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Original Study

Preventable Iatrogenic Disability in Elderly Patients During Hospitalization

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A B S T R A C T

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Background: In older patients, hospitalization is often associated with new or worsening disability. This hospitalization-associated disability may be explained in part by the cumulative effect of aging, frailty, comorbidities, and illnesses that led to hospitalization but may also result from health care management issues and the hospital environment. Our objective was to determine the frequency, causes, and the preventability of disability induced by the processes of care or "iatrogenic disability."

Methods: A total of 503 patients, aged 75 years and older, hospitalized in the 105 medical and surgical units of Toulouse University Hospital between October 2011 and March 2012, with a minimal length of stay of 2 days, were included. Hospitalization-associated disability was defined as a loss of 0.5 points or more in the Katz Activity of Daily Living Score between the time of hospital admission and discharge. To determine the iatrogenic component of hospitalization-associated disability, an expert panel in geriatric medicine reviewed each medical chart using a standardized record review and identified precipitating iatrogenic adverse events resulting in functional decline.

Results: Incidence of iatrogenic disability was 11.9% (95% confidence interval, 9.2%–15.1%). Of the 60 cases of iatrogenic disability, 49 (81.7%, 95% confidence interval, 69.6%–90.5%) were judged to be potentially preventable. The most common health management issues identified in patients with preventable iatrogenic disability were low mobilization [by excessive bed rest (26.5%) and lack of physical therapist intervention (55.1%)], overuse of diapers (49.0%), and transurethral urinary catheterization (30.6%).

Conclusions: The present study suggests that a significant proportion of hospitalization-associated disability may be induced by iatrogenic events, and that most of them are potentially preventable. Health care professionals need to be educated on the specific needs of elderly hospitalized patients and should consider hospitalization-associated disability as an outcome of care.

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In older patients, acute illness requiring hospitalization is frequently associated with a diminished ability to perform basic activities of daily living. Previous studies have shown that 30% to 60% of patients 70 years of age or older are discharged from the hospital with a loss of independence in activities of daily living regardless of whether they needed assistance before the admission.^{1,2} These

patients are at greater risk of mortality, re-hospitalization, need for formal and informal home services, and institutionalization.^{3,4}

This loss of independence may be due to the illness that led to hospitalization. However, the poor adaptation of our health care system to an aging and frail population may also contribute to this functional decline. Hospital can be stressful for older adults as a result of many environmental factors including prolonged bed rest, sensory and social isolation, and excessive noise.⁵ In addition, elderly patients do not systematically receive appropriate care during hospitalization.⁶ These conditions combine to increase the vulnerability of this population to adverse iatrogenic events that affect functional outcomes during hospitalization.^{4,7,8}

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Most of the studies that have explored risk factors for hospitalization-associated disability in elderly patients have focused on patient-related characteristics.^{1,9–13} Only a few studies have explored the association between a few identified health-care management factors and functional decline during hospital stays,^{14–16} but no study has explored the rate of hospitalization-associated disability potentially because of adverse health-care management factors in elderly patients. While patient-related characteristics (such as age or cognitive impairment) associated with hospitalization-associated disability are more likely to be nonpreventable, hospitalization-related factors (health-care management issues) may be preventable.

By developing a first definition from an International Association of Gerontology and Geriatrics,¹⁷ we define “iatrogenic disability” as functional decline that results from 1 or several iatrogenic adverse events (IAEs) occurring during hospitalization. Iatrogenic adverse events are usually defined as any unintended injury, harm, or complication that results more from health care management rather than the underlying disease process.¹⁸

We performed a cross-sectional study of patients aged 75 years and older who were hospitalized in a large teaching hospital, either for an acute illness or for a scheduled hospitalization. The most common objective of our study was to assess the incidence of “iatrogenic disability” and how much of this disability was preventable; and to identify the underlying adverse events. We hypothesized that a large number of all iatrogenic disability cases were potentially preventable.

Methods

Patients and Study Design

We recruited elderly patients hospitalized in medical and surgical units of Toulouse University Hospital, France, a 2400-bed teaching hospital (13,000 employed), spread over 2 locations and serving a large community and referral population. Potential participants were patients aged 75 and older from each of the 105 medical and surgical units capable of receiving elderly patients (with the exception of the day hospital). Patients were eligible for this study if they were admitted for an acute medical illness or a scheduled hospitalization for chronic disease, and for a minimum length of stay of 48 hours. Patients admitted through the emergency room (ER) for an acute medical illness were included. To optimize enrolment and follow-up, the inclusions were realized by set of 6 to 10 units between October 2011 and March 2012. Patients were enrolled during a 2-week period and were followed until discharge from the hospital, or death.

Patients who were mechanically ventilated, in a coma, or in palliative care, were excluded.

Ethics statement

The study protocol (with the number 17-0412) was approved by the local ethics research committee (Comité d’Ethique de la Recherche des Hôpitaux de Toulouse). It did not require neither a verbal nor a written consent from participants as our study collected and analyzed only data and information from usual care during hospitalization (without any further assessment, experimentation, procedures, or follow-up). Patient records and information were anonymized and de-identified prior to analysis.

Data Collection

Functional status

Functional status was assessed at admission (within the first 48 hours) and at discharge, with the Katz activities of daily living (ADL) scale,¹⁹ by the medical and nursing team responsible of each patient.

All members of the nursing and nursing auxiliary staff of each admission unit were initially trained to administer the Katz index by a geriatric nurse and an assistant researcher, 1 week before the beginning of participant enrollment at the unit. If the patient was admitted through the ER, the functional status was assessed by the medical or surgical downstream unit. If the length of stay in the ER before transfer was greater than 48 hours, the patient was excluded because the functional status in the unit of admission could not be timely assessed. Katz’s ADL index was selected because of its reliability²⁰ and ease of administration. Six activities (bathing, dressing, toileting, continence, walking, and feeding) are assigned a score of 1 point if totally independent, 0.5 if partially dependent, and zero if totally dependent, for a total Katz ADL score ranging from 0 to 6, with lower scores indicating worse functional status.

Definitions

Hospitalization-associated disability

Hospitalization-associated disability was defined as a loss of 0.5 points or more on the total Katz ADL score between admission and discharge.

Iatrogenic disability

We defined iatrogenic disability (ID) as the functional consequence of 1 or several IAEs occurring during hospitalization. An IAE may be any unintended injury or complication that resulted from health care management issues rather than the underlying disease process. Health care management refers to actions of individual hospital staff and broader systems and care processes. It includes acts of omission (failure to diagnose or to treat), acts of commission (incorrect diagnosis or treatment, or poor performance), but also appropriate health care.²¹

IDs may be preventable or nonpreventable.²² A preventable ID results from an IAE that is attributable to an act of omission or commission and not to appropriate health care. An act of omission is the failure to make a diagnosis or failure to implement care. An act of commission is the generation of an incorrect diagnosis, or implementation of inappropriate treatment.²² A nonpreventable ID results from an IAE that occurs despite appropriate health care.²²

Assessment of Iatrogenic Disability

Assessment of ID involved a 2-step review. First, 2 trained physicians and a team of assistant researchers and nurse researchers screened medical records of patients who had been hospitalized and collected demographic, medical, and nursing data on a standardized form. This form was created to help the panel of experts and record systematically, from the paper and electronic medical chart, essential patient and hospital stay information. The objective was to summarize key information from potentially long and complicated hospitalizations. Demographic and social data included date of birth, gender, and living arrangement. Hospital stay data included hospital unit of admission (eg, medical, surgical, or admission from the ER); whether the hospitalization was scheduled or unscheduled; whether there was intervention from a geriatric team that advises all hospital departments; whether the patient underwent surgery, received an intravenous line, transurethral urinary catheter, or nasogastric tube; whether physical restraints were used; length of stay; and discharge destination. Diagnoses at admission and during hospitalization were coded according to the Classification of Diseases, Ninth Revision, Clinical Modification. Occurrence of falls during the hospital stay was also recorded. Comorbidities were assessed using the Charlson comorbidity index.²³ Medications at admission and discharge, and use of psychotropic drugs (benzodiazepine, antipsychotics, antidepressants,

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