

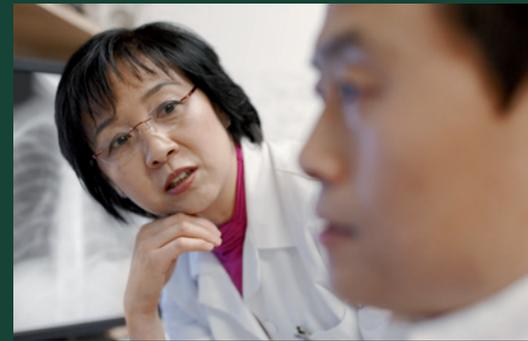


The ACT Programme:  
Advancing Care Coordination  
and TeleHealth Deployment

# What does it take to make integrated care work?



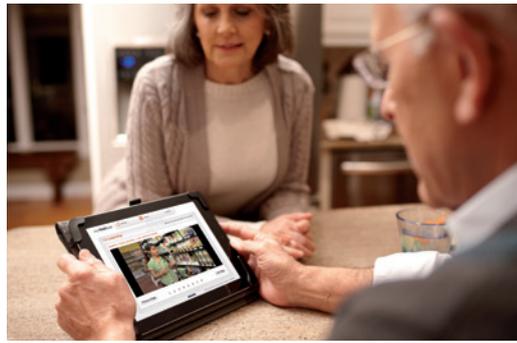
A 'cookbook' for large-scale deployment of coordinated care and telehealth. A personalised approach that will benefit patients in your organisation.



The work leading to these results has received funding from the European Community's Health Programme under grant agreement n° 20121209. The ACT programme is fully aligned with the European Innovation Partnership in Active and Healthy Aging objectives to deploy integrated care for chronically ill patients.

We acknowledge the contribution of the following researchers participating in ACT:

C. Bescos, C. Westerteicher (Philips Healthcare); S. Pauws, H. Schonenberg, I. Sokoreli (Philips Research); P. Natsiavas, D. Filos, C. Maramis, I. Chouvarda, N. Maglaveras (Aristotle University Thessaloniki); S. Newman, R. Davidson (City University London); J. Roca, I. Dueñas (IDIBAPS); J. Escarrabill, M. Moharra (AQuAS); J. Cleland (Imperial College); D. Barrett, J. Hatfield, S. Nabb (University of Hull); N. Hart (Guy's and St Thomas' NHS Trust); E. de Manuel, J. Mora, S. Ponce (Kronikgune); C. Domingo (OSAKIDETZA); E. Buskens, M. Lahr (UMCG); M. Romano, M. Nalin, I. Baroni (Telbios); A. Pavlickova (NHS 24/SCTT); S. Störk, C. Wahl (University of Würzburg).



“People increasingly want healthcare on their own terms, in places and at times that let them get on with their daily lives.”

Bas Verhoef, President Market Group EMEA, Philips Healthcare



## Executive summary

### ACT Consortium

The Advancing Care Coordination & Telehealth Deployment (ACT) Programme is the first to explore the organisational and structural processes needed to successfully implement care coordination and telehealth (CC&TH) services on a large scale.

This EU-funded programme includes a consortium of healthcare authorities, clinical experts, universities and industry partners. After monitoring CC&TH initiatives in five EU healthcare regions – Lombardy (IT), Basque Country (ES), Catalonia (ES), Northern Netherlands (NL), and Scotland (UK) – the ACT programme has produced this ‘cookbook’ of good practices to facilitate CC&TH deployment across Europe.

### Challenges

The challenge now is to deliver on the promise of better patient experience, better population health, and more efficient use of resources. The observations of the ACT programme, on care integration in the five regions, tells us that not all of the aims will be easy to achieve. The challenge will be in overcoming these barriers, and creating new models, and ways of thinking, around integrated care.

### Encouraging Signs

In evaluating the good practices mentioned in this cookbook we can see signs of encouragement. The opportunity to implement integrated care at a far greater scale is likely to evolve with a stronger, more enabling and supportive environment.

For this purpose, the consortium has developed a full data collection strategy to assess the current state of CC&TH deployment in the five regions, and monitor progress and changes.

### ACT Outcomes and Drivers

ACT collects data to evaluate CC&TH deployment outcomes. Here we assess efficiency and efficacy. Ensuring a level of quality for higher demands with limited resources — due to the demographic changes and exploitation of chronic diseases.

Together with the outcomes, we address the successful drivers of CC&TH in the following areas:

**Risk stratification:** We look at how healthcare providers have identified the sub-populations with different levels of risk. Then they assigned resources to fill their care needs at a regional level.

**Workflow and organisation optimisation:** Here we look at the challenges of managing a health care delivery organisation in the face of increased expectations and constrained resources. And how healthcare organisations can optimize structural changes, care pathways, and care coordination.

**Staff engagement:** We observe what organisations are doing to motivate, train and prepare professionals for this new model of working.

**Patient adherence:** We discuss the promotion of self-managed care, identify its complications and benefits, and review how patients define the new role.

### ACT Evaluation Framework

ACT uses a holistic framework for evaluating the scaled deployment of CC&TH. Its success relies on the analysis of drivers and outcomes, which address the qualitative and quantitative aspects of the deployments.

- The Key Performance Indicators are the quantitative outcome indicators that capture CC&TH performance.
- The Key Drivers are the qualitative indicators, which describe anything that affects CC&TH performance.

This holistic framework is what drives the ACT evaluation engine.

### ACT Evaluation Engine

The ACT evaluation engine is a useful tool for data collection, storage, and analysis of CC&TH data. Developed by Philips Research and the University of Thessaloniki, it utilises a number of open source tools, and custom-developed modules. It enables centralised data collection, an on-line survey tool, and interactive dashboard for data analysis and visualisation of key indicators. The platform is secure, flexible, and user-friendly.

[www.act-programme.eu](http://www.act-programme.eu)

The work leading to these results has received funding from the European Community's Health Programme under grant agreement n° 20121209.

The ACT programme is fully aligned with the European Innovation Partnership in Active and Healthy Ageing objectives to deploy integrated care for chronically ill patients.

## Insights and Conclusions

A number of insights and conclusions were identified by the ACT programme. These will prove useful and valuable in supporting the large-scale deployment of CC&TH. Targeted at populations of chronic patients and elderly people, these insights and conclusions are a useful benchmark for implementing and exchanging best practices across the EU.

Examples are:

- Perceptions between managers, frontline staff and patients do not always match.
- Organisational structure does influence the views and experiences of patients: a dedicated contact person is considered both important and helpful.
- Successful patient adherence happens when staff are engaged.
- There is a willingness by patients to participate in healthcare programmes.
- Patients overestimate their level of knowledge and adherence behaviour.
- The responsibility for adherence must be shared between patients and health care providers. Awareness of the adherence concept is an important factor for adherence promotion.
- The ability to track the use of resources is a useful feature of a stratification strategy, however, current regional case finding tools are difficult to benchmark and evaluate.
- Data availability and homogeneity are the biggest challenges when evaluating the performance of the programmes.

## ACT Recommendation Highlights

### Staff Engagement

Findings from ACT suggest that no single intervention can ensure staff engagement. Yet it is evident that frontline staff should give a clear insight into the potential benefits of the programme. What have demonstrated to be effective are interventions in training, early engagement of staff, introducing feedback loops, and ensuring recognition of professional expertise.

### Patient Adherence

Healthcare systems, programmes, personalities, and – importantly – patient profiles vary substantially. For this reason, we need to design adherence strategies that are adapted around the needs of the patient. Not only clinical, but also social support and socio-economic needs.

### Stratification

Health risk assessment should employ a population-based approach. Both for risk prediction modelling and indicators. This is a priority for scaling up integrated care at EU level.

### Assessment

European regions should agree on a minimum dataset of outcome indicators to be collected by all CC&TH programmes, addressing data collection challenges (comparability, ambiguity), with a small set of strictly defined indicators. The EC should facilitate unified data collection through interfaces, conforming to data privacy and protection legislation, and promote further initiatives in the implementation of evaluation of integrated care programmes.

## Regional Good Practice Examples

### Basque Country: Population Intervention Programmes

Regional risk stratification strategies indicate how to match populations, and individual requirements, to appropriate service levels.

### Lombardy: CREG Programme

Personalized care plans improve patient satisfaction and perception of safety, as well as their capacity to manage their condition.

### Catalan Agency for Quality in Healthcare

Proper KPI systems (data + IT system) and a mandate to review the progress of interventions, guide decision-making, and identify areas that need management attention and resources.

### Northern Netherlands: Embrace

A novel, population-based, integrated care model for the elderly community, aimed at helping them live at home as long as possible. With comfort and independence. This programme demonstrates an ongoing approach to encouraging and acting upon frontline staff feedback to promote staff engagement.

### Scotland: REACT programme

A community service for the frail and elderly, which supports their desire to remain at home. Avoiding the need for unplanned emergency admissions.





# Consortium

## ACT Consortium

The Advancing Care Coordination & Telehealth Deployment (ACT) Programme brings together a Pan-European consortium of leading companies, universities, hospitals and healthcare authorities. Initiated in February 2013, the 2.5-year programme identified good practices in care coordination and telehealth. The objective of this EU co-funded project is to overcome the structural organisational barriers surrounding the deployment of coordinated care.





# Contents

	<b>Preface</b>	
	Context of project	7
<b>1</b>	<b>Scope</b>	
	ACT Project. Introduction, Purpose and Method	8
<b>2</b>	<b>Insights and conclusions</b>	
	2.1 Stakeholder Insights	12
	2.2 Stratification Details and Process	16
	2.3 Assessment Insights	19
<b>3</b>	<b>Deployment recommendations</b>	
	3.1 Staff Engagement Recommendations	20
	3.2 Patient Adherence Recommendations	22
	3.3 Stratification Recommendations	24
	3.4 Assessment Recommendations	25
<b>4</b>	<b>Good practices</b>	
	Regional Programmes	27
	Good Practice Factsheets	28



“Patients overestimate their level of knowledge and adherence behaviour. They are often unaware of the impact of their own behaviour on their health.”



## Preface

### **Primary challenge**

Quality of life for patients who are chronically ill is a primary challenge for healthcare systems in EU member states. They are faced with a population that is rapidly ageing. Plus, the related burden of chronic illness growing to pandemic proportions. In the EU, some 10 million people suffer from heart failure, 20 million have chronic obstructive pulmonary disease (COPD), and 60 million live with diabetes. These three conditions cost EU healthcare systems around EUR 125 billion each year.

### **Care coordination and telehealth services**

Chronically ill people can now be treated in their own homes. One of the most effective ways to manage these patients is through the deployment of integrated care. Care coordination and telehealth services (CC&TH) provide patients with independence, freedom, and control over their health and lifestyle. Using remote management systems, and an integrated network of caregivers, patients can help themselves. Resulting in measurably improved health.

### **Promising results**

CC&TH has the potential to reduce hospital admissions, days in hospital and mortality rates. Despite the shortage of skilled professionals within European healthcare systems. Clinical studies around CC&TH are promising. These integrated systems can reduce the economic burden of chronic care, and maximise delivery of clinical support. Positive benefits of CC&TH are linked to how well organisational change is implemented.

### **Barriers to deployment**

CC&TH has been limited to pilot programmes and test installations. This is due to the complexity of translating evidence into practice. Deployment on a wider scale can only be achieved with new behaviours, routines and ways of working. Which require significant organisational change. So far, CC&TH has been directed at improving health outcomes, administrative efficiency and cost effectiveness. With a more proactive experience for patients and health professionals.



## I Scope

### Introduction and purpose of the ACT Project

The Advancing Care Coordination and TeleHealth Deployment Programme (ACT) is the first of its kind. It is specifically designed to help overcome the barriers surrounding the large scale deployment of care coordination and telehealth services (CC&TH).

#### **Foundation to overcome barriers**

The ACT programme brings together a powerful Pan-European consortium. Which includes healthcare authorities, clinical experts, universities and industry partners. In full support of the ACT programme, their efforts are directed at improved health outcomes for the chronically ill.

#### **Beyond the trial setting**

With the objective of identifying good practices, the ACT programme goes beyond the trial setting to assess the structural and organisational drivers, and their barriers, in five EU healthcare regions: Lombardy (IT), Basque Country (ES), Catalonia (ES), Northern Netherlands (NL), and Scotland (UK). Each participating region manages, via integrated care programmes, a group of at least 3,000 heart failure, COPD, diabetes, and comorbid patients.

#### **Large-scale deployment of CC&TH**

This 'cookbook' of good practices identifies best-in-class processes, structures and ways of working from these five partner European regions. Their insights, conclusions and recommendations, presented here, can be used to build a blueprint for large-scale CC&TH deployment.

#### **Evaluation of CC&TH deployments**

In order to transfer the advantages of CC&TH services into routine clinical practice, it is essential to understand how to measure CC&TH service performance over time. It is also important to understand how the performance is driven, so that large-scale deployment can be guided by the configuration of these outcomes.

The ACT programme gathers regional data by using an Evaluation Framework and Evaluation Engine to help investigate three core questions:

1. How do CC&TH services work around Europe?
2. What needs to be done to make them work better?
3. How to deploy high-quality CC&TH services in new European regions?

#### **Evaluation Framework**

The Evaluation Framework refers to a holistic approach for assessing qualitative and quantitative (effectiveness and efficiency) performance of CC&TH services deployed in a local healthcare system. The framework of measurement indicators is structured in domains and subdomains over several areas, as presented in Figure 1.

Outcome area	Domains
Efficiency and efficacy	Case ascertainmen, health outcomes, clinical management goals, process outcomes, service utilisation, economic outcomes
Patient adherence	Adherence, satisfaction, acceptance, benefits
Driver area	Domains
Population stratification	Method, disease, age, deprivation index, past use of healthcare.
Patient stratification	Method, health status, frailty, capabilities
Care coordination and workflow	Coordination of care, organisational structure and function, technology, care pathways
Staff engagement	Leadership, awareness, motivation, workforce development, creating psychological ownership, organisational change
Patient adherence	Introduction, belief, experience with TH technology

Figure 1 ACT outcome & driver areas with their domains

### Data collection

The duration of the project was 32 months, starting in February 2013. Baseline data was collected in month six to report how CC&TH pathways are integrated and accepted in the regions. Figure 2 summarises the data collection: The baseline describes data collected from programme managers, frontline staff, patient adherence, and staff engagement. It also provides an overview of the status quo of the region at the start of the project. Iteration data was collected in months 14, 18 and 26. During the iteration phase, specific data was collected and evaluated 2012, 2013 and 2014.

Data	Description	Collection method
<b>Baseline</b>		
<b>Month 6 (July 2013)</b>		
Care coordination & workflow	Extensive survey (programme manager) on qualitative aspects of care coordination and workflow.	Survey (Closed and open questions)
Staff engagement	Survey (programme manager) on staff engagement.	Survey (Closed and open questions)
Healthcare system description	Description of the context of the healthcare system in which CC&TH is deployed.	Written documentation
Population description	Description of the population characteristics.	Written documentation Public repositories
<b>Iteration 1</b>		
<b>Month 14 (March 2014)</b>		
Population stratification	Data collection from healthcare systems and reported domain knowledge on population stratification. Data from 2012.	Spreadsheet
Efficiency and efficacy	Data collection from healthcare systems. Data from 2012.	Spreadsheet
EIP on AHA B3	Survey (programme managers) to collect information on key features of risk stratification models.	EIP on AHA B3 survey results
<b>Iteration 2</b>		
<b>Month 18 (July 2014)</b>		
Programme manager	Follow-up survey (programme manager) of the care coordination and workflow survey. The programme manager's views about the CC&TH programme to identify the best ways to support the effective implementation of CC&TH services in the routine management of people with chronic diseases.	Survey (5pt-Likert closed and open)
Frontline staff	Follow-up survey (frontline staff) of the staff engagement survey. Frontline clinician views about the CC&TH programme to identify the best ways to support the effective implementation of CC&TH services in the routine management of people with chronic diseases.	Survey (5pt-Likert closed and open)
Patient adherence – Part 1	Patient adherence survey (patients). The patient views about the programme.	Survey
<b>Iteration 3</b>		
<b>Planned: Month 24 (January 2015)</b>		
Population stratification 2013	Follow-up with 2013 and 2014 data.	Data collection template
Efficiency & efficacy 2013	Follow-up with 2013 and 2014 data.	Data collection template
Patient adherence – Part 2	Follow-up of patient adherence survey.	Survey (5pt-Likert closed and open)
Patient adherence	Structured group interviews.	Structured group interviews

Figure 2 Data collection overview

### Evaluation engine

The ACT evaluation engine is responsible for capturing, monitoring and evaluating CC&TH deployment, using collected data. This web platform is able to publish, manage, and analyse on-line surveys, collect quantitative indicators via on-line and off-line templates, visualise stored information in multiple views and export data for further statistical analysis. The data is organised as key drivers (generic aspects of healthcare programmes determining their quality with respect to CC&TH) and key indicators (measurable healthcare outcomes used for assessing the drivers). These drivers and outcomes are important considerations when deploying CC&TH at scale.

Figure 3 presents the elements and context of the evaluation engine. The engine has been built on open source technology to offer a content management system with a database. It offers surveys, statistical analysis and interactive visualisations. The analysis performed by the domain experts has been added in the evaluation engine, and runs on the collected data.

### The engine supports:

- A central point of authorised data entry and navigation in the system.
- An online survey tool, with questionnaires for different users, regions, and groups of indicators.
- Import modules for survey data from the survey tool, and external sources.
- An import module for quantitative data templates.
- A data model, which supports integration of data originating from different sources into a common database.
- Raw data and descriptive visualisations of programme details, stakeholder perceptions, and comparison to a reference.
- Full interactive implementation of the evaluation framework, which can be used for hypothesis generation of good practices.

Figure 4 depicts an example of an interactive visualisation provided by the engine.

Visit the ACT portal at [www.act-programme.eu](http://www.act-programme.eu). Here you will find in-depth details regarding the methodology, evaluation framework, tools, additional background information, and news related to the ACT programme.

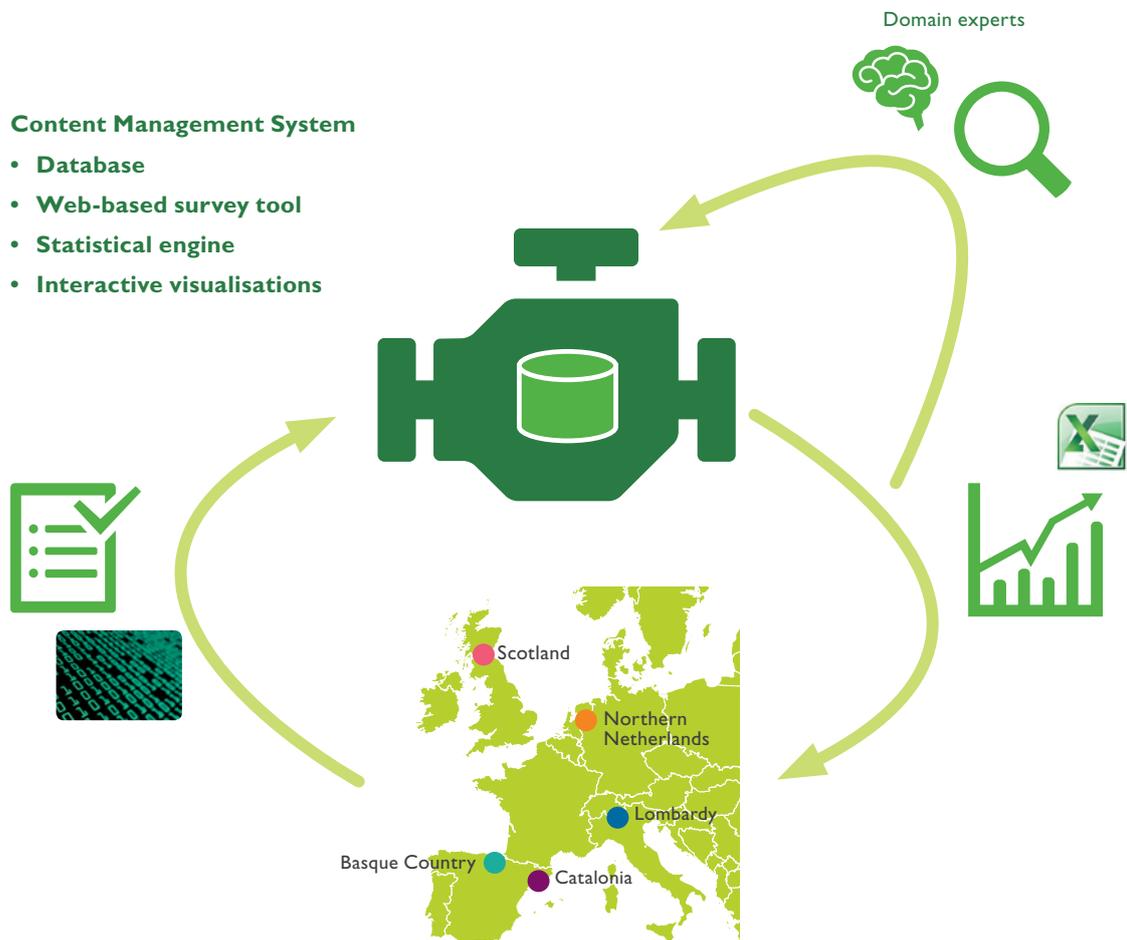
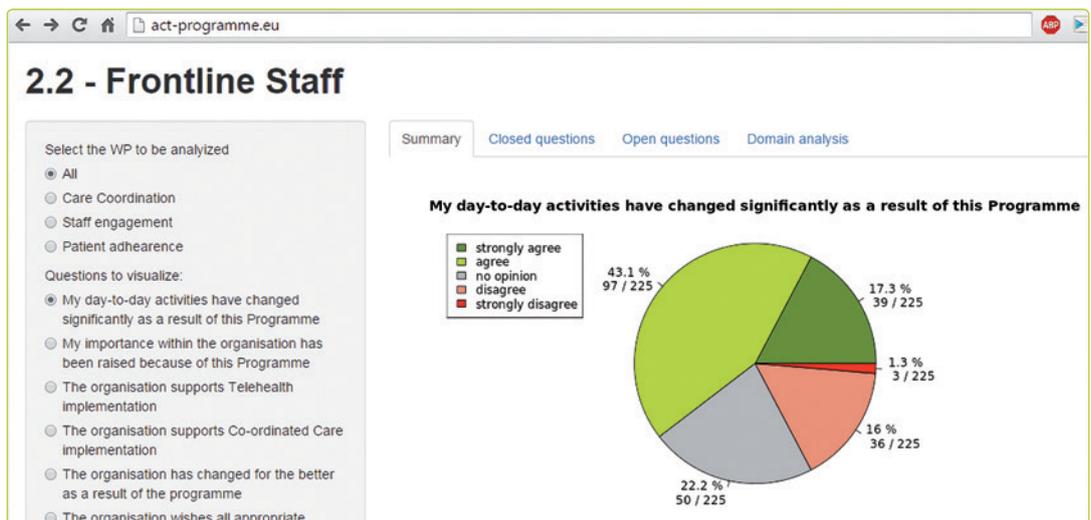
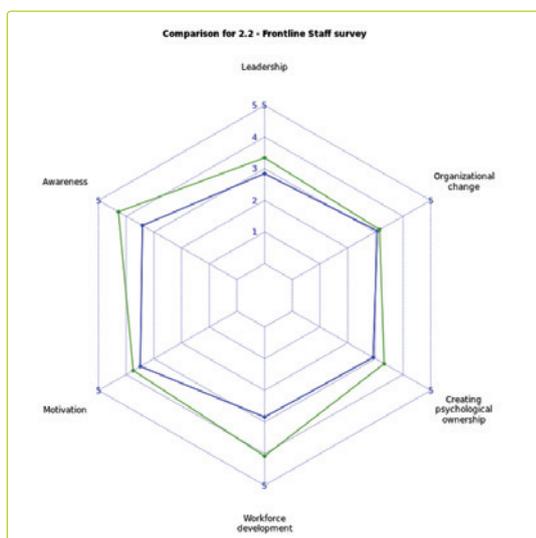


Figure 3 Elements and context of the evaluation engine.



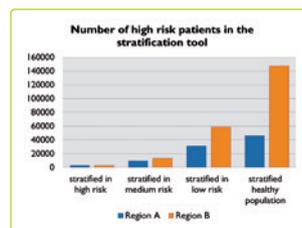
a



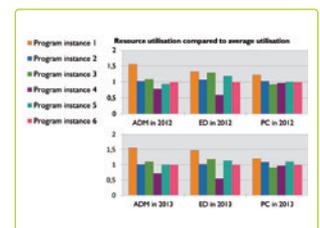
b



c



d



e

Figure 4 Screenshots of the evaluation engine.

- Summary of the overall survey responses per question.
- Scores per domain for two selected programmes.
- Overview of domains and subdomains for organisational aspects.
- Risk stratification results for two selected regions.
- Detailed results in various years for resource utilisation (hospitalisations, emergency visits and primary care visits) for various programmes within a region.



## 2 Insights and conclusions

### 2.1 Stakeholder Insights

Here we summarise the insights from programme managers, frontline staff and patients on the topics of organisation, staff engagement, and patient adherence.

#### **General insight**

Perceptions between managers, frontline staff and patients do not always match

These differences were not as simple as one group being more positive than the other. There were notable differences in staff engagement in particular areas. Frontline staff have a good understanding of the benefits associated with integrated care. This was underestimated by programme managers. Managers, however, have a more positive view on the impact of workforce development activities than frontline staff. For patients, their views and experiences were significantly influenced by the organisational setup. There is an increasing interest from patients to take more responsibility for their health.

#### 2.1.1 Stakeholder insights – organisation



##### **1 From patients:**

**Organisational structure does influence the views and experiences of patients**

Patients are more likely to agree that participation improves their level of care.

Especially if it includes:

- High degree of sense of urgency.
- Some form of self management.
- Self care or patient empowerment.
- Patient satisfaction with communication channels.
- Shared decision making.
- A committee that represents the views of patients and/or carers.



##### **2 From frontline staff:**

**Organisational structure does predict outcomes in many instances**

Staff hold more positive views when training is tailored to their needs. Especially when their views are evaluated, and rewards are given for good service. Training and staff development is seen as positive. Although patients and trainers view some courses as time consuming and demanding. Cost saving and justifying business cases are sometimes at odds with the ethos of the healthcare organisation.

As the future direction of their organisation, staff agree that their programme will bring long-term benefits. Particularly when the following elements are in place:

- Implementation barriers identified.
- Regular evaluation of staff awareness.



### 3 From programme managers: Organisational structure does influence the views and experiences of programme managers and staff

Programme managers have more positive views on organisational support, change, implementation and programme benefits. This suggests that healthcare organisations must do more to engage staff at all levels. Not just those in managerial positions. Managers think the programme fits in with the broader aims and objectives of their organisation.

## 2.1.2 Stakeholder insights – staff engagement



### 1 From patients: Successful patient adherence happens when staff are engaged

According to the ACT project, patients appreciate a unique reference person to coordinate their healthcare. A dedicated contact person is considered both important and helpful.

Frontline staff need to be more aware of the strategies for promoting patient adherence. This also helps keep participants well informed about the primary goals of the programme. It also increases the probability that it will stabilise or improve their health. Now, and in the future.

Successful promotion of patient engagement in the programmes requires more staff, and more staff time allocation.



### 2 From frontline staff: There is no single intervention that will, on its own, ensure staff engagement

The ACT project reveals that staff engagement is a complex element of change management. It is not reliant on one single intervention. A range of different interventions need to be put in place. This will ensure that staff feel engaged with the project.

ACT has reinforced findings from previous studies. These suggest staff engagement requires factors such as:

- Comprehensive workforce development.
- Clarity on project aim and benefits.
- Regular 360° communications.
- Have a single reference contact person for the programme.

Feedback from qualitative and quantitative data reinforces the conclusion that staff engagement is complex. Findings from ACT suggest a holistic approach. This will ensure a high level of staff engagement. There is no 'silver bullet'. The approach should encompass all key elements. Especially those identified as being important to staff engagement. These key factors have limited impact in isolation. When used as part of a package of techniques, they work in synergy to optimize benefits, including elements like workforce development, communication and staff involvement in programme design.

There were no obvious patterns or drivers identified. Suggesting a more complex picture. Qualitative data from staff support this complexity, and their perception of engagement. Instead of one issue of importance, staff report a range of factors.



### 3 From programme managers: Levels of staff engagement vary significantly

The ACT project revealed the need to identify and work out frequent mismatches in perception, between programme managers and staff, about levels of staff engagement.

Variations in levels of staff engagement between programmes is expected. This is particularly true for the programmes analysed, which are of varying sizes, scopes and settings. They also utilise different modalities of care at separate stages of their development. Even so, the study suggests that the success of staff engagement varies across different programmes.

There are different views between staff and managers on the level of staff engagement. This is shown by the significant level of variation identified through non-parametric testing. As the extreme differences show below, managers are more positive towards psychological ownership, workforce development and leadership; staff are more positive towards motivation and awareness, as shown in Figure 5 on the next page.

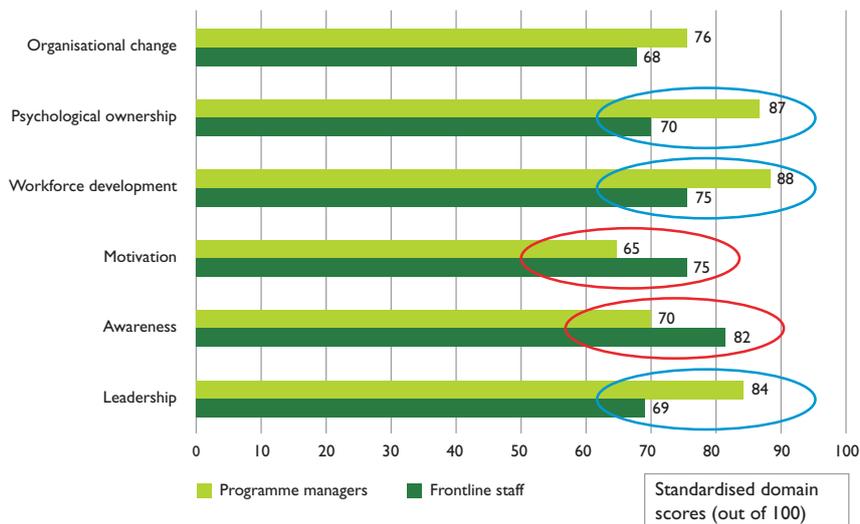


Figure 5: Comparison of standardised domain scores between programme managers and frontline staff.

### 2.1.3 Stakeholder insights – patient adherence



#### I From patients:

There is a willingness by patients to participate in healthcare programmes

This willingness is associated with the following expectation:

- Shared decision making.
- Better self management.
- Readily available communication channels to monitor patient satisfaction.

Organisational structure does predict patient outcomes in a number of areas. There are many factors on why patients choose willingly to participate in their programme. These include employing shared decision making approaches, self-management, self-care, and patient empowerment. Checking patient satisfaction with communication channels is another participation factor.

Self-management and self-monitoring were also positively associated with patient beliefs surrounding the power to influence their health. Along with making and tracking their appointments themselves, and having access to their data.

#### The responsibility for adherence should be shared between patients and healthcare providers

Awareness of the adherence concept is an important factor for its promotion. Several barriers and promoters to adherence are identified by the patient questionnaire and focus group (see Figure 6). The adherence concept is clear to staff. What is not clear, is how to implement this strategy in practice.

Barriers to adherence		Promoters of adherence
Deviation from routine (e.g. weekend)	Frustration and depression	Regular inspections / controls
Side effects / no effect	Being away from home	Health education
"Stubborn and lazy"	Don't feel pain / have no restrictions	Transparency
Do not feel to be taken seriously by health care professional	Lack of knowledge	Empowerment
Non-acceptance of illness	Unawareness of illness	Routine
Enjoying unhealthy behaviour	Afraid of medication dependence	Support received from relatives
Unawareness of seriousness of condition	Be ashamed to have to take medication Effects of medication pass unnoticed	Realization of advantages, e.g. of medication, lifestyle changes, etc Stable mental and emotional status

Figure 6: Barriers and promoters for adherence, for further details of the relations, we refer to the ACT portal.

Transfer of knowledge is frequently employed to promote adherence. This strategy alone, however, is not sufficient. The results from focus groups confirm that patients need to be convinced of the benefits of a healthcare recommendation. Otherwise, the adherence level will not be stable. Routine daily circumstances will endanger or promote optimal adherence with healthcare recommendations.



## 2 From frontline staff:

### Patients overestimate their level of knowledge and adherence behaviour

Patients are often unaware of the impact of their own behaviour on their health. They assume that they understand their diagnosis or what they can do to improve their health. The focus group interview disclosed important uncertainties, misunderstandings and misconceptions in this regard.

The level of education is an important positive predictor promoting whether a patient understands the impact of the disease or not. Health education needs to be tailored to individual patient's needs. Essential for effective education, staff should help patients engage with the best suited communication channel, at the right moment, and with the right person.

### Support from family and friends, and feeling secure, are of prime importance to patients.

These are common findings throughout all focus groups held at ACT. Good family support helps patients to cope with their disease. It also helps to maintain a positive attitude also in times of suffering.

A single point of contact in the health care system, and telehealth solutions, improves the patient's feeling of being supported. Improving their the sense of security. Across most regions, feeling secure emerged as a pivotal factor. It influences the health behaviour of patients, and forms a basis for patient self-empowerment.

Patients need to master the implementation of new health strategies. Those who feel supported are more likely to gain confidence.

“Staff and patients involved in current review are given the opportunity to provide feedback on the service.”



## 3 From programme managers:

### A simple patient questionnaire can detect meaningful differences between predefined and project-specific characteristics

The level of education is relevant for the beliefs of patients around their own healthcare behaviour. Age turns out to be another pivotal factor when explaining the benefits of medication and healthcare behaviour to elderly participants. They are less likely to understand their medication, and not so convinced that changing their behaviour will influence their health.

### A comprehensive assessment of adherence requires in-depth structured questioning.

Uncovering the many facets of patient adherence has had limited success. Using a format similar to a Likert scale (allows user to agree or disagree with a statement), the patient questionnaire could only address simple questions.

Adherence is a complex concept. Thus, one question alone in a face-to-face situation is also insufficient to describe the actual status of adherence. However, a reliable understanding of adherence can be achieved by serial, targeted, open questions. Focus group interviews allow employing interrogation techniques suitable to disclose valuable insights regarding the actual adherence level of the patient. These reveal relevant uncertainties and misunderstandings of patients. Such insights, however, are vital to improve patient adherence over time.

To get the desired information, the interview technique is crucial. When asked superficial questions, most participants reported a high adherence level. They agreed to strive for full understanding of their health condition and diagnosis. In-depth questioning revealed important uncertainties, misunderstandings and misconceptions in sizeable proportions of participants. By contrast, only a small percentage of participants had admitted some limitations in this respect. Compared to the patient questionnaire, more limitations towards adherence were identified in the focus groups (see Figure 6. Barriers of adherence).

## 2.2 Stratification details and process

Risk prediction modelling is a priority for the implementation of integrated care.

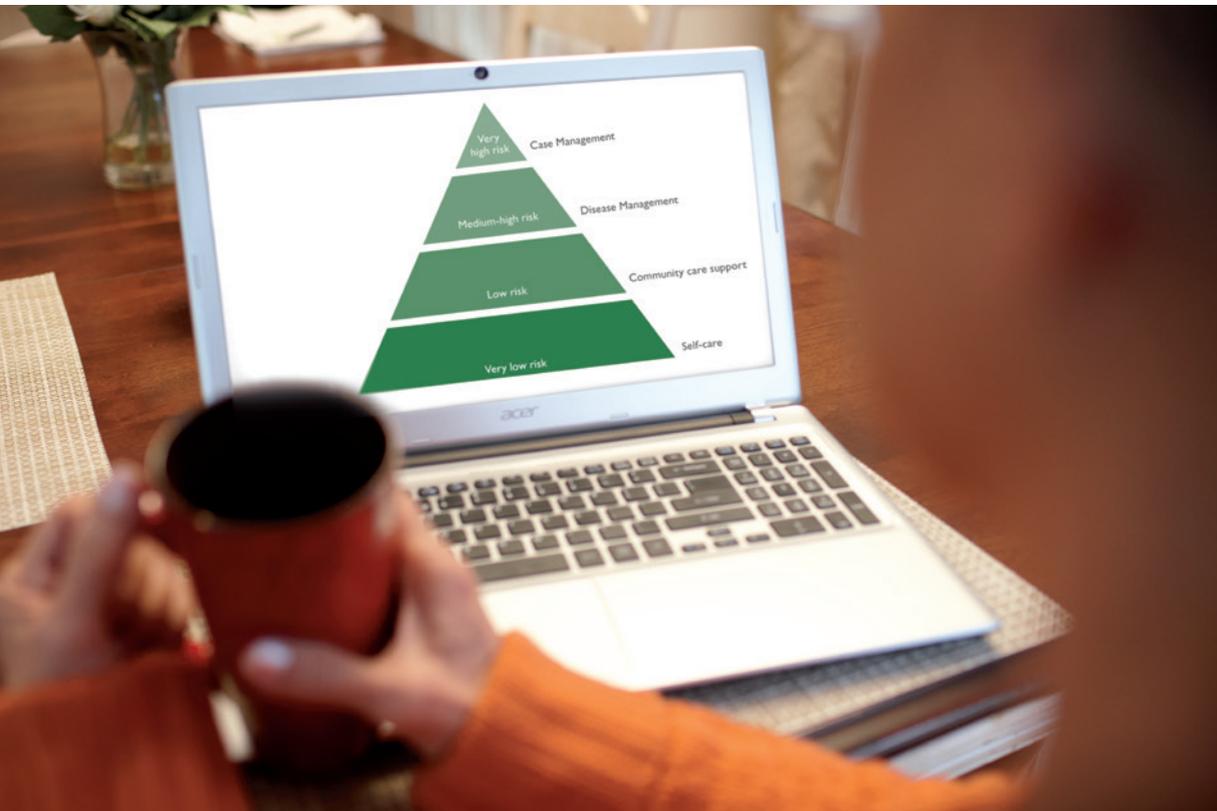
One of the key challenges generated by large-scale deployment of integrated care services is the need for dynamic health risk assessment, both at population level and in the clinical scenario. This helps to feed adaptive case management strategies. Particularly those aimed at covering the evolving requirements of chronic patients over time.



### Summary of results

All five ACT regions agree on the relevant role of population-based health risk assessment for regional deployment of integrated care. There is also consensus on the use of population health stratification and not clinical stratification. That is, health risk assessment tools generated from modelling the entire population of a given region (or geographical area) with a holistic approach.

The evolution of risk prediction modelling tools allows proper quantification of sensitivity/specificity of the estimations.





## Regional risk prediction modelling tools

Our observations show the use of diverse regional risk prediction modelling tools. Together with the criteria for health risk strata classifications, these limit comparability of risk pyramid distributions among ACT regions (Figures 7 and 8). Likewise, different problems associated with data management preclude appropriate comparisons of the recommended indicators.

We also identified issues with license binding constraints, and insufficient transparency of some computational algorithms. These may limit transferability of population-based health-risk assessment among regions. These two factors might also prevent the adaptation of current risk prediction tools. Especially for the following evolving requirements:

- Integration between healthcare and social services.
- Implementation of synergies between population-based and clinical health risk prediction modelling.

There are innovative strategies for individual health risk prediction models, which can be applied in different clinical scenarios. The ACT work has reported on the conceptual steps required to develop these strategies. Further studies are needed to evaluate their feasibility, added value and clinical applicability.

	Basque Country	Catalonia	Lombardy	Scotland
Model	Predictive (based in Adjusted Clinical Groups-Predictive Model ACG-PM®)	Explanatory (based in 3M Clinical Risk Groups, 3M-CRG®, and the self-development model GMA)	Classificatory (based in the Diagnosis Related Group, DRG, and a self-developed scheme CReG)	Classificatory (Scottish Patients at Risk of Readmission and Admission, SPARRA-3)
Source population	2.100.000	7.800.000	100.000	3.400.000**
Updates	Annual	Semester	Once	Monthly
Scope of the use	Population-based risk assessment and stratification for health policy and service design, as well as use as case finding tool	Population-based risk assessment and stratification for health policy and service design, as well as use as case finding tool	Case finding tool and reimbursement model	Case finding tool
Clinical application	<ul style="list-style-type: none"> <li>- All levels of care can see the same information.</li> <li>- Practicing physicians receive a risk score for each patient</li> </ul>	<ul style="list-style-type: none"> <li>- All levels of care can see the same information.</li> <li>- Practicing physicians receive a risk score for each patient</li> </ul>	<ul style="list-style-type: none"> <li>- All levels of care can see the same information.</li> <li>- Practicing physicians receive a risk score for each patient</li> </ul>	<ul style="list-style-type: none"> <li>- All levels of care can see the same information.</li> <li>- Practicing physicians receive a risk score for each patient</li> </ul>
Outcomes (dependent variables)	Mainly: Health costs	Mainly: Unscheduled hospital admissions at one year, re-admission at 180 days and risk of death at 12 months	Costs of pharmacy, outpatient and inpatient costs	Individual's risk of emergency hospital inpatient admission over the next twelve months. Risk of Institutionalisation
Covariates (independent variables)	<ul style="list-style-type: none"> <li>- Demographic information</li> <li>- Diagnosis</li> <li>- Comorbidity using a grouper</li> <li>- Past health care consumption</li> <li>- Aggregated socio-economical status</li> </ul>	<ul style="list-style-type: none"> <li>- Demographic information</li> <li>- Diagnosis</li> <li>- Comorbidity using a grouper</li> <li>- Aggregated socio-economical status</li> </ul>	The classification system uses diagnosis for grouping	<ul style="list-style-type: none"> <li>- Demographic information</li> <li>- Diagnosis</li> <li>- Comorbidity using a grouper</li> <li>- Past health care consumption</li> </ul>

Figure 7 Risk prediction modelling tools in the ACT regions\*

\* The Northern Netherlands was not included in the figure because the integrated care programmes are not using population-based health risk predictive modelling tools.

\*\* The total population of Scotland is 5,295,000 inhabitants.

	Basque Country	Catalonia	Northern Netherlands	Lombardia	Scotland	Barriers for comparison
Scope of the stratification strategy	Entire population (population health)	Population (population health)	Programme (population medicine)	Programme (population medicine)	3.4 million people (population health)	Heterogeneous predictive modelling tools
Current predictive modelling tool	ACG-PM	GMA (owned by the region)	Not available	CReG, evolving toward a risk predictive modelling tool	SPARRA v3 (owned by the region)	Different statistics describing predictive power, different levels of flexibility
Number of risk strata	Four	Five levels of complexity & Seven levels of multi-morbidity	Four	Three	Four	Different criteria for risk categories leading to non-comparable population distributions
Characteristics of reporting on top indicators	Regional & micro system	Regional & four areas	Three programmes	GReG cohorts	Sub-region	Heterogeneity of reporting allowed conceptual consensus but not comparability of results

ACG-PM® = Adjusted Clinical Groups-Predictive Model

CReG = Chronic Related Group

SPARRA V3 = Scottish Patients at Risk of Readmission and Admission – version 3

Figure 8 Risk prediction strategies and characteristics of data reporting for the study on top indicators in the five ACT regions

## 2.3 Assessment insights

### 1 The ability to track the use of resources is a useful feature of a stratification strategy

This shows why patients assigned to complex programmes (case management) are using more resources. Especially when compared to patients in disease management programmes of HF, COPD and DM.

We have not been able to measure patient level data. Yet results at the population level confirm they are consistent with the stratification algorithms. They also show when resource allocation for patient needs has been adequately thought through.

### 2 Data availability and homogeneity are the biggest challenges when evaluating the performance of the programmes

We collected a wealth of data during the ACT project. The collection is unique. It encompasses not only the outcomes, but also the full context of the deployment. Including stakeholder perceptions. The challenges we have identified during collection and analysis are data availability, comparability and ambiguity.

### 3 Complexity of the quantitative data collection

Figure 9 depicts the size and quantitative complexity of the data collection process performed in ACT. Shown here after the interpretation and reorganisation of the collected data. Quantitative data are collected from national, regional, and general programme data as well as specific programme instance data for 2012, 2013 and 2014 in more than 90 datasets. The data from surveys cover more than 2,500 responses that address the qualitative aspects of care coordination, workflow optimisation, staff engagement and patient adherence. The survey data was provided by different stakeholders (patients, staff and programme managers).

The ACT framework was designed to be flexible in the processing of different data elements. The ACT Evaluation engine has the capacity to visualise this wealth of data in different dashboards.

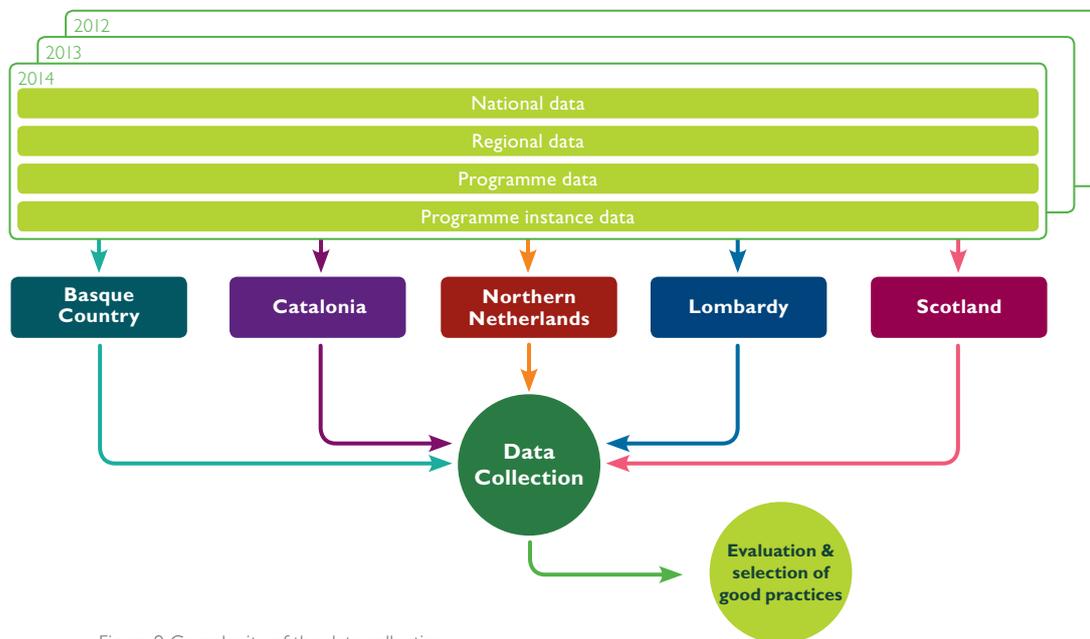


Figure 9 Complexity of the data collection.

### 4 Key Performance Indicators Despite the wealth of data, there is a limit on how the data can be compared at indicator level

The data have been reported at different levels (national, regional, programme and programme instance level). Some indicators are missing in the reported data. This does not mean these indicators are not collected or available locally, but there is an issue to make the data available for evaluation and research purposes. Regions embarking in the endeavour of CC&TH deployment should not underestimate the effort of data collection.



## 3 Deployment recommendations

### 3.1 Staff engagement recommendations

"Patient care is more personalised and integrated across the organisation (coordination between different services). The aim is to adjust the services to the needs."



#### 1 Staff engagement: Programme managers should provide staff with clarity on aims and patient benefits

Findings from ACT suggest that no single intervention can ensure staff engagement. Yet it is clear that frontline staff should give a clear insight into the potential benefits of the programme.

When frontline staff see patient benefits, and believe in the benefits of the programme, these are powerful drivers of engagement. It helps staff to engage with programmes, and take on extra workload. Programme managers should be aware of this. Taking the opportunity to publicise and celebrate the successes and benefits of the programme. Frontline staff are often the first to recognise the positive impact on patients. Their experiences should be sought out and shared with the communication and feedback channels discussed earlier.

Qualitative data from frontline staff provides useful insights and benefits, which could be used to support implementation.



#### 2 Staff engagement: Programme development that is early, ongoing, and responsive

Communication is an important element of any staff engagement strategy. It is important that it is not one way, infrequent or just a token effort. Programme managers should seek to interact on a regular and inclusive basis. Acting upon any staff feedback wherever possible.

The ACT programme suggests that early staff involvement helps raise awareness of programme aims. It also enables the development of clinical champions, and identifies early barriers to change.

The results of the ACT project also pinpoint that consultation should be ongoing. This allows for progress updates and effective partnership working on emerging issues. It is crucial that programme leads do not give unilateral directions to staff. They should feel that their feedback can further shape the development of the service.

Qualitative feedback provides insights into programme development. It underlines the importance of giving staff a voice. Together with recognition of the need for staff input from programme managers.

“I think the organisation, and its managers, should approach this issue in a planned way. Carrying out a dialogue with the clinicians.”



### 3 Staff engagement: Elevate levels of staff engagement on regular occasions

Levels of staff engagement within ACT programmes have been studied closely. It results in a new level of scrutiny and evaluation. Which should not be restricted only to primary research. It should also be an element of all staff engagement strategies.

There is a comprehensive survey tool developed for the ACT programme, combining scores and textual information from stakeholders. It tracks and gathers views of frontline staff on engagement activities and progress. It also shows the importance of staff engagement within a project plan. Programme managers should make regular use of this tool. It also helps staff to develop and deliver the programme

The justification for this recommendation lies in the outcome of the ACT programme. The views gathered from staff have been exceptionally useful. These views have outlined the most important elements of their engagement with the programme. Views that help guide how these need to be implemented as part of a holistic package. Recognising those areas that need most work, it has also helped to identify best practice.

Using a staff engagement evaluation tool is a useful process. It should part of any future programme development.



### 4 Staff engagement: Maximise engagement among the workforce with staff training, tailored to different grades and groups

Certain measures are needed to ensure staff engagement and acceptance of organisational change. These include tailored staff training and monitoring of staff satisfaction.

Before training staff, establish a demand for the service. This will ensure the existence of a coherent framework in which to train staff. Carrying out successful coordinated care depends on a well-trained workforce. It also depends on meeting their diverse development needs. Consultation and support are needed for the day-to-day staff running the service.

The analysis shows that tailored staff training and a well-informed workforce are necessary. These will achieve a collective sense of positive purpose among staff. As well as a shared understanding of the future plans of the organisation. Managers should allocate time for staff training and recognise its importance.

“A conscious strategy to elicit feedback helps to address obstacles. It provides a good service, with a high turnover of both staff and patients.”



### 5 Staff engagement: Continuous feedback between professionals, service operators and project teams is vital

Continuous feedback ensures that evolving needs are met and change is made step by step. Examples of poor communication were reported between different services. This led to tensions between healthcare professionals. Some were reluctant to get involved. While others had become isolated due to lack of support. A number of programmes implemented measures to address this problem.

## 3.2 Patient adherence recommendations



### 1 Patient adherence: The need for personalised strategies to overcome adherence barriers

Healthcare systems, programmes, personalities, and – importantly – patient profiles vary substantially. For this reason, we need to design adherence strategies that are adapted around the needs of the patient. Not only clinical, but also social support and socio-economic needs.



### 2 Patient adherence: Routine iterative evaluation of patient adherence should be implemented in healthcare programmes. This will help foster coordinated care and telehealth

The level and quality of adherence and factors limiting adherence cannot be assessed and monitored using a single standardised procedure.

Establishing effective communication between healthcare professional and patient is key. This will reveal the true level of adherence, and presence of any barriers.

The use of simple yes/no, or other closed questions, cannot detect and track limitations. There needs to be a deeper level of assessment. For example, structured patient interviews.

“Misunderstandings are the rule, not the exception.”



### 3 Patient adherence: Health education should be tailored to the patient’s needs. Healthcare staff should reassure patients that information has been properly understood

The higher the education level of patients, the more likely they will believe in their ability to actively influence their health. More support is needed to reach this attitude for participants with a lower level of education.

While health education needs to use simple language, just providing a superficial education tool will not work. Huge discrepancies can arise between what the doctor thinks his patient has understood, and what the patient thinks his clinician has told him.



### 4 Patient adherence: To enhance a sense of security, families and informal carers should be routinely included in the healthcare plan or programme

Families and informal carers are a valuable resource when helping patients with adherence. For this reason, they should be routinely included in the healthcare plan or programme. A strategy to enhance a sense of security needs to be considered.

Support from relatives and friends is a meaningful resource to promote adherence. They can support the patient in their health care behaviour, as well as providing more accurate information to the health care professionals. Hence, care can be managed more effectively. Feeling secure constitutes an important factor influencing the health behaviour of patients.



### 5 Patient adherence: Healthcare professionals need to be aware of the barriers to patient adherence. As well as effective strategies for its promotion, which requires time.

A key element of the adherence concept is the active role and empowerment of the patient. Health care professionals need to be aware that involvement of the patient, and shared decision processes, are crucial for higher adherence rates. Awareness of barriers to adherence (see Figure 6), and of effective strategies for its promotion, enables staff to implement strategies more effectively.

They can put more effective strategies in place if they are tailored to each patient's need. This makes it easier to provide health education. This will ensure that crucial information has been processed by the patient.

“Loss of perspective can happen when too many healthcare professionals are involved in the management of the same patient and family. Resulting in the loss of coordination objectives and healthcare criteria.”



#### 6 Patient adherence:

A single point of contact for patients, related their healthcare

When large numbers of health professionals collaborate, it can lead to a less comprehensive view of the patient. A central point of contact can remedy this. It can be a dedicated person, or a team who deals with requests. This will avoid compromising care. It will also guard against the potential complexities of a coordinated care approach. Making it easier for patients, healthcare professionals and stakeholders to maximise the benefits.



## 3.3 Stratification recommendations

Health risk assessment should employ a population-health approach. Both for risk prediction modelling and indicators. This is a priority for the scaling up of integrated care at a European level.



### Risk Stratification

Risk stratification is a statistical process to determine and quantify characteristics associated with an increased or decreased chance of experiencing unwanted outcomes. By identifying factors prior to the occurrence of an event, it is possible to develop targeted interventions to mitigate their impact.

Risk stratification provides a rationale for allocation of resources to those patients at highest risk. To improve outcomes, and change their cost structure, healthcare organisations must design population health management interventions that target high-risk, high-cost patients who need to be managed carefully and proactively. A critical aspect of this is understanding multimorbid conditions.

Risk prediction modelling is also useful for screening purposes. That is, discovery of cases with non-manifest illnesses that may benefit from early diagnosis and cost-effective preventive interventions.

In the clinical scenario, risk prediction of well-defined medical problems can support health professionals in the decision making process. Moreover, clinical risk prediction may contribute to patient classification in the optimal healthcare tier. Helping to define shared care arrangements between primary care and specialists.



### Recommendations

**1 Evolve to an open, transparent and flexible population-based health risk assessment tool (Figure 10). This will ensure transferability among EU regions.**



**2 Facilitate comparisons among regions. Harmonise data coding, and standardise logistics for data collection and reporting.**



**3 Support clinical decision making. Assess recommended strategies. Converge population-based health risk assessment tools and clinical health risk prediction modelling.**

Domain	Recommendations
Type of risk stratification tool	Predictive model using a population health approach
Validation of the model	Longitudinal follow-up
Predicted/explained outcomes	Hospitalisation; risk of Institutionalisation; Death
Source sample	Whole regional population
Statistical model	Predictive modelling
Statistical indices	Standardisation on reporting performance (positive predictive value, PPV) and sensitivity across risk bands
Population usefulness	Risk adjustment; planning and commissioning health services Support to novel reimbursement models
Clinical and social usefulness	Identification patients at high risk and cost-effective preventive clinical and social interventions
Periodicity of updates	Semester
Clinical accessibility	Available into the professional workstation through CDSS
Flexibility	Transparent algorithms, open source, reduced or no licence binding. High transferability

Figure 10 Stratification recommendations for best practice.

## 3.4 Assessment recommendations

### Assessments



#### 1 Ensure achievable data collection

ACT recommends the agreement on a minimum dataset of outcome indicators to be collected by all CC&TH programmes. This proposed data set (Figure 11) should be consensused and validated across Europe:

Domain	Indicators
Case ascertainment	Coverage of the target population
Health outcomes	a. Mortality /Survival b. # Hospitalisations per patient c. Polypharmacy patients
Clinical management goals (per type of program).	Management goals are reached
Process outcomes (per type of program).	Processes are performed
Service utilisation	a. Total hospitalisations days (# *days) b. # Readmissions (30 days), per patient c. Adequate use of emergency, per patient
Economic outcomes	a. Total cost per patient b. Transition of resources towards primary care

Figure 11 Minimum data set for efficiency and efficacy outcomes.



#### 2 Ensure data comparability across regions

Address data collection challenges (comparability, ambiguity), with a small set of strictly defined indicators. For instance, following relevant standards such as HL7 Health Quality Measure Format (HQMF). This will provide the structure in which eMeasures can be defined.



#### 3 Facilitate local data collection and governance

The facilitation of unified data collection through interfaces, conforming to data privacy and protection legislation. Together with a distributed engine, where regions control data entry, thereby ensuring relevant information is more readily available.

Enabling access to patient level data to track adequately patient populations, and allow the optimal use of machine learning techniques and big data.



#### 4 Take a holistic evaluation approach

For a holistic assessment of the programmes, not only outcomes are needed. ACT recommends:

- Combine qualitative and quantitative indicators to provide the full picture: ACT Evaluation Framework.
- The application of the Evaluation Engine to monitor progress of existing deployments, and the effect of changes to existing deployments.



#### 5 Scale the evaluation of integrated care across Europe

ACT recommends the EU to promote further initiatives in the implementation of evaluation of integrated care programmes:

- Implementation of the recommendations to enable a continuous improvement system that would bring the required maturity level of the programmes.
- Transfer of good practices in other regions to facilitate faster deployment in follower systems.



“It will not be possible to improve the system by focusing only on the internal performance of care organisations. The improvement in coordination between them is even more important.”

Rafael Bengoa, Director of Health Deusto Business School,  
Former Ministry of Health Basque Country and Assessor of Obamacare reform.



## 4 Good practices

### 4.1 Regional programmes

# Observations of good practise across the five EU regions

The ACT programme evaluated five EU regions: Lombardy, Basque Country, Catalonia, Northern Netherlands and Scotland. By observing each region, we have started to identify good practices, structures and ways of working. Revealing the processes needed to help reduce hospital admissions, days in hospital and mortality rates.

#### **Crucial in overcoming challenges**

This regional data will form the foundation to help facilitate large-scale deployment of CC&TH solutions across Europe. Potentially transforming care for millions of chronically ill people. Saving healthcare systems billions of euros each year.

[www.act-programme.eu](http://www.act-programme.eu)

## 4.2 Good practices

# Five regional programme factsheets

### Programme outcome and driver scores presented in the good practice factsheets

The outcomes scores consist of two parts: Indicator Score and a central Data Availability Score.

In Figure 12, the central score represents the data availability for the programme, with scores 1-4 for each segment. The subscripts state how many indicators are available – e.g. a data availability score of 3.9 means that data was available for the programme, for multiple years (score 3), and 9 (out of 10) indicators have been reported (score 9). The outcome indicator score is visualised in each spider segment. Here we distinguish whether a programme is performing under or below its reference value. Also, whether or not the outcomes are improving

over the years. In this example, the total hospitalisation days score is 4. Which ranks above average and with improvement over the years.

The driver scores in Figure 13 have a similar shape. The central score refers to the intermediate outcomes – driver indicators that are considered to be an outcome by itself. The segments display the score of all indicators related to particular domain. All driver scores are related to the 5-pt Likert scales of the questionnaires.

It is not possible, nor is it the intention, to benchmark the programmes. This is due to differences in data maturity. Instead, the visuals should help show the relative strengths and weaknesses for each of the programmes. In particular, within a region.

#### Catalonia

- Chronic Patient programme – Badalona Serveis Assistencials (PPAC – BSA)
- Chronic Patient programme – Alt penedès (PPAC – AP)

#### Scotland

- Home safety service (HHS)
- Reablement (Reablement)
- Rapid Elderly Assessment Care Team (REACT)

#### Northern Netherlands

- Embrace (Embrace)
- Asthma/COPD Telehealth Service (Asthma/COPD)
- Effective Cardio (Effective Cardio)

#### Basque Country

- Active Patient (Active Patient)
- Population Intervention programme of Multimorbidity (PIP MM)
- Population Intervention programme of Diabetes (PIP DM)

#### Lombardy

- Chronic Related Groups (CReG)
- Chronic Related Groups – Telemonitor (CReG Telemonitor)

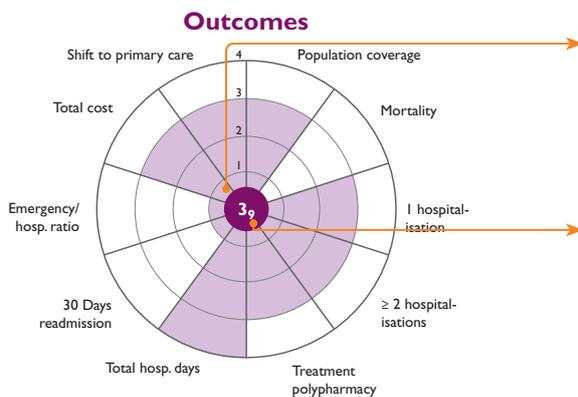


Figure 12: Outcomes indicators scores of availability and performance

**Indicator score** for a particular outcome indicator (e.g. total hospitalisation days)

- 1 Worse than reference – no improvement
- 2 Worse than reference – improvement
- 3 Better than reference – no improvement
- 4 Better than reference – improvement

**Data availability score** for outcomes data

- 0 No data
- 1 Partial data
- 2 Programme data, single year
- 3 Programme data, multiple years
- 4 Programme data, multiple years, robust

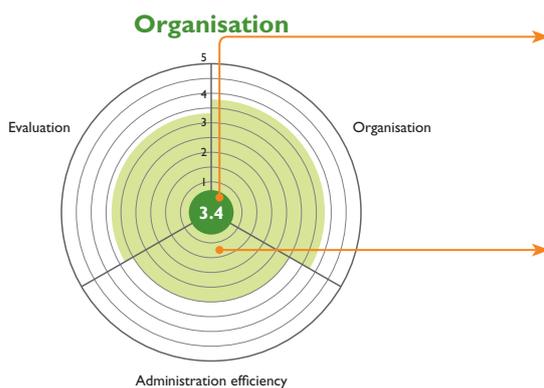


Figure 13: Intermediate outcome and indicator scores

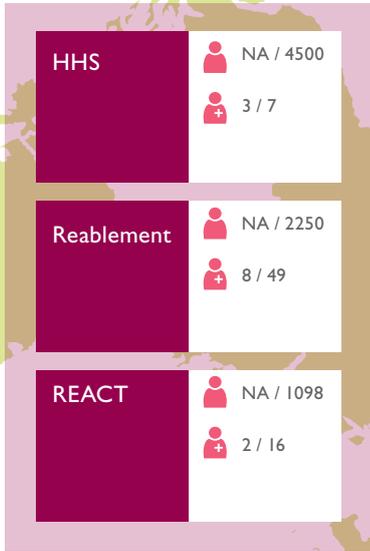
**Intermediate outcome score** for the whole area (e.g. Organisation)

- 1 Strongly disagree
- 2 Disagree
- 3 No opinion
- 4 Agree
- 5 Strongly disagree

**Indicator score** for a particular domain (e.g. Administration efficiency)

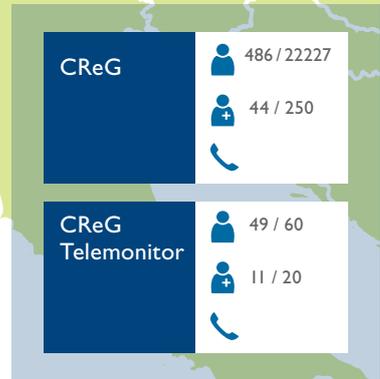
- 1 Strongly disagree
- 2 Disagree
- 3 No opinion
- 4 Agree
- 5 Strongly disagree

● Scotland

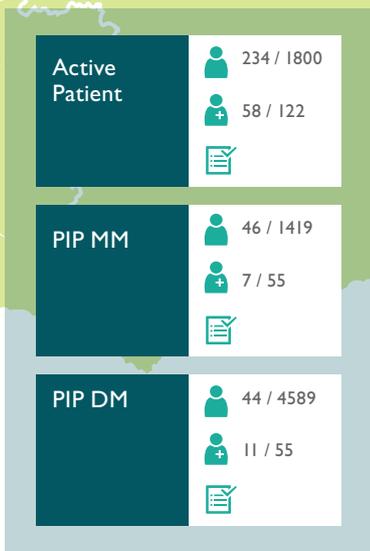


● Northern Netherlands

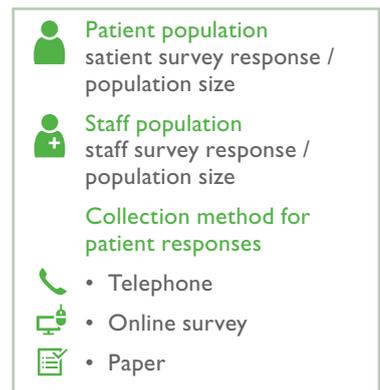
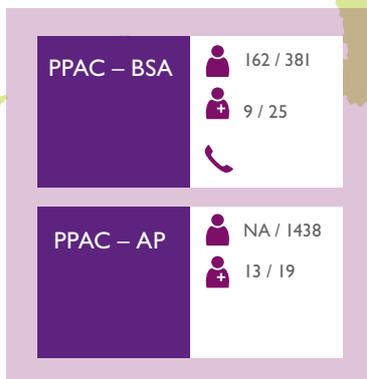
● Lombardy



● Basque Country



● Catalonia



## Key to success

- The key user role is taken by clinical champions. Serving as an example, they spread the engagement to the rest of the professionals.
- Interoperable information systems are a key factor for full deployment of integrated care.
- Policy support and commitment will facilitate organisational processes. Together with governance mechanisms for the deployment of the programme.

**Chronic Patient Programme – Badalona Serveis Assistencials**  
Region: Catalonia

## The needs of citizens and patients must be at the centre of the system

**Badalona Serveis Assistencials (BSA) is an integrated private care organisation. BSA is entirely funded by public capital, and manages one municipal hospital, integrated home care services, one intermediate care hospital, seven primary care centres and a centre for sexual and reproductive health.**

**BSA provide care for 419,797 inhabitants in a very populated suburban area of Barcelona (Spain). BSA has been responsible for health and social care services in this area since 2000. The Badalona's City council included social care under the BSA service provision. This fostered a new model that would put the needs of citizens and patients at the centre of the system. Within this context, BSA launched the Chronic Patient Programme.**

The Chronic Patient Programme plans and carries out interventions. The focus is to identify, prevent and treat. Particularly with the reduction of acute episodes. The programme helps to:

- Avoid further hospitalisations.
- Evaluate each particular need to design and implement individual integrated care plans.
- Include general geriatric evaluation.
- Promote independent living for patients, while maintaining good quality of life.
- Coordinate the work of the interdisciplinary teams doing the interventions.

BSA developed an institutional and organisational model with policy support. With a commitment that facilitates full integration. It includes fully integrated services. These cover: the continuum of care and the work across tiers of care with a multidisciplinary team of specialists, general practitioners, nurses and social workers, occupational therapists and physiotherapists.

This organisational innovation is aligned and supported by technological innovation. BSA EHR is a fully interoperable information system. It enhances communication and information flow across the continuum of care. Supporting health and social care professional practice.

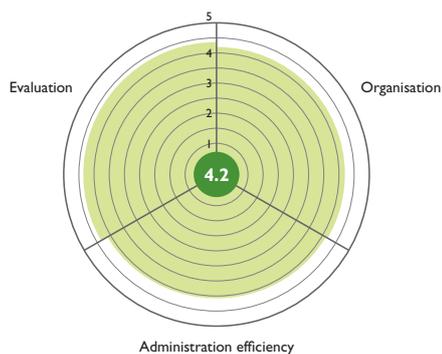
### Contact information

Sebastià Santauegènia; [ssantauegenia@bsa.cat](mailto:ssantauegenia@bsa.cat)  
Jordi Piera; [jpiera@bsa.cat](mailto:jpiera@bsa.cat)

### Sources and references

- Badalona Serveis Assistencials (2013). Annual Report 2013.
- Strategic Intelligence Monitor on Personal Health Systems Phase 3 (SIMPHS3). Badalona Serveis Assistencials. Case Study Report; Joint Research Centre; Institute for Prospective Technological Studies. European Commission, 2015
- [www.bsa.cat/international](http://www.bsa.cat/international)

## Organisation

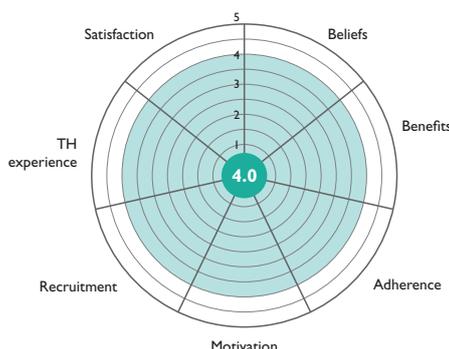


Administration efficiency

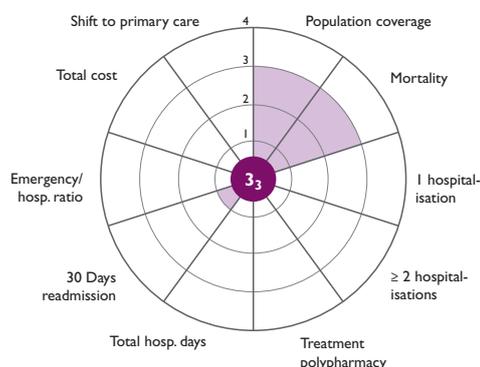
## Staff engagement



## Patient adherence



## Outcomes



162 / 381

9 / 25



## Good Practice: Foster good relationships between different care providers and specialities

Healthcare professionals described a range of approaches to encourage strong relationships between different specialities and organisations. This is based on an acceptance of the need to work in new ways to deliver support beyond conventional care settings and within patient's homes. This encourages more fluid boundaries between professionals and areas of work overall.

“Provide individualised care for people with complex needs by offering coordination with specialised care teams.”

Strong relationships were forged by building multidisciplinary care teams. BSA Programme is outstanding in terms of staff engagement – Specific drivers directly impacting upon patient outcomes are: interventions in training, early engagement of staff, introducing feed-back loops, and ensuring recognition of professional expertise.

The main objective of the Chronic Patient Programme is to offer an integral care model through the provision of social and healthcare services. This is provided for patients with multiple chronic conditions, and is based on the optimisation and integration of resources. Resulting in a fast response time to the needs of the inhabitants in the region. In order to develop it, BSA has designed a predictive model. This allows the risk stratification of the population between care needs, which would arise during next year. The purpose is to identify patients in a proactive way, rather than wait for their institutionalisation. This model has a demographic focus, which has allowed BSA to organise its care units in order to provide a better service to chronic patients.

Using this model, together with multimorbidity and frailty criteria, BSA can identify the risk of each particular citizen. Helping to provide the best care to each individual.

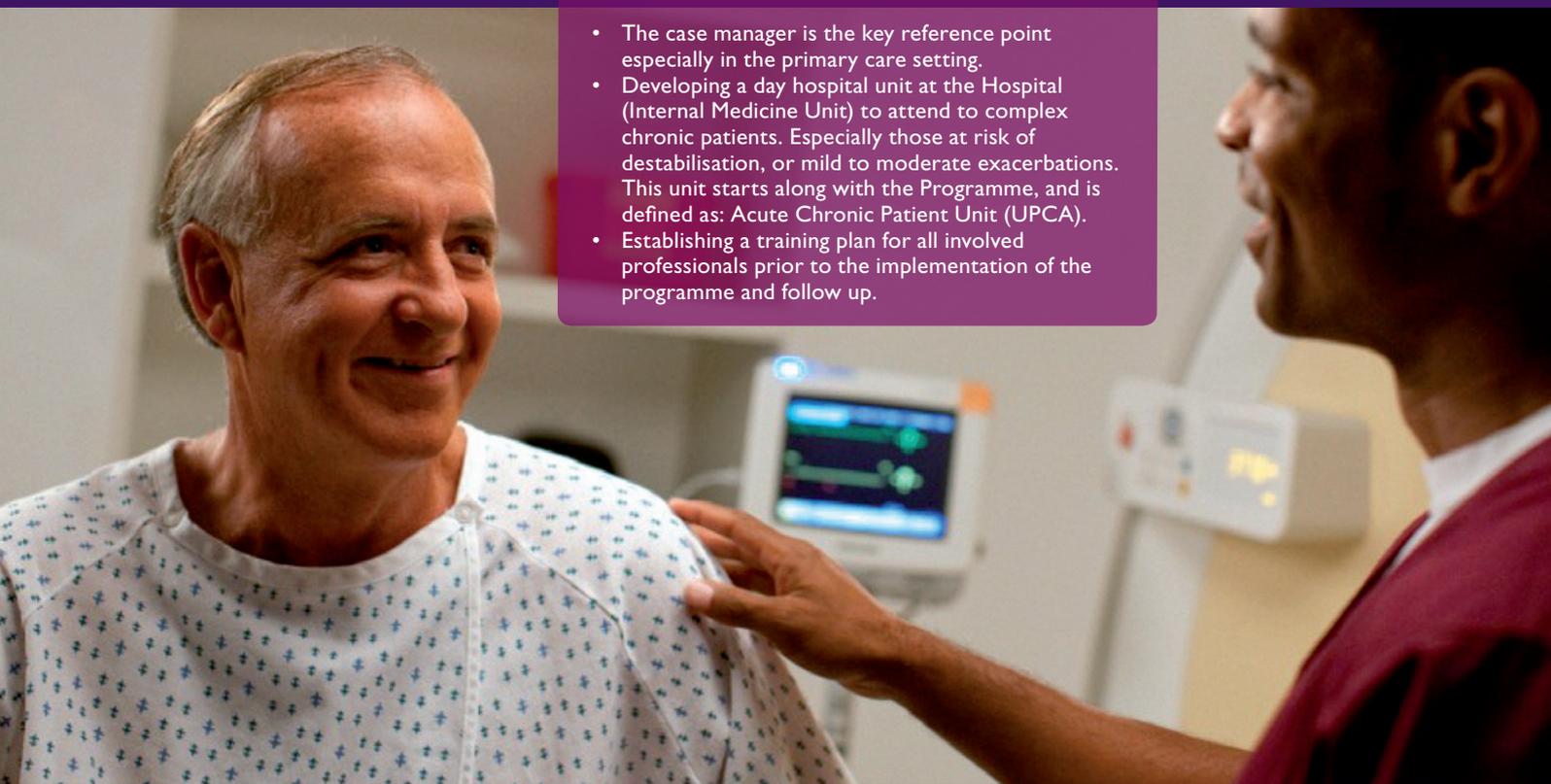
Depending on the multimorbidities, BSA classifies the patients into different groups to adapt the needed resources:

- Patients without any disease: Promotion and prevention.
- One to two chronic conditions: Patient at risk: Self empowerment.
- Three to four chronic conditions: Medium complexity patient. Assisted care. Disease management.
- Five chronic conditions: High complexity patient. Special care. Case management.

The main goal of the PPAC programme is to offer an integrated care model. Which is provided by social and healthcare services for patients with multiple chronic conditions. By optimising and integrating resources, they can respond quickly to the needs of the inhabitants in the region.

## Key to success

- The case manager is the key reference point especially in the primary care setting.
- Developing a day hospital unit at the Hospital (Internal Medicine Unit) to attend to complex chronic patients. Especially those at risk of destabilisation, or mild to moderate exacerbations. This unit starts along with the Programme, and is defined as: Acute Chronic Patient Unit (UPCA).
- Establishing a training plan for all involved professionals prior to the implementation of the programme and follow up.



**Programme for  
Prevention and Treatment  
of Chronicity with  
HF patients –  
Alt Penedès**  
Region: Catalonia

## Programme for prevention and treatment of chronicity with HF patients

**The Programme for Prevention and Care of Chronicity (PPAC) provides a new model of health and social care for the Catalan people. With the focus on long-term conditions like heart failure, COPD and diabetes mellitus. PPAC was launched by the Catalan Ministry of Health and the Ministry of Social Welfare and Family.**

**PPAC aims to develop comprehensive clinical processes for the chronic conditions. It will help construct integrated care pathways for hospital, primary care centres, nursing home facilities and social services. PPAC also aims to provide proactive care of patients with complex disease and advanced chronic disease. This will assure a 24/7 coverage model. With good response to potential exacerbations of this group of patients. The PPAC programme in Alt Penedès includes chronic care patients with heart failure and/or COPD and two comorbidities.**

PPAC was launched to plan and carry out interventions to:

- Reduce hospital readmissions.
- Reduce unplanned and urgent care needs.
- Improve transactions in case of emergencies.
- Maintain functional status and quality of life of the patients.
- Improve patients' perception of quality of life.
- Improve professional management of these patients.

We have a chronic care team made up of physicians nurses, health and social care professionals.

They organise professional care using a flexible, integrated, proactive care model.

A change in the provision of services was needed, using a model of shared care to improve communication. In addition, there were other aspects implemented. These include:

- Sharing information through the use of shared clinical record.
- Involving patients and families in self care.
- Training professionals.
- Assessing the development of the programme through indicators to detect which aspects to improve.

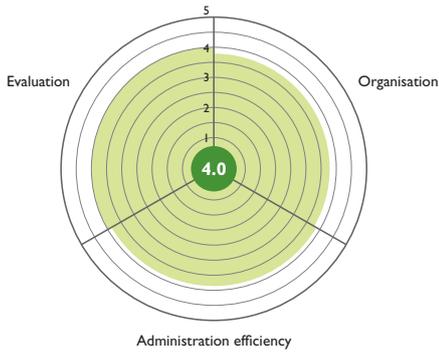
### Contact information

Pilar Piñeiro; pilar.pineiro@gencat.cat  
José Carlos Molina; jcmolina@csap.cat

### Sources and references

- Economic evaluation of a program of coordination between levels for complex chronic patients' management. *Annals de Medicina*. Volume 47, Issue 3, March 2015, Pages 134–140
- Guia per a la implementació territorial de projectes de millora en l'atenció a la complexitat

## Organisation

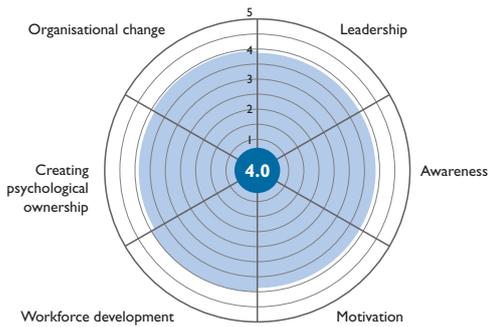


## Good Practise: The use of a specific contact person to coordinate care as part of a patient centred model of care.

Patients are more supported when they are assigned a contact person who guides them through the programme. This markedly improves their overall experience of care. A contact person is one key person whose remit in relation to care will differ dependent on the healthcare system. For example, a professional with advanced knowledge of complex conditions. Or a more general person to oversee milder chronic conditions.

The use of a specific contact person gave enhanced control of chronic diseases and helped to provide more coherent, integral and individual care. There was also the possibility of earlier intervention and, therefore, more proactive treatment.

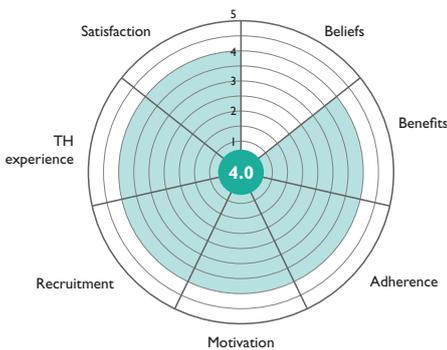
## Staff engagement



“The programme gives security to the professionals when making decisions. The patient feels more accompanied. Which improves his or her perception of quality of care and quality of life. For the organisation, it optimizes resources and improves efficiency, efficacy and care.”

Significant change was reported where healthcare services adopted a patient centred healthcare model, and a shared decision making approach. Coupled with the decision to invest in a programme. This is the case of the PPAC in Alt Penedes, resulting in outstanding experiences for patient adherence.

## Patient adherence



Organise care by professionals based on an integrated, proactive and flexible service model. This will enable appropriate response to the needs of this population. Improving the efficiency of the system in the context of clinical practice guidelines and care pathways.

Modify the provision of services with a shared care model among:

- Primary care.
- Case management.
- Specialised care teams and/or other services:
  - Territory-based Continued and Emergency Care Units-ACUT.
  - Home Healthcare and Support Team Programme-PADES.
  - Long Term care.

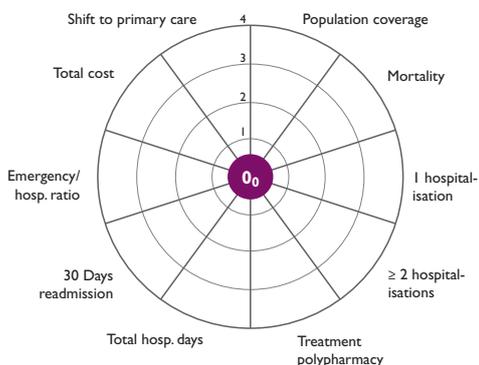
The programme included the following interventions:

- Ensure the service is a 24h (territory-based) continued and emergency care unit.
- Reach consensus on Primary Care Specialist-Healthcare health paths.
- Involve the patient and their family in their self cure.

This last intervention helps promote maximum independence, and prevents the progression of complexity and dependency.

The programme is for patients above 69 years with the following inclusions criteria: diagnosed with HF and/or COPD and having three morbidities (COPD, asthma, HF, ischemic cardiopathy, diabetes, AVC, dementia, hypertension, mental disorder or Parkinson).

## Outcomes

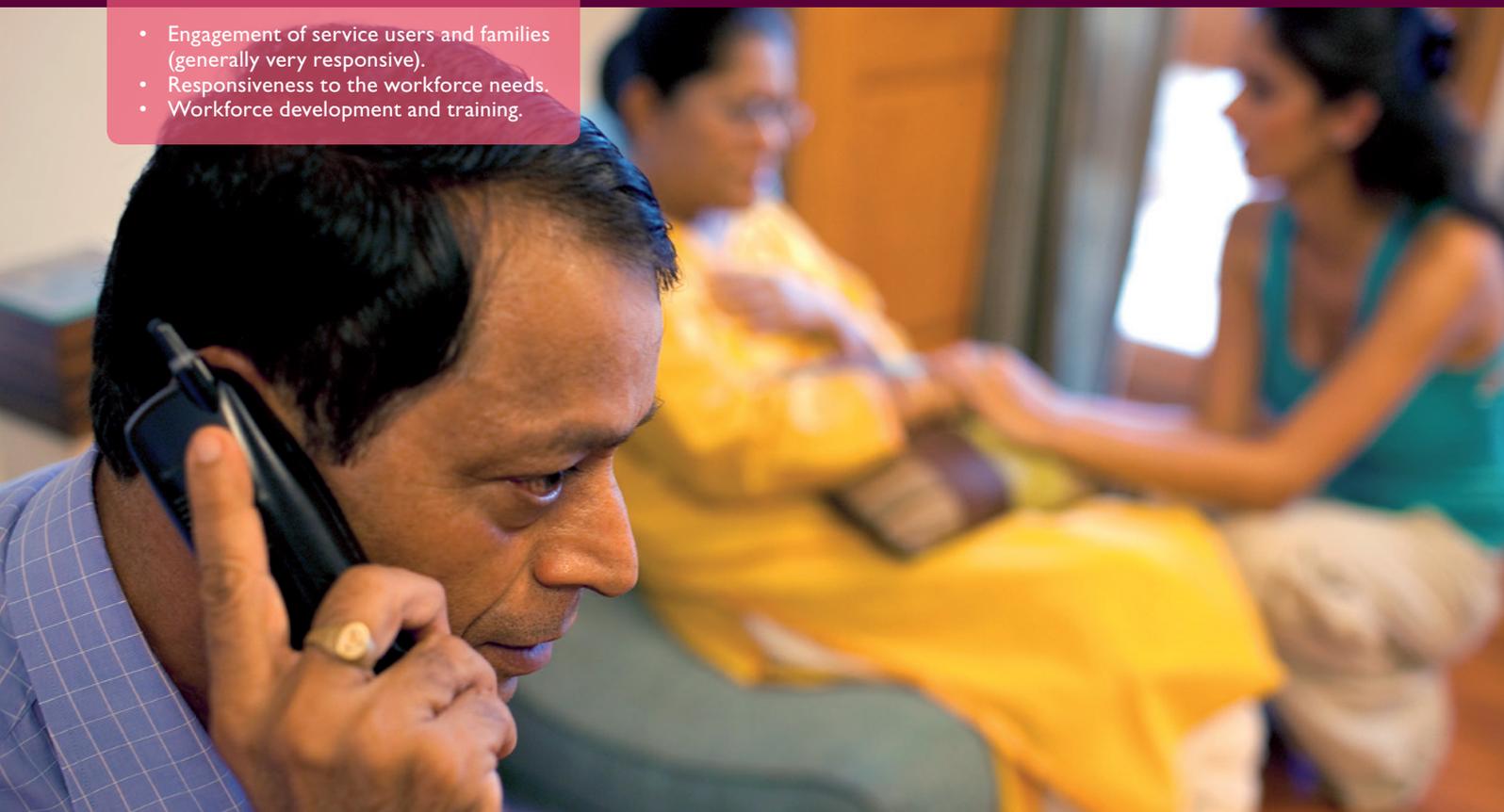


NA / 1438

13 / 19

## Key to success

- Engagement of service users and families (generally very responsive).
- Responsiveness to the workforce needs.
- Workforce development and training.



Rapid Elderly Assessment  
Care Team (REACT)  
Region: Scotland

## Hospital level care within a patient's own home

**An important hallmark of a caring and compassionate society is to enable people to live independent lives, with meaning and purpose, within their own community. It is a fundamental principle of social justice, and a core element of West Lothian's strategy to reshape healthcare and support services for older people. Especially for those with long term conditions.**

**The REACT programme reflects the ambitions of this strategy. It aims to manage demands by supporting people to remain at home. Avoiding the need for unplanned emergency admissions. It is an umbrella name for community services for the frail and elderly.**

The REACT service has been designed to support HEAT targets (agreed national performance targets) by:

- Reducing the rate of emergency in-patient bed days for people aged 75 and over per 1,000 population by at least 12% between 2009/10 and 2014/2015.
- Reducing admission and emergency attendances for those over 75
- Reducing delayed discharges

The REACT team provides hospital level support and therapy interventions within a patient's own home for a short period time as an alternative to being admitted to hospital.

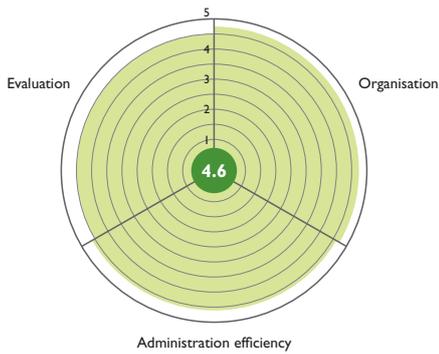
### Contact information

Lesley Broadley; Lesley.Broadley@westlothian.gov.uk  
Pamela Main; Pamela.main@westlothian.gcsx.gov.uk

### Sources and references

Maximising Recovery, Promoting Independence:  
An Intermediate Care Framework for Scotland, 2012.  
A National Telehealth & Telecare Delivery Plan for Scotland to 2015.

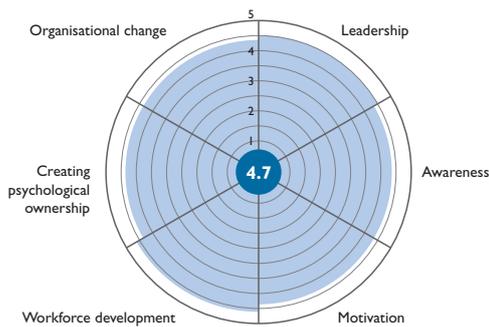
## Organisation



Following a GP referral, the REACT team provides hospital level support and therapy interventions within a patient's own home. The team consists of one consultant, one doctor, four nurses, four physiotherapists, four occupational therapists, and one speech and language therapist. The support normally lasts for a short period, and offers patients and families an alternative to being admitted to hospital.

required. A database is maintained to record qualitative data. This includes response times, the time spent by patients in the service, details of follow-up contacts, mortality figures, the length of hospital stays resulting from referrals, and the related number of bed days saved.

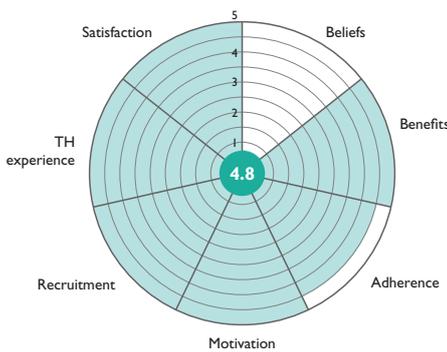
## Staff engagement



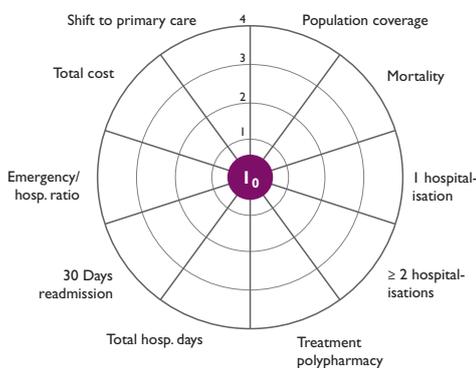
The REACT team provides the care and intervention required to support people to remain at home. To achieve this, it will carry out investigations, diagnose illness, and treat any medical conditions that can be managed at home. The team, in collaboration with the individual, will then decide the best intervention, and agree a treatment plan and/or therapy goals. The team also plays a key role in supporting patients returning home from hospital. They accept referrals from wards to speed up the discharge process where a higher level of therapy input is

REACT was formed in May 2013. It followed an extensive plan to create a team that was physically, and in spirit, motivated by the overall goals of the project. It is a multi-disciplinary team, where professional and personal strengths have been identified and promoted. The team meets regularly. Not only to discuss cases, but also to ensure that progress is aligned with team objectives. This also ensures close integration with existing service provision. As a pilot, progress is closely monitored to consider the impact and effectiveness of the service, and the wider implications of the concept.

## Patient adherence



## Outcomes

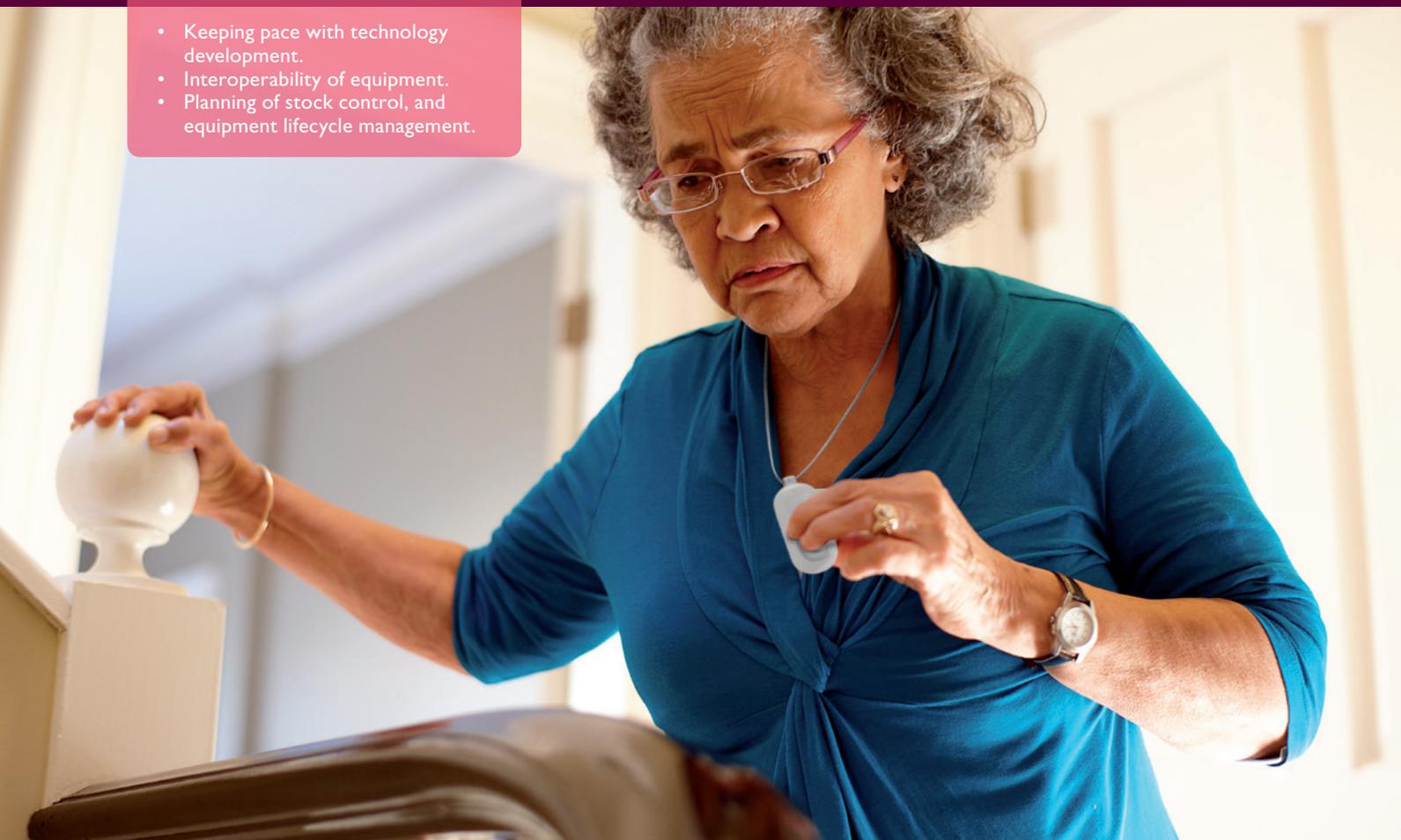


NA / 1089

2 / 16

## Key to success

- Keeping pace with technology development.
- Interoperability of equipment.
- Planning of stock control, and equipment lifecycle management.



Home safety service  
(HSS)  
Region: Scotland

## Provides technology to allow people to live in their own home

**Telecare is provided by the Home Safety Service of the West Lothian Council. Who use its technology to increase safety and security for disabled, elderly, and vulnerable people in over 4,000 homes.**

### **The Scottish Government uses Telecare to:**

“Support as many people as possible to live at home for as long as they want to, in comfort and safety, with the best possible health and quality of life.”

National Telehealth & Telecare Delivery Plan, 2015

- With the growing elderly population, comes the need to transform current services. As the demographic changes, traditional services are becoming unsustainable.
- The focus now is on more personalised outcomes, and the reduction of emergency hospital admissions.
- This has resonated with service users themselves. They have higher expectations. They are keen to support and help patients. Maximising their independence and wellbeing at home, or in a homely setting.

HSS provides technology to enable independence and social inclusion for service users and carers. The programme provides mostly Telecare equipment, which helps increase safety and security for disabled, elderly and vulnerable people in their own homes.

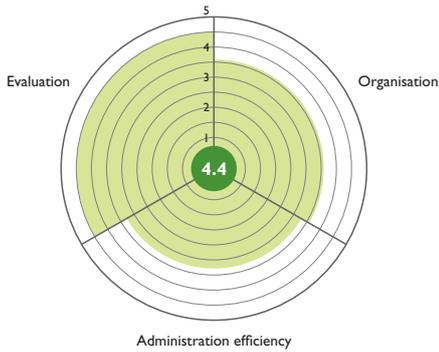
### **Contact information**

Lesley Broadley; Lesley.Broadley@westlothian.gov.uk  
Pamela Main; Pamela.main@westlothian.gcsx.gov.uk

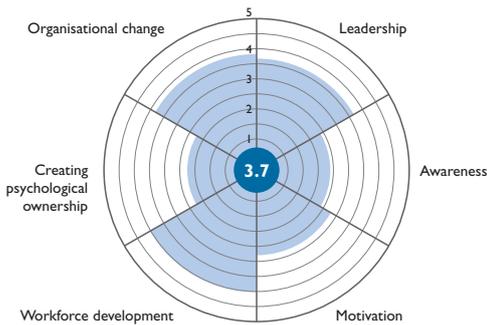
### **Sources and references**

Maximising Recovery, Promoting Independence:  
An Intermediate Care Framework for Scotland, 2012.  
A National Telehealth & Telecare Delivery Plan for Scotland to 2015.

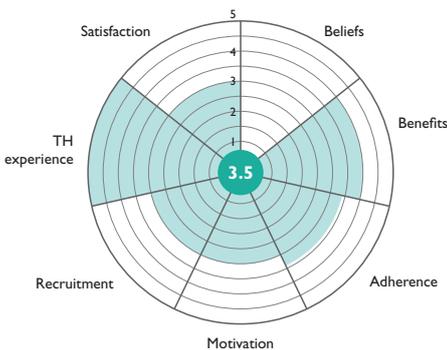
## Organisation



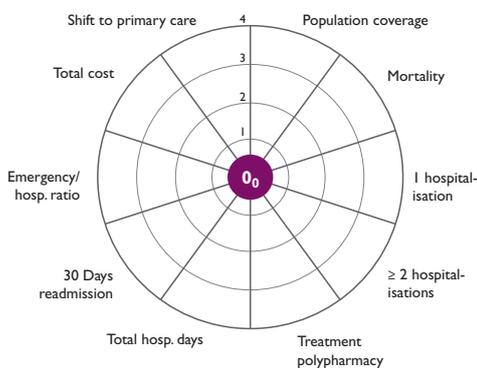
## Staff engagement



## Patient adherence



## Outcomes



NA / 4500

3 / 7

## Good Practice: Using technology for real-time interaction between patient and relevant healthcare services

Telehealth and Telecare can provide 24/7 care. Caution needs to be used to ensure the level of care at different times. Sufficient support helps participants to cope with their disease and helps them to maintain a positive attitude. Home equipment helps participants to feel secure and supported, once they are used to the technology devices.

“Being able to respond quickly to alerts and provide reassurance for users.”

There is evidence of programmes successfully monitoring patients remotely, and responding quickly to alerts. Which provides reassurance. Scotland’s HSS Programme successfully supports independent living of seniors at home.

The Home Safety Service provides a package of technology. These include a Lifeline unit, and a range of sensors protecting the person, and their home, by means of a 24-hour telephone link to West Lothian Careline. Sensors provided include a pendant, flood detectors, smoke detector, movement sensors and a temperature extremes sensor. All equipment is wireless, and linked to the lifeline unit. This is plugged into a telephone socket. Other equipment and settings can be provided based on individual’s assessed need. For example, medication reminders, bed or chair occupancy sensors, and door sensors.

Research has shown that having Home Safety Service technology installed can make a considerable difference to the length of time people can remain at home in their community. It helps manage assessed risks, and gives additional peace of mind for patients, relatives and carers.

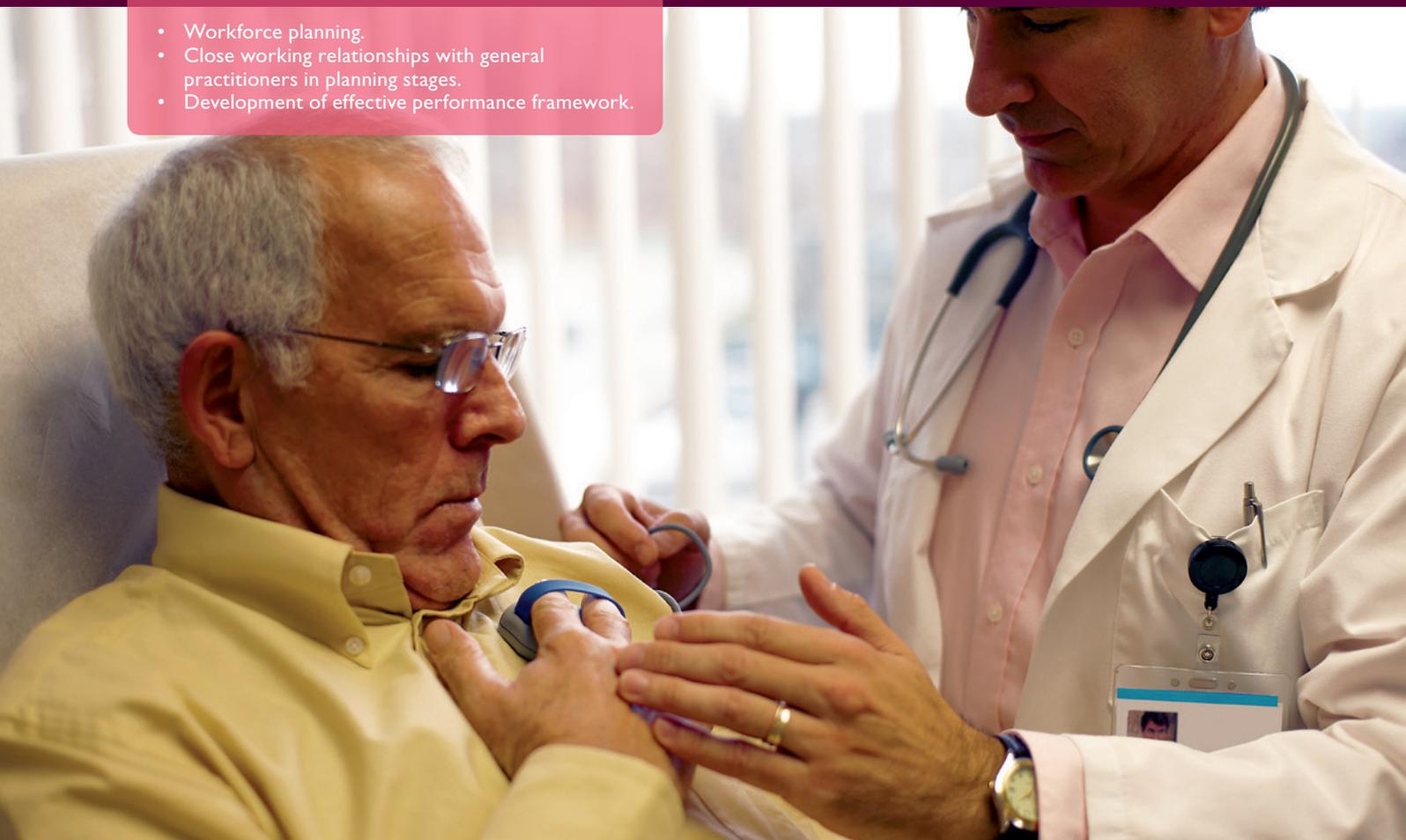
The Home Safety support staff are experienced in the use and programming of Telecare equipment. They provide an individualised assessment service and on-going support in the use of the technology.

Training is undertaken in accordance with the Social Policy Learning and Development Guidelines. Development needs are identified both at an individual level, through the performance review process, and at a team level in accordance with legislative and policy improvements.

There are currently over 4,000 households in West Lothian with Telecare equipment installed. In terms of future activities, the goal is to expand the use of technology by a minimum of 10% within integrate care approaches. This will effectively support people who want to remain at home. It will also avoid the need for unplanned emergency hospital and care home admissions. In addition, the ambition is to move towards a needs-led assessment, evaluating a user’s abilities, independent of services that already exist, and assess whether additional services are needed.

## Key to success

- Workforce planning.
- Close working relationships with general practitioners in planning stages.
- Development of effective performance framework.



Reablement and  
24/7 Crisis Care  
Region: Scotland

## Intensive and short term emergency support to enable independence at home

**Reablement is a core element in the delivery of the Scottish Executive's plans to improve the health and well-being of the population of Scotland. It will be instrumental in achieving some of the key national outcomes and targets that have been set for the NHS and local authorities.**

Reablement and 24/7 crisis care service address a need to:

- Prevent unnecessary acute hospital admission, or premature admission to long-term care.
- Support timely discharge from hospital.
- Promote faster recovery from illness.
- Support anticipatory care planning, and the self management of long-term conditions.

Reablement service provides intensive support to enable independence at home.

It is designed to help people learn or re-learn the skills necessary for daily living. Which may have been lost through deterioration in health, and/or increased support needs. 24/7 crisis care has been developed as an arm of reablement services. It is designed to provide short-term emergency support. Further avoiding hospital admission, by allowing people to deal with crisis in their own home.

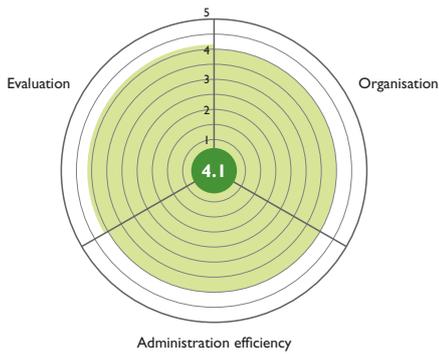
### Contact information

Lesley Broadley; [Lesley.Broadley@westlothian.gov.uk](mailto:Lesley.Broadley@westlothian.gov.uk)  
Pamela Main; [Pamela.main@westlothian.gcsx.gov.uk](mailto:Pamela.main@westlothian.gcsx.gov.uk)

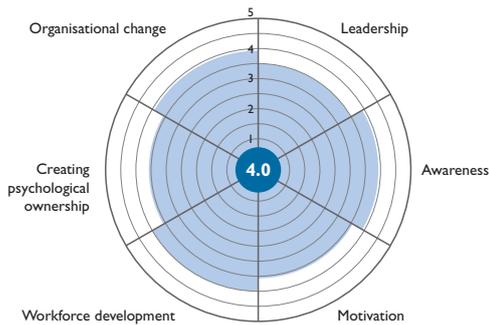
### Sources and references

Maximising Recovery, Promoting Independence:  
An Intermediate Care Framework for Scotland, 2012.  
A National Telehealth & Telecare Delivery Plan for Scotland to 2015.

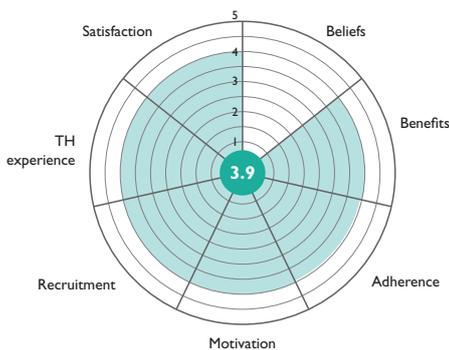
## Organisation



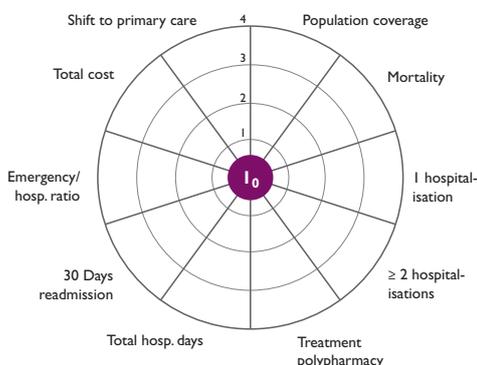
## Staff engagement



## Patient adherence



## Outcomes



NA / 2250

8 / 49

Reablement supports early discharge from hospital in the patient's own home wherever possible. It promotes self care and management, and the prevention of unnecessary acute hospital admission. Or premature admission to long-term care. The Reablement Service is available to adults who reside within West Lothian, who are assessed as being eligible for community care. It provides initial short term intensive support in order to allow the individual to build upon their skills and abilities. In doing so, they become as independent as possible. This may be, for example, helping them to become independent in meal preparation. Or using a particular piece of equipment or personal care. The focus of the support is determined by needs.

24/7 crisis care service is a new approach that involves working in partnership with community nursing services. This will provide a 24/7 service for people

who are experiencing a health or social care emergency. Helping them deal with the immediate crisis in their own home. 24/7 crisis care service is structured around community GP localities. It aims to provide treatment, and arrange short-term services (up to 5 days) to support people at home. To support this service, the Social Policy Learning & Development department initiated the development of a two-day bespoke training programme. Which included the introduction of mentors to transfer the learning into practice. The training model recognised that reablement is an approach, and not simply a service. The goal was to develop a skilled workforce with an individual approach to customers' needs. Providing a person-centred outcome, the workforce delivers a focused approach to care. To achieve maximum impact from the development would require culture and system changes at every level.

Reablement is the name given to an approach we use in how we assess and support people. The intention being to provide initial short term intensive support in order to allow the individual to build upon their skills and abilities. In doing so, they become as independent as possible.

## Key to success

- Patient centred, proactive and preventive care and support of an elderly care team for all older adults living in the community. This covers health problems related to the consequences of ageing (including body functions, activities, participation and environmental factors).
- Annual screening and triage into risk profiles, and connecting a suitable care intensity level to these risk profiles.
- Embrace was initiated, developed, implemented and evaluated by a variety of dedicated organisations: care providers, financiers of care and support, and research institutes.

Embrace, an integrated elderly care model  
Region:  
Northern Netherlands

There is already talk of efficient care: more quality for the same cost. This is an important result.

**Originally designed to solve single, acute, and mainly short-term diseases, today's health care systems face difficulties in solving these challenges. Associated, ongoing specialisation and technological improvements have led to fragmentation of care delivery. The result is a substantial increase in health care expenditures. Structural and financial barriers have further increased the segmentation of organisations that provide primary and secondary care, health care, and social care.**

Despite the wide array of health services, frail elderly do not always receive appropriate and coherent care. This often leads to adverse drug events, difficulties with participation in treatment, and even treatment errors. Consequently, health care systems need to be transformed. Integrated care models promise to provide a solution to control these health care challenges, to enable elderly to live at home as long as possible in good health.

Embrace connects the health system with the community services, and reflects the four key elements of the Chronic Care Model (CCM):

- Self-management support.
- Delivery system design.
- Decision support.
- Clinical information systems.

Within the context of the community and health care systems, these four components are combined with the Kaiser Permanente (KP) triangle. This population health management model classifies older adults living in the community.

The delivery system design includes Elderly Care Teams (ECTs). These multidisciplinary teams are led by the GP, and include an elderly care physician, a district nurse, and a social worker.

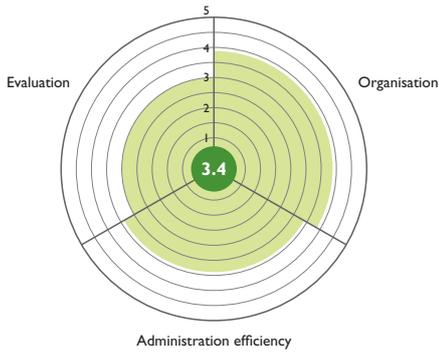
## Contact information

Dr. Klaske Wynia; Assistant professor for Integrated Care and Programme leader for Embrace. Email: [k.wynia01@umcg.nl](mailto:k.wynia01@umcg.nl)

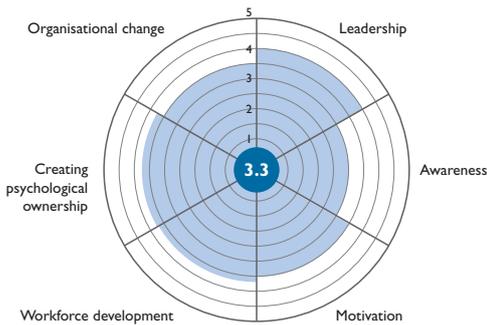
## Sources and references

<http://www.samenuid.nl/>

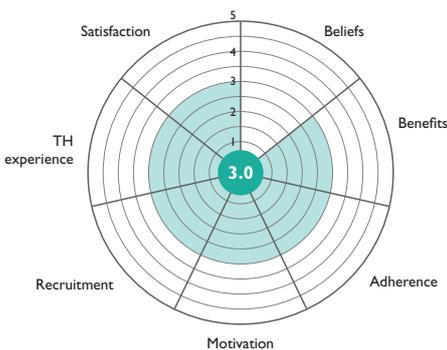
## Organisation



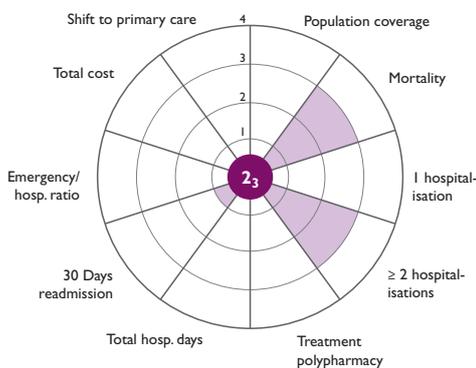
## Staff engagement



## Patient adherence



## Outcomes



1136 / 1143

8 / 50



## Good Practice: Empower staff to shape development through the project lifespan

Engaging with clinical staff early in the developmental process is important. ACT also identifies that this engagement should continue throughout the project lifespan. Most crucially, it is a process that allows staff to influence the ongoing development of programmes.

Programmes within ACT that demonstrate good practice in staff engagement have mechanisms in place to ensure 360° communication and involvement. Staff are not simply told what to do or why they are doing it. They are encouraged to make comments and suggestions that can be incorporated into the ongoing development of programmes.

“A ‘learning community’ with regular meetings to exchange ideas and knowledge between professionals and project leaders is a ‘professionals-centred’ method for improving integrated care.”

The Embrace programme is one that demonstrates an ongoing approach to encouraging and acting upon frontline staff feedback. Not only are there regular meetings between project leads and frontline practitioners, but these are carried out in the spirit of partnership: a learning community

Frontline staff are encouraged to give their views on the progress of programme and, where possible, this feedback is incorporated into future developments. Demonstrating some of the challenges of project management, it is not always possible for all staff suggestions to be taken forward.

Embrace reflects four key Chronic Care Model elements: Self-management support focuses on the elderly person’s central role in health management. This includes shared decision making, motivational interviewing, goal attainment, and action planning. Community meetings for participating elderly individuals are organised around the need for prevention. Emphasis is around enforcing a healthy lifestyle, as well as maintaining self-management abilities.

The district nurse or social worker, in the role of case manager, will navigate the elderly person through this complex processes. Organising appropriate care and support in the most efficient, effective, and acceptable way.

The GP and elderly care physician will manage the medical care for elderly people with multimorbidity. Monthly ECT meetings are scheduled, in which

health problems and treatment options of elderly people and caregivers will be discussed and evaluated. Particular attention will be paid to the elderly person’s multimorbidity, polypharmacy, self-management ability, prevention, lifestyle, and future expectations. Decision support will be addressed through multiple decision support tools. A triage instrument is used for stratification. The second decision-support instrument is a structured history questionnaire.

The clinical information systems will be represented by the Electronic Elderly Record System (EERS). This is a web based application built for both clinical and research purposes. The EERS includes personal health records that contain individual triage data, the history questionnaire, an individual care and support plan with information about goal setting, actions performed, and evaluations.



www.act-programme.eu



## Key to success

- Structuring the collection of the data through a web-based Electronic Diagnostic Support (EDS) system helps communication between primary and secondary healthcare workers.
- Cooperation from the very start of the project results in clear collaboration between GPs and pulmonologists. Preventing suspicion and opposition.
- The GP has the lead role and is the initial point of contact. The pulmonologist is more of an advisor.

**Asthma/COPD**  
Telehealth service  
Region:  
Northern Netherlands

## A telehealth integrated asthma/COPD service for primary care

**Asthma and Chronic Obstructive Pulmonary Disease (COPD) are examples of prevalent chronic diseases in primary care. Worldwide, approximately 300 million people have asthma and 65 million people suffer from moderate to severe COPD. In the Netherlands, 60% to 80% of all asthma and COPD patients are treated by their GP. Patients are only referred to the pulmonologists in case of uncontrolled asthma or severe COPD.**

Diagnosing and distinguishing asthma from COPD and other pulmonary problems is difficult. Asthma and COPD overlap in symptoms, while the treatments of asthma and COPD are different. To make things more challenging, some patients have an asthma-COPD overlap syndrome (ACOS). Which can be described as a (partly) reversible, but progressive deterioration in lung function. Often combined with a history of smoking, and previous diagnosis of asthma and or allergies.

In general, ACOS patients are younger than COPD patients. They have more exacerbations and hospitalisations compared to COPD or asthma patients. A careful study of a patient's history is the cornerstone in the diagnostic

process. Spirometry is an important instrument to confirm or reject the working diagnosis. Performing spirometry in primary care and interpreting the results is complicated.

We developed the Asthma/COPD (AC) telehealth management support service for asthma and COPD patients in primary care. It helps GPs examine patients and provides detailed advice from pulmonologists to the GPs. AC is accurate, comprehensive and short enough to be used by the GP in daily clinical practice. The service is easily accessible for GPs and patients in rural areas. Each patient with suspected asthma, COPD, ACOS or pulmonary symptoms of unknown origin is eligible for inclusion.

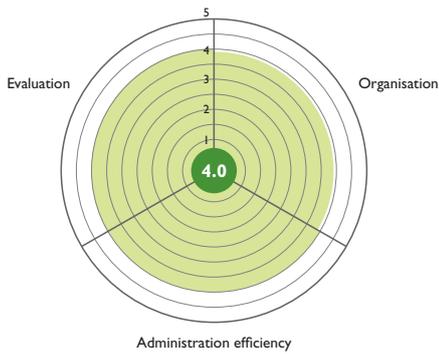
### Contact information

Prof.dr. Thys van der molen;  
t.van.der.molen@umcg.nl

### Sources and references

Metting EI, Riemersma RA, Kocks JH, Piersma-Wichers MG, Sanderman R, van der Molen T. Feasibility and effectiveness of an Asthma/COPD service for primary care: a cross-sectional baseline description and longitudinal results. NPJ Prim Care Respir Med. 2015 Jan 8;25:14101.

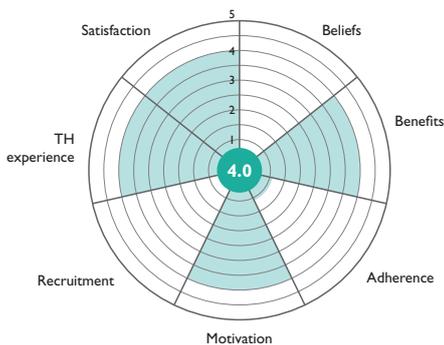
## Organisation



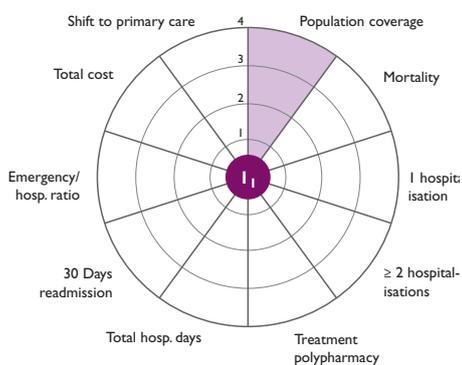
## Staff engagement



## Patient adherence



## Outcomes



## Good Practice: Better diagnosis and treatment by improving communication between primary and secondary care.

For chronic patients, integrated care should result in improvements in the quality of the care process, especially with regard to effectiveness, patient-centred attitude, continuity, accessibility, integration and efficiency.

Automation is necessary to prevent miscommunication between healthcare providers, and to realise a structured data assessment making each decision and the results of that decision transparent for follow up.

“Early involvement of both primary and secondary healthcare professionals in the process is key for obtaining successful care coordination”

The main challenge of the asthma/COPD telehealth service is to overcome preconceived opinions of general practitioners and pulmonologists. In fact, they have to work together for optimal patient management. General practitioners fear losing patients when they refer them to the hospital. Pulmonologists, on the other hand, hesitate to refer patients back to primary care physicians, claiming they provide insufficient care. An open discussion with both parties at the very start of the project resulted in clear agreements about the collaboration between general practitioners and pulmonologists. This prevented suspicion and opposition. This solid base is necessary for developing a successful integrated care protocol.

Four starting principles are defined:

- Integrated care should optimize the diagnosis, treatment and management of patients with asthma and/or COPD
- The general practitioner(GP) is the leading organiser.
- Integrated care should be easy accessible for both patients and healthcare providers in both primary and secondary care.
- The allocation of tasks and cooperation between primary and secondary care has to be clearly defined.

Patients enter the integrated care service after being invited by their GP. Usually because of previous use of inhaled medication, or because the patient presents pulmonary symptoms.

To optimize the diagnostic process, the quality of the lung function tests has to be high. The retrieval of other data, like medical history and health status measurements, should be concise.

Performed in a uniform and transparent way. For quality reasons, these tasks are given to specially trained lung function assistants from a primary care diagnostic service. The medical history data is then fed into the Electronic Data System (EDS), together with the result of the lung function test. Flowcharts based on international guidelines are created for the EDS system. Lung function data is combined with the CCQ and ACQ scores to generate automated therapeutic advice.

This computerised advice, in combination with the outcomes of the patient history, forms the basis of the final diagnosis and treatment. Advice is then given by the pulmonologist to the GP. In case a change in therapy is advised, patients are automatically scheduled for a follow-up visit to the primary care asthma/COPD diagnostic service after three months. In all other cases, patients have an annual follow-up. Guaranteeing the continuity of care.

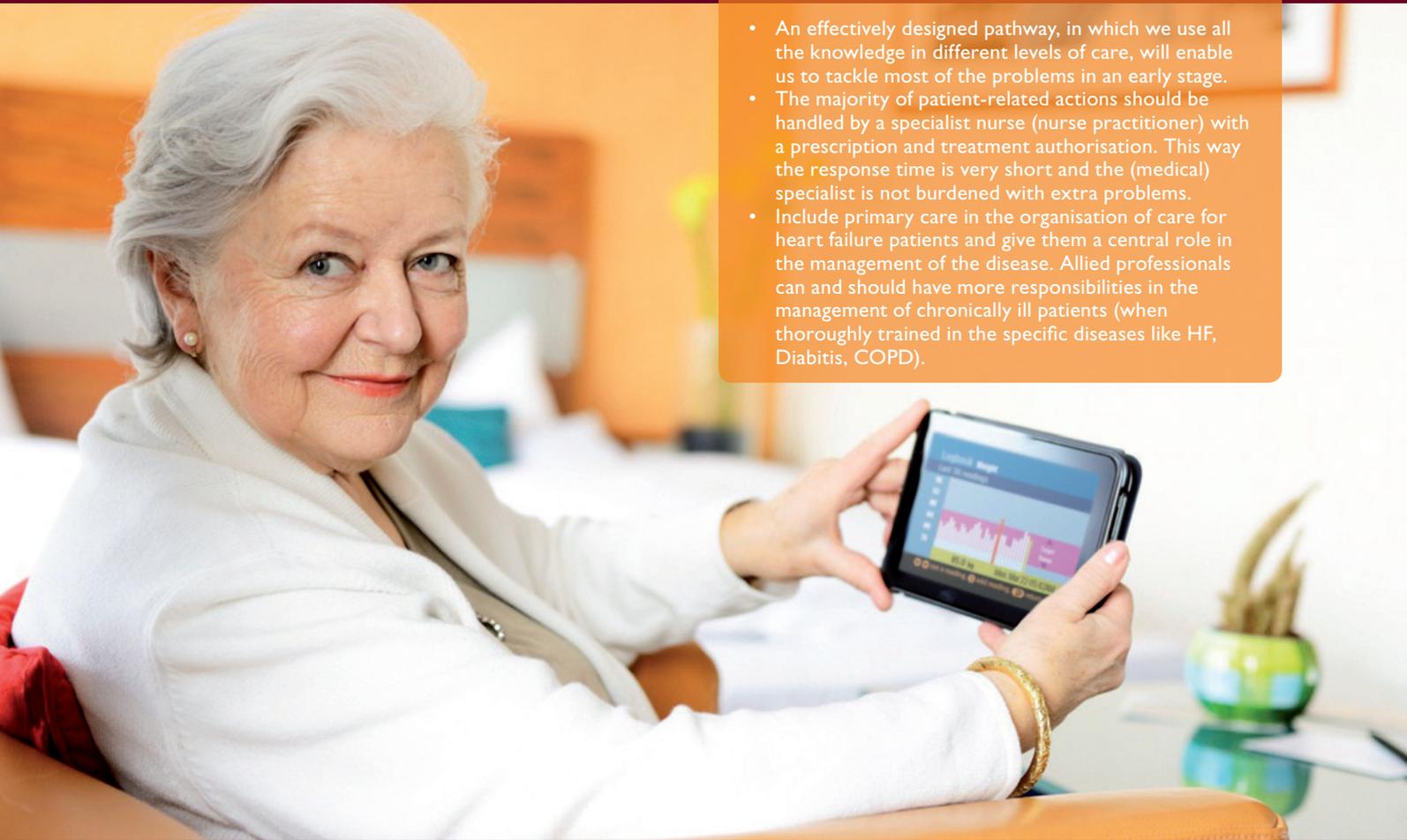
76 / 11473

8 / 350



## Key to success

- An effectively designed pathway, in which we use all the knowledge in different levels of care, will enable us to tackle most of the problems in an early stage.
- The majority of patient-related actions should be handled by a specialist nurse (nurse practitioner) with a prescription and treatment authorisation. This way the response time is very short and the (medical) specialist is not burdened with extra problems.
- Include primary care in the organisation of care for heart failure patients and give them a central role in the management of the disease. Allied professionals can and should have more responsibilities in the management of chronically ill patients (when thoroughly trained in the specific diseases like HF, Diabetes, COPD).



Effective Cardio  
Region:  
Northern Netherlands

## Optimising the care pathway of heart failure with telemonitoring

**The continuing ageing of the population is expected to increase the prevalence of heart failure in the Netherlands from 120,000 (~ 1 % of the population) in 2008 to approximately 200,000 in the coming decade.**

**Guidelines of the European Society of Cardiology (ESC) recommend a multidisciplinary approach that coordinates care along the continuum of CHF—often implemented as in person follow-up visits. Recently, alternative approaches such as telehealth and remote monitoring via cardiac implanted electronic devices have been proposed. These assess physiological parameters related to CHF exacerbation more frequently. Therefore, enabling remote disease management.**

The optimal approach to non-invasive remote monitoring is uncertain. An ESC guideline recommendation is not yet supported because the randomised controlled trials (RCTs) performed to date have given inconsistent results. Even though most available data suggest that telehealth is a promising strategy for improving disease management of CHF patients, more data are needed to determine the most advantageous approaches.

To assess the impact of telehealth-based disease management on unplanned admissions, disease severity and quality of life in CHF patients, cardiologists and nurse practitioners need to collaborate within the hospital outpatient heart failure unit. Furthermore, primary care, local home care agencies and nursing homes play a key role in the care protocol of CHF patients.

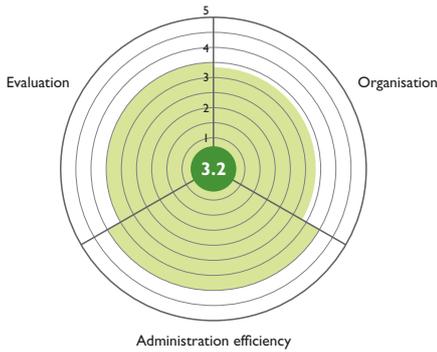
### Contact information

Wietse Veenstra, specialist nurse;  
w.veenstra@sze.nl

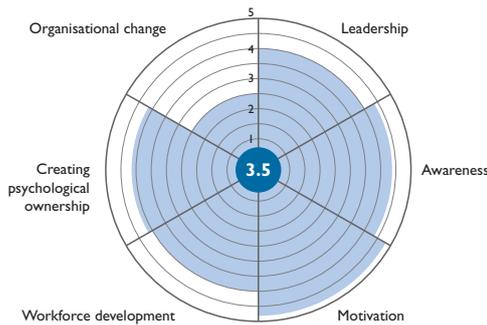
### Sources and references

Veenstra W, Op den Buijs J, Pauws S, Westerterp M, Nagelsmit M. Clinical effects of an optimized care programme with telehealth in heart failure patients in a community hospital in the Netherlands. *Neth Heart J*. 2015 Jun;23(6):334-40.

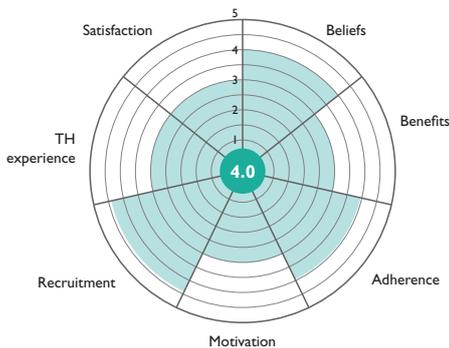
## Organisation



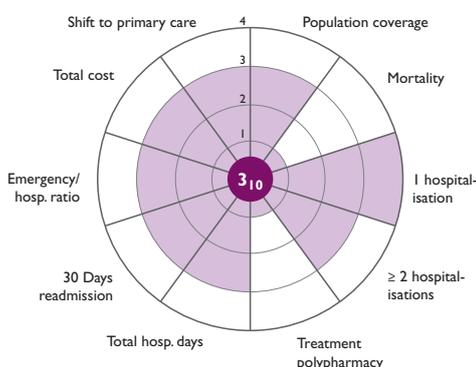
## Staff engagement



## Patient adherence



## Outcomes



72 / 115

3 / 3



## Good Practice: Integration of telemonitoring services as part of the care pathway optimisation for chronic patients.

For patients with chronic conditions it is important that treatment begins quickly. This makes it possible to keep the likelihood of exacerbations and serious events as low as possible. In order to improve quality of life for patients, the aim is to slow down the progression of the disease, to maximise the chances of survival, and alleviate symptoms.

“Technology should support self-care and management of patients in order to respond quickly to exacerbations, by treating and managing patients in the home setting as much as possible’

Effective Cardio demonstrates optimisation of the care pathway for heart failure patients. To integrate technology into the optimised care pathway, and not as an add-on component, a set of four steps are recommended.

Patients participating in the programme include:

- CHF NHYA class II-IV patients in stable condition discharged after an admission with the primary diagnosis of heart failure or outpatients after an episode of new or worsening heart failure – judged by the attending cardiologist to have clinical symptoms and NT-proBNP levels elevated above normal limits.

Staff had prescription and treatment authorisation. Which prevented delay in response-treatment times and putting burden on the workload of the cardiologist. The telemonitoring system was used to obtain and check patient vital sign measurements (blood pressure, pulse, weight) on a daily basis. All members of the cardiology department had access to the telemonitoring system. This allowed them to check vital sign measurements at every moment. Enabling them to react accordingly.

From the learnings in previous experiences with telehealth, Effective Cardio builds on the optimisation of a coordinated care pathway in four steps:

- Formulate clear goals, create a sense of urgency, ensure commitment and leadership, deploy persons from the own organisation.

- Design the processes in the care pathway: organise referral from primary to secondary care, organise the diagnostic process, set up a treatment plan inclusive of telemonitoring, organise information regarding titrating up, make a plan for follow-up.
- Determine the conditions for implementation: optimize IT support, contemplate using a Medical Service Center.
- Secure the newly designed measure outcomes: develop reports on the process and outcomes, benchmark process and outcome data.

All patients were followed up for a period of one year with additional visits as required in case of deterioration. Follow-up visits at the outpatient unit took place 3, 6 and 12 months (study end) after enrolment. The nurse practitioners and cardiologists participating in the study were the same as those involved in the patients’ everyday care before the study. During the study period, all patients continued to receive the standard care provided to patients at the CHF outpatient unit. Patients received primary care from their own general practitioner. The study shows very promising results in clinical outcomes and cost efficiency.



www.act-programme.eu

## Key to success

- Programme prioritised by Department of Health and linked to the funding of the health care provider.
- Training in the methodology of Spanish Diabetes Self-Management Programme (SDSMP) to diabetic patients and health professionals.
- A programme manager devoted to the programme and in charge of the deployment and implementation of the programme, the engagement of professionals and the evaluation of the programme.



Active Patient  
Programme  
Region: Basque Country

## Active patient programme for diabetic patients

**Chronic diseases are the dominant epidemiological pattern in the Basque Country. The incidence of type 2 diabetes mellitus has increased in our region in recent years. The prediction is that prevalence of DM2 may reach up to 12% in the population over 30 years of age. Mortality and morbidity in DM2 patients are known to be higher than those in the general population. The mortality rate ranges from 13 to 30 deaths per 100,000 people. It is estimated that diabetes accounts for as much as 6.3 to 7.4% of health expenditure in our health system.**

The main priority around the world is to improve the prognosis of patients with DM, and reduce its high morbidity. It requires an integrated action on risk factors.

Health systems need to provide more efficient and coordinated care to patients with chronic conditions. This will help decrease rates of deterioration, and improve the quality of life for patients and their families. To achieve this, a new strategy for chronic patient care

has been launched. Featuring new organisational models, one important element is self-care promotion and population education.

The active patient programme provides information and trains patients skills in self care and disease management. Educational sessions help patients better understand their disease, and take responsibility for their health.

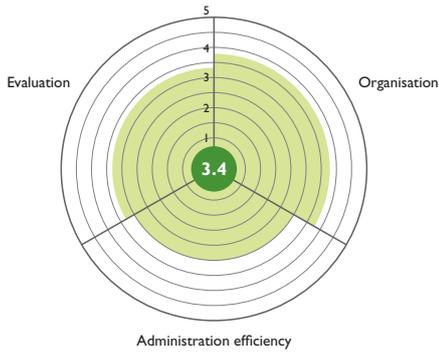
### Contact information

Estibaliz Gamboa;  
estibaliz.gamboamorenno@osakidetza.eus

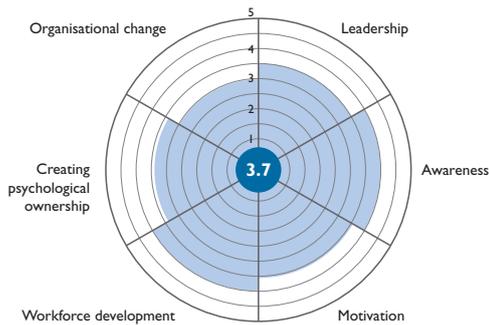
### Sources and references:

Moreno EG, Perez AS, Vrotsou K, Ortiz JCA, del Campo E, de Retana LO, et al. Impact of a self-care education programme on patients with type 2 diabetes in primary care in the Basque Country. BMC Public Health. 2013; 13(1):521.  
Compartiendo el Avance de la Estrategia de Cronicidad. Administración de la Comunidad Autónoma del País Vasco, Departamento de Sanidad y Consumo. 2012.

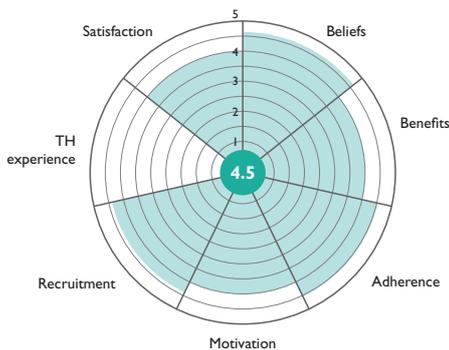
## Organisation



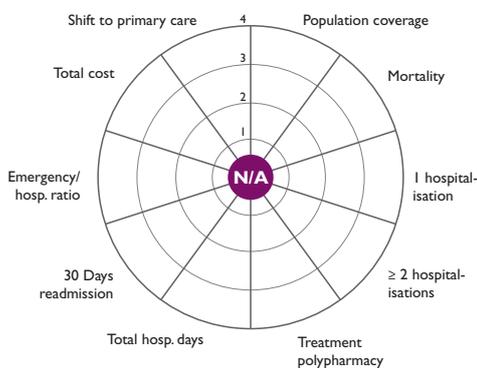
## Staff engagement



## Patient adherence



## Outcomes



## Good Practice: Overlap the aims of staff engagement with patient adherence

Best practice for staff engagement within ACT is identified as ongoing, holistic and inclusive workforce development. The fact that the Active Patient workforce development programme is also offered to patients is unique. Staff and patients undergo the same education. As a result, they are able to share experiences and ideas. This overlap between the two aims is now considered as good practice.

The sessions are taught by patients and caregivers who have experienced the same difficulties. Participants acquire knowledge and skills related to the disease and its management. Strong emphasis is placed on proactive tools. These help achieve healthier lifestyles, and better control of their symptoms.

“I took a course to prepare myself...not only from a nurse’s point of view, but also as a person who can improve their lifestyle habits. It was aimed at nurses and chronic patients.”

The Basque Active Patient programme stands out as an appropriate model of good practice in workforce development. The activities described by staff suggest that delivery is ongoing. With an initial training course supplemented by follow-up events. The content of the sessions appear broad and holistic. They encompass the aims of the programme, and consider the impact it may have on healthy lives for patients.

The Active Patient programme for diabetic patients is based on the Stanford methodology, which provides workshops in self management of diabetes. The programme is led by care professionals (GP and primary care nurse) and patients who suffer from the same disease.

The educational training consisted of six sessions once a week for six weeks (each session lasts 2.5 hours and involves 8 to 15 people). Each group is supervised by two leaders previously trained and certified in the Spanish Diabetes Self Management Programme (SDSMP). At least one of the leaders is required to be a diabetic patient or a caregiver. The other leader should be a healthcare professional. Healthcare professionals introduce themselves to participants in the sessions as SDSMP leaders. They do not refer to their professional position. This promotes peer-learning, which is recommended in the implementation manual of the SDSMP. Patients do not complete the intervention until they attend at least four sessions.

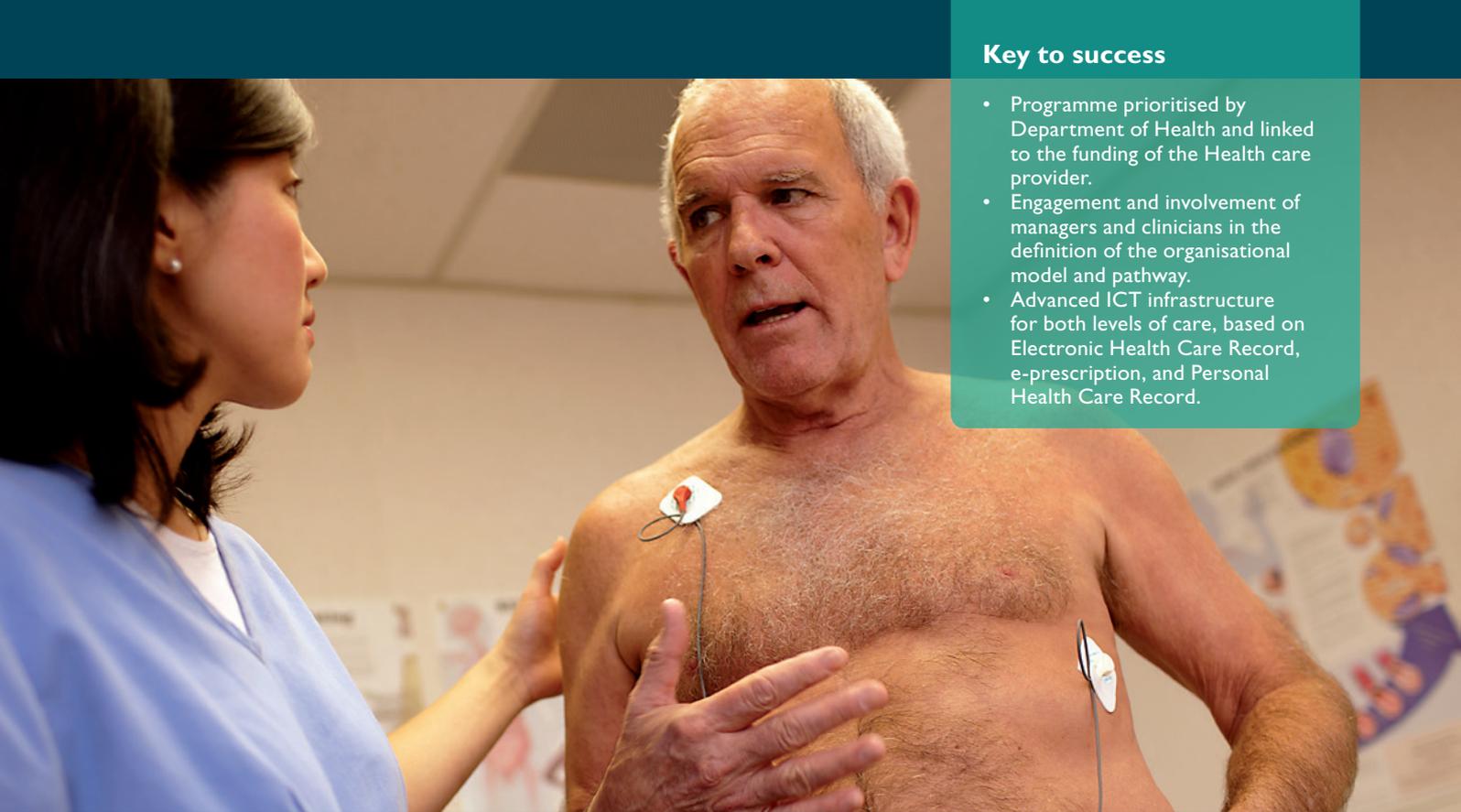
The objective of each session is to enable participants to acquire knowledge and skills related to the disease and its management. Emphasis is placed on tools for enhancing proactive self care to achieve healthier lifestyle behaviours. These include improvements in diet, physical activity patterns, emotional management, and medication adherence.

In the sessions, patients are trained to set their own targets and solve problems related to their condition. Sharing their feelings helps them communicate more effectively with their relatives and healthcare professionals. This helps them play a more active role in the management of their disease. The main goal is to promote changes towards healthier lifestyles. All the sessions were supported by educational material that is developed specifically for the programme: books, leaflets, and CDs.

234 / 1800

58 / 122





## Key to success

- Programme prioritised by Department of Health and linked to the funding of the Health care provider.
- Engagement and involvement of managers and clinicians in the definition of the organisational model and pathway.
- Advanced ICT infrastructure for both levels of care, based on Electronic Health Care Record, e-prescription, and Personal Health Care Record.

Population Intervention  
Plan for Multimorbidity  
(PIP MM)  
Region: Basque Country

## Integrated care pathway and organisational model for patients with multimorbidity

**Compared to patients with only one chronic disease, frail and elderly patients with multimorbidity are responsible for around 49% of the total health costs. They have complex health and social care needs, are at risk from multiple admissions to hospitals or residential care homes, and require a range of high level interventions due to their frailty and multiple chronic conditions.**

**These patients typically demand an integrated care approach. All care practitioners working in the different levels of care are tightly coordinated, and special emphasis is put on each patient's empowerment.**

Improving the delivery of care for complex patients is a priority around the world and requires overcoming several challenges. As a consequence, there is a primary need to:

- Move the primary attention away from the disease to patient-centred care.
- Ensure the continuum of care within Health system and social care system.
- Provide the delivery of care in the most cost-effective setting, while trying to keep the patient at home.
- Identify patients at risk to anticipate care. Avoid worsening symptoms and acute decompensation. Introduce monitoring and patient follow up at home.
- Empower patients and carers in managing their own health condition.
- Personalise care according the patient's condition, health status, social, and healthcare needs.

The aim of the programme is to improve the health and social outcomes. The solution is to use a population approach, and define common and shared pathways between different levels of care and common objectives. The resulting population intervention programme for multimorbid patients is developed by a collaborative, multidisciplinary team of clinicians and managers.

Their work has various outcomes:

- A new organisational model, which includes new roles and new functions.
- A new common pathway.
- Proactive patient identification using risk stratification tools.
- Improved ICT infrastructure, which supports sharing information and patient monitoring.
- A common set of shared objectives and indicators linked to health outcomes and process improvement.

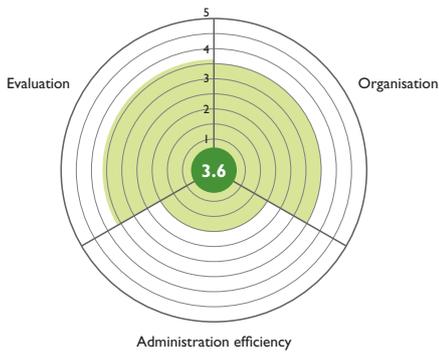
### Contact information

Cristina Domingo Rico;  
cristina.domingorico@osakidetza.eus

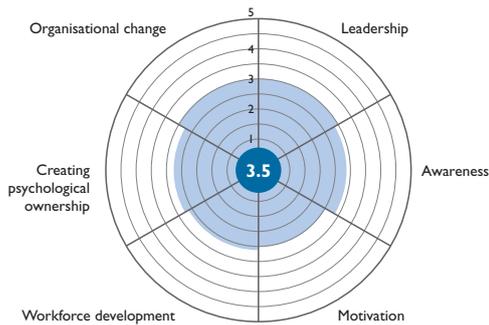
### Sources and references:

- Department of Health and Consumer Affairs of the Basque Government and Osakidetza. A strategy to tackle the challenge of chronicity in the Basque Country. 2010.
- Mora J, de Manuel E, Arratibel P, Paz K, Ureta A. Planning of the local innovation process for the development of Population Intervention Plans in an integrated health system. 2013. 13th international Conference on Integrated Care.
- Internal source: Osakidetza 2011.

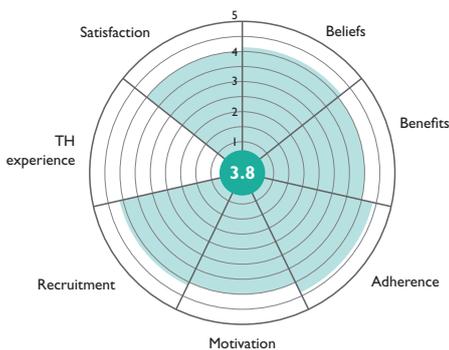
## Organisation



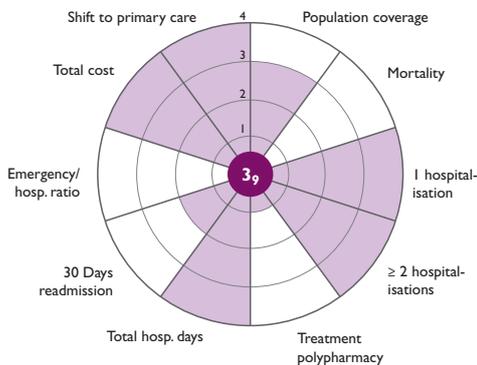
## Staff engagement



## Patient adherence



## Outcomes



46 / 1410

7 / 55



## Good Practice: Patients are stratified to allow for more personalised and efficient care.

Patients are stratified according to resource consumption in the previous 12 months. This allows for better care, personalised treatment, and targeted follow-up. High complex patients spend 49 times more resources than patients with only one chronic condition. The adequate identification of this population is essential for the quality of care of frail patients. Giving the capacity to treat them in a more effective manner, and to avoid unnecessary hospitalisations. It also helps to provide a more sustainable system.

This proactive approach improves relationships among health and care professionals. It also anticipates serious events, and ensures the provision of care at an early stage.

“Risk stratification tools are becoming a key factor in the redefinition of the work among team members.”

In the Basque health care system, 33% of patients with chronic conditions consume nearly 70% of the financial resources available. Those with several chronic conditions number 43,000 and are considered complex patients. The Basque Population Intervention Plan for multimorbidity is a service designed for patients with high risk of health events. Proactive identification of patients at future high risk has been achieved through risk stratification tool. Resource allocation for patient needs has been adequately assigned. Expenditures for this patient group has been managed appropriately in a coordinated plan. The overall goal has been to make the health care system more proactive than reactive, and more collaborative than fragmented.

The programme involves several healthcare professionals from different levels of care and settings. Described below are the varieties of activities performed by the agents, which depend the needs of each patient.

Primary care professionals (GP and primary care nurse) are principally responsible for each patient’s case management, therapeutic / care plan definition, drug prescription, patient training, home visits and follow-up. The communication between healthcare professionals and patient is mainly via traditional channels (face-to-face, phone). Health care professionals can also exchange patient-related documentation over the phone, via a Personal Health Care Record, or by meeting face-to-face on a periodic basis.

Healthcare professionals share patient information through Electronic Health Care Record. Online consultations between healthcare professionals is also available in order to avoid referrals.

The Telecare Centre is in charge of coordinating health and social care professionals. Operators can activate services entrusted to the eHealth Centre. Nurses at the centre are responsible of giving support out of hours following validated protocols. They also give health advice to patients.

Once the patient shows worsening symptoms, additional healthcare actors take part in the caring process. The GP may refer the patient to a specialist if necessary. The deputy health service can be activated on a patient’s request. Clinical interventions can be performed at home by GPs, primary care nurses, and out-of-hour healthcare professionals.

The reference internist and hospital liaison nurse are the main roles highlighted in hospital care. The reference internist is responsible for carrying out tests and diagnostics, defining the therapeutic plan, following up the pharmacological plan, coordinating specialists, informing GP on patient’s health status, referring the patient to the long-term hospital (if required), and activating hospital social care team when the patient is hospitalised. The hospital liaison nurse, supervises the patient’s hospital discharge. Usually by sharing information with the primary care nurse, and providing patients with information on therapeutic plans and health education.

On hospital discharge, the GP and the primary care nurse perform an intensive follow-up. This includes home-visits. The primary care nurse carries out the patient’s integrated frailty assessment. Depending on the outcomes, the community social services can be activated.

- Programme prioritised by Department of Health, and linked to the funding of the Health care provider.
- Engagement and involvement of managers and clinicians in the definition of the organisational model and pathway.
- High and common advanced ICT infrastructure for both levels of care, based on Electronic Health Care Record, e-prescription, Personal Health Care Record.
- Structured training sessions to empower patients in the management of their own condition.

**Population Intervention  
Plan for Diabetes (PIP DM)**  
Region: Basque Country

## Integrated care pathway and organisational model for patients with diabetes

**In the Basque Country, as in high-income countries, chronic diseases are the dominant epidemiological pattern. The incidence of type 2 diabetes mellitus has increased in our region in recent years. Indeed, it is predicted that prevalence of DM2 may reach up to 12% in the population over 30 year of age.**

**The direct costs of diabetic patients almost double not spending diabetic patient and between 6.3% and 7.4 % of health spending can be attributed to Diabetes.**

**It is estimated that the average number of annual visits of each diabetic patient to the general practitioner (GP) is nine, and that between one third and half of the visits to endocrinologist are related to diabetes.**

Improving the prognosis of patients with DM and reducing its high morbidity is a priority around the world. It calls for an integrated action on risk factors. This requires the application of a correct therapeutic plan, which is properly organised with an adequate coordination between levels of care. This will lead a better control of diabetes. The training for self-care and empowerment is also essential for this population group.

This approach requires overcoming several challenges:

- Move from disease centred care to patient centred care.
- Ensure the continuum of care within the health system (primary care and specialised care).
- Provide cost-effective delivery of care while trying to keep the patient at home.
- Empower patients and carers to manage their own health condition.
- Identify patients at risk by introducing monitoring and patient follow up at home.

This will avoid decompensations and worsening symptoms.

- Personalise care according the patient's condition, health status and social and health care needs.

The aim of the programme is to provide an integrated and individualised approach to care for both the patient and caregiver. Provided by a multidisciplinary team, the programme ensures treatment and follow up for the patient. Using the best criteria, a higher quality of life and care is achieved.

The follow up of the patients by the primary care professionals is essential in order to reduce the impact of the disease. This coordination of primary care and specialised care is important for:

- Continuum of care within the health system.
- Maintenance and functional recovery.
- Improved quality of life.

The main focus of the programme is to improve health outcomes.

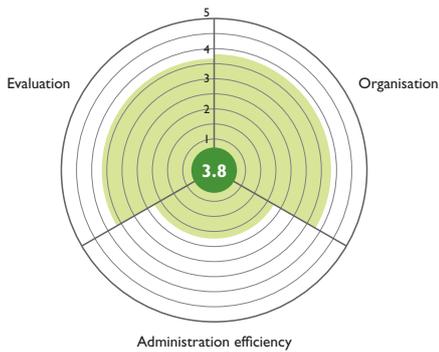
### Contact information

Cristina Domingo Rico;  
cristina.domingorico@osakidetza.eus

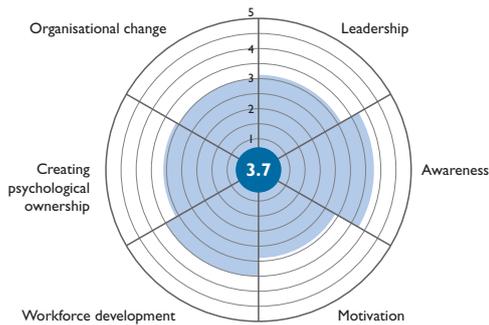
### Sources and references:

Department of Health and Consumer Affairs of the Basque Government and Osakidetza. A strategy to tackle the challenge of chronicity in the Basque Country. 2010.

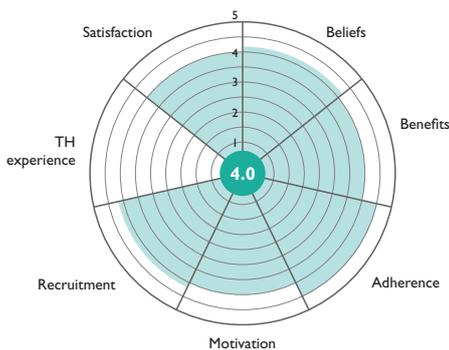
## Organisation



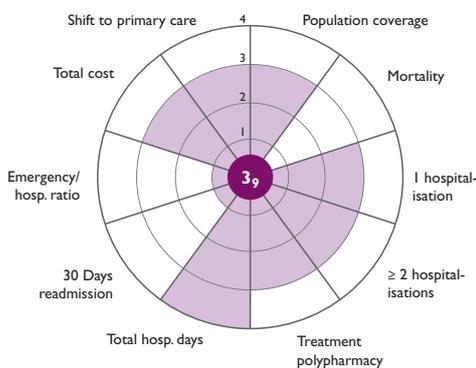
## Staff engagement



## Patient adherence



## Outcomes



## Good Practice: Adequate tools for coordination of primary and secondary healthcare services

Staff use the same criteria for patient management, work in a coordinated manner and use shared medical records. Patients are stratified according to need. Allowing better care, personalised treatment, and targeted follow-up. This more coordinated approach improves relationships among health professionals. It also supports coordinated decision-making. Services need to ensure that therapeutic plans and monitoring indicators for chronic conditions are specific enough to apply directly to patients. These need to be coupled with opportunities to review plans, identify problems, and generate appropriate protocols for patients.

“We have reduced the gap between hospital and primary care.”

The Basque Population Intervention Plan for diabetes is a service designed for patients with medium to high risk of health events. There is special attention given to patients with glycaemic levels that are above the threshold. Managers report that patients are more satisfied with the quality of care they receive.

The programme involves healthcare professionals from different levels of care and settings. Depending on the status of the patient, the activities performed and agents involved can vary. The agents, and activities performed in each status of the patients, are described below: Primary care professionals (GP and primary care nurse) are principally responsible for a patient’s care, initial integral assessment (clinical, functional, psycho-social and social assessment), therapeutic / care plan definition and follow up, drug prescription, patient training and empowerment.

Improving the health outcomes, and to have the highest number of well-controlled diabetic patients, is achieved through a direct follow up to the patient by the primary care team (GP and nurse).

This includes:

- Structured education about the disease: what is the hyper and hypoglycemia, recommendations for diet, exercise and foot care?
- Measure of the glycosylated hemoglobin every six months.
- Annual general exploration, including cardiovascular check and feet exploration.
- Annual electrocardiogram.
- Funduscopy examination every three years if there are no changes.

While the communication between healthcare professionals and patient is mainly via traditional channels (f2f, phone), health care professionals can communicate and share information through the Electronic Health Record and the electronic prescription. Additionally, healthcare professionals can exchange patient-related documentation or make consultations to avoid referrals by online consultations through Electronic Health Care Record. Once the patient shows worsening symptoms, the GP may refer the patient to a specialist or hospital if it is necessary. In turn, achieving the highest number of well-controlled diabetic patients. The population intervention plan for diabetic patients is a common programme. It is developed by a multidisciplinary team where clinicians and managers work in a collaborative way.

The outcome of this work is:

- A new organisational model, which includes new roles and new functions.
- A new common pathway.
- Proactive patient identification using risk stratification tools.
- Improved ICT infrastructure, which supports sharing information and patient monitoring.
- A common set of shared objectives and indicators linked to health outcomes and process improvement.

44 / 4589

11 / 55



## Key to success

- Reduce impact of acute events and emergency visits for chronic patients.
- Improve chronic patient's continuity of care.
- Design new care pathways for multimorbid patients.

**CReG**  
(Chronic Related Groups)  
Region: Lombardy

## Delegating chronic care management to primary care: the new chronic care model in Lombardy

**The Lombardy region has a population of 10 million inhabitants, with over 4.6 million NCD patients. Most of them are over 65 years. They are affected by one or more pathologies (76% affected by at least one comorbidity, and 49% by at least two). The situation is even worse for those who are over 74 (86% and 68%, respectively).**

**Based on recent data shared by Lombardy Region, the percentage of chronic patients increases with age, with a particular accent between 40 and 80 years old patients. Patient care for older subjects use a high percentage of the overall costs.**

Chronic diseases are characterised by a long duration and generally slow progression. The challenge is to deal with the complexity of these diseases. Given the long life of patients with chronic conditions, it is important to ensure care coordination for acute events, and prevent relapses. They include:

- Non-Communicable Diseases – cardiovascular disease, cancer, chronic respiratory diseases, diabetes, mental disorders, skeletomuscular diseases, etc.
- Communicable diseases such as HIV/AIDS
- Genetic disorders like cystic fibrosis – included because of the survival rates and the duration.

The regional government launched an innovative programme called CReG (Chronic Related Groups). This promotes continuity of care in chronic patients for COPD, hypertension, cardiovascular diseases, type 2 diabetes and comorbidities. The CReG mimics a DRG in a territory, by defining a bundle payment system for multimorbid patients. The programme promotes continuity of care, focused on the elderly, for NCD patients and comorbidities. By providing an appropriate care plan, we can reduce implicit costs related to avoidable hospitalisations and acute events.

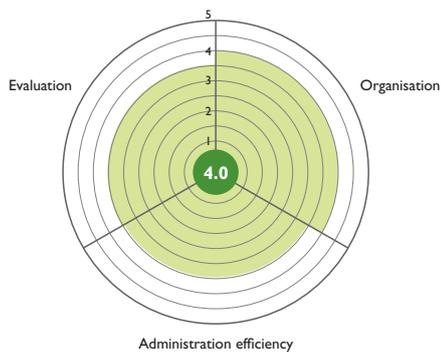
### Contact information

Marco Nalin; marco.nalin@telbios.com

### Sources and references

- [1] M. Nalin, I. Baroni, M. Romano, G. Levato, Chronic related groups (CReG) programme in Lombardy, European Geriatric Medicine, Volume 6, Issue 4, July 2015, Pages 325-330, ISSN 1878-7649.
- [2] Sanità e salute.
- [3] Il progetto CReG: I primi risultati nella regione Lombardia.

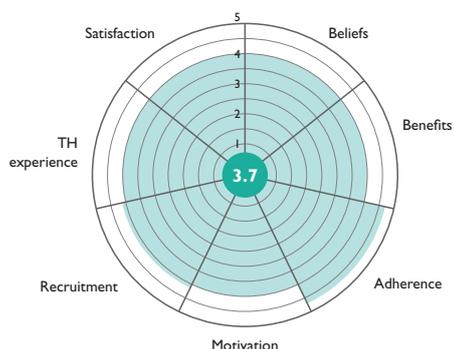
## Organisation



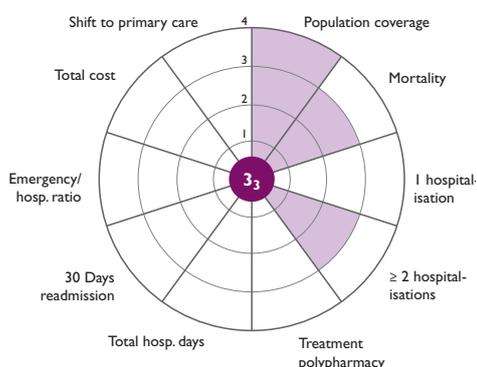
## Staff engagement



## Patient adherence



## Outcomes



486 / 22227

44 / 250



## Good Practice: Empower patients to ensure they agree with support plans.

Managers and frontline staff identified a number of tools to encourage patient adherence. These approaches all involve techniques to empower patients by:

- Encouraging motivation.
- Knowledge and skills in self management.
- Formulating action plans.
- Sharing experiences.
- Problem solving.
- Communication techniques.
- Shared decision making.
- Managing emotions.

Successful strategies involved tailoring information and the participation of all clinicians. Specifically, primary care, hospital, healthcare providers, and encouraging patients to take ownership. Consistent follow-up by professionals is also needed, and the implementation of ‘anti drop-out’ policies. Also import is to ensure treatment plans are reinforced before discharge, at discharge and during follow-ups.

“Strong relationships between patient and healthcare professional is fostered by a good understanding of the patient. This means his pathologies, his mentality, culture, education and perception of the disease.”

Lombardy’s CREG Programme shows excellent results in patient adherence. The key is the distribution of a personalised careplan in paper to the patients. This gives them opportunities to agree or disagree with treatment, and be involved with goal setting. This is designed to improve adherence at all levels of care.

The CREG programme is an innovative solution. Providing a built-in economic model, which promotes care coordination. Five Local Health Authorities (LHA) were involved during the pilot phase. A first scale up to other five LHAs is ongoing and, depending on the additional results, a scale up to the entire region is planned.

The model is based on three pillars:

- Technological infrastructure to identify and stratify the NCD patients.
- Individual Care plans (ICP) and medical guidelines.
- New reimbursement system.

The details of the programme are in the hands of the general practitioner cooperatives. They must guarantee:

- The definition of a personalised ICP for each NCD patient.
- Adherence of the patient.
- Service centre available for 12 h/365 days, operated by trained personnel.
- Health data management and indicators evaluation.
- Patient education.
- Evaluation of the satisfaction of the enrolled patients.



**Telemonitoring programme for chronic patients.**  
Region: Lombardy

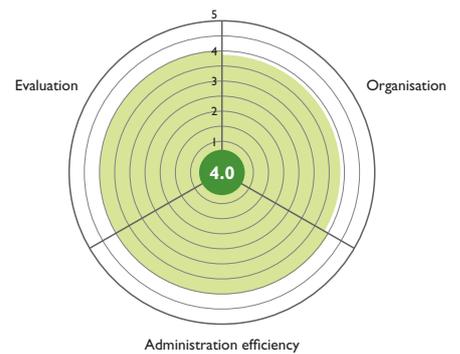
## Patient care can finally happen at home every day

Current healthcare practice in EU countries is primarily focused on the acute hospital sector. If modern healthcare systems want to respond to the major illness of the 21<sup>st</sup> century, however, they need to develop a systematic approach to intervene earlier in the course of chronic diseases. One solution is to provide the most intensive care, in the least expensive setting—nearer to, or in, their home.

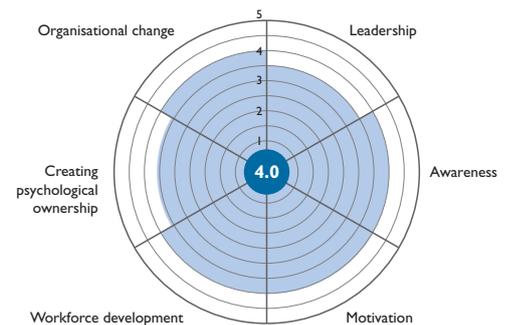
To achieve this, we need to monitor vital signs, detect early exacerbation, and provide closed-loop feedback with the patient. This combination will help minimise the effects of disease and reduce complications. The current approach to patient care and disease management is reactive, unplanned and episodic. The overarching strategy should be towards a care system that empowers patients to take more control of their treatment regime.

Patients participating to the GReG programme are classified according to a risk stratification tool, which identifies the most critical patients within the region. High-risk patients use a telemonitoring service, through which vital signs are monitored daily. Values are checked against thresholds, predefined by their GPs. In case of significant deviations from healthy values, or in case of identification of problematic situations, a Service Centre intervenes by calling the patients, and assessing the situation through a specific triage procedure. The GP is always in the loop. In case of need, the GP can take action (visit the patient, suggest changes in the prescribed therapies, etc.).

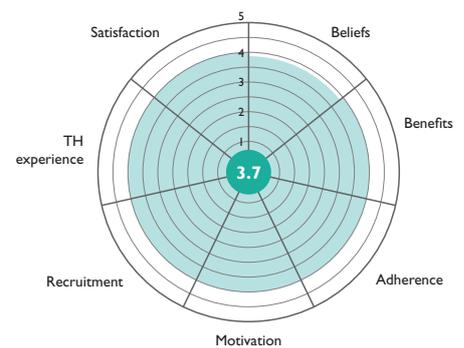
### Organisation



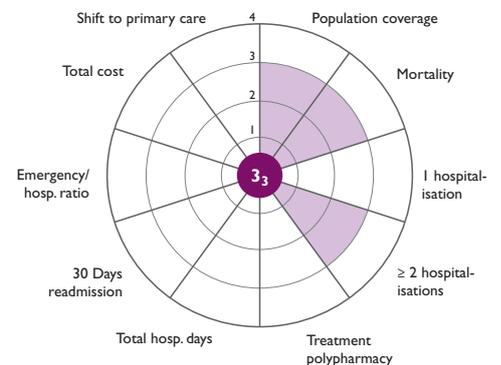
### Staff engagement



### Patient adherence



### Outcomes



49 / 60

11 / 20



#### Contact information

Marco Nalin; marco.nalin@telbios.com

# Telbios

The copyright for all images in this document is owned by  
Koninklijke Philips N.V.

© Koninklijke Philips N.V., 2015



© 2015 All rights reserved. Specifications are subject to change without notice. Trademarks are the property of ACT or their respective owners.

[www.act-programme.eu](http://www.act-programme.eu)

