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IM - COMMENTARY

Overnight bridge crossing troubled waters

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Western countries keep aging. According to Eurostat, Europeans aged ≥ 65 years have grown from 16% in 2003 to 21% in 2023. Not surprisingly, up to 30% of presentations to European Emergency Departments (EDs) are from elderly patients. The COVID-19 pandemic era has not inverted this surge. In a recent prospective study involving nine European countries, most elderly patients managed in EDs were comorbid and were more commonly evaluated for non-traumatic illnesses. Almost half of them were hospitalized, mostly to an internal medicine ward, while 9% were admitted to an intensive care unit [1]. In several cases, the main reason for hospitalization is patient's incident decline in frailty and dependence, exceeding the limits of available outpatient/home care networks.

Caring for elderly patients in the ED is challenging, for multiple reasons. History taking is frequently fragmented, symptoms are less specific, differential diagnosis is broader and tends to provide unspecific findings, prognosis is poorer, and treatment is cumbersome due to limited evidence and increased side effects. For instance, a recent study has shown that elderly patients with nonspecific complaints have higher risk of functional decline and institutionalization [2]. Last but not least, hospital stay is frequently hampered by discomfort and complications, such as delirium, infections, and falls.

Shortage of hospital beds and impaired outflow invariably lead to ED overcrowding and to increased boarding time. Most evident crises occur during flu season, but general reduction of hospital beds and increased ED length of stay have worsened in the post-COVID era, internationally and during all seasons [3]. In multiple studies, overcrowding has shown detrimental effects on quality of care and clinical outcomes [4]. A recent study performed in 97 French EDs stunningly reported that in patients aged ≥ 75 years, the 30-day mortality was 15.7% in patients waiting in ED overnight for a hospital bed, as compared to 11.1% in patients admitted to a ward on the same day of ED presentation, reaching statistical significance in both unadjusted and adjusted analyses [5]. Longer ED stay was specifically associated with increased risk of infection and fall. These findings, if confirmed, imply that ED boarding is particularly harmful for elderly patients, and urge us to develop solutions.

The observational retrospective study by Mirò et al. provides new data to this controversy [6]. The authors have applied the analytical pipeline of the recent French study, to a registry of consecutive patients awaiting for a ward bed in 52 Spanish EDs. Patients admitted to an intensive care unit or admitted overnight were excluded. During the first week of April 2019, 96.014 ED visits were censored, including 17% in patients aged ≥ 75 years. The median age of study patients was 85 years, of whom 24% were with severe dependence. Their overall admission rate was 29%. Of note, 66% of the patients were admitted to a ward before midnight, while 34% spent one or more nights in the ED, corresponding to median lengths of stay of 24 h vs 5 h, respectively.

The authors report that overnight patients were frailer and more comorbid, as shown by higher prevalence of chronic kidney disease, dementia, stroke, complicated diabetes and ethanol consumption, compared to patients moving upstairs before midnight. They were also more frequently affected by a non-traumatic condition and evaluated in an urban academic ED. Long boarders were more commonly affected by urinary trait infection, and less commonly by community-acquired pneumonia or cancer. A key finding of the present study is that the 30-day mortality rate was similar in both groups (10.7% vs 9.5%), with non-statistical difference in both unadjusted and adjusted analyses. Sensitivity subanalyses did not detect differences in mortality risk among several subgroups, with the exception of increased risk of

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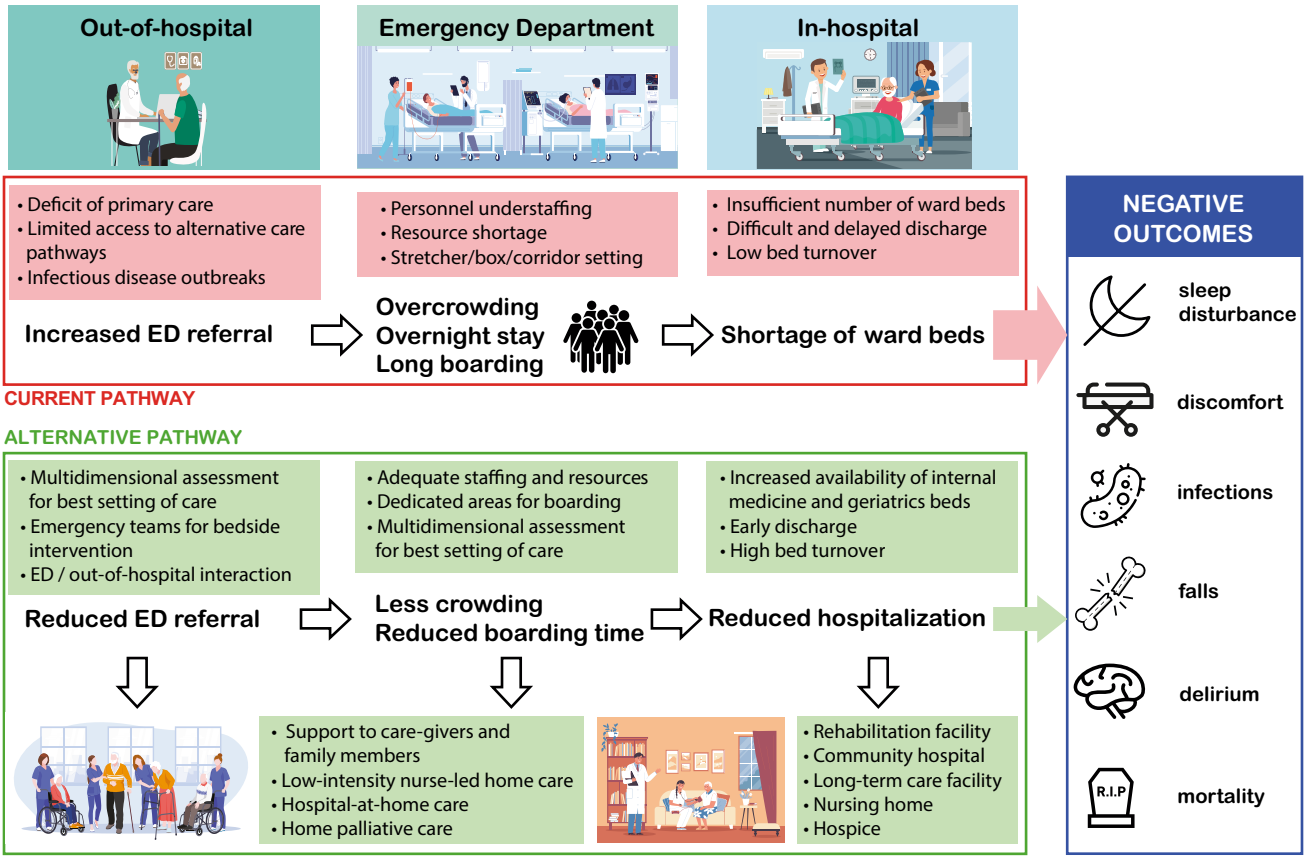

Fig. 1 Outline of input, throughput and output factors affecting clinical outcomes in elderly patients waiting for a hospital bed in the Emergency Department (ED). Negative features of current management pathway are compared to more favorable features of a proposed alternative pathway crossing the boundaries of hospital care

death for overnight stay in non-academic centers. Hence, this study does not confirm previous French data.

Study results must be interpreted with caution. Most importantly, differences between the ward and the ED group are by study design necessarily selection biased. Variables favoring early admission vs overnight stay are largely unknown, may be clinical and non-clinical, and likely differ among centers. For instance, in centers with most severe restrictions in hospital beds, clinicians and/or bed managers may either assign beds earlier to frailer patients considering their high risk of complications, or later, preferring early admission for cases with the lowest risk of clinical futility. An important confounder could also be local availability of high dependence units. These wards, not classified as intensive care units and typically managed by emergency or internal medicine physicians, may facilitate rapid admittance of elderly patients at highest risk of death, artificially increasing mortality rates in the ward group.

The underlying differences between the Spanish and the French study may inform us on factors conditioning boarding outcomes. A reasonable interpretation is that the detrimental effects of overnight ED stay in elderly patients becomes evident when coupled to other "precipitating" factors. One could be clinical acuity or severity, depending on local incident case-mix. Indeed, overall mortality in the Spanish cohort was lower than in the French study. Another co-factor could be the epidemiological and functional context of EDs. The Spanish study was performed during springtime of 2019, while the French study took place during a 2022 triple winter season COVID/CMV/flu epidemic. In the French centers, the shortage of hospital beds was more evident, since 44% of patients (vs 34% in the Spanish study) stayed in the ED overnight. The detrimental effect of boarding may be amplified during infection peaks, especially if coupled to flares in ED fluxes. Instead, boarding harms may be "attenuated" during more ordinary periods. A diagnosis of pneumonia per se, for instance, may not be a key element, since ED diagnosis did not impact on mortality in the Spanish study.

An important factor affecting outcomes could be the local type and organization of ED treatment. French patients were mostly managed on stretchers during their ED stay. In the Spanish cohort, instead, 77% of patients were allocated to

an ED bed, and all received food and drinks. Both elements negatively affect patient's comfort and outcomes. We could assume that ward-like organizations of ED boarding may curb detrimental effects. This emerged as a trend also in the underpowered sensitivity analysis of the Spanish study. However, we should also consider that, in the absence of additional resources, ED care for boarding patients can easily subtract ED spaces and workforces to "new" patients. If ED resources are averted from time-dependent activities, we could expect worsening of "traditional" outcomes for time-dependent conditions such as trauma, myocardial infarction, stroke or sepsis.

Several strategies to reduce ED overcrowding and boarding time have been described, but so far, results of their implementation are yet to come [2]. In the era of technological medicine depending on imaging and blood tests, traditional territorial medicine spinning around a general practitioner has come to an end, also for elderly patients. From a pragmatic point of view, the only way to improve unscheduled medical care of frail patients is to extend the boundaries of current ED care, as represented in the Fig. 1. Ideally, frail patients with unscheduled medical needs should be triaged before landing to EDs. For patients with adequate caregivers, especially in nursing residences, teams of nurses and physicians must be empowered to avoid unnecessary immediate transportation to EDs. This can be obtained by preemptive measures, such as increasing awareness of caregivers, physicians, nurses and family members, and by dedicated protocols applying tele-counseling and technologically advanced point-of-care methods for imaging and labs. Synergy of hospital and ED teams with local caregivers is mandatory, to set the adequate stage of care at the patient's bedside. Most patients could then wait 24–72 h for a hospital bed while staying at home/in the nursing residence, and not in the ED. This would shift boarding time outside the hospital, and the patient could be moved directly to the hospital ward bed only when this is available, bypassing the ED. For several frail patients, as an alternative, hospital-at-home care could be activated in this time gap, thus avoiding unnecessary hospitalization. For some of them, human end-of-life care will be set locally, avoiding ambulance transportation to overcrowded EDs.

The time has come. For internal, geriatric and emergency medicine, it is time to move beyond boundaries. Bridging hospital care to home care should be our new mission. Both in clinical and in scientific terms.

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Declarations

Conflict of Interest The authors declare that they do not have any conflict of interest.

Research involving human participants and/or animals and Informed consent This article does not contain any studies with human participants or animals performed by any of the authors.

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