Supplemental data 1: Clinical assessment, outcomes, and data collection

- ### *On admission*

A comprehensive geriatric assessment was performed during the stay in the AGU. Data on comorbidities, disease severity, previous hospital stays, medication, walking status, nutritional status, cognitive status, laboratory variables, and the caregiver burden were collected.

During the first 48 hours, the baseline characteristics were recorded:

- Age, sex, place of residence (at home, in a residential home), living alone (yes/no), social isolation (yes/no), number of hospital stays in the previous 6 months, the number of medications taken at home, and the number of psychotropic medications.
- AGU admission route (directly from home, transfer from the emergency department, transfer from a medical or surgical ward, or transfer from a rehabilitation unit or a residential home).
- The Katz ADL score (29) on admission and 1 month before admission.
- Body weight on admission and the reference weight during a stable period in the previous year, weight loss (yes/no; >5% in 1 month or >10% in 6 months, >10% in 1 month or >15% in 6 months), estimated height, and body mass index (weight/height²), and swallowing disorder at home (yes/no).
- The serum albumin level (if, according to the attending physician, the serum albumin level is likely to be inaccurate due to an abnormal state of hydration, the value on D2 or D3 can be recorded instead of the value on D0), prealbumin level, haemoglobin level, lymphocyte count, creatinine level, and vitamin D 25(OH) level.
- The Charlson Comorbidity Index (20), the NYHA score (30), a history of depression (yes/no; confirmed by the attending physician or a psychiatrist), cancer progressing at the time of treatment (yes/no), and the presence of metastases (yes/no).
- Known neurocognitive disorders (yes/no; diagnosed by a geriatrist or a neurologist), previous Mini Mental State Examination (MMSE) score (31) recorded during a stable period, memory complaints (yes/no; according to the patient and/or the family circle).
- Ability to walk during a stable period before hospital admission (yes, yes with assistance, confined to bed or a chair, or confined to bed), number of falls in the previous year, history of osteoporosis-related fractures (yes/no), and treatment of osteoporosis (none, calcium, vitamin D, bisphosphonates).

- ### *During the hospital stay*

A state is assigned to the patient on each day of the hospital stay. There are five mutually exclusive states:

1. Late discharge, defined as the physician's reply to the following question: if the patient was in a stable state for all 24 hours of the previous working day (from 8am to 8am), and if he/she had received all the material and organisational assistance required for discharge (family circle, home help, financial assistance, an immediate place in a rehabilitation unit or a residential home, etc.), would you have authorized his/her discharge on that previous day?

2. Community-acquired infection, defined as: hospital admission justified by a confirmed community-acquired infection if the clinical, laboratory and radiological symptoms started before hospital admission or within

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72 hours of admission to the establishment. The site of the infection is specified (urinary tract, respiratory tract, bacteraemia, digestive tract, *Clostridium difficile*, skin).

3.   Hospital-acquired infection, defined as: hospital admission justified by an infection that appeared at least 72 hours after admission to the healthcare establishment. Surgical site infections were excluded for methodological reasons. The site of the infection is specified (urinary tract, respiratory tract, bacteraemia, *Clostridium difficile*, other).

4.   Palliative care: hospital care with limitation of treatment decided in a multidisciplinary staff meeting, in view of the patient's state of health.

5.   Medical obstacle to discharge: assigned if the patient does not meet any of the definitions 1 to 4.

Furthermore, the patient was assessed daily for delirium (according to the Confusion Assessment Method). The MMSE was administered at the end of the hospital stay if the patient was stable.

-       **Discharge**

The following items were recorded on the day of discharge: the Katz ADL score, the body weight, and the destination/outcome:

- Home
- Rehabilitation unit
- Return to a residential home
- Transfer to a medical or surgical ward
- Transfer to a palliative care unit
- Death

Supplement data 2:

Results of a bivariate analysis of the logistic regression model predicting membership of subgroup 2

	OR	95%CI
SOCIAL & CLINICAL CHARACTERISTICS		
Age, years	0.96	(0.81, 1.14)
Sex (male)	**0.79**	**(0.67, 0.93)**
Place of residence		
At home	Reference	-
In a residential home	0.92	(0.75, 1.12)
Hospitalized in the previous 6 months	**1.24**	**(1.17, 1.33)**
Charlson Comorbidity Index		
0 – 2	Reference	-
3 – 4	**1.53**	**(1.29, 1.81)**
>4	**1.97**	**(1.51, 2.56)**
Cancer	**1.47**	**(1.20, 1.81)**
GERIATRIC SYNDROMES		
Living alone	0.97	(0.83, 1.14)
Socially isolated	1.39	(0.86, 1.49)
Number of medications taken at home	**1.05**	**(1.03, 1.07)**
Polypharmacy	**1.26**	**(1.05, 1.51)**
Psychotropic medication	1.06	(0.99, 1.15)
Katz ADL at home	**0.95**	**(0.92, 0.99)**
Body mass index	1.00	(0.99, 1.02)
Malnutrition	1.18	(0.93, 1.48)
Swallowing disorder	1.11	(0.89, 1.38)
History of depression	0.83	(0.68, 1.01)
Cognitive disorder	0.94	(0.80, 1.11)
Walking ability		
Walks unaided	Reference	-
No, confined to bed	1.16	(0.81, 1.64)
No, bed or chair only	0.98	(0.77, 1.25)
Walks with assistance	0.88	(0.74, 1.05)
CHANGES IN HOSPITAL		
Katz ADL on admission	0.98	(0.94, 1.02)
Katz ADL on discharge	0.96	(0.93, 1.00)
Change in Katz ADL in hospital		
Stable	Reference	
Worse	1.24	(0.94, 1.63)
Better	1.01	(0.86, 1.20)
Body weight on admission, kg	1.01	(1.00, 1.02)
Body weight on discharge, kg	1.00	(0.99, 1.02)
Change in body weight in hospital		
Stable	Reference	-
Decrease	1.24	(0.96, 1.61)
Increase	**1.35**	**(1.03, 1.77)**
Serum albumin level, g/L	**0.97**	**(0.96, 0.99)**
Blood haemoglobin level, g/L	**0.92**	**(0.88, 0.96)**
Serum creatinine level, μmol/mL	**1.03**	**(1.02, 1.04)**
Delirium on admission	0.84	(0.66, 1.05)
Time spent in each state during the hospital stay, days		
Late discharge	Reference	-

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Medical obstacle to discharge	1.03	(0.62, 1.76)
Community-acquired infection	1.03	(0.61, 1.79)
Hospital-acquired infection	2.03	(0.91, 4.55)
DAMAGE death risk score	**1.37**	**(1.22, 1.51)**

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Supplement data 3 (color should be used):

ROC curve for the prediction of hospital readmission: AUC = 63% (IC 95% = 61% – 67%). Sensitivity = 79%. Specificity = 96%. Positive predictive value = 49%. Negative predictive value = 70%.