D2.2 Use cases for integrated care models and pathways

WP2 Use Cases for CareWell services

Version 1.0, date 30th October 2014

DOCUMENT INFORMATION

ABSTRACT

ORGANISATION RESPONSIBLE

empirica

AUTHORS

Vogt, Jess (empirica)

Stroetmann, Veli (empirica)

Lewis, Leo (IRH)

Fullaondo, Ane (Kronikgune)

CONTRIBUTING PARTNERS

Avolio, Francesca (AreS Puglia)

Benković, Vanessa (FER)

Fusello, Massimo (VENETO)

Graps, Elisabetta (AreS Puglia)

Green, Ian (PHB)

Gustin, Karlo (ENT)

Lepore, Vito (AreS Puglia)

Marchet, Francesco (VENETO)

Marcin, Silvia (VENETO)

Mora, Joana (Kronikgune)

Piazzolla, Vito (AreS Puglia)

Summerfield, Tanya (PHB)

Whitear, Bruce (PHB)

Zweifka, Antoni (LSV)

DELIVERY DATE

31st October 2014

DISSEMINATION LEVEL

P   Public

VERSION HISTORY

Version	Date	Changes made	By	Sent to
0.1	11/8/2014	First draft of structure and initial content suggestions	Jess Vogt (empirica)	Ane Fullaondo (Kronikgune) Leo Lewis (IRH) Ane Fullaondo and Joana Mora, (Kronikgune) Angel Faria (Osakidetza)
0.2	28/8/2014	Structure alteration	Jess Vogt (empirica)	Veli Stroetmann (empirica)
0.3	29/9/2014	Initial site specific use case development	Jess Vogt (empirica)	
0.4	1/10/2014	Further site specific use case development	Jess Vogt (empirica)	
0.41	2/10/2014	Further site specific use case development	Jess Vogt (empirica)	All pilot site representatives, Leo Lewis (IRH) Ane Fullaondo (Kronikgune), Angel Faria (Osakidetza)
0.42	16/10/2014	Introduction, purpose of document, structure and methodology	Jess Vogt (empirica)	
0.43	17/10/2014	Alteration of generic use cases based on input by Leo Lewis (IRH) and Ane Fullaondo (Kronikgune)	Jess Vogt (empirica)	Leo Lewis (IRH) Ane Fullaondo and Joana Mora, (Kronikgune) Angel Faria (Osakidetza)
0.44	21/10/2014	Amendments to use cases from pilot site comments and comments from Ane Fullaondo (Kronikgune) and Leo Lewis (IRH)	Jess Vogt (empirica)	Pilot site representatives, Leo Lewis (IRH) Ane Fullaondo and Joana Mora (Kronikgune) Angel Faria (Osakidetza)
0.45	22/10/2014	Amendments due to comments from consortium members	Jess Vogt (empirica)	
0.46	23/10/2014	Amendments following discussions with consortium members	Jess Vogt (empirica)	John Oates (HIM) Leo Lewis (IRH) Ane Fullaondo and Joana Mora (Kronikgune) Angel Faria (Osakidetza)

Version	Date	Changes made	By	Sent to
0.47	30/10/2014	Amendments following quality review by John Oates (HIM)	John Oates (HIM)	Jess Vogt (empirica) Leo Lewis (IRH) Ane Fullaondo and Joana Mora (Kronikgune) Angel Faria (Osakidetza)
1.0	30/10/2014	Finalisation of document following comments and input from John Oates (HIM), Angel Faria (Osakidetza), Ane Fullaondo (Kronikgune), Leo Lewis (IRH), Ian Green (PHB)	Jess Vogt	Ane Fullaondo and Joana Mora (Kronikgune), Angel Faria (Osakidetza), John Oates (HIM) Leo Lewis (IRH)

OUTSTANDING ISSUES

None

FILENAME

D2.2 v1.0 CareWell Use Cases for integrated care models and pathways

STATEMENT OF ORIGINALITY

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

Executive Summary

This deliverable describes the use cases for the CareWell pathways. These use cases outline the care process and areas of healthcare delivery in which a need for improvement has been identified, and which the consortium has agreed will be addressed within the CareWell project. CareWell has chosen to focus on improving coordination, communication and information sharing between healthcare professionals, and the empowering of the patient and supporting the patient and informal carer through follow up and monitoring. This deliverable focuses on the patient's pathway journey from the perspective of a service process and CareWell improvement area. The detail described in these use cases will then be built on in deliverable D4.2, which depicts the technical architecture and system specification.

The use cases reflect these selected areas of focus, and have been aided in their development through drawing up a group of four functional blocks that will be used as the basis for the CareWell pathways, which will be developed in WP3. The functional blocks describe the four domains of the use cases, and encompass four areas of functionality:

- Data access and sharing.
- Improved coordination between healthcare professionals.
- Remote monitoring of patients.
- Patient empowerment.

These functionalities were informed by the possibilities, initiatives and scope for change and improvement envisaged by and imagined as feasible by the pilot sites. The pilot sites and their users were extensively consulted in drawing up the functional blocks and the resulting use cases.

The four generic use cases act as a means to guide and help describe the initial concepts from the six CareWell pilot sites on how they will improve their service delivery by defining:

- The purpose of the services they will deliver.
- The domains the services will encompass.
- The scale of these services' delivery.
- The context in which the services will be delivered.
- The content that will be included.
- The participants who will use the service.
- The improvements and benefits the services will bring.

Thus this document describes how each pilot site's alterations and additions to current service delivery fit the use cases, and the content, benefits and users of these services.

The use cases described here will be used to inform the work of WP3, WP4 and WP5, and will be used as a reference point throughout the project. The lessons learnt which were garnered through the explorative process of developing the use cases, and then outlining the envisioned services, chiefly concern the need to not expect the introduction of ICT to be a sufficient means of change in its own right. Rather, it is imperative that organisational, cultural and workflow changes are introduced in parallel. These lessons will be reflected on throughout the project lifetime as the services develop, but are also relevant for future service developments outside of CareWell.

Table of Contents

1   Introduction

1.1   Purpose of the document

This deliverable describes the use cases for the CareWell pathways. These use cases will be used to inform the preparation of organisational models and pathways in D3.1, and will serve as a basis for service specification and prototype testing of CareWell services in D4.1. This deliverable is particularly important for the prototype testing in WP4 as the use cases form the basis for test protocols in the prototype testing carried out WP4. This document will also act as a reference point for CareWell pilot sites as they develop their services, and thus will ensure that later developments remain true to the key CareWell aims.

1.2   Background

Patients with complex care needs are known to account for a disproportionate share of national health spending. These patients typically see multiple clinicians at different locations, making care coordination imperative. Due to their multifactorial health condition, complex and multi-morbid patients require a personalised and coordinated care approach with an "integrated vision of the patient" at all levels of care (primary, specialised, medium stay, mental health, emergencies, social services, health at work, etc…). CareWell aims to meet the needs of these patients and deliver better care and support through integrated and coordinated care programmes supported by ICT.

This deliverable is a starting point for the development of these key CareWell services for improving integration of care for patients with complex needs; specifically through better data access and sharing, improved coordination of healthcare professionals, remote monitoring of patients, and patient empowerment. This deliverable is the first step in a longer journey of designing and delivering CareWell services. It uses use cases to gather initial information from the six CareWell pilot sites on how they will improve their service delivery by defining:

- The purpose of the services.
- The domains they will encompass.
- The scale of these services' delivery.
- The context in which they will be delivered.
- The content that will be included.
- The participants who will use the service.
- The improvements and benefits that the service will bring.

As already stated, this deliverable is merely the starting point, or foundation, from which the CareWell services will develop. The next steps will be taken on within WP3, where the organisational models will be elaborated and CareWell pathways defined, and then WP4 where the service specifications will be drawn up, the architecture elaborated, and prototypes tested. WP4 concludes the design phase of CareWell before WP5 can carry out the pilot prototype tests and develop the implementation plan. Below is a diagram which elaborates how the work will progress in CareWell under the guidance of the eight work packages.
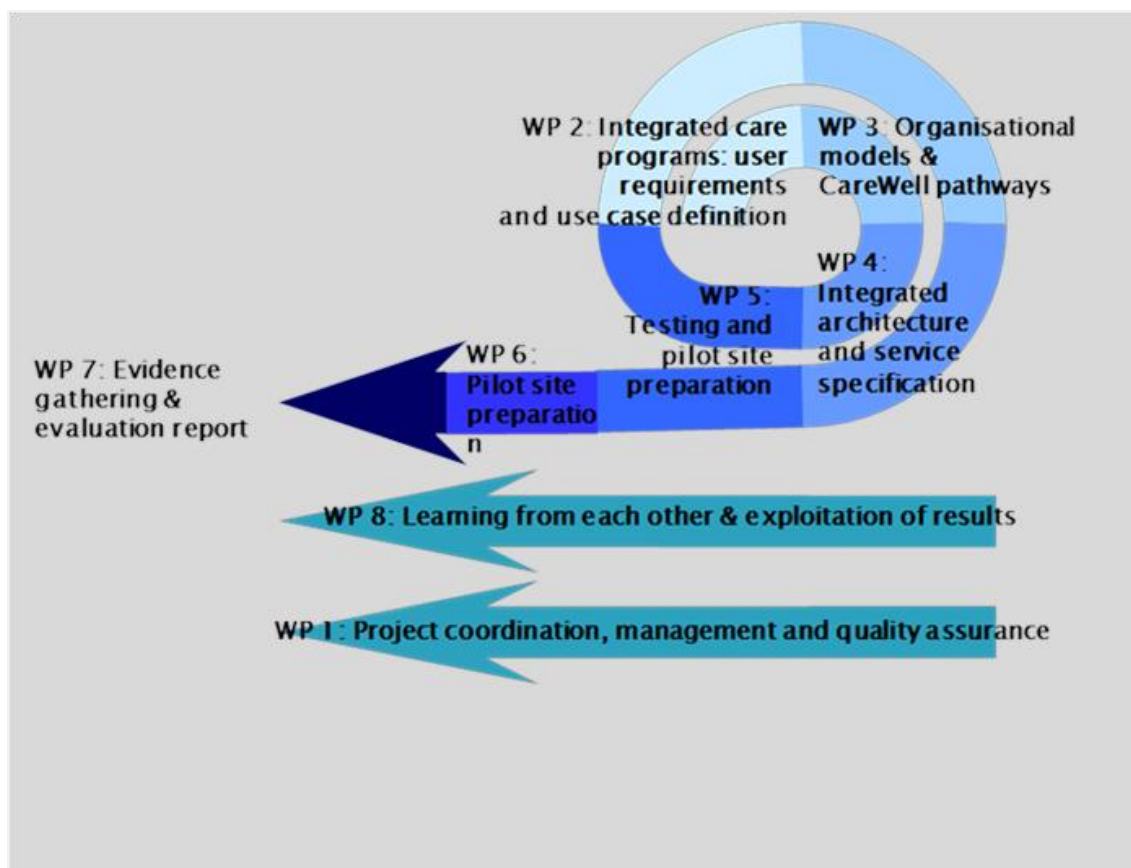
Figure 1: CareWell work package interdependences

1.3 Structure of this document

This document is organised as follows:

- Chapter 2 first introduces the methodology for the development of the use cases, and then outlines the four generic use cases. Chapter 2 then goes on to describe how these use cases are manifested at each pilot site, with a focus on the changes to service delivery and benefits achieved that CareWell will enable.

- Chapter 3 concludes with the lessons learnt through the development of use cases, and the next steps.

1.4 Glossary

ADL	Activities of Daily Living
AReS Puglia	Agenzia Regionale Sanitaria Pugliese
BP	Blood Pressure
BM	Body Mass
COPD	Chronic Obstructive Pulmonary Disease
CRM	Customer Relationship Management service
EC	European Commission
ECG	Electrocardiography
EHR	Electronic Health Record

EU	European Union
ENT	Ericsson Nikola Tesla D.D.
FAQs	Frequently asked questions
F.O.C.	Free of charge
GP	General Practitioner
HIS	Health Information System
ICCM	Integrated Chronic Care Model
ICCP	Integrated Care Coordination Pathway
ICD	Implantable Cardioverter-Defibrillator
ICT	Information Communication Technology
IHR	Individual Health Record
IKP	Individual Patient Account (Lower Silesia)
IMCR	Intelligent Mobile Movement Sensor (Lower Silesia)
INR	International Normalised Ratio
IT	Information Technology
LHA	Local Health Authority
LSV	Urzad Marszalkowski Wojewodztwa Dolnoslaskiego (Lower Silesia Marchall's Office)
PAS	Patient Administration System
PC	Personal Computer
PDAs	Personal Digital Assistants
PEHP	Patient Empowerment and Home-care Pathway
PHB	Powys Teaching Local Health Board
PHR	Personal Healthcare Record system
ULSS nr2	Unita Locale Socio-Sanitaria Number 2 (in Veneto Region)
WiFi	Wireless local area network
WoW	Ways of Working
WP	Work Package

2   CareWell use cases

2.1   Methodology

The starting point for the CareWell use cases was first to consider who are the patients that CareWell aims to support and improve services for. In the case of CareWell, this has been defined as the sickest 5% of the population: frail patients with multiple chronic diseases and complex needs. The next step was to reflect on how these patients could be supported and their care improved; this led to a consideration of who is involved in caring and supporting these patients, what information are they sharing, how can information sharing be improved, and how can their workflows be improved. Naturally, this produced an extensive list which was not realistically achievable within the constraints of CareWell, so from the project outset it was necessary to define which domains CareWell would focus on; these are illustrated in the diagram below. However, it should be noted that although the role of the social workers is important in meeting the care and support requirements of people living with complex needs, the need for exchanging information and communication with social workers will not be actively addressed by CareWell project.
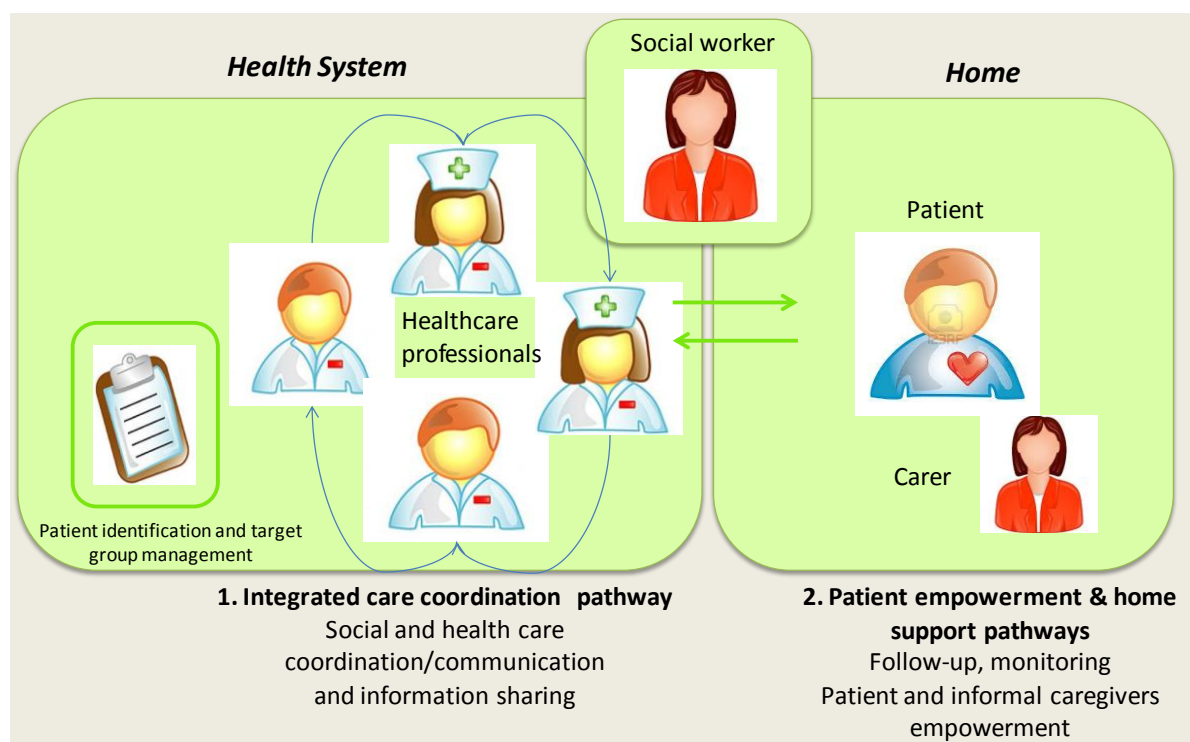
Figure 2: CareWell domains for integrated care

As can be seen in Figure 2 above, CareWell has chosen to focus on improving coordination, communication and information sharing between healthcare professionals, and on empowering the patient and supporting the patient and informal carers through follow up and monitoring. With these domains, with the actors and the areas for improvement defined, it was then possible to develop the concept of functional blocks which will form the basis of the CareWell pathways. The pathways are further developed in WP3; their definitions can be found in D3.1. When developing the functional blocks, four areas of functionality for improvement were identified; these can be seen in Figure 3 below. These functionalities were informed by the possibilities, initiatives and scope for change and improvement envisaged by and imagined as feasible by the pilot sites. Pilot site and user input on the functionalities were gathered through the use of use case

templates, which underwent: a series of iterations; two rounds of dedicated telcos with the pilot sites; and pilot site visits which were often carried out in conjunction with WP3 and WP4 representatives.

Case-finding (risk stratification and/or clinical judgement)

- **Patient Summary**
- **Referral and Discharge Reporting**
- **ePrescription**
- **Messaging**
- **Digital Platforms**

- **Co-ordination workflow**
- **Contact/Call Centre**
- **Virtual meetings**
- **Virtual Clinics**
- **Improved ICT systems for communication between multi-disciplinary care teams**
- **Use of care managers / nurses as coordination point Messaging systems**

Documentation

Data access and sharing use case

Improved coordination use case

Patient and Family

Patient empowerment use case

Remote monitoring use case

Integrated Care

- **Educational material**
- **Self-care material / functionalities**
- **Patient access to EHR / telemonitoring data**
- **Patient messaging with healthcare professionals**
- **Directory of services**

- **Telemonitoring and telecare**
- **With and without a call centre**

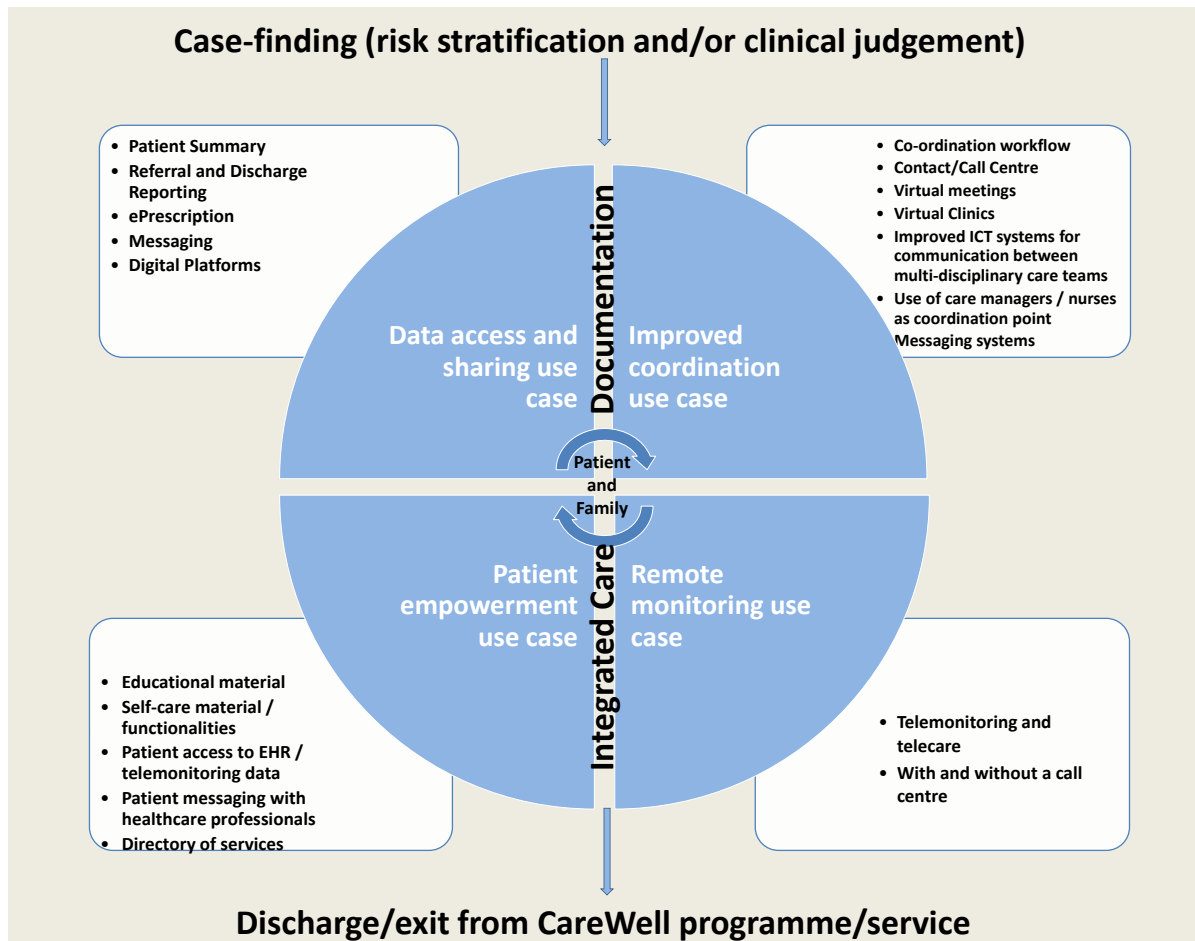**Discharge/exit from CareWell programme/service**

Figure 3: CareWell pathway implementation–key functional blocks

There are four use cases:

- Data access and sharing use case;
- Improved coordination use case;
- Remote monitoring use case;
- Patient empowerment use case.

In the four subsections below, the generic use case is described, followed by the specific implementations by each pilot site.

2.2   Data access and sharing use case

Title	Data access and sharing use case
Purpose	To enable data sharing between healthcare professionals, and access to shared information points. To allow healthcare professionals to be better informed as to a patient's health status and to reduce repetitions and risk of misdiagnosis.
Domain	The key functional domains are: • Patient Summary • Referral and Discharge Reporting • ePrescription • Messaging • Digital platforms
Scale	• Between remote nursing team and GP practices • Between primary care and hospital / specialists • Between patient and healthcare professionals (both primary and secondary care)
Context	Healthcare professionals do not have access to sufficient information, and so are often repeating diagnostics tests. Information sharing between healthcare professionals is limited and so healthcare professionals' view of patient is constrained.
Information	• Patient Summary • Pathways • EHR • Medication list
Participants	• General Practitioners • Remote nursing teams • Specialists • Primary care nurses • Secondary care nurses • Pharmacists • Emergency department staff • Laboratory staff • Radiologists
Workflow steps	Information input by one healthcare professional is made available / visible to further healthcare professionals.

2.2.1 Basque Country pilot site data access and sharing use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Electronic prescription	Yes	Primary and secondary care can access the same space where patient's pharmacological treatment is described, improving drug management. It is not part of the Ebook functionality described below.	Patient's pharmacological treatment. Secondary care professionals have access to the information on prescriptions and dispensing information. However, primary care professionals only have access to the list of drugs prescribed and the dosage, not the dispensing. Hospital pharmacists have access to all prescriptions and dispensing information. Community pharmacist only see the drugs prescribed for chronic conditions for a given patient.	GPs. Specialists. Primary care nurses. Secondary care nurses. Pharmacists. eHealth centre nurses.	Improve drug management, better prescribing avoiding duplications or errors between primary and hospital care.
Ebook; shared common space for primary and secondary care professionals in EHR	Yes	Reclassification and rearrangement of content will make it easier for primary and secondary healthcare professionals to find the relevant information. Will be used during consultations.	Patients' notes; structured free text relating to episodes.	GPs. Specialists. Primary care nurses. Secondary care nurses. eHealth centre nurses. Hospital pharmacists. Emergency department staff. Laboratory staff Radiologists.	Healthcare professionals are better informed, as is their decision-making capacity.

2.2.2 Puglia data access and sharing use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Vertical framework for new pathways for specific chronic pathologies within the CarePuglia web-based platform for Care Management (please see below for detailed description)	No	The new pathways will be introduced for chronic pathologies not previously addressed with a pathway. The pathway allows the relevant healthcare professionals to have access to the relevant documentation.	Access to documents from: • EHR • ePrescription	GP. Specialist. Care Manager (specialised nurse).	The vertical framework ensures that all relevant parties are able to access information appropriate to their access rights, thus avoiding repeated examinations and improving decision-making capacity.
Digital Platform	No	Allows all healthcare professionals and patients access to the EHR	EHR	GP. Specialist. Care Manager. Secondary care nurse. Patient.	All relevant parties are able to access information appropriate to their access rights, thus avoiding repeated examinations and improving decision-making capacity.

2.2.2.1   Introduction to CarePuglia

The information system of Care Puglia is a web-based platform that provides management services for taking care of chronic patients. It is a system designed and developed to operate in regional geographic areas. In the region of Apulia, CarePuglia is implemented on the WAN RUPAR that provides connection services and brokering access with strong authentication to all operators in public administration, and in particular to the nodes of the healthcare system.

The information system, built with open source technology, manages the access profiles of all those involved in the care of chronic patients. Each class of member has specific operational profiles: the Care Manager, the GP, the Clinical Specialist. Each profile is differentiated in terms of its role, and then access to and modification of information. In particular, CarePuglia also implements a back office system for managing user profiles, and an information structure for displaying reports and indicators. The framework for reporting ensures the consultation of a list of approximately 150 indicators of process, outcome, and quality, processed and presented in real time. It also has a utility for downloading whole report in the CSV format.

The system maintains a clinical framework that builds an information folder containing the patient's medical history, clinical evaluations and nursing, therapy, diaries notes, and a complex system for the planning and follow-up of the typical activities of the Care Manager.

CarePuglia integrates a PACS for the management of all forms of diagnostic imaging, and allows the implementation of specific workflows such as the processing of second opinions, or in general to support consultations and specialised activities.

The diagram below shows how the new vertical frameworks for new pathways for specific chronic diseases fit within CarePuglia.
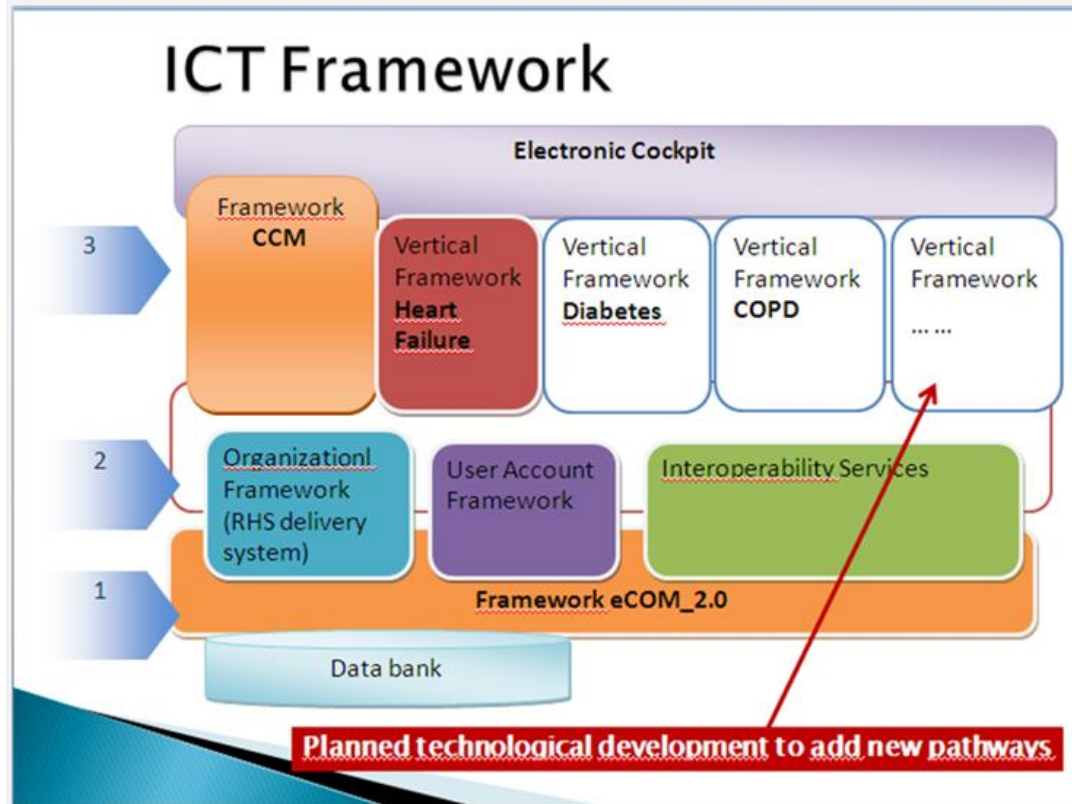

Figure 4: Vertical framework for new chronic disease pathways within CarePuglia

2.2.3 Powys pilot site data access and sharing use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Mobile communication devices for healthcare staff	No	Health professionals will have mobile access to a broader range of information about the patient and their interventions in a near live environment.	Access to documents from: • EHR • Patient administration systems	Community nurses. Clinical specialist community nursing.	Health professionals will have mobile access to a broader range of information about the patient and their interventions in a near live environment thus avoiding repeated examinations, improving decision-making capacity and ability to make timely interventions.
EHR from primary care to secondary care via Wales Clinical Communication Gateway (WCCG) (see section 2.2.3.1 below for more information on WCCG)	Yes	In CareWell, extracts of data will be taken from EHR for inclusion within the referral.	Clinical and personal information.	GP. Hospital consultant.	Improved and consistent communication with reduced delays in referrals.
Individual Health Record (IHR) extract from EHR	Yes	CareWell patients will be highlighted through IHR to the Out of Hours GP Service on a view-only basis.	Clinical parameters.	Out of Hours GPs.	Improved communications with Out of Hour's services.
Telemonitoring data available in EHR	No	Telemonitoring data will be systematically sent to the EHR.	Telemonitoring data on clinical parameters.	Community nurses. Clinical specialist community nursing. GPs.	Improved day to day management of patients. Healthcare professionals are better informed in their decision making.

2.2.3.1 Wales Clinical Communication Gateway (WCCG)

The WCCG is an all Wales Gateway currently used in Powys Health Board to send GP referrals from GP practices via a messaging service (WCCG) to Powys Health Board locations or to other Health Boards throughout Wales. WCCG is used to receive discharges in a couple of the Southern GP practices via the Clinical Work Station in place at Aneurin Bevan Health Board (Wales).

2.2.4 Veneto pilot site data access and sharing use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Patient's dashboard	No	Patient's dashboard has a star schema with a set of links to all the different relevant services involved in the multidimensional care of the patient (homecare nursing service, home social care service, GPs, secondary care consultations). The dashboard will allow the sharing of the information of the patients among all the professionals. Different profiles in the ICT system will be created in relation to the role of the professional. Depending on the role, it will be possible to have a different level of access to information.	Access to information and documents from: • health and social care district records • social care records • homecare service records • secondary care records	GP. Specialist. Primary care: health and social care professionals. Homecare service professionals.	All relevant parties are able to access information appropriate to their access rights, thus avoiding repeated examinations and improving decision-making capacity.

2.2.5 Lower Silesia pilot site data access and sharing use case

Tool/ Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Electronic case record (ECR)	No	Different healthcare professionals will use the ECR to access patients' data. The access will be online, secured by passwords.	EHR	Specialists. Nurses. GPs.	All relevant parties are able to access information appropriate to their access rights, thus avoiding repeated examinations and improving decision-making capacity.

2.2.6 Croatian pilot site data access and sharing use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Personal Health Record (PHR)	No	All patient data will be stored in the central PHR which will be available to primary care teams whenever needed. Data will be stored in digital form, in the central record, so the possibility of error or data not being transferred will be minimised.	Patient related clinical data.	Field nurse. GP. Secondary care medical professionals.	Healthcare professionals can rely on the accuracy of the patient data and feel confident in their decision making.

2.3 Improved coordination use case

Title	Improved coordination use case
Purpose	To improve the coordination of healthcare professional staff work flows and sharing of information between healthcare professionals. To avoid repetition of investigations or unnecessary referrals, and to better streamline workflows. The end beneficiary of these improvements will be the patient and the informal carer, as their care will be better targeted and more efficient due to healthcare professionals being better informed, and unnecessary repetitions avoided.
Domain	The key functional domains of the Use Case are: • Co-ordination workflow • Contact/Call Centre • Virtual meetings • Virtual Clinics

	• Improved ICT systems for communication between multi-disciplinary care teams • Use of care managers / nurses as coordination point • Messaging systems
Scale	From these options: • Between home and primary care • Between secondary care and home • Between home and remote nursing team • Between remote nursing team and GP practices • Between primary and secondary care
Context	Healthcare professionals are disjointed in their treatment of the patient; the communication between them is weak, and so referrals are made where they are not strictly necessary. Investigative procedures are unnecessarily repeated as information on previous examinations is not available.

Information	• Workflow
	• Care Pathway
	• Queries and clarification messaging
	   • Messaging systems
	   • SMS
	   • email
	• Videoconference consultations
	• Video meetings

Participants	• GPs • Specialists • Primary care nurses • Community nurses / field nurses/ care managers • Secondary care nurses • Pharmacists • Emergency department staff • Laboratory staff • Radiologists • Patients • Informal carers
Workflow steps	Workflows are coordinated centrally so that healthcare professionals are aware of the tasks carried out by other professionals. Information sharing is improved via centralised data storage with access for all relevant healthcare professionals, messaging between healthcare professionals, and video consultations between healthcare professionals and between healthcare professionals and patients.

2.3.1 Basque Country improved coordination use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Customer Relationship Management (CRM) Service	Yes	CRM acts as a workflow for an assigned pathway. The relevant healthcare professionals are aware of their role, tasks and the previous and subsequent steps on the pathway. It describes which healthcare professional has to do what, when, and who to hand over to. The eHealth centre nurse will act as a coordinator for the workflow, and ensure all healthcare professionals are aware of the workflow. Alarms for the call centre and telemonitoring information are also included. The telemonitoring module was only recently introduced, and the use of CRM with patients requiring the telemonitoring module started at the same time as CareWell. Additionally, during CareWell information from the CRM related to telemonitoring-transmitted constants, results of questionnaires, activated alarms and the activities triggered will be sent from the CRM to the EHR automatically by integration. Another CareWell development is that existing teams of healthcare professionals and managers of both primary and secondary care will be supported in telemonitoring alarm management by the incorporation of the eHealth Centre (please see below for description) into CRM.	Healthcare professionals' tasks and the patient's treatment plan. Actions completed and yet to be completed are clearly marked.	GPs. Specialists. Primary care nurses. Secondary care nurses. eHealth centre nurses.	Improve coordination. Improved communication between primary and secondary care, and better sharing of heath data with other healthcare professionals.

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Messaging inter-consultation	Yes	In CareWell, use of the messaging service will be expanded and made a standard part of healthcare professionals' workflow. The messaging service (from GP to specialist) is where the message is then placed on the healthcare professional's schedule so that time is devoted to responding to the message. All the information shared between the healthcare professionals in the messages is shared in the EHR, where all relevant professionals have access to it.	Messaging service marked in the schedule of the healthcare professional as a task for that day.	GPs. Specialists.	Improve the coordination between healthcare professionals. Healthcare professional are able to inform themselves more quickly about the patient and increase their confidence when making decisions.

2.3.1.1 Basque Country pilot site eHealth Centre

The eHealth Centre in the Basque Country pilot site is a counselling call centre which consists of a pool of nurses who carry out different tasks: provide health advice by phone, follow-up calls to patients (using validated questionnaires), run prevention campaigns (e.g. breast cancer), and provide alarm triage in telemonitoring. Please see the telemonitoring use case below for more information on this aspect.

2.3.2 Puglia pilot site improved coordination use case

Tool/ Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Care Manager role (Please see below for more details on this role)	Yes	The Care Manager is a specialised nurse in primary care setting who coordinates all the care management processes, and ensures adherence to the care plan and therapy. In CareWell, the use of Care Managers will be extended to a wider patient population.	Care Manager is a specialised nurse in primary care setting.	Patients. GPs.	Care is better coordinated; it is less likely that a development or change in a patient's status would be missed.

Tool/ Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
New organizational models	No	To modify care pathways so that new organisations are automatically involved in the patient's care plan. The new organisations include: • organisations representing care givers and/or informal carers; • organisations representing patients and/or older people.	Access to care pathways and care plans.	New users are: • organisations representing care givers and/or informal carers; • organisations representing patients and/or older people.	Ensures that informal carers' and patients' concerns are addressed in the organisation of patients' care plans.
Medical consultation via videoconference	No	Consultations can be made via videoconference.	Videoconference consultations.	GPs. Specialists. Care Managers. Patients.	Improved communication between healthcare professionals. Avoid having to make a referral. Patients can reduce travel for appointments.
Virtual clinical session	No	Healthcare professionals are able to contact each other to discuss cases via messaging service.	Messaging services (email, SMS, forum).	GPs. Specialists. Care Managers.	Healthcare professional are able to inform themselves more quickly about the patient and increase their confidence when making decisions.

2.3.2.1   Care Manager

The patient is selected for enrolment in the CareWell programme by either a GP or specialist after a complete medical examination. During the examination, the clinician informs the patient about the Disease and Care Management programme. with explanations of the pathway, advantages / disadvantages, and the envisaged holistic approach. The patient is then asked to sign an informed consent form for inclusion in the programme and use of their data. The patient is then referred to the Care Manager (CM specialised nurse) to be formally enrolled.

After enrolment, the CM completes the initial assessment in a face-to-face interview using information already present in the GP's/specialist's data base, and answers given by the patient; software supports the CM in collecting information about the patient by opening specific interfaces containing questionnaire on lifestyle and socio-economic condition. Based on the initial assessment, the GP /

specialist and the CM define the patient's care plan, and share it with the patient so the patient can provide input. The GP / specialist identify the degree of complexity of the patient in terms of care load required, and then tailor / focus interventions.

The care plan is then used to plan the workflow of all relevant healthcare professionals. The GP has access to all documents of the patient through CarePuglia. Where necessary, specialist consultations are requested using specific and dedicated booking systems to ensure the patients receives tests / examination in line with an appropriate schedule which is defined according to the related protocols.

The CM coordinates the whole care management process, ensures the care plan is carried out, and through direct interaction with the patient constantly monitors adherence to care plan and therapy.

The CM is also responsible for delivering coaching activities which seek to provide:

- Information.
- Motivation.
- Support / empowerment.
- Health education and self-management.

Therefore the patient becomes empowered, learns how to cope with his own condition, becomes pro-active and responsible, and is aware of how his involvement and commitment in managing his conditions can improve his overall clinical condition and his quality of life.

Each step of the Disease and Care Management process is registered in the EHR via the digital platform. Information uploaded via the digital platform is included in a database which is at the disposal of the entire care team, and can be used to better orient care processes and the patient's coaching.

The CM conducts periodic questionnaires in face-to-face interviews with the patient to update the assessment of the patient's condition. From this the care plan is modified accordingly. The coaching of the patient will then be updated to reflect these changes; if necessary, an appointment is made with the GP or the specialist in order to modify the therapeutic plan.

The CM will also collect patient measurements such as their weight, the size of their waist, etc. These measurements are collected every six months, and are used to follow the development / improvement of the patient's health status. Over time, the number of assessments will decrease if the care plan is effective and the patient's measurements / health status improves.

2.3.3 Powys pilot site improved coordination use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
'Total Mobile' IT capability	No	Allows near live updating of information to EHR and patient administration systems (PAS).	Access to EHR. Messaging.	Community based healthcare staff.	Access to immediate clinical advice and escalation. Access to key clinical information. Improved team-based approach to care.
Testing of existing pathways and development of new pathways	No	A CareWell Project Board has been established that will seek to develop and test pathways with a view to rolling out recommendations for improvement to the whole system.	Pathways.	CareWell Project Board.	Pathways will be more robust and more fit-for-purpose, thus ensuring better workflow.
Inter-consultations via electronic health record	No	Healthcare professionals will be able to make consultations via the ECR through mobile access.	EHR. Messaging.	GP. Community nurses. Clinical specialist community nursing. Allied Health Professionals. Hospital doctors.	Healthcare professional are able to inform themselves more quickly about the patient and increase their confidence when making decisions.
Medical consultation via videoconference	No	Consultations can be made via videoconference.	Video conferences.	GPs. Patients.	Improved communication between healthcare professionals. Avoid having to make a referral. Patients can reduce travel for appointments.

2.3.4 Veneto pilot site improved coordination use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Pathways to access the multidisciplinary assessment unit (more information below)	Yes	The multidisciplinary assessment unit creates and tailors the personalised care projects for the care of frail, chronic patients. Pathways to access the multidisciplinary unit will be modified so that they are available online, and collect data directly from the patient dashboard.	Pathways.	GP. Specialist. Secondary care nurse. Social worker. Primary care professionals. Home care service professionals.	Avoiding fragmentation of documentation and the time-consuming activity of gathering information from different services. The personalised care projects created by the multidisciplinary team will be fully informed and therefore more accurate.
Access to dashboard for GPs	No	GPs will have access to the dashboard. GPs do not currently have access to the dashboard as they do not have to use the territorial information system (which the patient dashboard links to) for their own records, and can choose their own ICT system. Now that GPs have access to the dashboard, they can view all the activities being performed by other health and social care professionals for their patients.	Territorial ICT system.	GP. Primary care professionals. Home care professionals.	GPs will have a complete view of all the services related to their patients and so be better informed about their patients' care and treatment.
Inter-consultations via electronic health record	No	Healthcare professionals will be able to make consultations via the electronic care record.	Territorial ICT system. Messaging.	Consultants and specialists. GPs.	Healthcare professional are able to inform themselves more quickly about the patient, and increase their confidence when making decisions.

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Medical consultation via videoconference	No	Consultations can be made via videoconference.	Video conferences	Consultants and specialists. Patients. Primary care professionals. Home care nurses.	Improved communication between healthcare professionals. Avoid having to make a referral. Patients can reduce travel for appointments.

2.3.4.1   Multi-disciplinary assessment unit

The multidimensional assessment unit evaluation is initiated by either the GP request to the primary care services, or a hospital discharge of a frail patient. Patients are informed of their selection for the evaluation, and their consent is requested.

The GP, social worker (if needed), nurse from the home care service, and specialist (if required) are then involved in preparing an integrated file / dossier that is used to analyse the needs of a patient in the Multidimensional Assessment Unit using a tool called SVAMA Form. The Form for the Multidimensional Evaluation of Elderly Patients (SVAMA) is the tool used by the Regione Veneto to assess access to the network of services for residential, semi-residential and home care.

SVAMA comprises:

- Multidimensional Assessment Unit Report: health, cognitive and functional and social assessments. It gives a numerical output by weighting all the items assessed on a scale from 0 to 100 in order to define the needs of the patient.

- Health Status Assessment: all medical issues and chronic conditions, ongoing treatments and nursing care needs. It also describes the sensorial and communicative capability of the patient, and the pathologies causing the non–self–sufficiency status using the International Classification of Primary Care (ICPC) developed by the WONCA International Classification Committee.

- Cognitive and Functional Assessment: this part contains the cognitive assessment of the patient using the Short Portable Mental Status questionnaire (SPMSQ), the functional assessment using the Barthel Index, the evaluation of the ADLs, the mobility assessment using the Barthel Index, and the decubitus (pressure ulcers) prevention and treatment plan using the Exton-Smith scale.

- Social Assessment: it reports on the contact persons and relatives in charge of assisting the patient, other caregivers, social service interventions, and the housing and economic situation of the patient.

The SVAMA assessment is used to create a personalised project of integrated care. The project of integrated care is transformed into a care plan, and is carried out by many key actors: the GP, who is responsible and the contact point for the citizens' health needs, the primary care district's physicians, specialists and consultants that are involved according to need, the nurses from the homecare nursing service, the ward assistants, and the social worker for their specific aspects.

In less complex cases, a simplified questionnaire can be use to assess the healthcare needs. In these cases, the care plan is directly developed by the Primary Care Services without a multidimensional assessment.

Every professional involved in the process of delivery of care will be able to access the patient's dashboard for their relevant part. Different profiles in the ICT system will be created in relation to the role of the professional. Depending on the role, it will be possible to have a different level of access to information.

2.3.5 Lower Silesia pilot site improved coordination use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Electronic Care Record (ECR): email communication	No	The ECR will include an e-mail box for communication between different professionals and sharing of anonymised medical information.	Email.	Specialists. Nurses. GPs.	Healthcare professionals are able to receive a quick response to concerns, and therefore feel more confident in their decision making. The actions of healthcare professionals can be better coordinated.
Virtual consultation	No	The doctors will upload medical records to a virtual patient healthcare account and requirements of the patient online; the patient will need to read and analyse them, and implement treatment giving feedback to the doctor. Communication will be via a specially designated inbox.	Clinical records. Patient comments. Email.	Specialists. Nurses. GPs.	Patients are involved in their healthcare and better informed. Healthcare professionals can feel confident that the information they have on the patient is accurate and they are better supported in their decision making.
Clinical pathways	Yes	New clinical pathways will be developed for chronic, frail patients.	Pathways.	Specialists. Nurses. GPs. Patients. Informal carers.	The use of pathways will better coordinate healthcare professionals.

2.3.6 Croatian pilot site improved coordination use case

Tool/ Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
PHR and Ericsson Mobile Health (EMH) Web viewer	No	Data is gathered during a field nurse's visits to a patient's home and stored in the PHR. The data will be available to the GP for analysis or sharing with other medical professionals for the purpose of coordinating care activities. The GP can access data stored in PHR either by using their existing GP application, or through EMH Web viewer application. The EMH Web viewer application can also be used to share the patient data with specialists, and to ask for feedback on patients' measurements. Prior to CareWell, data was not shared in this automated and digital manner.	Clinical parameters data.	Field Nurse. GP. Specialist.	Better coordination of healthcare professionals through common access to data. Easier to plan preventative services. Easier to seek a second opinion and advice from a specialist, so the GP and field nurse are more confident in the decisions they make. Unnecessary referrals are avoided.
Android based smartphone with EMH application	No	Previously the field nurse would write down the patient data in paper form, and the data would be available to GP only after the nurse has returned from the field. With introduction of CareWell, the data measured by nurse will be available to the doctor right away. In case there is the need for prompt analysis and feedback, GP will be able to instruct the nurse while she is still with the patient. Furthermore, GP will be able to ask specialist (secondary care) for their opinion		Field Nurse. GP. Specialist.	More prompt response to alterations in patients' clinical parameters may result in less escalation and reduction in acute episodes.

2.4 Remote monitoring use case

Title	Remote monitoring use Case
Purpose	To monitor patients clinical parameters remotely to ensure early detection of deterioration in condition. Early detection would mean that preventative action could be applied, and hospitalisation could be reduced.
Domain	The key functional domains of the Use Case are: • Telemonitoring and telecare • With and without a call centre
Scale	• Patient home and call centre • Between home and primary care • Between home and secondary care • Between home and remote nursing team
Context	Monitoring of patients is difficult and time consuming without the use of supportive technology.
Information	• Measurements of the patient's clinical parameters. • Alerts and alarm management
Participants	• Patient • Informal carer • Nurses from eHealth centre • Telecare centre • GPs • Specialists • Primary care nurses • Community / field nurses /care manager
Workflow steps	Patients' clinical parameters are monitored via the use of vital signs measurements and symptom management (health and wellbeing status) questions; the information is then shared with the relevant healthcare professionals and/or telecare centre operators.

2.4.1 Basque Country pilot site remote monitoring use case

Service / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Telemonitoring and telecare	Yes	The telemonitoring service where the CRM is used as a process management platform will be extended to a wider spectrum of patients and healthcare professionals.	Measurements of the patient's clinical parameters and questionnaires on health status.	Patient. Informal carer. Nurses from eHealth centre. Telecare centre operators. Primary and secondary care healthcare professionals (GPs, specialists, nurses).	The patient and informal carer feel supported. Telecare operators are alerted if an abnormality in measurements occurs; preventative action can be undertaken following a defined protocol and an acute episode avoided.

2.4.1.1 Description of Basque Country telemonitoring work flow

Information on the patient's clinical parameters and general health status will be collected by a number of possible options and transmitted to the Telecare Centre, eHealth centre or EHR. The options are:

- Following the clinician's prescription, the patient will routinely transmit his/her parameters at least once per week. The telemonitoring devices collect and send the data wirelessly to the gateway located at his/her home. The gateway device transmits the data collected by the patient to the alarm management system of the Telecare Centre.

- Information on the patient's parameters and health status will be collected by phone. It means that the operators of the Telecare Centre call the patient and register the information given by the patient.

- Registration of information by the patient (or informal caregiver) in the Personal Health Folder. This information will be accessible to the Telecare Centre operators; and will be transmitted automatically to the alarm management system of the Telecare Centre.

In all cases, the information gathered, the alarm triage, and the activities performed upon alarm are identical. The difference is how the information reaches the health system.

A group of professionals, including clinicians, GPs, nurses, general directors and representatives of the social area have defined a protocol for alarm management. This standard protocol classifies each alarm type depending on severity, and establishes the required actions for each situation. When clinical parameters are out of the standard range, the alarm is first verified by a phone call to the patient. If the alarm is validated, then the protocol is triggered according to the severity of the situation. The activities that can be triggered are: contact the eHealth Centre; appointment with GP or primary care nursing; appointment with specialists; or activation of emergency department.

In addition, the telecare centre's operators make regular follow up calls to check the status of the patient.

2.4.2 Puglia pilot site remote monitoring use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Telecardiology service	Yes	Telemonitoring service will be extended to a wider spectrum of patients with the use of new devices.	Measurements of the patient's clinical parameters.	Patient. Informal carer. Care manager (specialised nurse).	The patient and informal carer feel supported.

2.4.3 Powys pilot site remote monitoring use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Remote monitoring	No	Telemonitoring service will be used for patients to take measurements of their vital parameters at home, and then share these measurements with healthcare professionals.	Measurements of the patient's clinical parameters.	Community and specialist nursing.	The patient and informal carer feel supported. Healthcare professionals are kept informed of the patient's status and progress.

2.4.4 Veneto pilot site remote monitoring use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Monitoring undertaken by a nurse	No	Monitoring of the patient, done by nurses at the patient's home, will be introduced. The results of monitoring will then be shared directly via the Territorial ICT System so all relevant healthcare professionals will be able to access them.	Measurements of the patient's clinical parameters.	Specialist and consultants. Homecare nurse. Primary care professionals.	The patient and informal carer feel supported. Healthcare professionals are kept informed of the patient's status and progress.

2.4.5 Lower Silesia pilot site remote monitoring use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Remote monitoring	No	Telemonitoring service will be used for patients to take measurements of their vital parameters and activities at home, and then share these measurements with healthcare professionals.	Measurements of the patient's clinical parameters.	Specialists. Nurse. GPs.	The patient and informal carer feel supported. Healthcare professionals are kept informed of the patient's status and progress.

2.4.6 Croatian pilot site remote monitoring use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Ericsson Mobile Health (EMH) kit: Android based smartphone with EMH application installed as well as a set of medical sensor	No	The field nurse will perform medical measurements using the EMH system and accompanying medical sensors: glucometer, blood pressure monitor, peak flow meter (spirometer), 12 lead ECG, Pulse Oximeter (SpO_2). The nurse will also have the option for manual entry of body weight measurements as well as the option to take a photo of patient if needed. Results of medical measurements and photos taken will be stored in EMH central system (PHR) and made available to other healthcare professionals. Using the questionnaire functionality of EMH system, the nurse will collect additional information from the patient which will also be stored in the PHR.	Measurements of the patient's clinical parameters, photos and questionnaires.	Field Nurse (explanation of role below). GP. Specialist.	Releases the burden from the GP, with better integrated care for his/her patients resulting in better planning of preventive services. Field nurse learns and deploys new models of care. Healthcare professionals are better informed when taking decisions. The patient and informal carer feel supported.

2.4.6.1   Field Nurse

The patient's GP will make an initial care plan that will be performed by the field nurse as operational head. Each patient (10 patients per field nurse) will be visited by field nurse 18 times during the operational pilot phase (one visit /month). Once every month, after visiting all patients, field nurse will meet with GP to go through patient data and make changes to the care plan for the following month.

Care plan will include:

1. Clinical parameters that will be monitored.
2. Type of education to be provided to the patient.

Care plan results will be reported back to GP on a regular basis so that the GP can make changes to patient's care plan, based on the latest medical data collected by field nurse. Other AHPs' will be included in planning as well.

The field nurse performs home visits once a month, and performs the activities defined in the care plan for each patient. The activities include taking medical measurements using medical devices and Ericsson Mobile Health Telemonitoring system. After performing measurements, data is stored in central system and shared with all workers involved in ICCP. If needed (depending on the patients' health status), nurse can contact the GP directly during the home visit. In that case, GP will analyse the data immediately and provide feedback and define actions that need to be performed immediately by field nurse.

In case patients' status has not changed drastically and there is no need for immediate actions, nurse will meet with GP once a month, after she has performed all home visits. During that meeting, nurse and GP will analyse the medical data collected and make changes to the patient's care plan. If there is no need to make changes to care plan, it will stay the same for the visits in the following month.

If the doctor needs to contact specialist care and ask for analysis of patient's data, it can be done directly, not only via referrals. Specialist care will have direct access to patient's data, so specialist analysis can be performed on GP's request. After receiving the specialist's feedback and opinion, GP will make changes to care plan and coordinate with field nurse who will be performing the activities defined in the care plan.

In a typical patient visit, the nurse will perform the procedure described below; please note that the following description is somewhat focused on the activities typically performed for a diabetes patient. The Croatian pilot site will focus on patients with combinations of COPD, diabetes and cardiac conditions. The role of the nurse will be similar for patients with all combinations of these conditions, however the type of measurements taken and some of the educational and care activities will differ:

1. Initially, when the nurse has arrived at the patient's home, she will ask the patient how are they feeling and if they have been following the treatment prescribed by the doctor (regular exercises, healthy and controlled nutrition, and regular blood sugar measurements). The patient will show the list where they record the results of blood sugar measurements that they have performed since last visit.
2. In case the patient has an open wound, the nurse will take a look at the wound, and take a picture using the mobile phone. The picture of the wound will be stored in the central record where it will be made available to other healthcare workers taking care of the patient.

3. After consulting the patient, reviewing their measurement results, and inspecting the wound, the nurse will perform the medical measurements using the EMH system and accompanying medical sensors: blood sugar level and blood pressure. Results of medical measurements will be stored in EMH central system and made available to other healthcare professionals.

4. Using the questionnaire functionality of EMH system, the nurse will collect additional information from the patient. If needed, the field nurse can make a note or input data on social status of the patient. In case the field nurse suspects that patient was molested or neglected by other members in household, she will input that data in EMH system using the questionnaire functionality and make it available to social care worker. Social care worker can access the data using the EMH web application and schedule a visit to the patients' home.

5. After nurse has completed the patient data collection, all measurement results will be available to GP. The GP will be able to access historical patient data from the day one when he/she was first visited by the field nurse. If GP needs more information on patient, besides what was provided by the nurse, he/she can contact the nurse directly and schedule the consultation to agree on changes in therapy if needed.

After the measurements are done, the field nurse will also perform education of patients on how to manage their chronic diseases by themselves. Nurse will be using the EMH application on the tablet to show disease management content to the patient.

After field nurse has finished her work and left the patient's home, the same content that was shown during the education by nurse will be available to patients on their smartphone or smart TV applications. Articles or short movies will be provided to patients as educational materials, with a focus on:

- General disease information.
- Self control and prevention.
- Therapy information.
- Healthy nutrition.
- Regular exercising.

In practice, field nurses perform educational sessions with the patient and the caregiver, and guide them toward sources of information on their disease. The nurse provides educational clips and application, teaching them how to self-manage their disease.

When a 65+ years old patient gets diagnosed with diabetes, a field nurse will start visiting them once a month, or even more frequently, depending on how fast they learn how to live with their disease. The goal of PEHP is to empower patients to live their lives in a way that will not cause the worst outcomes of the disease.

In a typical patient visit, the nurse will perform the following procedure:

1. During the initial visit to the patient, nurse will talk to the patient and explain to them how to live with diabetes: what is diabetes, what are worst possible outcomes if they do not follow the procedure, and similar. Nurse will also provide information on the diet that needs to be followed in order to minimise the chance for health complications, and define the menu that patient should follow, depending on their body weight. Since regular physical activities are very important to minimise diabetes complications, nurse will use the EMH tablet application to educate patients on what type of physical activities they should regularly perform.

2. After covering the lifestyle related topics, nurse will teach the patient how to perform blood glucose measurements on their own, and how to track the record of their measurement results. Medication treatment is also very important, so the nurse will educate patient on how to follow the treatment and to take the medication on regular basis.

3. Apart from educating the patient, the nurse will also educate caregivers that live in the same household with the patient.

4. After finishing her visit, field nurse will explain to the patient and their caregiver how to use the smart TV application to access the education materials on exercise, nutrition and similar.

5. Field nurse will keep visiting the patient with the goal of providing additional education, until the patient is clear and can easily follow the treatment prescribed by their doctor.

Apart from the educational content, after the field nurse has left the patient's home, patient will be able to access their health record and take care of the trend of their measurements. They will be able to share this information with medical professionals, and ask for feedback and guidelines on how to best self-manage their disease.

Having access to guidelines for self-management and history of medical data, patients will be given a strong tool to take a central role in managing their own disease. Taking the medications in the correct way, and sticking to the therapy plan while having regular exercises (depending on age and health status) and eating healthy nutrition, will be the best possible way for patients to effectively self-manage their condition. Self-management of chronic diseases, sitting on top of regular field nurse visits and coordinated work of the whole healthcare team, will ensure the best possible treatment of chronic disease patients.

2.5   Patient empowerment use case

Title	Patient empowerment use case
Purpose	To provide the patient with access to health information and data, educational materials, and the ability to share information with healthcare professionals. By thus involving patients in their own healthcare and ensuring they are properly prepared and supported by healthcare professionals and appropriate educational material, patients can be empowered to take an active role in the management of their own health.
Domain	The key functional domain of the Use Case from the following domains: • Educational material • Self-care material / functionalities • Patient access to EHR / telemonitoring data • Patient messaging with healthcare professionals • Directory of services
Scale	• At patient home • Between home and primary care • Between home and remote nursing team • Between home and secondary care

Context	Although some patients are sufficiently well-informed and confident in taking an active role in managing their health a wider spectrum of patients would benefit from the support of educational materials, healthcare professional messaging systems and access to their health data. Existing services could be extended to a wider spectrum of patients and properly promoted to ensure uptake. New services could be developed for new patient cohorts and existing services should be enriched to ensure that patients are fully supported.
Information	- Clinical reports - Discharge reports - Lab analysis - Appointment dates - Vaccination schedule - Pharmacological treatment - Patient's personal notes - Patient entered biometric measurements - Reports from private sector healthcare professional - Educational information on conditions - Written care instructions and advice - Demonstration and instructional videos - Links to web content - Links to active patient journals - Messages between patient and healthcare professional
Participants	- Patient - Informal carer - Nurses from eHealth centre - Telecare centre - Primary care nurses - Secondary care nurses - Community nurses / field nurses / care managers - GPs - Specialists
Workflow steps	To provide the patient with access to health information and data, educational materials, and the ability to share information with healthcare professionals. Healthcare professionals will support patients by indicating and providing the material, data and opportunities to provide their own input. The patient is properly prepared and supported in order to take an active role in the management of their own health.

2.5.1 Basque Country pilot site patient empowerment use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Personal Health Folder: Patient access	Yes	Although patient access already existed prior to CareWell, it was not very extensive. CareWell will increase the information that patients have access to regarding their health and treatment.	Clinical reports. Discharge reports. Lab analysis. Appointment dates. Vaccination schedule. Pharmacological treatment.	Patients. Primary care nurses. Secondary care nurses. GPs. Specialists.	Patient is better informed and empowered to make decisions about their healthcare.
Personal Health Folder: Patient input and upload of information	No (only previously available in trial phase)	Patients can upload information to share with his/her healthcare professionals, for example, clinical reports from hospital not belonging to the Public Health System. The patient diary is functionality currently under development.	Patient's personal notes. Self-tracking of biometric measurements for self-reference. Reports from private sector healthcare professionals.	Patients. Primary care nurses. Secondary care nurses. GPs. Specialists.	Patient is actively involved in healthcare process. Through logging biometric measurements, they are better able to measure progress. Healthcare professional is better informed.
Personal Health Folder: Messaging	No	Asynchronous messaging will be introduced for messaging between a patient and his/her healthcare professionals.	Messages between healthcare professional and patient.	Patients. Primary care nurses. Secondary care nurses. GPs. Specialists.	Patient is more relaxed due to ability to contact professionals in this informal manner. Healthcare professionals are alerted of any changes in the patient's condition and can better address any patient concerns.

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Personal Health Folder: educational material	Yes	New educational material is being created for CareWell. When the educational material or information is put in the PHR by the nurse or GP, the patient will be notified by email. Videos including demonstration videos such as diabetic foot are a new mode of educational material to be used in CareWell.	Educational information on conditions. Written care instructions and advice. Demonstration and instructional videos. Links to web content. Links to active patient journals (experienced patients detailing how they manage their condition).	Patients. Informal carers. Primary care nurses. Secondary care nurses. GPs. Specialists.	Patient is better informed and able to carry out self-care.

2.5.2 Puglia pilot site patient empowerment use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Patient input of information to EHR	No	Software will be able to combine data coming from various sources into one central database, now also including data from patients.	Patient notes. Patient comments.	Patients. GP. Specialist. Care Manager. Primary care nurse. Secondary care nurse.	Patient is actively involved in healthcare process. Healthcare professional is better informed.
Educational material online	No	Care Managers currently provide patients with educational material. In CareWell educational will also be made available online.	Educational information on conditions. Written care instructions and advice.	Patients. Informal carers. Care manager.	Patient is better informed and able to self-manage conditions.

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Patients sending messages to healthcare professionals	No	Patients can send messages to healthcare professionals when they have particular concerns. The exact means of messaging, whether SMS, email or via forum, has not yet been decided on.	Messages regarding healthcare concerns.	Patients. GP. Specialist. Care Manager. Primary care nurse. Secondary care nurse.	Patient is more relaxed due to ability to contact professionals in this informal manner. Healthcare professionals are alerted of any changes in the patient's condition, and can better address any patient concerns.

2.5.3 Powys pilot site patient empowerment use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
InfoEngine via tablet devices and mobile phones	No	InfoEngine is a local directory of services; it will now be accessible via tablet devices.	Local directory of services.	Patients. Informal carers. Community nurses.	Patients are better able to find the assistance they need to live as active a life as possible.
Education and support materials through the Powys Teaching Health Board (tHB) website website	No	Educational material is delivered through the website as the patient takes their measurements.	Educational information on conditions. Written care instructions and advice. Instructional videos. Links to web content.	Patients. Informal carers.	Patients better understand their health and wellbeing, and are assisted then in self-care and self-management.

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Web based educational information	Yes	Expansion of material and inclusion on the Powys Teaching Health Board (tHB) website will mean that the material can reach a wider target group.	Educational information on conditions. Written care instructions and advice. Instructional videos. Links to web content	Patients. Informal carers.	Inclusion on tHB website means that patients will trust the information as it comes from an authority. Patients better understand their health and wellbeing.
Patient Access to their EHR through My Health Online	No	Patients are able to make appointments, request repeat prescriptions and update personal details. Access records (new functionality) and message GP (new functionality).	EHR.	Patients.	Patients are better able to engage with their EHR, and are therefore better informed about their health and better able to manage their condition and perform self-care.
Reporting system for personal health information	No	Patients are able to upload information to their health record.	Patient notes. Patient self-measurements. Documents from other healthcare organisations.	Patients. Informal carers. Community nurses. GPs. Hospital doctors.	Patient is actively involved in healthcare process. Healthcare professionals are better informed.

2.5.4 Veneto pilot site patient empowerment use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Education by nurses in conjunction with monitoring	No	When a care plan is assigned to a patient, the homecare nurse's tasks will be comprehensive and include delivery of education and training on disease management in conjunction with monitoring activities.	Education and training on self management.	Patient. Homecare nurse. GPs.	The patients will have a more clear vision of their own health status; in fact, they will be able to recognise risk conditions. The patient will feel secure in managing their condition.
Web-based educational material	Yes	A specific part of the ULSS 2 authority website will be created for educational materials to aid patients self-management.	Educational materials on self management.	Patient.	Inclusion on ULSS 2 authority website means that patients will trust the information as it comes from an authority. Patients will be more confident about self-management of their conditions.
My Health Portal: Patients entering health information	No	Patients will be able to enter a dedicated portal on the ULSS 2 website called My Health Portal where they will be able to insert information, find information, download results of tests, and book appointments.	Patient notes. Patient self-measurements. Clinical reports. Appointment booking.	Patient.	Patient is actively involved in healthcare process.
Territorial ICT system: Sharing of action plan for developing self-management in patients	No	The Territorial ICT system will allow healthcare professionals to share plans developed for monitoring of parameters and self-management education. Thus efforts to empower patients will be reinforced and supported by various health professionals in a patient's care plan.	Action plan for developing self-management in patients.	GPs. Homecare nurses. Specialists and consultants. Social workers. Ward assistants.	Avoid contradictory messages and reinforce support to encourage patient self-management and empowerment.

2.5.5 Lower Silesia pilot site patient empowerment use case

Tool/ Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Directory of educational web sites	No	A directory of websites will be integrated with the social platform in order to support patients with reliable, existing information from a source they can trust. There is much information on specific diseases.	Worldwide digital and interactive information. Questionnaires.	Patients. Informal carers.	Patients and informal carers will be able to access reliable web-based educational information relevant to their condition from one source, thus saving time as there is there is no need to search for information and avoid the use of unreliable material which could provide false information and advice.
Social platform: directory of independent living services	No	In CareWell a social platform will be used as the basis for a directory of assessed and quality controlled services; this will allow the patient to live independently at home. The services mean that the patient can have easy access to a variety of reliable services from one point, with the knowledge that they are quality controlled. The platform will allow the patient to make appointments, and will follow up and ask for feedback on appointments made. The patient and their informal carers can feel secure in the knowledge that the services available through the directory are approved and monitored, and any appointment will be followed up so that misconduct is immediately reported and the service removed from the directory.	Independent living services for frail people.	Patients. Informal carers.	Patients can be supported at home via trustworthy services. All services are accessible from one point, meaning that time is saved in searching for services. The services are quality assured and reliable, essentially meaning that patients have a higher probability of accessing good services and support. In turn this would mean that more patients are well supported and able to live independently.

Tool/ Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
e-Prescription	Yes	The service is implemented by the Health Ministry; in CareWell the application will also support patients with quick access to information on prescriptions and drug history.	Virtual access to prescriptions and possibility to select the pharmacy.	Patients. Informal carers.	Patients are better informed and would be able to recognise any error.
Internet patient account - IKP	Yes	Implemented by the Health Ministry, this application will support patients in gaining quick access to their medical information.	Patient medical information.	Patients.	Patients are better informed about their health and so more able to take an active role in their healthcare.

2.5.6 Croatian pilot site patient empowerment use case

Tool / Functionality	Already existing?	How it will be used in CareWell (change from normal practice)	Content	Users	Benefits
Educational material	Yes	The material is currently paper based. In CareWell, the material will be made digital. Patients will be shown the material by the field nurse using EMH application on a tablet. After the field nurse has finished her work and left the patient's home, the same content that was shown during the educational session by nurse, will be available to patients on their smartphone or smart TV applications.	Digital content such as educational articles and short videos on: • General disease information • Self control and prevention • Therapy information • Healthy nutrition • Regular exercise	Patients. Informal carers. Field Nurses.	Through the combination of educational material and support from the field nurse, the patient should be confident to self-manage his/her condition.
Self-care review meetings.	Yes	Self-care meetings already take place during the field nurse visit to patients' homes. In CareWell, these meetings will be extended to a wider patient cohort.	Review of self-care material and patient knowledge.	Patients. Field Nurses.	Reviewing will ensure that the patient is managing their disease correctly and provide support to empower those patients who are less confident.

3   Next Steps and lessons learnt

3.1   Next steps

The use cases described in this document will be used to inform the drawing up of organisational models and pathways in D3.1 which is due 30th November 11.2014, and will serve as a basis for service specification and prototype testing of CareWell services in D4.1, due 31st December 2014. The use cases will be used in test protocols in the prototype testing in WP4 & WP5. The use cases are the basis of the service definitions for delivery within CareWell, and so will be referred to throughout the project and used as a reference point to ensure we do not stray too far from CareWell's key aims.

3.2   Lessons learnt

These lessons learnt arose from pilot site teams' and users' concerns as the use cases were developed, and include:

- The development of an ICT service on its own is not sufficient for change:
  - Internal procedures on service use have to be defined so users are aware of how and in what situations the service can be used.
  - Ideally service use has to become part of a standardised workflow, so that it does not merely become part of a tick-box exercise.
  - Resistance to change and the use of ICT tools has already been encountered among clinicians. Clinicians need to be convinced of the need to develop new skills and to overcome resistance to sharing information in order for new services / service alterations to be successfully implemented.
  - Promotion of the ICT service to encourage up-take, by patients, informal carers and healthcare professionals is required to ensure that the services are used and achieve their aims.
  - Thorough training is required to ensure proper up-take and use of services.
  - The patient should remain at the centre of all interventions; it is easy for patients to be overlooked when changes focus on introduction of ICT, organisational changes and implementation of new ways of working. However, the patient is the recipient of the service, and so how they are impacted should remain as a focus.

3.2.1 Basque Country

Specific lessons learnt from the Basque Country pilot concern virtual clinical sessions and virtual consultation functionalities. The Basque Country pilot site team had originally planned to include these features as part of CareWell; however, following discussions with the healthcare professionals who will be actively involved in the changes to service delivery that CareWell will bring, it became clear that there was some resistance to implementing these functionalities.

The main reason for not wanting to use video conferencing for virtual consultations between professionals is because healthcare professionals feet that face-to-face meetings are more productive; as in the Basque Country they are physically close, face-to-face meetings are not difficult to organise. As the healthcare professionals could not be convinced of the added benefits the service would bring, the Basque Country pilot site team considered that given the limited time frame of CareWell and the large variety of other functionalities that are being implemented within the project, it would be more effective to not pursue the use of video conferencing during CareWell, and rather focus on ensuring that other functionalities were properly used.

Concerning the virtual consultation functionality, healthcare professionals perceived the benefits of the functionality and would like to use it in the future, but felt that it should not be a priority for CareWell as they could see more benefits from other functionalities. The Basque Country pilot site team decided not to include this functionality within CareWell, because they felt that if they are overambitious and try to make too many simultaneous changes to their organisational model, then the risk of failure is high. Instead a more gradual approach to organisational change will be adopted for CareWell.