

Deployment of Integrated Care Services for complex chronic patients. Limitations and opportunities



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No relevant commercial interests

Agenda

□ Healthcare in Catalonia.Integral HealthCare area.

Barcelona Esquerra

Lessons learnt from deployment of Integrated Care.

Home Hospitalization

Transitional Care

Adaptive case management strategies

The Nextcare project





Gross Domestic Product (GDP) in purchasing power standards per EU regions in % EU28 average= 100

Health System Decentralization

Central Government

- Basic legislation and coordination
- Minimum package funded through NHS
- Pharmaceutical policy
- International health policy
- Educational requirements

Autonomous Government CATALONIA

- Subsidiary legislation
- Organizational structure of the Health System
- Accreditation and Planning
- Purchasing and Service Provision
- Public Health
- Quality evaluation / Agency for Quality



The Catalan Health System Overview and Key figures Population 7,508,106





Shared Medical Record – Available information



"Shared Individual Treatment Plan" (PIIC)

	Pla d'Intervenció Individualitzat Compartit
+ Diagnòstics	
+ Medicació crònica	
+ Al·lèrgies	
Directrius si crisi o descompensació	Pla de decisions anticipades
+ Valoració multidimensional (test)	(Health problems/Diagnasis
Valoració multi dimensional (text lliure)	 ✓ Health problems/Diagnosis ✓ Active Medication ✓ Allergies ✓ Instructions for "in cases of
+ Dades EAP	"Instructions for in cases of
Atenció al pacient	Advanced Care Planning
Servei teleassistència? O Sí O No Atès per gestor de casos? O Sí O No Viu en residència? O Sí O No	 ✓ Resources and services used ✓ Multidimensional assessment
+ Cuidadors	Carer whom decisions are delegated
Informació addicional	Additional information of interest



- Healthcare in Barcelona is provided in the framework of the public health system based on the model of the National Health Service.
- □ The organization is structured in four integrated health areas, one of which is the Integrated Health Area of Barcelona Esquerra (*Área Integral de Salud de Barcelona Esquerra – AIS-BE*).





Font, D et al 2016. International Journal of Integrated Care, 16(2): 8, pp. 1–10

Agenda

Healthcare in Catalonia. Integral HealthCare area. Lessons learnt from deployment of Integrated Care. Home Hospitalization Transitional Care Adaptive case management strategies □ The Nextcare project

Integrated Care Services are the core component of the care model for chronic patients

An Integrated Care Service is an articulated set of standardized actions aiming at covering the patient's health needs, taking into account his/her environment and conditions

- ✓ Patient-centered, not necessarily disease-centered
- Designed to achieve target health goals within a comprehensive plan for the patient. Based on process design with a longitudinal approach which duration varies for each service
- ✓ A patient can be assigned to one or more integrated care services

Integrated Care Unit. Hospital Clínic



Integrated
Care
modelDeployment of the Integrated Care Model





Integrated
Care
modelDeployment of the Integrated Care Model



Home Hospitalization/Early Discharge Definition

- ❑ We defined Home Hospitalization/Early Discharge as a service providing acute, home-based, short-term complex interventions aiming at fully (Home Hospitalization)or partially (Early Discharge) substituting conventional hospitalization.
- The service was delivered by trained hospital personnel for a period of time that should not be longer than the expected length of hospital stay for the patient's diagnostic related groups involved.

□ The Hospital retained clinical, fiscal, and legal responsibility for the pharmaceutical input, medical supervision, and nursing care of the hospital at the patient's home.

Hernández C, et al. Eur Repir J 2003, Jan 21 (1): 58-67 Leff B, et al. Ann Intern Med 2005; 143 (11):798-808 Shepperd S, et al. The Cochrane Library 2011, Issue 8, 2011 Cryer L, et al. Health Aff (Millwood)2012; 31(6):1237-1243 Renneke S, et al. Ann Intern Med 2013; 158 (5 Pt 2): 433-440 Hernández C, et al. Int J Integr Care 2015 Hernández C, et al. . Int J Integr Care 2018 Hospital at Home: Feasibility and Outcomes of a Program To Provide Hospital-Level Care at Home for Acutely III Older Patients

Bruce Leff, MD; Lynda Burton, ScD; Scott L. Mader, MD; Bruce Naughton, MD; Jeffrey Burl, MD; Sharon K. Inouye, MD, MPH; William B. Greenough III, MD; Susan Guido, RN; Christopher Langston, PhD; Kevin D. Frick, PhD; Donald Steinwachs, PhD; and John R. Burton, MD

Ann Intern Med 2005;143:798-808



HEALTH CARE REFORM

The 500-bed hospital that isn't there: the Victorian Department of Health review of the Hospital in the Home program

Michael Montalto

ARCHIVES OF ScienceDirect GERONTOLOGY AND GERIATRICS ELSEVIER Archives of Gerontology and Geriatrics xxx (2006) xxx-xxx www.elsevier.com/locate/archger

Closure of a home hospital program: Impact on hospitalization rates

Rese

Jeremy M. Jacobs^{a,c,*}, Aaron Cohen^{b,c}, Ora Rozengarten^a, Ludmila Meiller^a, Daniel Azoulay^c, Robert Hammerman-Rozenberg^a, Jochanan Stessman^{a,c}

A meta-analysis of "hospital in the home"

Caplan, GA, et al. Med J Aust, 2012; 197: 512-519

Assessment of home hospitalization and early discharge at the Hospital Clinic of Barcelona



Objective – To evaluate implementation and 10 years follow-up of Home Hospitalization (HH) and Early Discharge (ED) as an ICS into an urban healthcare district in Barcelona (ES).

Design – Prospective study with pragmatic assessment of the deployment of HH/ED. Setting and patients: Surgical and medical acute and exacerbated chronic patients requiring admission into a highly specialized hospital (Hospital Clinic).

Area - Barcelona – Esquerra. Period 2006-2015

Intervention – Home hospitalization for a period equivalent to the hospital stay for the DRG. Integrated care intervention

Target variables – Reduction of days of in-hospital hospital stay, early readmissions, visits to emergency department, 30-day mortality, costs



Hernández, C, et al. Implementation of Home Hospitalization and Early Discharge as an Integrated Care Service: A Ten Years Pragmatic Assessment. *International Journal of Integrated Care*, 2018; 18(2): 12, 1–11. DOI: https://doi.org/10.5334/ijic.3431

RESEARCH AND THEORY

Implementation of Home Hospitalization and Early Discharge as an Integrated Care Service: A Ten Years Pragmatic Assessment

Carme Hernández^{*}, Jesus Aibar[†], Nuria Seijas[†], Imma Puig^{†,‡}, Albert Alonso^{*}, Judith Garcia-Aymerich[§] and Josep Roca^{*}



Patient evaluation



Clinical case



Results

Variable	Total		
nº discharge	4,165		
In-Hospital stay, days			
Hospital stay (Median, P ₂₅ -P ₇₅)	1(0-3)		
Home stay, days			
Home stay (Median, P25-P75)	6(5-7)		
Total length of stay, days			
In-hospital + Home (Median, P25-P75)	7(6-10)		
Use of resources during HH/ED			
Number of Physician visits, m±SD	1±0.5		
Number of nurse visits, m±SD	7±3		
Number phone call to the patient, m±SD	2±1		
Emergency Room visits, n(%)	68(2)		
In-Hospital re-admissions, n(%)	201(5)		
Outcomes at 30 days after HH/ED discharge			
Emergency Room visits, n(%)	311(7)		
Hospital admissions, n(%)	461(11)		
Mortality			
During episode, n(%)	12(0.3)		
During 30 days post discharge, n(%)	94(2)		
Transitional Care after HH/ED discharge			
Primary care n(%)	3527(85)		
Palliative care n(%)	226(5)		
Hospital n(%)	292(7)		

Data are expressed as mean ± standard deviation for quantitative variables and number (percentage) for discrete variables. It is expressed as median (25-75th Percentile) in quantitative variables showing extreme values. #Chi2 test or Fisher's exact test were used for the comparison of proportions. Indicates statistical significant differences between the two groups. * The Mann-Whitmey U test was used for variables not normally distributed. Home Hospitalization (HH), Early Discharge (ED).

Qualitative analysis

Domains	Results
Patients' perspectives	
Acceptance to participate	82% of the patients
Patients. Satisfaction	99 % of the subjects reported that the treatment received was very good.
Caregivers. Satisfaction	90% of the patients stated that they would repeat the experience if needed
	94% of the caregivers stated that they would repeat the experience if needed
Professionals' perspectives	Initial common resistances to implementation from both Hospital and Primary Care staff markedly decreased over time.
	Professionals of the HH/ED team showed high degree of satisfaction throughout the deployment period.
Organizational and regulatory	The HH/ED enforced the bridging between hospital and community care
aspects	throughout the study period and increased the transitional patient face after HH/ES discharge.
Technologies	Majors lessons learnt during the study period:
	i) Interoperability at a health system level, across levels of care and among
	providers, is a must to optimize the program;
	ii) Remote monitoring used by professionals visiting patient-home showed high
	efficacy and it was a source of cost-containment;
	iii) Patient self-monitoring showed limited potential because of two main factors:
	the acute condition of the patient and the short available learning period

Economic analysis

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
n of discharges	303	347	441	444	385	394	444	432	422	559
Cost										
Administrative costs	14.900,00	14.900,00	14.900,00	14.900,00	14.900,00	14.900,00	18.625,00	18.625,00	18.625,00	18.625,00
Nurse costs	110.843,00	110.843,00	110.843,00	128.954,60	128.954,60	165.177,80	188.360,65	188.360,65	188.360,65	188.360,65
Physician costs	59.441,36	59.441,36	59.441,36	59.441,36	59.441,36	59.441,36	74.301,70	74.301,70	74.301,70	74.301,70
Drug costs	13.594,03	16.195,27	35.327,80	39.293,31	40.481,25	36.262,29	64.210,94	44.626,84	37.711,31	63.098,97
Consumables	711,77	1.298,76	1.736,28	2.619,59	4.204,01	1.477,61	4.938,88	2.744,10	2.480,01	3.602,14
Transport costs	10.722,43	12.061,68	13.658,64	19.589,42	15.818,67	11.757,27	8.450,46	9.182,64	9.856,60	10.676,50
Total cost	210.212,59	214.740,07	235.907,08	264.798,28	263.799,89	289.016,33	358.887,63	337.840,93	331.335,27	358.664,96
Total reimbursement	295.225,02	340.802,58	439.200,72	438.105,90	384.033,65	372.846,14	397.450,20	379.167,60	379.167,60	392.817,60
Net cost of the program	85012,43	126062,51	203293,64	173307,62	120233,76	83829,81	38562,57	41326,67	47832,33	34152,64

Different sources of information



Assessment of home hospitalization and early discharge at the Hospital Clinic of Barcelona

Safe and effective – for acute and chronic patients. Average savings of 5 inhospital days per patient. Early readmissions 10%; mortality 0.3% during admission and 2% at 30 days post-discharge

Increased complexity over time with identical outcomes

- Synergies High potential for coordination with other integrated care services for chronic patients
- ✓ High degree of satisfaction of both patients and families
- Initial resistance in hospital staff and primary care professionals that decreased through the implementation period

 Sustainability – Cost reduction at health system level and aceptable balance for the provider

Assessment of home hospitalization and early discharge at the Hospital Clinic of Barcelona

Contributions

- Safe and cost-effective alternative to conventional hospitalization for properly assessed patients
- ✓ It requires highly prepared personnel
- ✓ The building blocks strategy for deployment allowed increase of complexity over time
- It should be considered in the portfolio of integrated care because of its potential for synergies with other services

Strenghts and limitations

- ✓ Development and assessment as a real world service
- ✓ Low level of academic evidence because of the study design

Future areas of development

- ✓ Generalization and expansion of the service
- ✓ Adaptation to community based integrated care services
- \checkmark Innovation of the service at tertiary hospital level
- ✓ Implementation of reimbursement modalities generating incentives

- Consolidation of HH/ED as the first choice service to be considered for most of the patients admitted in the Emergency Department.
- ✓ The service has increased the initial average of 12 beds per day during the study period to 36 beds per day in 2016 and 48 in 2018
- ✓ The current HH/ED is active on a 24x7 basis over the entire year with economic incentives that ensure sustainability of the service.
- ✓ The current reimbursement of the HH/ED stays are equivalent to those of the in-hospital stays.
- ✓ We also identified the need for appropriately designed transitional care.

Transitional Care

Patients with complex medical conditions

Transitional Care

Transitional care – range of *time limited* services and environments that *complement others interventions* and are designed to ensure health care continuity and avoid preventable poor outcomes among *at risk* populations as they move from one level of care to another, among multiple providers and across settings.

Transition can be challenging







There are No "Silver or Magic Bullets"!

Hansen, et al. Ann Int Medicine 2011; 155:520-528.

The meaning of fragility and Complexity are unclear



Transfer of prevention of hospitalizations in high risk COPD patients to the community



ABSTRACT: Hospital admissions due to chronic obstructive pulmonary disease (COPD) exacerbations have a major impact on the disease evolution and costs. The current authors postulated that a simple and well-standardised, low-intensity integrated care intervention can be effective to prevent such hospitalisations.

Therefore, 155 exacerbated COPD patients (17% females) were recruited after hospital Respiratory and Environmenta lealth Research Unit, Institut discharge from centres in Barcelona (Spain) and Leuven (Belgium). They were randomly Aunicipal d'Investigació Mèdica assigned to either integrated care (IC; n=65; age mean + sp 70 + 9 yrs; forced expiratory volume in (IMM-IMAS), Universitat Pomper one second (FEV1) 1.1 ±0.5 L, 43% predicted) or usual care (UC; n=90; age 72 ±9 yrs; FEV1 Fabra, Barcelona, 1.1 ±0.05 L, 41% pred). The IC intervention consisted of an individually tailored care plan upon Grupo de Bioingeniería elemedicina (GBT-UPM) discharge shared with the primary care team, as well as accessibility to a specialised nurse case niversidad Politécnica de Madrid manager through a web-based call centre. Madrid, Spain., and

After 12 months' follow-up, IC showed a lower hospitalisation rate (1.5±2.6 versus 2.1±3.1) and a higher percentage of patients without re-admissions (49 versus 31%) than UC without differences in mortality (19 versus 16%, respectively).

Objective - Analysis of effectiveness of the service provided by the community teams

Design – Randomized Controlled Trial (1:1) in frail COPD patients with high hospitalization risk (n=155)

Area - Barcelona - Esquerra



Intervention – Integrated care with remote support of specialized nurses. Active follow-up during 12 months and passive during 6 years

Target variables – Hospital admissions, emergency department visits mortality

Hernandez C, et al. Effectiveness of Integrated Care in Frail COPD patients . Primary Care Respiratory Medicine (2015) 25, 15022; doi:10.1038/npjpcrm.2015.22

Transfer of prevention of hospitalizations in high risk COPD patients to the community

	OR* (95% CI)	p-value
Hospital admissions due to exacerbations	2.17 (0.60-7.87)	0.237

No reduction in the number of hospitalizations

	OR* (95% CI)	p-value
Emergency room admissions due to exacerbations	0.33 (0.13-0.84)	0.020
	HR* (95% CI)	
Mortality by all-causes	0.36 (0.14-0.93)	0.034

* Adjusted for baseline differences between UC and IC group (influenza and pneumococcal vaccination)

Reduction of visits to the Emergency Department and reduced mortality

Improvement in self management of the disease and quality of life (p=0.02).Reduction of ansiety and depression (p=0.001) and major satisfaction of the patients (p=0.02) at 12 months

Transfer of prevention of hospitalizations in high risk COPD patients to the community

Contributions

- ✓ Displayed the problems for generalization of RCT results
- ✓ Identified two key factors for a successful deployment at community level: Preparation of health professionals Prediction of individual risk and patient stratification

Strenghts and limitations

- ✓ High level of evidence RCT
- ✓ Highly representative study group
- ✓ Problems of generalization shown by RCTs

Future areas of development

 \checkmark Development of risk prediction and stratification tools

✓ Implement innovative strategies for workforce preparation



YOU CAN DO ANYTHING, BUT NOT EVERYTHING.

-David Allen

"ALONE WE CAN DO SO LITTLE; TOGETHER WE CAN DO SO MUCH." - Helen Keller

Areas for improvement

Service evaluation

- □ Risk assessment/stratification and service selection
- Service workflow definition and execution

Which services are more efficient and which are the most interesting in the right term?

Duenas-Espin, I, et al. BMJ Open, 2016; 6: e010301. bmjopen-2015-010301 [pii]. DOI: <u>https://doi.org/10.1136/bmjopen-2015-010301;</u> Siu, AL, et al. Health Aff (Millwood), 2009; 28: 113–125. 28/1/113 [pii]. DOI: <u>https://doi.org/10.1377/hlthaff.28.1.113;</u> Hernández, C, et al. Int J Integr Care, 2015; 15:e006. DOI: <u>https://doi.org/10.5334/ijic.2018;</u>]. Sherman, RE, et al. N Engl J Med, 2016;375: 2293–2297. DOI: <u>https://doi.org/10.1056/</u>



A new Vision

Agenda

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Collaborative Adaptive Case Management

Planning at run-time is a fundamental characteristic of case management using well structured service flows. This implies the selection and scheduling of specific tasks for a case, and ad-hoc collaboration with other case managers on the task

✓ Decisions may be triggered by expected and unexpected events or new facts, such as completion of certain tasks or milestones or emergency room entry



Conceptual stages of ICS

Isaac Cano, et al.An adaptive case management system to support integrated care services: Lessons learned from the NEXES project. J Biomed Inform (2015), http://dx.doi.org/10.1016/j.jbi.2015.02.011

Cooperation between levels of care and services providers



The RIGHT patient, the RIGHT therapy, the RIGHT time and the RIGHT professionals

Needs to be delivered every time and something has to change



Please, get to know the patient better



- Socio-demographic characteristics
- Health care team and system-related factors
- Chronic conditions
- Risk factors and treatment
- Patient's dependence factors

Goal-Oriented Patient Care — An Alternative Health. Outcomes Paradigm David B. Reuben, M.D., and Mary E. Tinetti, M.D. Shared Decision Making — The Pinnacle of Patient-Centered Care Michael J. Barry, M.D., and Susan Edgman-Levitan, P.A. NEJM, 366;9 March 1, 2012

Therapeutic Educational Program (APRENEPOC)





Walks that heal/patients like you





Sociedad Española de **Neumología y Cirugía Torácica** SEPAR









SEPAR: Spanish Society of pneumology and thoracic surgery

- Inform, orient and respond
- Make work of SEPAR known to the patient
- Improve relationships between HCPs and patients
- Enhance social impact by dissemination of problems 49[•]

Patients' Congress 300 registrations







1er CONGRESO SEPAR DE PACIENTES RESPIRATORIOS

Respirando juntos





Respirando juntos







Continuous education



Continuous evaluation



IF Plan A Didn't Work; The alphabet has 25 more letters! Stay Cool.

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Regional deployment of ICTsupported integrated care services

design, evaluation and large scale implementation of five actions aiming at generating healthcare-value at system level

Multimorbidity

(cardiovascular diseases; COPD; diabetes type II and anxietydepression)

www.nextcarecat.cat





NEXTCARE

(clustering of CVD, COPD and T2DM-metabolic syndrome)



Service implementation – case study 1 (CCP)





Innovation contest







