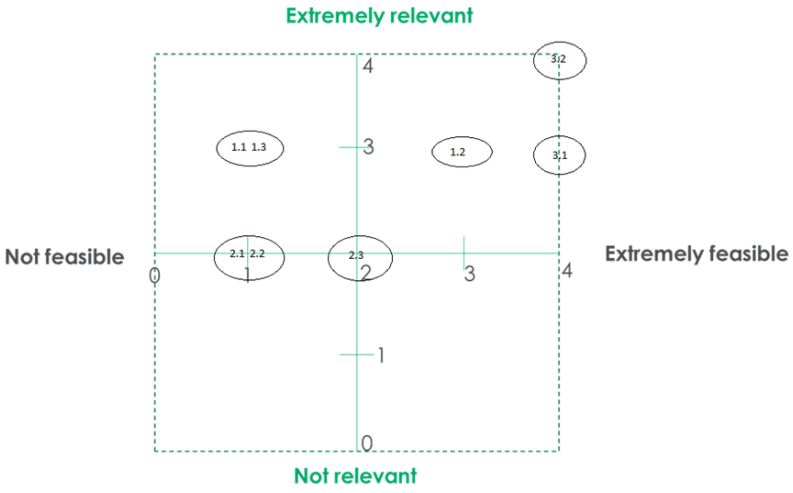
Identified and prioritized needs

Block	Prioritized needs
B1 Risk stratification	Need 1 Identify patients at risk to help prevent relapses in their condition Need 2 Minimize number of visits to the hospital by prevention
	Need 4 Allocate budget based on needs Need 5 Increase hospital capabilities
	Need 3 Get statistics and analytics regarding local most common conditions
B2 Integrated care	Need 8 Avoid multi-medicine
	Need 9 Minimize visits to the hospital through offering alternative solutions (eg online platform, application)
	Need 6 Offer patients access to their medical history Need 7 Offer clinicians easy access to patients' personal information
B3 Patient empowerment	Need 10 Give patients access to information regarding their health condition Need 12 Give the opportunity to family members to effectively help their loved ones in need of care
	Need 11 Minimize number of visits to the hospital

Assessment of Core Features

Core Features	Relevance	Feasibility
CF 1.1 Stratification data extraction and construction of dashboards	3	1
CF 1.2 Classification of patients	3	3
CF 1.3 Stratification in the framework contract	3	1

CF 2.1 Creation of integrated healthcare organizations	2	1
CF 2.2 Deployment of integrated communications and information systems	2	1
CF 2.3 Care coordination and communication between health providers	2	2
CF 3.1 Deployment of a School of Health	4	3
CF 3.2 Empowerment programs for chronic and/or multimorbid patients	4	4



Final Core Features selected

CF1.2- Classification of patients
CF3.1- Deployment of a School of Health
CF3.2- Empowerment programs for chronic and/or multimorbid patients

Situation analysis

Internal

Strengths	Weaknesses
Classification of Patients • Database for patients has begun to be created due to vaccination needs. • E-prescription already integrated in health system. • Patient empowerment • Team experience regarding patient empowerment. • Projects involving patient empowerment already running. • The role of the patients regarding decision making has been strengthened. General • Team experience regarding innovative health-oriented interventions. • Team experience in digital innovation, focus and deep knowledge on co-creation methodologies, community based approaches and the e-health hub platforms • Primary care teams which are used to teamwork working together.	Classification of Patients • Lack of data from Primary Care • No database of patients' history and difficulties in communication, coordination • Non-interoperability and lack of standards on ICT (information and Communication Technology) and weak e-Health governance and infrastructure • Lack of national policy and Strategy and National action plan towards e-Health • Change of the Administrative Subordination of the Informatics Organization Sub-Directorates of the Hospitals to the logic of independence and direct cooperation with the hospital administration. Patient empowerment • Lack of education regarding disease self-management for patients and their caregivers. • A holistic approach towards patient empowerment, does not exist, only sporadic and small initiatives. General

	• Health professionals are open to trying new approaches. • Leadership open to innovation. • State's digital transformation (N 4727/2020) and citizens' web portal (gov.gr) • The pandemic acted as a way to speed up digital transformation of health. • Expertise from European Actions and participation in corresponding projects • Participation of team members in Networks of health professionals and some of them holding special roles in some of them e.g., President of HL7 Hellas and leveraging expertise. • Health professionals have been educated in using digital health systems. • Ability to engage effectively with and gain the support of diverse stakeholders. • The cooperation and participation of national and regional networks and support from EC and close cooperation with major media partners and promotional tools ensures appropriate media coverage, visibility and dissemination of the project activities and results.	• No medical folder infrastructure in existence, so it will be hard to collect patients' history. • No continuity of care (primary etc.) – primary health care needs to be supported. • Resource constraints. • Lack of coordination between healthcare and social services. • Lack of dedicated financial resources • Limited budget for ICT systems in the regional & local organizations • Need for extra human resources to face the needs of healthcare organizations due to the pandemic. • Lack of digital health literacy • Burnout of personnel due to the pandemic • Remote areas do not have easy access to technology • Avoiding discontinuity in terms of commitment to the implementation of the roadmap and the National e-Health Strategy 2014-2020
	Opportunities	**Threats**
External	Classification of Patients • Digital transformation book 2000-25 a set of guidelines that outline the framework of digital reform and the "rules" that govern the organization, management and provision of new digital services in the country • Team has connections with various professionals that can offer data regarding most common diseases and patients' history. • Discussions regarding medical folder have already began in government. • Data search from large registries, such as the National e-system, medical societies for specific chronic conditions (heart failure, COPD, etc). • The momentum - the timing of the proposed initiative aligns with the increased attention by the International community on patient-centered empowerment and active involvement on issues that directly affects them • Citizens' right to healthcare is enshrined in the European Charter of Fundamental Rights (OJEC, 2000), as well as in international declarations (Nations) where empowerment is a core value	Classification of Patients • Persistence of privacy problems • Some patient classification systems are expensive. • Interoperability and cyber security principles in the ICT systems of health care organizations • Data of patients' history may be of bad quality. • Disequilibrium due to COVID, lack of motivation and overload, inertia, or different focus of the state-led services • Development of the central National Data Set Mechanism for e-Health in the logic of interoperability registers. The lack of implementation of such essential and necessary registers is the main reason why there is a huge heterogeneity in the way of use and application of digital services in the field of Health. • Commitment to Securing the Required Human Resources at the ICT sector. At the moment, the staffing of the health sector with scientific staff in the ICT sectors is moving to the lowest levels in Europe. The ICT staffing rate in Greek hospitals is 0.06% in contrast to 1.6% in other countries. Patient Empowerment • Healthcare professionals are not sensitized towards patient empowerment. • Not all patients can access the internet

• Increase capacities to organize the implementation of an integrated interoperability standards. • Strengthening the ICT e-Governance and Management Model • Change of the Administrative subordination of the Informatics Organization Sub-Directorates of the Hospitals to the logic of independence and direct cooperation with the hospital administration Patient Empowerment • Population awareness for need of self-empowerment. To increase the knowledge, skills, attitudes and self-awareness about their condition to understand their lifestyle and treatment options and make informed choices about their health • Wide use of the internet by people of all ages • Improved participation of individuals in self-monitoring and chronic disease management and the the capacity to become 'co-managers' of their condition in partnership with healthcare professionals • Improved access to trusted health knowledge sources • Compliance and Cooperation of the Supervised Bodies of the Ministry of Health in the implementation of the central strategy of digital transformation, but also their coordination and central guidance in the implementation of their special action plans to avoid mistakes and overlaps but also to maximize the solution and applications. • Collaboration with the private sector and software developers in the field of Health. The Ministry of Health must and must secure the consent of health software developers or otherwise seek cooperation with the healthy market segment of manufacturers seeking more development and investment opportunities. • Securing the required Financial Resources with strategic exploitation as a priority by the Public Investment Program, the Regular Budget and finally the European Co-financed Development Programs. General • Possibility to create synergies with other European initiatives. • The impact of the application of the integrated care model will be assessed.	• Lack of awareness and specialized training may lead to diverse and inconsistent methodologies of PE General • The sustainability of public healthcare system is under pressure due to the increase of the population ageing and its chronic condition. • Changes in the political situation. • Changes in organizational models. • Resistance to change of the population against organizational changes in the public healthcare system. • Health professionals involved in current COVID-19 crisis, creating obstacles for teamwork and collaboration. • Existing Legislative gaps and regulatory frameworks • Stability and continuity of political and bureaucratic health-sector leaders •

• Availability of new technologies with potential application for the care of complex chronic patients. • Some potentially useful components of the current IT infrastructure • The basis for the Communities of Practices has already been put (CoP) • Collaboration with National Digital Health Networks (in countries where they have already been formulated) • Covid is an accelerator for digital transformation (i.e., for the use of mHealth, the implementation of vaccine green pass, the EHR in integration with Covi19 national registries) • 5G Internet enabling faster connections • Reduction of Costs and more effective resource allocation	

Strategic Intervention Areas

Strategic intervention area	Priority	Ranking
Empowerment of patients and care givers towards disease self-management and health literacy	1	1
Increase monitoring capacities, data management and interoperability for more accurate, comparable medical data	2	2
Strengthen inter-sectoral coordination to facilitate continuity of care.	2	3

Definition of the LGP and LAP

Local Good Practice

Local Good Practice	Greece's approach on patient classification and patient empowerment	
Target population		**Setting(s)**
2000	Hippokration General Hospital, AHEPA General University Hospital, Thessaloniki	
Main aim		
Empower the population in order to improve their quality of life and prevent avoidable emergency room visits reducing unnecessary costs. Advance patients' classification through a patient classification tool in order to increase the quality and effectiveness of the health care system. A digitally enabled integrated care approach will facilitate patient classification and increase patient and caregiver empowerment. The approach focuses on classification of patients, empowerment of patients and caregivers and digitally enabled integrated care		
Outcomes	**Local Core Features and their Components**	**Inputs**
• Provide timely and appropriate care to the population based on their care needs • Empower patients and caregivers in chronic care and promote symptoms self-management	Classify a large number of general population based on their medical data (LCF) • Criteria for local classification model • Data extraction and processing mechanisms	• Funding • IT Staff • Program managers • Decision makers • Alignment of policy makers • Training and technical assistance

• Enable communication among health care professionals and with patients • Inform patients on the available care pathways • Enhance empathy of medical professionals • Inform patients and medical professionals on their rights and obligations in health delivery	Empower patients and caregivers in chronic care (LCF) • Create a web application along with a mobile app which, through interactive scenarios, will inform patients and caregivers about chronic conditions, symptoms management and medical education • Inform the population on the available care pathways, promote inclusion in the health system and inform them about their rights and obligations Enhance empathy on medical professionals (LCF) • Use virtual reality equipment to create scenarios promoting empathy • Inform medical professionals on the patients' rights and obligations in healthcare	• IT systems • Health professionals • Patients' data • Patients • Caregivers
General description		
Greece will implement a LGP based on the local needs and capacities of the health system. In Greece, the MHR Medical Health Records – Personal Health Record has not been widely used, leading in a shortage of digitally available medical data. Nevertheless, hospitals have their own digital database, providing the NAWG with a large amount of data available for the performance of classification. At the same time, patient empowerment has gained ground during the last few years, offering great opportunities, and getting medical professionals accommodated with the idea of managing their patients based on their own needs. For that purpose, the empowerment of the patients will be implemented in two different levels. The patients' level and the medical professionals' level. On the patients' level, they will be offered with a large variety of different digital tools, which they can use in order to educate /inform them on how to manage their symptoms, increase health literacy as well as expand their knowledge regarding their rights and obligations, decision making on issues that affects them (treatment plan etc.). On the medical professionals' level, they will be trained in empathy with the use of virtual reality, a skill that is missing from the curricula of the medical schools but is necessary when interacting with patients. Furthermore, the medical professionals will also be informed on the patients' and their own rights and obligations when it comes to healthcare		
Local Core Feature 1		
Classify a large number of patients based on their medical data		
Local Core Feature 2		
Empower patients and caregivers in chronic care		
Local Core Feature 3		
Enhance empathy on medical professionals		

Local Action Plan

Local Good Practice	**Greece's approach on patient classification and patient empowerment**
Target population	**Setting**

2000	Hippokration General Hospital, AHEPA General University Hospital, Thessaloniki

Main aim

Empower the population in order to improve their quality of life and prevent avoidable emergency room visits reducing unnecessary costs. Advance patients' classification through a patient classification tool in order to increase the quality and effectiveness of the health care system. A digitally enabled integrated care approach will facilitate patient classification and increase patient and caregiver empowerment. The approach focuses on classification of patients, empowerment of patients and caregivers and digitally enabled integrated care

General description

Greece will implement a LGP based on the local needs and capacities of the health system. In Greece, the medical folder has not been widely used, leading in a shortage of digitally available medical data. Nevertheless, hospitals have their own digital database, providing the NAWG with a large amount of data available for the performance of classification. At the same time, patient empowerment has gained ground during the last few years, offering great opportunities, and getting medical professionals accommodated with the idea of managing their patients based on their own needs. For that purpose, the empowerment of the patients will be implemented in two different levels. The patients' level and the medical professionals' level. On the patients' level, they will be offered with a large variety of different digital tools, which they can use in order to learn about their diseases and how to manage their symptoms, as well as they will be informed on their rights and obligations when it comes to their healthcare. On the medical professionals' level, they will be trained in empathy, with the use of virtual reality, a skill that is missing from the curricula of the medical schools but is necessary when interacting with patients. Furthermore, the medical professionals will also be informed on the patients' and their own rights and obligations when it comes to healthcare

Related oGPs and CFs	The Basque Health Strategy in Ageing and Chronicity: Integrated Care original Good Practice (Core Features 1.2, 3.1 and 3.2)
Local Core Feature 1	**Classify a large number of chronic patients based on their medical data**

SMART objective

By the end of JADECARE (sep2022), the NAWG of Greece will adopt a classification approach based on a patient classification tool that contributes to the transition to digitally-enabled, integrated, person-centered care, with special emphasis on sustainability

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
a. Design criteria for the local classification model	• Regional health authorities • Hospitals • Developers • Researchers •	• Hospital database • PHR • IT Staff • Researchers • Decision Makers	• Hippokration General Hospital • Ahepa General University Hospital	8 Months	• List of criteria used for the classification (Y/N) • Adopt the definition of the classification approach
Develop a data extraction process and processing mechanisms	• IT staff • Researchers • Public Health Experts • Hospital staff	• Hospital database • PHR • IT Staff • Researchers • Decision Makers	• Hippokration General Hospital • Ahepa General University Hospital	12 Months	• Data extraction Processes designed • No of patients classified/total number of patients targeted

Local Core Feature 2	**Empower patients and caregivers in chronic care**

SMART objective

By the end of JADECARE (Sep 2022), our NAWG and all the stakeholders involved will have defined a digitalized approach for empowering patients and caregivers. This approach is dedicated to improving chronic conditions, health care and effectiveness, increase knowledge and empower service users and transform them from passive recipients to active agents in the health system.

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
Creation of a mobile app and a web application which will inform patients and caregivers about chronic diseases.	General population	• Professors • IT Staff • Program managers • IT Systems • Health Professionals • Decision makers	• Hippokration General Hospital • Ahepa General University Hospital	8 Months	• Patient Reported Experience Measures (PREMs) • No of training sessions • No of participants in training • No of downloads • • •
Inform the patients on the available care/clinical pathways in order to improve health systems and notify them about their rights and obligations through digital means	General population	• Professors • IT Staff • Program managers • IT Systems • Health Professionals • Decision makers	• Hippokration General Hospital • Ahepa General University Hospital	12 Months	• System Usability in pilot phase • User experience • Patient Reported Experience Measures (PREMs) • No of downloads • No of clicks per topic • Creation of an online platform

Local Core Feature 3	Enhance empathy on medical professionals

SMART objective

By the end of JADECARE (Sep 2022), the NAWG of Greece will have implemented a Virtual Reality platform for promoting empathy in health professionals. Medical professionals will increase their skills, knowledge and capacities on the updated human rights charter and contemporary evidence-based treatment, enhance empathy by engaging in interactive communication and actions in order to strengthen connections with their patients.

Activities	Actors	Resources	Setting(s)	Timeline	KPIs
Creation of scenarios promoting empathy, using virtual reality equipment	Health professionals	• IT Staff • Program managers • IT Systems • psychologists	• Hippokration General Hospital • Ahepa General University Hospital	10 Month	• Virtual Reality application developed • No of training programs
Inform medical professionals on the patients' rights and obligations in order to improve the health	Health professionals	• IT Staff • Program managers • IT Systems	• Hippokration General Hospital • Ahepa General	12 Month	• System Usability • User experience • No of participants in training • No of training programs

status via the prevention, diagnosis, treatment, and recovery.			University Hospital		• No of participants in training • No of downloads

Implementation

1st PDSA Cycle

Plan

LCF1	Classify a large number of chronic patients based on their medical data							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Design criteria for the local classification model	Design of the data schema	• Data analysts • Regional health authorities • Hospitals	3 months (01.12.21-28.02.22)	• List of criteria used for the classification (Y/N) • Adopt the definition of the classification approach	• Researchers • Data analysts • Regional health authorities	• 3rd month (28.02.22) • 8th month (31.08.22)	• Literature review • Focus group • Consultation with experts	• Yes (for criteria list) • Definition adopted
	Selection and design of classification algorithm	• Data analysts • Developers • Researchers	5 months (01.03.21-30.07.22)					
Develop a data extraction process and processing mechanisms	Development of data extrac-tion process	• Data analysts • IT staff • Researchers	5 Months (01.12.21-31.04.22)	• Data extraction Processes designed	• Researchers • Data Analysts • IT staff	5th month (30.05.22)	Consultation with experts	• Design of data extraction process

LCF2	Empower patients and caregivers in chronic care							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**

Creation of a mobile app and a web application which will inform patients and caregivers about chronic diseases.	Patient specification and diagnostic assessment of chronic diseases	• Psychologists • Researchers • IT experts	3 months (01.12-21-28.02.22)	• Patient Reported Experience Measures (PREMs) • No of downloads • Creation of an online platform • Number of patients visited • No of professional/caregivers visited web application	• Researchers • Data analysts	• 3rd month (28.02.22) • 5th month (30.05.22)	• Literature review strategy • Application analytics	• 50 patients PREMs assessed • 200 downloads • Application fully functional • By the 5th month 100 patients visited mobile app • 50 Health professionals/caregivers visited web application
	Develop mobile app and web application	• IT experts • Researchers • Health professionals	5 months (01.03.21 - 31.07.22)					
Inform the patients on the available care/clinical pathways in order to improve health systems and notify them about their rights and obligations through	Design specifica-tions of training sce-narios	• IT staff • Health professionals • Researchers	6 Months (01.12.21 - 31.05.22)	• No of System Usability in pilot phase • Patient Reported Experience Measures (PREMs) • One policy Brief developed based on Patients Classification / Stratification in the country • No of downloads	• Researchers • IT staff	6th month (31.06.22)	• Application analytics • SUS questionnaire in pilot phase • User Experience questionnaire in pilot phase • policy brief	• 20 participants responded to the System Usability Scale that was conducted during the pilot phase • Policy brief developed based on the findings • 150 downloads

digital means								

LCF3	Enhance empathy on medical professionals							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Creation of scenarios promoting empathy, using virtual reality equipment (Oculus quest 2)	Design of specifications of Empathy-enhancing scenarios	• Psychologists • Medical professionals • IT staff • Researchers	2 Months (01.12.21-31.01.22)	• Virtual Reality application developed • No of System usability will be assessed • No of training programs	• Researchers • IT staff • Medical professionals • Psychologists	7th month (30.07.22)	• Application analytics • Consultation with experts • SUS questionnaire	• VR Application developed and fully functional by month 7 • 10 participants responded toSystem Usability Scale • 5 training programs where organized and conducted

Do

Cycle number	**1**	
Activity	**KPI**	**Actual value**
Design of the data schema Selection and design of classification algorithm	• List of criteria used for the classification (Y/N) • Adopt the definition of the classification approach	• Yes • Different algorithms being tested
Development of data extraction process	Data extraction Processes designed	Data already extracted from two university hospitals
• Patient specification and diagnostic assessment of chronic diseases • Develop mobile app and web application	• Patient Reported Experience Measures (PREMs) • No of downloads • Creation of an online platform	• N/A • N/A • Created online platform
Design specifications of training scenarios	• System Usability in pilot phase • Patient Reported Experience Measures (PREMs) • No of downloads	• N/A • N/A • N/A
• Design of specifications of • Empathy-enhancing scenarios • Development of empathy-enhancing scenarios	• Virtual Reality application developed • No of training programs • System usability	• Application fully functional • Five different empathy scenarios implemented • N/A
Design specifications of training scenarios	• System Usability • User experience	• N/A • N/A

QUESTIONS	**ANSWERS**
What was actually implemented? Any deviation from the planned actions	Patient Classification: • Patient data have been collected from two university hospitals of Thessaloniki (AHEPA, Ippokratio) for three consecutive years (2019, 2020, 2021) • The data include patient information (sex, age, primary diagnosis and in some cases number of re-admissions) • meetings were held with ACG owners for identifying the optimal way for using the collected data • Decided that the quality of the data was not sufficient for using ACG • We will implement regression analysis or classification and descriptive statistics of the data • Professionals involved: IT staff, researchers, hospital staff Patient Empowerment: • 2 meetings have been held with experts for identification of the VR and mobile scenarios. • The VR scenarios have been designed and are fully implemented • The mobile app virtual patients' scenarios have been designed and are fully implemented • The patient rights charter has not been implemented yet, but the material has been collected

	• Professionals involved: IT staff, researchers, hospital staff, psychologists, healthcare professionals Deviations • Data for patient classification is of poor quality / unable to use ACG Self-implemented algorithms will be used • Implications with bioethics committee user experience and system usability not collected yet
Problems? Unexpected findings? Please describe	Barriers: • COVID-19 possible next outbreak • Difficulty to extract results for classification • Bioethics committee (no big problems, just small deviations from the timeline) Facilitators: • IT staff very experienced • Healthcare staff co-operative

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
	Patient classification (still trying out various classification and regression algorithms to identify the one with the optimal accuracy level)	VR empathy mobile app (both fully functional, not yet tested for usability)	

Study

Cycle number	**1**					
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
• Design of the data schema • Selection and design of classification algorithm	• List of criteria used for the classification (Y/N) • Adopt the definition of the classification approach	• Yes (for criteria list) • Definition adopted	• Yes • Different algorithms being tested	• Data for patient classification is of poor quality / unable to use ACG • Difficulty to extract results for classification	• Patient data have been collected from two university hospitals of Thessaloniki (AHEPA, Ippokratio) for three consecutive years (2019, 2020, 2021) • The data include patient information (sex, age, primary diagnosis and in some cases number of re-admissions) • 2 meetings were held with ACG owners for identifying the optimal way for using the collected data • Decided that the quality of the data was not sufficient for using ACG • Regression analysis and descriptive statistics of the data implemented	Self-implemented algorithms will be used

					• Professionals involved: IT staff, researchers, hospital staff	
Development of data extraction process	Data extraction Processes designed	Design of data extraction process	Data already extracted from two university hospitals			
• Patient specification and diagnostic assessment of chronic diseases • Develop mobile app and web application	• Patient Reported Experience Measures (PREMs) • No of downloads • Creation of an online platform	• Application fully functional • 100 patients visited mobile app • 50 Health professionals/caregivers visited web application	• N/A • Application fully functional (will add more scenarios in PLAN step cycle 2)	PREMs not yet available caused by to difficulty in engaging users due to ethical committee delays	• Bioethics committee application will be submitted soon • The patient rights charter has not been implemented yet, but the material has been collected	Will solve every problem
Design specifications of training scenarios	• System Usability in pilot phase • Patient Reported Experience Measures (PREMs) • No of downloads	• Application developed • Policy brief designed • 100 downloads	• Application developed • Policy brief designed • N/A			
• Design of specifications of Empathy-enhancing scenarios • Development of empathy-enhancing scenarios	• Virtual Reality application developed • No of training programs • System usability	• Application fully functional by month 7 • At least 5 training scenarios	• Application fully functional • Five different empathy scenarios implemented • N/A	Implications with bioethics committee ➔ user experience and system usability not collected yet. No usability data	• 2 meetings have been held with experts for identification of the VR and mobile scenarios. • The VR scenarios have been designed and are fully implemented	

Design specifications of training scenarios	• System Usability • User experience	• Application developed • Policy brief designed	• Application developed • N/A	Implications with bioethics committee ➔ user experience and system usability not collected yet. No usability data		

Act

Cycle number	1		
Activity	**Maintain**	**Adapt**	**Abandon**
Design of the data schema	X		
Selection and design of classification algorithm		X	
Development of data extraction process		X	
Patient specification and diagnostic assessment of chronic diseases			X
Develop mobile app and web application	X		
Design specifications of training scenarios	X		
Design of specifications of Empathy-enhancing scenarios	X		
Development of empathy-enhancing scenarios	X		

QUESTIONS	ANSWERS
Any new proposed action for the future?	Design policy recommendations on risk startification

2nd PDSA Cycle

Plan

LCF1	Classify a large number of chronic patients based on their medical data							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
• Design criteria for the local classification model	Selection and design of classification algorithms	• Data analysts • Developers	12 months (01.12.21-30.11.22)	• Adopt the definition of a classification approach	• IT Staff • Rsearchers	• Throughout the process	• Consultation with experts • Literature review	• Definition adopted
	Comparison of multiple algorithms based on accuracy	• Researchers	12 months (01.12.21-30.11.22)	• No of patients classified/total number of patients targeted	• Researchers from the AUTH team	• At the end of the classification	• Data provided by the hospitals	• 30.000

Develop a data extraction process and processing mechanisms	Creation of a policies recommendation handbook including lessons learned from early adopters	• IT Staff • Researchers	12 months (01.12.21-30.11.22)	• Policy recommendations handbook created	• Researchers from the AUTH team	• At the end of implementation period of JADECAR	Data provided by the findings of the analysis on Classification/Stratification	Policy recommendation handbook available

LCF2	Empower patients and caregivers in chronic care							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Creation of a mobile app and a web application which will inform patients and caregivers about chronic diseases.	Redefine the mobile application and add more scenarios Design specifications of training scenarios	• Psychologists • Researchers • IT experts • Developers	• 12 months (01.12-21-30.11.22)	Patient Reported Experience Measures (PREMs) No of downloadsSystem Usability in pilot phase	• IT Staff • Program managers • IT Systems • Health Professionals • Decision makers	End of the implementation	Application analytics SUS questionnaire in pilot phase	Application fully functional 100 visits mobile app

Inform the patients on the available care/clinical pathways in order to improve health systems and notify them about their rights and obligations through digital means				Creation of an online platform 100 User experience	• IT Staff • AUTH Researchers		• User Experience questionnaire in pilot phase • Draft European Charter of Patient Rights	Obtain the experience of patients and their valuable input Increase patient awareness through the EU Charter of patient rights

LCF3	Enhance empathy on medical professionals							
Activities	**Actions**	**Actors**	**Timeline**	**KPIs measure (data collection)**				
				KPI	**Who**	**When**	**How**	**Target**
Creation of scenarios promoting empathy, using virtual reality equipment (Oculus quest 2)	• Design of specifications of Empathy-enhancing scenarios	• Psychologists • Researchers • IT experts	• 12 months (01.12-21-30.11.22)	• Virtual Reality • Application developed • System usability	• IT Staf • Program managers IT Systems • Psychologists		• Application Analytics Consultation with experts • SUS questionnaire	• Application developedand n fully functionalAt least 5 training scenarios

Inform medical professionals on the patients' rights and obligations in order to improve the health status via the prevention, diagnosis, treatment, and recovery.	• Development of empathy-enhancing scenarios	• Psychologists • Researchers	• 12 months (01.12-21-30.11.22)	• No of training programms the prevention, diagnosis, treatment, and recovery.	• IT Systems • Psychologists		• User Experience questionnaire in pilot phase	• Application developed • Policy brief designed and disseminated tailor to each sector

Do

Cycle number	**2**	
Activity	**KPI**	**Actual value**
Selection and design of classification algorithms	Adopt the definition of a classification approach	Definition and conceptualization of classification and stratification approach has been developed and shared to relevant stakeholders
Comparison of multiple algorithms based on accuracy	No of patients classified/total number of patients targeted	Data already extracted from two university hospitals Different algorithms being tested but the data provided did not allowed to create accurate patient classification
Creation of policy recommendation handbook including lessons learned from early adopters	Policy recommendations handbook created	Sector specific policy recommendations developed and shared with relevant policy makers
Redefine the mobile application and add more scenarios Design specifications of training scenarios	• PREMS • No of downloads • System usability in pilot phase • Creation of an online platform • User experience	• Application fully functional • Application developed • Policy brief designed
Design of specifications of empathy enhancing scenarios Development of empathy enhancing scenarios	• VR application developed • System usability • 4 training programs	• Application fully functional • Five different empalthy scenarios implemented • Application developed • Policy brief designed

QUESTIONS	**ANSWERS**
What was actually implemented? Any deviation from the planned actions	Stratification • We did the training sessions in risk stratification. • Despite the public tender is finished and we already have the risk stratification tools license (ACG and CRG), we didn't finish the study to choose the one we are going to use. Meanwhile, we made available a risk stratification tool made in house, for the professionals start to use. • We did a communication plan and an international meeting to discuss risk adjusted financing models.

	• We did an in person meeting for the groups to share the work done about the care pathways. • It is still missing meetings with oGP experts to discuss: financing adjustment criteria besides risk (context costs, for example) • It is still missing a proposal for risk adjusted financing because we only can do that after deciding which risk stratification tool are we going to use. • The definition of programmes for the different risk strata were abandoned, because in the absence of time with prioritized the care pathways. Deviations • Data for patient classification is of poor quality / unable to use ACG Self-implemented algorithms will be used • Implications with bioethics committee user experience and system usability not collected yet. Data scarcity, lack of patient health records and definititional overall make it impossible to gather the quality of the data required for stratification purposes. Patient empowerment • 2 meetings were held with experts for the identification of VR and mobile scenarios • The VR scenarios have been designed and are fully implemented • The mobile app virtual patients' scenarios have been designed and are fully implemented • The patients rights charter has not been implemented yet, but the material has been collected Professionals involved: IT staff, researchers, hospital staff, psychologists, healthcare professionals
Problems? Unexpected findings? Please describe	Barriers: Difficulty to extract results for classification Bioethics committee Facilitators: IT staff very experienced Helathcare staff co-operative

IMPLEMENTATION PROGRESS OF THE LOCAL GOOD PRACTICE			
0-25%	**25-50%**	**50-75%**	**75-100%**
	Patient classification abandoned and policy recommendationsfor Patient Health record keeping were developed and disseminated	VR empathy Mobile app (both fully functional, not yet tested for usability) 100 visits mobile App Pilot phase with 30 patients completed	

Study

Cycle number		2				
Activity	**KPI**	**Target value**	**Actual value**	**Reasons for the deviations**	**Mitigation actions implemented**	**Impact of mitigation actions**
• Design criteria for the local classification model • Develop a data extraction process and processing mechanisms	• Adopt the definition of a classification approach • No of patients classified/total number of patients targeted • Policy recommendations handbook created	• Definition adopted • 30.000 • Policy recommendation handbook available	• Definition adopted • Obtained data from 150.000 patients, being tested in different algorithms (30.000 initial target), some of the data may not be used due to missing values, but still target will be reached • Policy recommendations prepared	Data for patient classification is of poor quality / unable to use ACG	• Patient data have been collected from two university hospitals of Thessaloniki (AHEPA, Ippokratio) for three consecutive years (2019, 2020, 2021) (150.000 patients) • The data include patient information (sex, age, primary diagnosis and in some cases number of re-admissions) • A number of algorithms are already tested, and preferred algorithm has already been selected • Policy recommendations for implementing patient stratification in Greece have been designed	Self-implemented algorithms will be used

• Creation of a mobile app and a web application which will inform patients and caregivers about chronic diseases. • Inform the patients on the available care/clinical pathways in order to improve health systems and notify them about their rights and obligations through digital means	• Patient Reported Experience Measures (PREMs) • No of downloads • System Usability in pilot phase • Creation of an online platform • User experience	• Application fully functional • 100 visits mobile app	• Application fully functional • Application available in store • Pilot phase with 30 patients completed • SUS & USE questionnaires collected	Statistics from store not available yet	Will get statistics from store	
• Creation of scenarios promoting empathy, using virtual reality equipment (Oculus quest 2) • Inform medical professionals on the patients' rights and obligations in order to improve	• Virtual Reality application developed • System usability • No of training programms	• Application fully functional • At least 5 training scenarios • Application developed • Policy brief designed	• Application fully functional • Pilot phase complete • 5 training programsSUS & USE questionnaires collected			

the health status via the prevention, diagnosis, treatment, and recovery.						

Act

Cycle number	2		
Activity	**Maintain**	**Adapt**	**Abandon**
Policy recommendations	X		
Classification of patients from 2 Greek hospitals			X
Creation of a mobile app and a web application which will inform patients and caregivers about chronic diseases.	X		
Inform the patients on the available care/clinical pathways in order to improve health systems and notify them about their rights and obligations through digital means			X
Creation of scenarios promoting empathy, using virtual reality equipment (Oculus quest 2)		X	
Inform medical professionals on the patients' rights and obligations in order to improve the health status via the prevention, diagnosis, treatment, and recovery.			X

QUESTIONS	ANSWERS
Any new proposed action for the future?	**-**

Post-implementation

ITEM	ANSWER
Title and abstract	
Title	Greece's approach on patient classification and patient empowerment
Abstract	The flow of patients in the emergency room is overwhelming for the health care professionals on duty. The health system of Greece is financially unstable and new pathways need to be explored in order to reduce unnecessary visits. Risk stratification and patient empowerment are two different methodologies, but the correct application of them can lead towards better disease management both from the patients, the health system and the policymakers' side. On one hand, an empowered patient is a patient that has relevant information on their disease and basic knowledge on symptom management and as a result can better deal with their everyday life and thus reduce the unnecessary visits to the hospitals, for only when it is necessary. A patient can be empowered either by themselves by obtaining relevant information, or by their HCPs during their hospital visits. On the other hand, the prediction of the cost of healthcare through the stratification of patients based on their severity and possible readmissions, can lead to better financial management on behalf of the policymakers but also for the cost-effectiveness of the healthcare facilities. In order to try and move towards a more functional and sustainable health system, the Greek team has chosen this LGP based on our needs and capabilities, to explore the transfer of stratification and empowerment techniques in our local settings.
Why did you start?	

Problem description	In Greece, the concept of digital health is just beginning to form. As a result, patient data is not being collected and analyzed in a systematic way. The concept of stratification is not widespread and no attention is being paid to the concept of minimizing hospital visits and trying to foresee the financial cost of health. On the other hand, the available pathways of public health focus on the presentation of the HCPs as "godlike" individuals, leaving the patients in their mercy and not paying any attention to the concept of joint decision making. Patients and their caregivers have no information apart from what they can find online through informal channels on diseases and symptoms management and they are always bound to their doctors and nurses for help. As a result, the emergency rooms are always over capacity, crawling with people that come in for simple problems, manageable outside as easy. Furthermore, HCPs during their medical training do not receive any guidance for enhancing the doctor-patient communication. This leads to phenomena where they are perceived as unapproachable by their patients. The latter are sometimes reluctant to address their questions to their HCPs, as they might be confronted with rudeness and even laughed at.
Available knowledge	Extreme overburden of the primary, secondary and tertiary health system due to the COVID-19 epidemic, lack of sufficient funding in the majority of the participating counties created a fertile ground for the expansion of multiple serious public health and safety related problems. Numerous studies have highlighted the lack of available resources and targeted interventions' measures that created an even more difficult situation since available cost saving interventions were not implemented to those that need such interventions and vice versa, people with mild conditions were spending valuable resources that could save others people lives. Therefore, the majority of the studies show evidence that the available resources were not spent sufficiently and highlighted several targeted strategies such as stratifying patients[1],[2],[3] into distinct sub-groups that can help in guiding treatment decisions and focusing therapies on the appropriate populations in order to avoid overtreatment, improve success rates, and save costs. <u>Risk Stratification:</u> The goal of [risk stratification] is to help patients achieve the best health and quality of life possible by preventing chronic disease, stabilizing current chronic conditions, and preventing acceleration to higher-risk categories and higher associated costs. The success of population health management depends, in part, on "accurately identifying patients at high risk for poor health outcomes as well as preventable and costly health events," the report authors explained. "Risk-stratification approaches typically focus on clinical markers.[4] Risk stratification is the foundational step for targeting patients at various levels of risks, and further, scheduling follow-ups and keeping them aligned with their care plans. Here's why **risk stratification is important**: • Predict risks: Risk stratification can help providers to proactively identify patients at risk of unplanned hospital admissions. Almost one-third of all the readmissions that take place in the United States are preventable.

[1] Torres Moral, T.; Sanchez-Niubo, A.; Monistrol-Mula, A.; Gerardi, C.; Banzi, R.; Garcia, P.; Demotes-Mainard, J.; Haro, J.M.; the PERMIT Group. Methods for Stratification and Validation Cohorts: A Scoping Review. J. Pers. Med. 2022, 12, 688. https://doi.org/10.3390/jpm12050688

[2] Russo, E., Di Bari, S., & Agnoletti, V. (2022). Benefits of patient risk stratification and targeted interventions on multidrug resistant pathogens prevention and control. *Discover Health Systems*, *1*(1), 6.

[3] Abdelnour, C., Agosta, F., Bozzali, M., Fougère, B., Iwata, A., Nilforooshan, R., ... & Traber, M. (2022). Perspectives and challenges in patient stratification in Alzheimer's disease. *Alzheimer's Research & Therapy*, *14*(1), 1-12.

[4] Janes, H., Pepe, M. S., & Gu, W. (2008). Assessing the value of risk predictions by using risk stratification tables. *Annals of internal medicine*, *149*(10), 751-760.

	• Patient-specific care plans: Identifying patient-specific risk factors that may pose a threat in future can help physicians and health coaches develop care plans tailored to their needs. • Understanding population health trends: With a continuous assessment of risk factors and the use of risk scores, providers can understand their patient population and find answers to critical questions. Finally, it's the need of the hour to implement risk stratification in any successful population health management model to classify patients into high-risk, low-risk, and rising-risk groups and to achieve the Triple Aim: better health outcomes, quality care and lower costs of care.[5] <u>Patient Empowerment:</u> Likewise, patient empowerment has been recognized by the major international organizations WHO, UNODP, ECDC[6] as a fundamental element for patient improvement. Moving away from the passive recipient to active agent in her/his recovery plan.[7] [8] The sharing of information is crucial to patient empowerment and there's ample research which suggests that health outcomes are better in patients who are more involved in decisions about their treatment.[9] Plus, as patients understand more about their illness, they can actively take steps at home to aid their recovery, potentially reducing hospital visits in the future and lowering further costs. Furthermore, Patient empowerment is so much more than enabling patients to assert greater control over their healthcare. It enables a more collaborative relationship, where doctors and patients can work together to decide on the most appropriate care pathway and treatments. By implementing resources to support patient empowerment, patients will have access to everything that they need instantly, such as ordering meals if they're an in-patient, a digital map of the hospital and their appointment date and time. Ultimately, patients will no longer need to ask staff for assistance, meaning staff will spend less time tending to non-medical queries and can focus on other important matters. Empowerment in patients with chronic diseases has shown several positive effects, such as increased patient satisfaction with care, improved patient adherence to self-management of the treatment and better clinical outcomes.
Rationale	We focus our approach in two main contemporary personalized based models. The patient empowerment with the paradigm shift of the patient from passive recipients of the interventions to active agents to their recovery. This is supported by evidence that active involvement and engagement of the patient leads to more favorable outcomes. The con-cept also includes the principles of shared care and taking responsibility for one's own life and recovery. Therefore, we initiated the empowerment approach by acknowledging international and EU documents e.g. EU Patient Rights raising awareness of their rights when hospitalized or visiting a doctor as well as their responsibilities. Taking the respon-sibility through self-care reduces unnecessary costs in the health system and increase the quality of patients' lives. Furthermore, we included the concept of empathy as a "sine qua non" of human interaction and in particular patient-doctor relationship. A determining factor of a successful any type of treatment. The basic

[5] Sheets, L., Lyttle, K., Popejoy, L. L., & Parker, J. C. (2017). The Paradox of Higher Charges for Lower-Risk Inpatient Admissions: When Healthier Patients Cost More. In *MEDINFO 2017: Precision Healthcare through Informatics* (pp. 1158-1162). IOS Press.

[6] Kohl, S. (2018). WHO/Europe and ECDC intensify collaboration on infectious diseases and health emergencies. *European Journal of Hospital Pharmacy*, *25*(2), 111-113.

[7] Prigge, J. K., Dietz, B., Homburg, C., Hoyer, W. D., & Burton, J. L. (2015). Patient empowerment: A cross-disease exploration of antecedents and consequences. *International Journal of Research in Marketing*, *32*(4), 375-386.

[8] Anderson, R. M., & Funnell, M. M. (2005). Patient empowerment: reflections on the challenge of fostering the adoption of a new paradigm. *Patient education and counseling*, *57*(2), 153-157.

[9] Oh, H. J., & Lee, B. (2012). The effect of computer-mediated social support in online communities on patient empowerment and doctor–patient communication. *Health communication*, *27*(1), 30-41.

	assumption here was that in-creasing medical personnel's empathic understanding will increase their capacities to connect with their patients and understand them more effectively while at the same time patients will foster their capacities and skills regarding their condition avoiding in this way the patient-doctor dependency, or the unnecessary hospital visits. In the same line is the second approach that we selected to implement patient classification/ risk stratification. There is a bulk of evidence that a one fit all approach is not as effective as designing treatment interventions tailored to the needs of the patients in terms of frequency severity and intensity of the intervention. The basic assumption here was that if we manage to classify the patients based on some criteria we will be able to predict (if not in terms of cause and effect relationship) but more as increase our probabilistic capacities to group certain type of patient that through previous evidence have been shown to react more positive to certain type of treatment, or sub-group of patients that share similar characteristics. We will be able to be more accurate in our prediction of the treatment retention in intensive care or hospitalized and thus manage to expand our cost -effectiveness and cost saving approach. Regardless of our expectations, unfortunately we did not have the appropriate data (scarce data), aggregated and managed differently in each institution making the comparison or even the descriptive sub grouping impossible. That was a good lesson learn since the lack of interoperability, guidelines of keeping safely patient data as well as harmonizing and transposing our national system with the EU acquis in ways that would firstly increase our goal towards digitized health care system, increase treatment efficacy, reduce unnecessary healthcare costs and secure the standards of care.
Specific aims	A digitally enabled integrated care approach will facilitate patient classification and in-crease patient and caregiver empowerment. The approach focuses on classification of patients, empowerment of patients and caregivers and digitally enabled integrated care. More specifically it aims at empowering the population in order to improve their quality of life and prevent avoidable emergency room visits reducing unnecessary costs and ad-vance patients' classification through a patient classification tool in order to increase the quality and effectiveness of the health care system.
What did you do?	
Context	Classification of Patients: Database for patients has begun to be created due to vaccina-tion needs. E-prescription already integrated in health system. Strengthening the ICT e-Governance and Management Model. Change of the Administrative subordination of the Informatics Organization Sub-Directorates of the Hospitals to the logic of independence and direct cooperation with the hospital administration. Patient empowerment: Team experience regarding patient empowerment. Projects involv-ing patient empowerment already running. The role of the patients regarding decision mak-ing has been strengthened. Population awareness for need of self-empowerment. To in-crease the knowledge, skills, attitudes and self-awareness about their condition to understand their lifestyle and treatment options and make informed choices about their health. Wide use of the internet by people of all ages General: Team experience regarding innovative health-oriented interventions. Team experience in digital innovation, focus and deep knowledge on co-creation methodologies, community-based approaches, and the e-health hub platforms. Primary care teams which are used to teamwork working together. Health professionals are open to trying new approaches. Leadership opens to innovation. State's digital transformation (N 4727/2020) and citizens' web portal (gov.gr). The pandemic acted to speed up digital transformation of health. Expertise from European Actions and participation in corresponding projects. Participation of team members in Networks of health

	professionals and some of them holding special roles in some of them e.g., President of HL7 Hellas and leveraging expertise. Health professionals have been educated in using digital health systems. Ability to engage effectively with and gain the support of diverse stakeholders. The cooperation and participation of national and regional networks and support from EC and close cooperation with major media partners and promotional tools ensures appropriate media coverage, visibility and dissemination of the project activities and results.
Intervention(s)	Greece will implement a LGP based on the local needs and capacities of the health system. In Greece, the MHR Medical Health Records – Personal Health Record has not been widely used, leading in a shortage of digitally available medical data. Nevertheless, hospitals have their own digital database, providing the NAWG with a large amount of data available for the performance of classification. At the same time, patient empowerment has gained ground during the last few years, offering great opportunities, and getting medical professionals accommodated with the idea of managing their patients based on their own needs. For that purpose, the empowerment of the patients will be implemented in two different levels. The patients' level and the medical professionals' level. On the patients' level, they will be offered with a large variety of different digital tools, which they can use to educate /inform them on how to manage their symptoms, increase health literacy as well as expand their knowledge regarding their rights and obligations, decision making on issues that affects them (treatment plan etc.). On the medical professionals' level, they will be trained in empathy with the use of virtual reality, a skill that is missing from the curricula of the medical schools but is necessary when interacting with patients. Furthermore, the medical professionals will also be informed on the patients' and their own rights and obligations when it comes to healthcare. The target population are patients and their caregivers, as well as HCPs and IT staff. The NAWG was composed of members of different organizations with different levels of involvement: • Researcher (AUTH – 4th YPE), full participation • Senior rearcher (AUTH), full participation • Junio researcher (4th YPE), full participation • Professor/project manager (AUTH), consultation • Director (4th YPE), consultation
Study of the Intervention(s)	Indicators chosen to reflect the acceptability and feasibility of the studies conducted in the context of JADECARE. These studies included the testing of the mobile and of the VR application. Number of downloads, SUS, USE, open questions to participants to as-sess acceptability. For the stratification, the policy recommendations have been shared with policymakers Greece is moving towards digitalisation, so it would be safe to assume that any changes in the data collection, handling, storage and analysis that may occur in the near future will not come as a result of the policy recommendations that were put together during the project. The best thing that the team can hope for is for these recommendations to form a basis upon which the policymakers will start thinking about the importance of predictions and the valuable outcome they may have for the economy of the country. As a result, there is no way to measure whether the change that is coming our way will be influenced by JADECARE
Measures	<u>Risk stratification (LCF1):</u> • List of criteria used for the classification (Y/N)

	• Adopt the definition of the classification approach. • Data extraction Processes designed. • No of patients classified/total number of patients targeted. <u>Patient empowerment (LCF2&3)</u> • Patient Reported Experience Measures (PREMs) • No of training sessions • No of participants in training • No of downloads • System Usability in pilot phase • User experience • Patient Reported Experience Measures (PREMs) • No of clicks per topic • Creation of an online platform
Analysis	Collection methods for the data: • Literature review • Focus group - situational / stakeholder analysis • Consultation with experts • Application analytics • SUS questionnaire in pilot phase • User Experience questionnaire in pilot phase • Policy brief - recommendations
What did you find?	
Results	Patient classification: • Plan C1: use of ACG grouper • Do C1: data obtained of poor quality. Self-implemented classification algorithms to be used • Study C1: Regression analysis and descriptive statistics of the data implemented • Results of poor accuracy and results produced • abandonment of classification approaches • policy recommendations for risk stratification designed Empowerment: • Plan C1: Creation of mobile app with scenarios • Do C1: Integration of JADECARE scenarios on an already existing application • Study C1: implement a new application for JADECARE including only targeted scenarios • HCPs empathy: • Plan C1: implement VR scenarios. Went according to plan Outcomes: • Used regression analysis and numerous classifiers for patient classification. 150.000 patients classified, not good accuracy due to poor quality of the data • Bioethics committee delayed the pilots for mobile and VR apps. Now pilots completed. USE and SUS collected, modifications made. Mobile app available in store Creation of a policy recommendations' document regarding patient stratification. Document shared with local policymakers
What does it mean?	
Summary	Key findings:

	• The momentum for digitally enable personalized integrated care in Greece is very good since it is the first formal attempt to develop Patients Electronic Health Records (HER). Greece now is on the process of designing one of the biggest digitalized reforms in the NHS, as it is creating the National Digital Patient Health Record (NDPHR)) allowing the overview of citizens' data and documents through the application of the Individual Electronic Health Record (EHR), thus enabling patients/citizens to gain comprehensive access to health data related to Secondary / Tertiary health care. At the same time, this implementation will upgrade the provided health services and reduce health costs due to the immediate access to history data and the avoidance of repeating tests that were already carried out in other health units. • However, one of the most unexpected key findings that is also directly related to the main aims of JADECARE, was the lack of available infrastructure to support the organization of obtaining electronic health records. The available data collected were so incomplete and weak that did not allow to proceed to any kind or type of classification or stratification methodology. Therefore, one of the main actions taken was the policy recommendations designed specifically, to increase policy makers and program planers awareness of the necessity to develop the eHealth digital infrastructure building blocks and legislative and policy harmonization with the EU acquis. • Other finding was that policy makers and medical personnel need to develop digital literacy and increase their awareness of the benefits of the digitalization of healthcare. • Furthermore, the findings indicated that the mobile app utilized with the scenarios for empathy, self-care and self-management and interaction with health care providers was an effective tool to increase patient empowerment and empathic understanding. Empathy training in medical professionals was well received even if the HCPs still prefer a more collaborative way in the real world. Precisely, the high acceptability of the patient empowerment mobile scenarios led to the search for funding for enriching the application with new scenarios and feedback regarding the empathy training led to the search of other, non-digital ways for empathy training organized by the hospital. • Finally, the hospitals participated in JADECARE found the empathy workshops very useful and are trying to organize relevant events Strengths: • First attempt on analysis of large medical data in Greece • Not successful, but involved medical professional got in touch with the idea of stratification • Policy recommendations hopefully will disseminate the need for high quality digital medical data • Empathy training in medical professionals well received, will be implemented in more different ways in the future • Patient empowerment really useful
Interpretation	• The non-availability of high-quality medical data led to the creation of a set of policy recommendations • The high acceptability of the patient empowerment mobile scenarios led to the search for funding for enriching the application with new scenarios. • Dissemination means of mobile app still under investigation

	• Possible feedback regarding the empathy training led to the search of other, non-digital ways for empathy training organized by the hospital • Although the digital solution of the empathy training was well received, the HCPs still prefer a more collaborative way in the real world
Limitations	• The classification approach was limited to 2 hospitals of Thessaloniki. The lack of satisfying results led to the abandonment of the proposed method and to targeting policymakers rather than hospitals • The mobile app pilot was limited to one hospital, but the app is available on google store • dissemination techniques of the mobile app need to be investigated in order to raise the spread of it • The empathy training was limited to one hospital and the scenarios will be now implemented in a non-digital way. If this program proves successful and well received, perhaps more hospitals will adopt it
Conclusions	Next steps: • Disseminate the policy recommendations • Try to collect through other funded projects more hospital data • Investigate the use of ACG grouper for patients' stratification in the future • Disseminate the mobile app • Increase number of downloads from the store • Enrich mobile app with more scenarios • Empathy training within hospital will be funded by other projects • Investigate new ways for achieving patient empowerment
Other information	
Funding	Funding was derived from the InAdvance Horizon 2020 EU project (staff, hardware and expertise)