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SUPPLEMENTARY DATA

ICA-SEMES ad hoc COHERENT Study Group

Marta Fuentes, Cristina Gil (Hospital Universitario de Salamanca), Héctor Alonso, Enrique Pérez-Llantada (*Hospital Marqués de Valdecilla de Santander*), Guillermo Llopis García, Mar Suárez Cadenas López (*Hospital Clínico San Carlos de Madrid*), Víctor Gil, Rosa Escoda, Sira Aguiló, Carolina Sánchez (*Hospital Clínic de Barcelona*), Javier Millán (*Hospital Politénic La Fe de Valencia*), Antonio Noval (*Hospital Insular de Las Palmas de Gran Canaria*), María Luisa López-Grima, Amparo Valero, Marian Ángeles Juan (*Hospital Dr. Peset de Valencia*), Alfons Aguirre, Maria Angels Pedragosa, Silvia Mínguez Masó (*Hospital del Mar de Barcelona*), María Isabel Alonso, Francisco Ruiz (*Hospital de Valme de Sevilla*), Josep Tost (*Consorci Sanitari de Terrassa*), Pascual Piñera, José Andrés Sánchez Nicolás (*Hospital Reina Sofía de Murcia*), Raquel Torres Garate (*Hospital Severo Ochoa de Madrid*), Aitor Alquezar, Miguel Alberto Rizzi, Sergio Herrera (Hospital de la Santa Creu y Sant Pau de Barcelona), Alex Roset, Irene Cabello, Antonio Haro (*Hospital Universitari de Bellvitge de Barcelona*), Fernando Richard, José María Álvarez Pérez, María Pilar López Diez (*Hospital Universitario de Burgos*), Inmaculada Jiménez, Benjamín Brouzet, Ana López, Begoña Espinosa, Tamara García, Adriana Gil, Francisca Molina, Sergio Guzmán (*Hospital General de Alicante*), Juan Antonio Andueza (*Hospital General Universitario Gregorio Marañón de Madrid*), Rodolfo Romero (*Hospital de Getafe de Madrid*), Beatriz Amores Arriaga, Beatriz Sierra (*Hospital Clínico Lozano Blesa de Zaragoza*), Enrique Martín Mojarro, Brigitte Silvana Alarcón Jiménez (*Hospital Sant Pau i Santa Tecla de Tarragona*), Lisette Travería Bécquer, Guillermo Burillo (*Hospital Universitario de Canarias de Tenerife*), Lluís Llauger García, Gerard Corominas LaSalle (*Hospital Universitari de Vic de Barcelona*), Carmen Agüera Urbano, Ana Belén García Soto, Elisa Delgado Padial (*Hospital Costa del Sol de Marbella de Málaga*), Manuel Garrido (*Hospital Virgen Macarena de Sevilla*), Francisco Javier Lucas (*Hospital General de Albacete*).

METHODS

Code system

The code system considers the patient's clinical status (alive or dead) and location (at home or in hospital, with several possibilities) in each defined time frame. Thus, codes 10 to 59 represent different options for living patients, and codes 60 to 63 for patients who have died. For the model, the most desirable clinical situation is considered being alive at home with no additional care needed. This is represented by code 10. The worst condition is being dead, which is represented by code 60. Intermediate situations are classified as being alive in the emergency department (ED) (codes 20 and 30) and being alive in hospital during the index admission (codes 40-49) or hospital during any readmission (codes 50-59). The additional subcodes provide additional information and were developed to provide more detailed insight into the description of the patient's journey. This is relevant for clinical outcome research, endpoint adjudication, and cost calculation. Thus, subclassification options were developed for specific locations or models of care (ie, home care, nursing home, day hospital or HF clinic visit for codes 1x, admission to different hospital settings, such as cardiac or general intensive care unit or other medical wards for codes 3x and 4x) (table 1 of the supplementary data). Additional subcodes were developed for the reasons for readmission, ED visits, and death. Each patient´s clinical situation was determined at the end of each day during follow-up. However, to facilitate a more detailed analysis of patient management in the earliest phase, when changes in status or location are frequent, patient status was recorded every 6 hours during the first 48 hours after ED admission, and every 12 hours during the third day.

Cost calculation

The cost of chronic long-stay hospitalization is less well standardized at the national level and therefore we used the information published by one of the Spanish regional health care systems

(Basque Country)[1] or patients discharged home directly from the ED on the first day, status code 10 (alive at home with no additional care at the end of the day in the figure) was converted in status code 20 (ED) for cost calculation. The cost of hospital transfer was estimated as the mean cost for 1 stay in the Spanish National Health Service.

Statistical analysis

Outcome comparison

If patterns are considered potentially different visually, statistical analysis can be performed to make formal claims/comparisons. Comparison of outcomes between 2 groups was performed with the t-test with unequal variances for the mean time of the study variable (clinical situation[s] of interest), which will vary according to the focus of the study (ie, time alive at home, which may be the top priority from a system perspective or as the main component of the composite endpoint in a clinical trial), or according to the visually observed differences (ie, percentage of time spent in readmissions in the example shown in figure 3C). For comparisons between 3 or more groups, an outcome of primary interest had to be chosen first (ie, percentage of time alive at home) and mean times should be compared by the 1-way ANOVA test if groups are not ordered (ie, countries) or by the 1-way ANOVA trend test for groups with some type of ordered arrangement (ie, systolic blood pressure or functional class as shown in figure 3A and figure 3B).

Cost comparison

Comparison of costs between 2 groups was performed by the t-test with unequal variances, and comparisons between 3 or more groups, by 1-way ANOVA test.

Table 1 of the supplementary data. Estimated daily cost (in euros) by unit and type of hospital used for the calculation of the 30-day cost for the whole cohort*

Hospital type	Type 1	Type 2	Type 3	Type 4	Type 5
ED stay without hospitalization	229	229	229	229	229
Admission in internal Medicine	509	478	448	456	446
Admission in cardiology	522	486	500	487	506
Admission in geriatrics	556	393	431	433	362
Admission in ICCU/CCU	1177	1232	1498	2401	2221
Admission in short stay unit	980	1296	881	1053	641
Other hospital wards	572	539	521	435	468
Home care	389	389	389	389	389
Chronic long-stay hospital	375	375	375	375	375
Transfer to another hospital	487	487	487	487	487

ED, emergency department; ICCU/CCU, intensive cardiac care unit/coronary care unit

Cost estimation based on the Spanish National Health Service hospital episodes for discharges with International Classification Diseases, Ninth Review, Clinical Modification codes 389.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93 and 428., published by the Spanish Ministry of Health. Types of hospitals are categorized according to the classification established by the Ministry of Health, which considers different variables of provision, services offered, activity, complexity and teaching intensity: Type 1 includes small regional hospitals, < 150 beds on average, with hardly any high-technology equipment, few physicians and low complexity; Type 2, basic general hospitals, average size < 200 beds, minimum technological equipment, with some teaching activity, and somewhat greater complexity; Type 3, area hospitals, average size around 500 beds and medium complexity; Type 4, large hospitals, but more heterogeneous in equipment, size and activity with high teaching intensity and high complexity; Type 5, hospitals with greater structural weight, high activity, and a full range of services. See text for ED cost calculation.

Table 2 of the supplementary data. Clinical characteristics of patients included in the study

	Total n = 1126	Missing values
Demographics		
Age ≥ 75 y	822 (73.3)	5 (0.4)
Female sex	630 (56.5)	10 (0.9)
Comorbidities		
Hypertension	953 (84.8)	2 (0.2)
Diabetes mellitus	463 (41.2)	2 (0.2)
Ischemic heart disease	310 (27.6)	2 (0.2)
Chronic kidney disease	304 (27.0)	2 (0.2)
Cerebrovascular disease	132 (11.8)	3 (0.3)
Atrial fibrillation	524 (46.6)	2 (0.2)
Heart valve disease	287 (25.5)	2 (0.2)
Peripheral artery disease	91 (8.1)	3 (0.3)
Previous episodes of acute heart failure	608 (54.1)	3 (0.3)
Chronic obstructive pulmonary disease	261 (23.2)	2 (0.2)
Dementia	148 (13.2)	2 (0.2)
Cancer	141 (12.5)	2 (0.2)
Baseline status		
NYHA class II-IV	753 (69.8)	47 (4.2)
Left ventricular ejection fraction < 50%	208 (33.1)	497 (44.1)
Severe functional dependence (Barthel index < 60)	170 (16.5)	98 (8.7)
Clinical status at ED arrival		
Systolic blood pressure, mmHg	142 ± 27.7	12 ± 1.1
Oxygen saturation at room-air, %	92 ± 6.6	17 ± 1.9
NYHA class IV	510 (47.0)	42 (3.7)
Disposition after index ED visit		
Home	272 (24.2)	0 (0)
Hospitalized	854 (75.8)	0 (0)
Intensive care unit	20 (2.3)	
Cardiology	195 (22.8)	
Internal medicine	404 (47.3)	
Geriatrics	49 (5.7)	
Short stay unit	90 (10.5)	
Other	96 (11.3)	

ED, emergency department, NYHA, New York Heart Association.

The data are expressed as No. (%) or mean ± standard deviation.

REFERENCES OF THE SUPPLEMENTARY DATA

1. Departamento de Salud. Osakidetza. Coste efectivo de los servicios de salud. Available at: https://www.euskadi.eus/coste-efectivo-servicios-de-salud/web01-s2osa/es/. Accessed Aug 10 2021.