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Advancing Care Coordination and Telehealth Deployment

ACT Programme

Annex F to Deliverable 3:

WP3, WP5, WP7: Comparison of Two Programs

Population Intervention Plan Heart Failure – Comarca Interior (Basque Country) & Chronic Care Model – Badalona Serveis Assistencials (Catalonia)

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1 Management Summary

The current document is a detailed example of the potential of the ACT Evaluation Engine. We show the preliminary analysis of two selected programs in detail, and explain the similarities and differences according to the data provided. Already at this stage, very interesting conclusions can be extracted. The work leading to this report has been presented at the King's Fund Digital Health Event (September 2014), showing the conclusions of the example of the Basque Country.

The comparison of the two programs serves two purposes:

a) Provide recommendations to the ACT team members on the data collection, analysis and visualisation, highlighting areas of interest or concern.
b) provide recommendations to the programs managers and regions on the deployment of the CC&TH programs

The programs selected are:

- BAS_PIP HF_CI in the Basque Country: The Population intervention programs are integrated care programs deployed in the Basque Country. They cover both disease management areas (mid risk patients) and case management area (top risk multimorbid patients). The current document will analyse the HF disease management program which has been implemented in Comarca Interior, one of the 11 microsystems of the Basque country. The service, as in the rest of the region, is provided by the Public Health Organisation, Osakidetza, which is organised in primary and secondary care units.
- CAT_PPAC_BSA: The Chronic patient program is an integrated care program deployed in Catalonia to cover HF, DM, COPD and cancer patients. The current document will analyse the deployment of the program in Badalona, which is one of the service areas, covered completely by one integrated service provider, Badalona Serveis Assistencials.

The document goes through the analysis of the workpackages for the two programs: how the risk stratification tools are used in the regions, how the care coordination is organised at program level, how the frontline staff is engaged in the programs and finally how to compare and analyse outcomes and coverage of the programs.

The following tables show the analysis of the Basque Country program vs the Catalonian one (first column shows the good practices and second column shows areas of improvement):

Both programs use the electronic health record, though a more extensive use of it, to facilitate the communication between providers and patients/caregivers is advised. CarePathways are defined at local level; the self-management component should be given a bigger focus. Related to Multimorbidity, in the HF management of the Basque Country it is considered in the identification of patients to judge the risk level. The Catalonian model includes polymerisation and other scores in the holistic assessment.

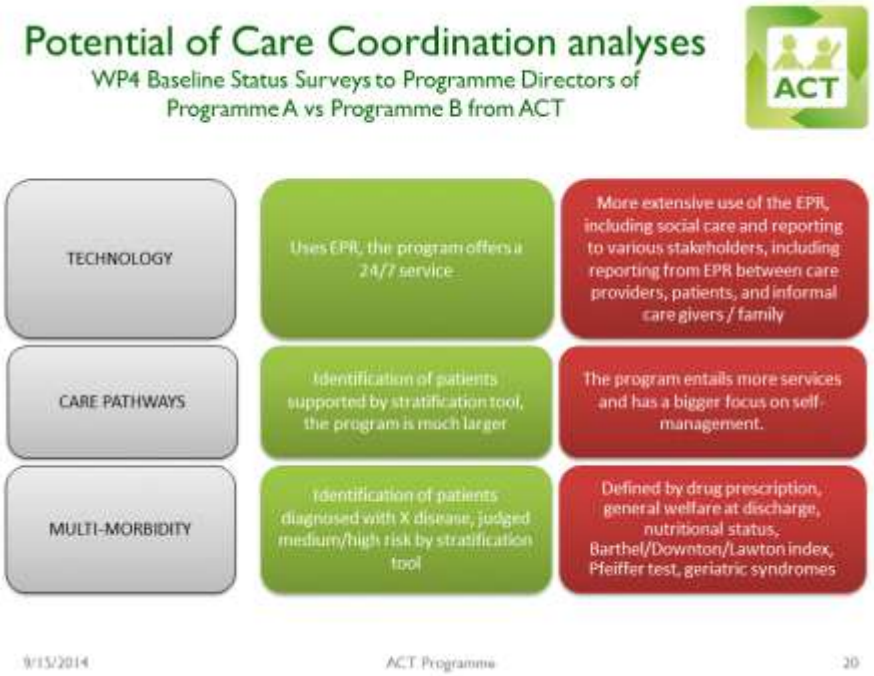

Figure 1 Comparison of programs in technology use, care pathways and Multimorbidity.

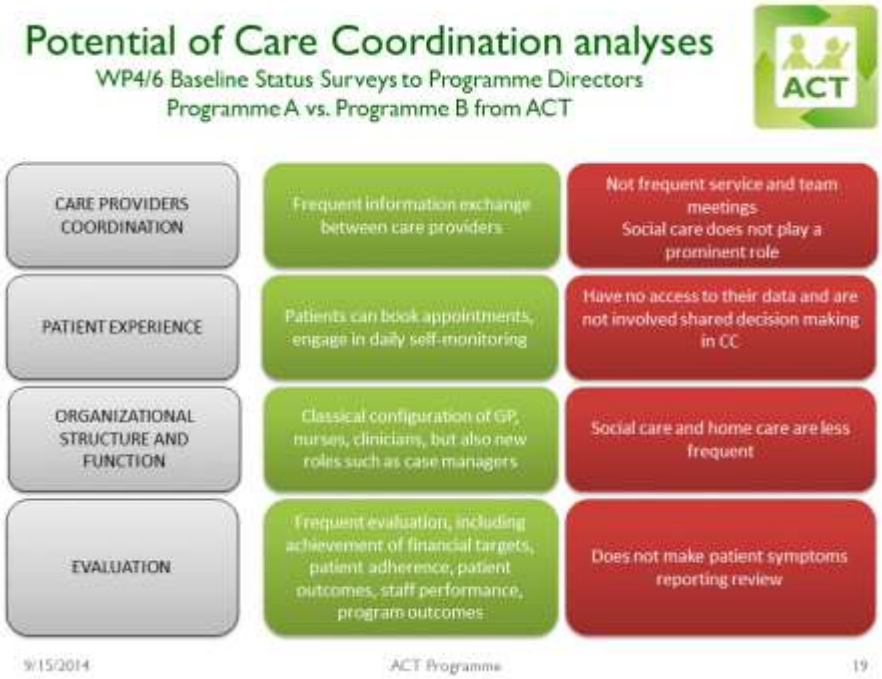

Figure 2 Comparison of programs in Care coordination, patient experience, organisation structure and evaluation

The model from Badalona includes horizontal integration, with a stronger inclusion of social care. In both programs, though patient can access to certain services using Internet, the access to their own data and the involvement in the decision making process is not yet extended.

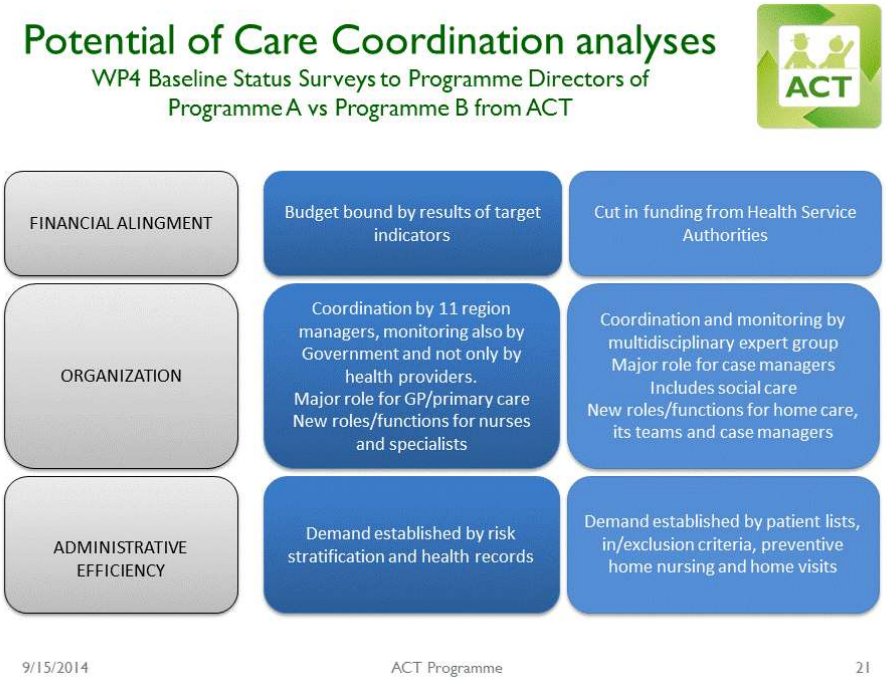

Figure 3 Comparison of programs in financial alignment, organisation and administrative efficiency.

The Basque model excels in the design of the financial alignment and the political support from all level at the administration. The programs are changing the organisations, including new roles in the delivery of care. The transition of the local organisations to this new roles and delivery models need to be further monitored and optimised.

2 Programs and Clusters

In this section we present the overview of all ACT programs and clusters, including an overview of the organisational units for the Basque country and Catalonia.
This provides the overview of the whole ACT assessment and the selected programs.

2.1 ACT Full Program Overview

Telehealth program
Multimorbid program
Program Program used in evaluation

Table 1 ACT full program overview.

ACT acronym	Name of programme (EN / local)	Notes
Lombardy		
LOM_ExpertPatient	BuongiornoCREG-Expert Patient Program / Viva Paziente Esperto	All Lombardy programs are multimorbid
LOM_Telemonitor	Remote patient monitoring / Telemonitoraggio	Idem
LOM_CREG	Chronic Related Group (CReG) / BuonGiorno CReG	Idem
Basque Country		
BAS_ActivePatient	Active Patient Program – Self-Management for Chronic Disease / Paciente Activo	
BAS_PIP HF	Population Intervention Plan for Heart Failure – PIP HF / PIP Insuficiencia Cardíaca	Disease management Note that we only have Comarca Interior data for WP4 and WP6. For WP5 and WP7 we have data for all microsystems
BAS_PIP DM	Population Intervention Plan for Diabetes Mellitus – PIP DM / PIP DM PIP Diabetes	Disease management Note that we only have Comarca Interior data for WP4 and WP6. For WP5 and WP7 we have data for all microsystems
BAS_PIP COPD	Population Intervention Plan for COPD – PIP COPD / PIP EPOC	Disease management Note that we only have Comarca Interior data for WP4 and WP6. For WP5 and WP7 we have data for all microsystems
BAS_PIP MM	Population Intervention Plan for Multimorbidity / PIP Pluripatología (PP)	Multimorbid management, case manager Note that we only have Comarca Interior data for WP4 and WP6. For WP5 and WP7 we have data for all microsystems
BAS_TelehealthHF	Telehealth for heart failure / Telemedicina-Insuficiencia Cardíaca	
Groningen		
GRO_EffectCardio	Effective Cardio	Motiva program that runs in the Scheper Ziekenhuis Emmen
GRO_eDiabetes	eDiabetes	Program will start next year.
GRO_Embrace	Embrace / Samenoud	National program elderly care
GRO_Asthma COPD	Asthma COPD (AC) TH Service	

Catalonia		
CAT_OXYGEN_AISBE	Validation of Oxygen Prescription	Will include TH in future version
CAT_Diabetes_AISBE	Early diagnosis program for DM	Diabetes program
CAT_Diabetes FU_AISBE	Enhanced care program for DM	Diabetes follow-up program
CAT_postdischarge HF/COPD_AISBE	Post discharge program HF COPD	
CAT_PPAC_BSA	Chronic Care Model - Badalona Serveis Assistencials	**Badalona PPAC**, PPAC = prevention and care. This is not a disease specific program. It is one program where different care pathways can be selected, depending on the disease(s) of the patient.
CAT_PPAC_AP	Chronic Care Model - Alt Penedes	**Alt Penedes PPAC**
CAT_PPAC_SISO	Chronic Care Model - Sistema Integral de Salut Osona	**Osona PPAC**
Scotland		
SCO_Reablement	Reablement & Crisis Care	
SCO_HSS	Home Safety Service	
SCO_REACT	Rapid Elderly Assessment Care Team (REACT)	

2.2 Programs per Cluster

Telehealth program
Multimorbid program
Program Program used in evaluation

Table 2 Programs per cluster.

ACT acronym	1	2	3	4	5
Lombardy					
LOM_ExpertPatient	1				
LOM_Telemonitor				4	
LOM_CREG			3		
Basque Country					
BAS_ActivePatient	1				
BAS_PIP HF			3		
BAS_PIP DM			3		
BAS_PIP COPD			3		
BAS_PIP MM			3		
BAS_TelehealthHF		2			
Groningen					
GRO_EffectCardio				4	
GRO_eDiabetes			3		
GRO_Embrace					5
GRO_Asthma COPD				4	
Catalonia					
CAT_OXYGEN_AISBE			3		
CAT_Diabetes_AISBE	1				
CAT_Diabetes FU_AISBE		2			
CAT_postdischarge HF/COPD_AISBE				4	
CAT_PPAC_BSA			3		

CAT_PPAC_AP		3	
CAT_PPAC_SISO		3	
Scotland			
SCO_Reablement	2		
SCO_HSS			5
SCO_REACT			5

2.3 Organisational units in Basque Country and Catalonia

Telehealth program
Multimorbid program
Program Program used in evaluation

Table 3 Organizational units for Basque Country.

Cluster	Basque country	Org. units
Prevention / educational / active patient programs	BAS_ActivePatient - DM	Region
Transitional care / post discharge	BAS_Telehealth_HF	Region
Chronic disease or multimorbid management long term programs, excluding telehealth	BAS_PIP HF BAS_PIP DM BAS_PIP COPD BAS_PIP MM	1. COMARCA ARABA 2. COMARCA BILBAO 3. COMARCA EZKERRALDEA - ENKARTERRI 4. COMARCA INTERIOR 5. COMARCA URIBE 6. COMARCA GIPUZKOA 7. GOIERRI-ALTO UROLA 8. OSI ALTO DEBA 9. OSI BAJO DEBA 10. OSI BIDASOA 11. TOLOSAALDEA
Chronic disease or multimorbid management long term programs, including telehealth		
Elderly at home		

Table 4 Organizational units for Catalonia.

Cluster	Catalonia	Org. units
Active Patient / prevention / educational programs	CAT_Diabetes_AISBE	**Early diagnosis** 1. Barcelona, Esquerra (AISBE),
Transitional care / post discharge	CAT_ Postdischarge HF/COPD_AISBE	**Postdischarge HF/COPD** 1. Barcelona, Esquerra (AISBE)
Chronic (per disease) or *multimorbid* management long term programs, excluding telehealth	CAT_OXYGEN (current) CAT_PPAC	**OXYGEN** 1. Barcelona, Esquerra (AISBE) **PPAC** 1. Alt penedes (AP), 2. Barcelona, Esquerra (AISBE),

		3. Badalona (BSA) 4. OSONA (SISO)
Chronic (per disease) or *multimorbid* management long term programs, including telehealth	CAT_Diabetes FU_AISBE	**Diabetes Follow Up** 1. Barcelona, Esquerra (AISBE)
	CAT_OXYGEN (future)	
Elderly at home		

2.4 BAS_PIP HF_CI

The Population intervention programs are integrated care programs deployed in the Basque Country. They cover both disease management areas (mid risk patients) and case management area (top risk multimorbid patients). The current document will analyse the HF disease management program which has been implemented in Comarca Interior, one of the 11 microsystems of the Basque country. The service, as in the rest of the region, is provided by the Public Health Organisation, Osakidetza, which is organised in primary and secondary care units.

2.5 CAT_PPAC_BSA

The Chronic patient program is an integrated care program deployed in Catalonia to cover HF, DM, COPD and cancer patients. The current document will analyse the deployment of the program in Badalona, which is one of the service areas, covered completely by one integrated service provider, Badalona Serveis Assistencials.

3 Healthcare Systems

This section provides the overview of the healthcare systems. It provides a better understanding of context in which the program is deployed and is needed for comparison. We compare the regional descriptions provided at baseline in a descriptive Word document. The regional descriptions are available in the evaluation engine.

Both programs are located in regions in Spain, having a public healthcare system. The two systems are very similar at regional level in terms of structure of the service delivery with one public payer. The main difference is the internal organisation: in the Basque Country two public organizations are delivering the care, one for primary and one for secondary in the area of Comarca Interior. In Badalona, one integrated private organisation has the mandate to provide primary, secondary and social services to the area.

3.1 Method

Comparing the regional descriptions provided at baseline. This data is available as healthcare system data in the evaluation engine. The comparison shows some heterogeneity in the acquisition and reporting of data.

Table 5 Healthcare system data overview for the Basque country and Catalonia. Numbers in bold are provided by the region. Derived data is derived from regional input and depicted in plain font. Absolute numbers (n) are depicted between parentheses.

Description	Basque country	Catalonia
National healthcare system	**Public, funded by taxes**	**Public, funded by taxes**
Population size	**2,174,033**	**7,546,522**
Nr Physicians *per 1000 inhabitants (n)*	5.7 (**12435**)	**8.1** (61127)
Total hospital beds *per 1000 inhabitants (n)*	2009: 3.6 (**7916**) 2010: 3.6 (**7921**)	2012: 1.8 (**13,356**)
Hospitalization rate - 2011	Admissions: **244,777** Urgent: **133,196** Urgent attention: **897,301**	Admissions: **699,532** Urgent: **401,767** Planned: **297,765**
Outpatient specialist visits *per 1000 inhabitants (n)*	Year : 1180.6 (**2,566,654**)	2012: 495.5 (**3,739,053**)
Healthcare expenditure in Euro *per 1000 inhabitants (n)*	2011: 1569.8 (**3,412,852**)	2012: 1127.2 (**8,506,564.76**)
Mortality rate – 2010 *per 1000 inhabitants (n)*	**8.9** (19,349)	M: **8.3** (62,636) F: **7.8** (58,863)
Mortality rate – 2011 *per 1000 inhabitants (n)*	**9.1** (19,784)	M: **7.9** (59,618) F: **8.0** (60,372)
Life expectancy *In years*	M: **77.2** F: **84.3**	M: **79.3** F: **85.2**
1st Cause of mortality *in %*	M: Tumors - **35.2** F: Circulatory - **34.3** All: Circulatory - **30.7**	M: Tumors - **34.5** F: Circulatory - **31.5**
2nd Cause of mortality *in %*	M: Circulatory - **27.6** F: Tumors - **22.4** All: Tumors - **29.1**	M: Circulatory - **25.5** F: Tumor - **23.0**
3rd Cause of mortality	M: Respiratory - **11.0**	M: Respiratory - **11.8**

in %	F: Respiratory - **9.5** All: Respiratory - **10.3**	F: Respiratory - **8.6**
Prevalence HF *in % (n)*	N/A	**1.09** (82,257)
Prevalence COPD *in % (n)*	1.1 (**22,995)**	**3.11** (234,697)
Prevalence DM *in % (n)*	3.3 (**71,656**)	**6.67** (503,353)

3.2 Recommendations

- The reporting style differs per region. We see difference in the years that are reported, the units (percentages, rates, absolute values), and the granularity (per gender, totals). Where possible we converted the data to allow for comparison. Future regional descriptions can be collected using the Evaluation Engine, which was not available yet during the collection of the regional descriptions. The engine needs to be very specific in the description of the collected data and should be able to convert absolute numbers to percentages or rates, and vice versa.
- A more careful interpretation of the mortality rate is needed. We suggest the inclusion of population age; the age pyramid and the median age.
- Follow-up with the regions is needed to understand the differences in the healthcare system and their potential effect on CC&TH outcomes.

4 Population Stratification

This section describes how the stratification is performed at a regional level.
Both regions are performing extensively stratification strategies to identify proactively patients that would benefit from CC&TH programs.
The methods differ in scope and levels. Apart form the Catalonia stratification (11 levels), the area of Badalona has an own stratification tool to identify patients (6 risk levels).

4.1 Stratification Purpose

Basque country
Primary purpose: optimal identification of patients who are likely to benefit from multidisciplinary interventions. Provision of better care for these patients, adapted to their requirements.
Secondary purpose: better targeted organization of financial provision.

Catalonia
Measuring comorbidity populations:
1) Healthcare management (clinical efficiency)
2) Economic management (payment adjustment based on territory)

4.2 Method

The stratification methods of the regions are depicted in **Error! Reference source not found.**. In comparison to the stratification in Catalonia, the stratification in the Basque country is more extensive and also considers: (1) gender, (2) age, (3) previous hospitalizations, (4) previous visits, and (5) admission risk.

Table 6 Stratification overview of all regions.

	BAS	CAT	GRO-COPD	GRO-EMB	GRO-EFC	LOM	SCO
population	Yes	Yes	No	Yes	No	Yes	Yes
diagnosis	Yes	Yes	Yes	No	Yes	Yes	Yes
severity	Yes	Yes	Yes	Yes	Yes	Yes	Yes
comorbidities	Yes	Yes	Yes	No	No	Yes	Yes
gender	Yes	No	No	No	No	No	Yes
age	Yes	No	No	Yes	No	Yes	Yes
deprivation	No	No	No	No	No	No	Yes
frailty	No	No	No	Yes	No	No	No
hospitalisations	Yes	No	No	No	Yes	No	Yes
visits	Yes	No	No	No	No	No	Yes
drugs	Yes	Yes	Yes	No	Yes	No	Yes
cost-risk	Yes	Yes	No	No	No	Yes	No
admission-risk	Yes	No	No	No	No	No	Yes
period	year	year	poc	poc	poc	half-year	year
frequency	yearly	yearly	once	monthly	once	yearly	monthly
source	EMR	EMR	registry	registry self-assessment	registry	registry	registry
tools	commercial Hopkins' ACG-PM	commercial 3M CRG	none	none	none	proprietary CReG	proprietary SPARRA

4.3 Overview of data provided

We have defined **TOP indicators**. Those are indicators that can be reported by the majority of the regions and/or are considered by the clinical experts to be very the most important indicators. For an overview of availability to TOP indicators, see Figure 4 and Figure 5.

Please note that these graphs only show the ability of the region to share data in a specific (sub)domain. This response does **not** guarantee the possibility to compare the regions in the respective (sub)domains. This is due to gaps to reported indicators, i.e. there is little to no overlap between the indicators that the regions are able share. In some cases the data is collected during operations, but it is not available in the context of the ACT project. In other cases the data is available for the project, but comparison is impossible due to incomparable reported values.

Availability of TOP indicators	
Unavailable	None of the requested indicators available
Low	Less than half of the requested indicators available
Moderate	More than half of the requested indicators available
Full	All requested indicators available

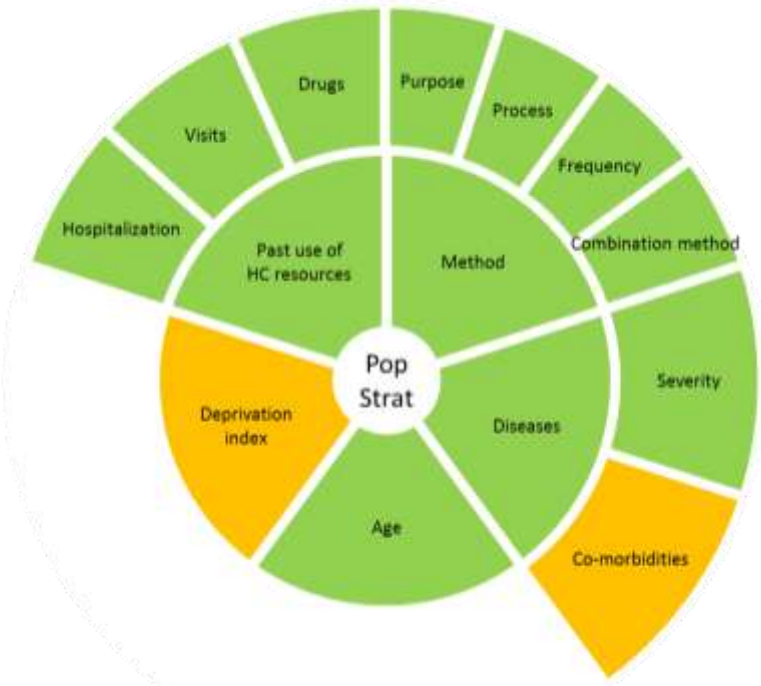

Figure 4 Availability of population stratification indicators in the Basque country.

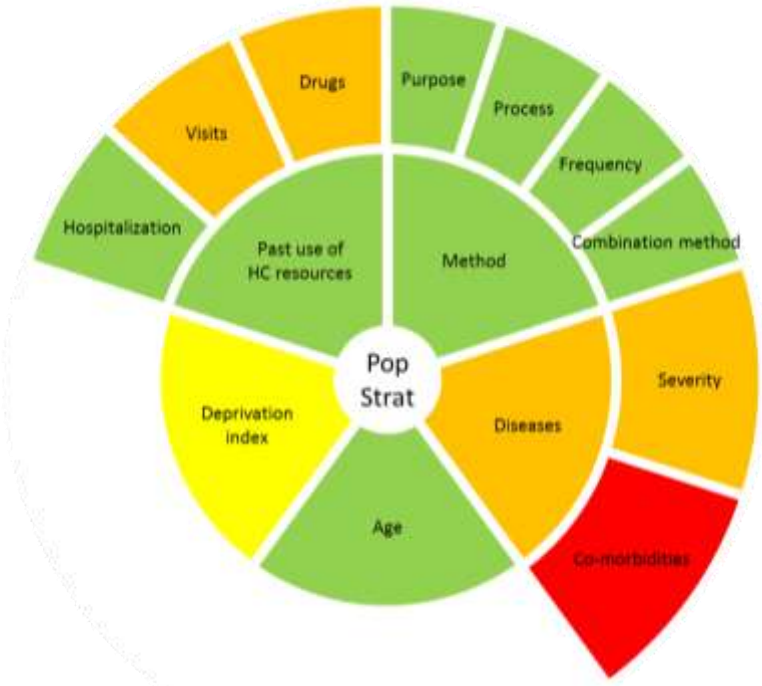

Figure 5 Availability of population stratification indicators in Catalonia.

4.4 Stratification Results

Table 7 Stratification in the Basque Country.

	1 CASE MANAGEMENT	2 DISEASE MANAGEMENT	3 SELF-MANAGEMENT	4 PREVENTION AND PROMOTION	5 HEALTHY POPULATION	Total sum
COMARCA ARABA	4.017	19.882	79.644	182.489	18.031	**304.063**
COMARCA BILBAO	5.483	27.472	111.457	218.369	19.543	**382.324**
COMARCA EZKERRALDEA - ENKARTERRI	5.249	24.719	91.588	172.188	14.304	**308.048**
COMARCA GIPUZKOA	4.548	22.423	95.340	233.606	19.685	**375.602**
COMARCA INTERIOR	4.547	22.180	93.270	177.670	15.282	**312.949**
COMARCA URIBE	2.578	12.835	58.451	137.504	11.087	**222.455**
GOIERRI-ALTO UROLA	1.498	6.766	26.233	59.318	5.693	**99.508**
OSI ALTO DEBA	888	4.745	18.522	38.150	3.847	**66.152**
OSI BAJO DEBA	1.406	6.432	22.662	41.544	4.236	**76.280**
OSI BIDASOA	989	4.903	20.707	53.223	4.568	**84.390**
TOLOSALDEA	669	3.902	17.937	38.693	3.983	**65.184**
Total Sum	**31.872**	**156.259**	**635.811**	**1.352.754**	**120.259**	**2.296.955**

Table 8 Stratification of BSA groups.

Level	Groups of BSA	Men	Woman	Total
0	Patients without any disease Promotion and prevention	24052	24052	48104
1	1-2 chronic conditions Patient at risk Self-empowerment	14382	16746	31128
2	3-4 chronic conditions Medium complexity patient Assisted care Disease management	3878	5716	9594
3	>5 chronic conditions High complexity patient Special care Case management	1215	1755	2970

Table 9 Fragility in the BSA stratification groups.

	Non-fragile		Fragile		Total	
Level	male	female	male	female	male	female
1	11648	13842	2734	2904	14382	16746
2	2204	3650	1674	2066	3878	5716
3	452	784	763	971	1215	1755

Table 10 Association with Clinical Risk Groups (*), Badalona.

		Severity Level						
		1	2	3	4	5	6	Total
1.	**Non-users**	19736	0	0	0	0	0	19736
2.	**Healthy**	26719	1810	0	0	0	0	28529
3.	**Births**	250	591	0	0	0	0	841
4.	**History of significant acute disease**	3857	1368	0	0	0	0	5225
5.	**Single minor chronic disease**	4143	1305	0	0	0	0	5448
6.	**Minor chronic disease in multiple organ systems**	1946	600	1433	775	0	0	4754
7.	**Single dominant or moderate chronic disease**	10863	4412	1004	113	91	11	16494
8.	**Significant chronic disease in multiple organ systems**	9826	5283	4310	3029	1567	177	24192
9.	**Dominant chronic disease in three or more organ systems**	430	400	1118	439	446	133	2966
10.	**Dominant chronic disease in multiple organ systems**	91	296	412	437	144	0	1380
11.	**Malignancies**	18	174	107	110	36	49	494
		77879	**16239**	**8384**	**4903**	**2284**	**370**	**110059**

4.5 Recommendations

- The policy without restriction on the format of reporting data for the indicators has proved to be helpful in understanding what data the regions have available and can share for the evaluation of CC&TH. This will help to standardize the data collection for the indicators, which is needed for comparison between regions. It is essential to clearly define each indicator and the format of the reported data.

5 Care Coordination & Workflow

This section describes the similarities and differences with respect to CC&WF for the two programs.

5.1 Method

For the comparison, we used the summary of comparing the responses to the WP4 baseline survey. The telehealth component was excluded from the comparison, since only one program includes telehealth. An overview of the differences is presented in Table 11.

5.2 Summary

BAS_PIP HF_CI: a **large** size **24/7 program** with focus on **primary care**. The program has **frequent evaluations** that include **financial targets** and is supported by **stratification tools**.

CAT_PPAC_BSA: **smaller** sized program with focus on **secondary care**. There is a strong focus on **self-management** and there are many **additional services**. The program is led by a **case manager** and involves **social care and home care**. The **EPR** is used to exchange information with various stakeholders

Follow-up with the regions is needed to find out why social care is a big component of the CAT_PPAC_BSA program, except in decision making, whereas the opposite holds for the BAS_PIP HF_CI program.

We have identified the need to include the number of case managers per program, and the number of patients per case manager.

Table 11 Overview of the differences in care coordination and workflow between BAS_PIP HF_CI and CAT_PPAC_BSA.

Component	BAS_PIP_HF_CI	CAT_PPAC_BSA
Coordination of care	Similar approach for both programs.	
Care providers coordination	More frequent information exchange with care providers	More frequent service and team meetings Social care plays a prominent role
Patient experience		More enhanced patient experience where patients can book appointments, engage in daily self-monitoring, have access to data and are involved in CC and shared decision making
Organizational structure and function	The programs are different in the organization. The Basque program is more led by traditional roles (GP, nurses,	

	clinicians), compared to the Catalan program that has a case managers, social care, home care involved. The Basque program has a more frequent evaluation, that includes achievement of financial targets	
Legal alignment	Similar	Similar
Financial alignment / incentives	Similar: budget bound by results of target indicators	Similar: cut in funding from Catalonian Health Service
Organization	Coordination by region managers (11), monitoring by Basque government Major role for GP/primary care New roles/functions for nurses and specialist cardiologist	Coordination and monitoring by multidisciplinary expert group Major role for case managers Includes social care New roles/functions for home care, its teams and case managers
Administrative efficiency	Demand established by risk stratification and health records	Demand established by patient lists, in/exclusion criteria, preventive home nursing and home visits
Evaluation	Includes patient adherence More frequent evaluation of patient outcomes, staff performance, program outcomes Includes financial targets Self-management evaluation includes financial targets and reduction in healthcare system use	Includes patient symptoms reporting review Monitors patient satisfaction with communication channels
Technology	Both use EPR. Catalonia has a more extensive use of the EPR, including social care and reporting to various stakeholders. The Basque program offers a 24/7 service	
Role of ICT services	NA	
Interoperability		Social care has access to the EPR and it includes social care information Reporting from EPR between care providers, patients, and informal care givers / family
Service level agreements	24/7 service Out of hours: emergency support plus advice	Out of hours: emergency support
Care pathways	Both programs address multi-morbid patient. Identification of patients supported by stratification tools in the Basque	

	country. The Basque program is much larger, whereas the Catalan program entails more services and has a bigger focus on self-management. In Catalonia the case manager plays a crucial role.	
Multi-morbid	Identification of patients diagnosed with HF, judged medium/high risk by stratification tool	Defined by drug prescription, general welfare at discharge, nutritional status, Barthel/Downton/Lawton index, Pfeiffer test, geriatric syndromes
Programs	Large: 12642 Multidisciplinary shared decision making, including secondary care, case managers and social workers	Small: 446 Includes community and home care, specialist support via case manager Individual therapeutic and multidisciplinary plans Higher level of self-management Many additional services

6 Staff Engagement

In this section we describe the similarities and differences with respect to staff engagement for the BAS_PIP_HF_CI program and CAT_PPAC_BSA program.

The Basque Country program is recognized by the strong political leadership that is endorsed by the staff members. On the other hand, staff members in Badalona feel more engaged in the definition and deployment of the program.

6.1 Method

For the comparison, we used the summary of comparing the responses to the WP6 baseline survey. An overview of the differences is presented in Table 12.

Table 12 Comparison of staff engagement between the BAS and CAT program. Plus (+) indicates the highest scoring program, (=) indicates similar scores.

Component	BAS_PIP_HF_CI	CAT_PPAC_BSA
Staff engagement		+
Highly skilled staff		+
Effective staff communication		+
Monitoring staff satisfaction		+
Communication of good practice and success		+
Staff training		+
Perception of staff on implementation		+
Organisational and cultural barriers	=	=
Receiving high level support	+	
Evaluating the process of change	+	

7 Efficiency and Efficacy

7.1 Overview of data provided

In the Basque country, mortality data is only available at hospital level and cannot be shared for the purpose of this project. In Catalonia, the results cannot be reported per population in the program, but extensive statistic data is available per organisational unit.

Comarca Interior

- All/most of the requested elements are available for analysis

Badalona

Data is only available at regional level, not at program level:

- Number of deaths in relevant year
- Average hospitalization days per patient
- Accumulative hospitalization days per patient
- Number of potentially avoidable hospitalisations[1]

7.2 Population Coverage

The next tables provide the population coverage results for BAS_PIP HF_CI and CAT_PPAC_BSA.

Table 13 Population data for the Basque Country.

Name	Total	Description
Full population	312949	Full population of Comarca Interior
Candidate population for the program: Disease management	22180 (7.1%)	The number after stratification of the full population, this is the potential population for disease management
Population included in PIP DM*	3342 (15.1%)	The actual patients included in the programs
Population included in PIP COPD*	1417 (6.4%)	The actual patients included in the programs
Population included in PIP HF*	2043 (9.3%)	The actual patients included in the programs
Total population included (sum DM, COPD,HF)	6802 (30.7%)	Population covered with disease management

**) reported in baseline excel files WP5/WP7*

[1] Reasons for hospitalizations are available, including an objective definition of “potentially avoidable”.

Table 14 Population data for Catalonia.

Name	Total	Description
Full population	>=249377	Full population of Badalona
Total in stratification tool	249377 (100%)	Stratification results
1. Non-users	77075 (30.9%)	
2. Healthy	58324 (23.4%)	
3. Births	1759	
4. History of significant acute disease	5554 (0.7%)	
5. Single minor chronic disease	9871 (2.2%)	
6. Minor chronic disease in multiple organ systems	4086 (4%)	
7. Single dominant or moderate chronic disease	32643 (1.6%)	
8. Significant chronic disease in multiple organ systems	49741 (13.1%)	
9. Dominant chronic disease in three or more organ systems	5177 (19.9%)	
10. Dominant chronic disease in multiple organ systems	3505 (2.1%)	
11. Malignancies	1642 (0.7%)	
Candidates population for the program: Disease management	?	The number after stratification of the full population, this is the potential population for disease management, based on the sum of stratification levels 1-11
Population served PPAC_BSA	99432	Population covered with the program

Table 15 Age distribution for Heart Failure

HF per age group	Comarca Interior	Badalona
<= 65	24.1% (1159)	
66-75	23.3% (1118)	
>75	52.6% (2529)	
Total	**4806**	
<=64		16.4% (180)
>= 65		83.6% (920)
Total		**1100**

Comarca Interior

- 4806 persons in Comarca Interior have HF
- They cover 2043 with their programs
- That is a coverage of 42.5% of the potential HF population

Table 16 Diseases per age group Badalona.

HF per age group	<=64	>=65	Total
HF	16.4% (180)	83.6% (920)	**1100**
COPD	72.1% (10194)	27.9% (3948)	**14142**
DM	40.8% (2979)	59.2% (4322)	**7301**
All	**13353**	**9190**	**22543**

Badalona

- 1100 persons have HF
- 14142 persons have COPD
- 7301 have DM
- The program is a multimorbid program. We need follow-up with Badalona to determine how to report the coverage of the program. In particular for the HF group if we want to compare this to Comarca Interior.

7.3 Further analysis of the data

As indicated, this document describes preliminary findings of the comparison. Further analysis is planned for comparison on common indicators. Including, reporting of the exclusive indicators for Comarca Interior. Initial focus will be on loop diuretics use and other therapies, also compared to expected numbers, based on clinical expertise and literature. Similarly, we address the clinical outcomes. Finally, we address resource usage, clinical and financial outcomes.

8 Conclusions and future work

Thanks to the close collaboration of the regions of Basque Country and Catalonia, the ACT programme has performed this initial comparison of two CC&TH programs. These are the main conclusions and lessons learned of the exercise:

- We have learned how to identify comparable elements of programs that are different in scope and scale. We can already highlight elements in programs that are candidates for good practices.
- We have a powerful evaluation engine for the collection/analysis/comparison and visualisation of the data.
- Topics such as availability and homogeneity of indicators to be compared between programmes and regions need to be fine-tuned.
- Integration of iteration 1 with the views of front-line staff and patients need to be added.
- Further refinement of the indicators and visualizations will provide a sharpener overview of the programs, enabling zooming in from a high-level overview to the organisation details.

The iterations phase will conclude in February 2015 and the final dissemination phase will start. By that time, all the work packages will present their conclusions for the conceptual phase and consolidate a cook-book to facilitate the scaling up of CC&TH programs in Europe.

8.1 Comparison Results

The intention to compare these two programs is to describe potential factors to explain differences in performance (WP7) in the area of

- Stratification
- Care coordination
- Staff engagement
- Efficacy and Efficiency

This is a preliminary analysis that shows the potential of the data collected and the Evaluation Engine. Further work needs to be performed in order to represent and reason the best practices among the analyzed programs.

8.2 Ruritania

The model of Ruritania has been implemented in the evaluation engine, in collaboration with WP5 and WP7.
Regions are very willing to contribute their data for this project, but due to local processes and technology it is not always feasible to share all requested data elements. The proposal is to work on a virtual population data set, based on which we can demonstrate all analysis features and where regions can insert their own data for comparison to expected data, based on literature and domain expertise.

Figure 6 Example of Ruritania interface. Age distribution

Method:

- It is difficult to get all the data from the regions
- We introduce a full data set from a hypothetical region, named Ruritania, to demonstrate the potential of data analysis
- In this data set we can provide expected efficiency and efficacy outcomes, based on simple population characteristics (population size, and the age distribution, specified per gender)
- The estimations are based on results described in literature and by clinical domain experts, e.g. prevalence and incidence numbers, diagnosis and treatment statistics, and so on
- Regions can compare their population with the Ruritania data
- Regions provide their actual numbers and a simulation tool compares the actual number to the expected outcomes for the region

Further concretization of the Ruritania model will converge in the next iterations. The model is expected to be discussed and fine-tuned at the next General Assembly in September.