

Characteristics of Older Adults Admitted to Hospital versus Those Discharged Home, in Emergency Department Patients Referred to Internal Medicine



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ABSTRACT

Background

Frail older adults present to the Emergency Department (ED) with complex medical, functional, and social needs. When these needs can be addressed promptly, discharge is possible, and when they cannot, hospital admission is required. We evaluated the care needs of frail older adults in the ED who were consulted to internal medicine and seen by a geriatrician to determine, under current practices, which factors were associated with hospitalization and which allowed discharge.

Methods

We performed a chart-based, exploratory study. Data were abstracted from consultation records and ED charts. All cases had a standard Comprehensive Geriatric Assessment (CGA) which records a Clinical Frailty Scale (CFA) and allows calculation of a Frailty Index (FI).

Results

Of 100 consecutive patients, 2 died in the ED, 75 were admitted, and 23 were discharged, including one urgent placement. Compared with discharged patients ($0.39 \pm SD 0.16$), those admitted had a higher mean FI-CGA (0.48 ± 0.13 ; $p < .01$). Greater mobility dependence (2% in discharged vs. 32% in admitted; $p < .05$) was notable.

Conclusions

Discharge decisions require assessment of medical, functional, and social problems. Ill, frail patients often can be discharged home when social and nursing support can be provided. The

degree of frailty, impaired mobility, and likely delirium must be taken into account when planning for their care.

Key words: frail older adults, frailty index, geriatric assessment, social factors, social work, aged, emergency department, hospital admission, hospital discharge, delirium, mobility impairment

INTRODUCTION

As populations age, so does use of health-care services, including the Emergency Department (ED).⁽¹⁾ In virtue of their multiple, interacting medical and social problems, frail older adults commonly challenge systems of care that typically have been optimized for people with single system disorders and robust social networks. In consequence, factors such as well-being, sense of control, and social activities can each have an especially important impact on discharge disposition from the ED.⁽²⁾ Inasmuch as frailty refers to the increased risk of adverse health outcomes compared with other people of the same age, the impact of age on frailty is profound; given the higher ambient risk of adverse outcomes at higher ages, frailty in the ninth decade and beyond is associated with high rates of death, hospitalization, institutionalization, falls, and worsening health status.^(3,4)

Given the risk of adverse health outcomes, frail older adults and their families understandably turn to the hospital when acute changes in health and functional status arise. How appropriate this is increasingly is debated: hospitals also are well-known as places in which frail older adults can come to harm.⁽⁵⁾ Harm often arises through practices that are sometimes tolerated by people fit enough to withstand not just their illness, but the rigors of many routine aspects of hospital care, especially where such care is associated with invasive or toxic interventions.^(6,7) In frail older adults, new medications, minor infection, or invasive procedures particularly increase

risk.⁽⁸⁾ Often they manifest as immobility, delirium,⁽⁸⁾ and a greater functional dependency after discharge.⁽⁹⁾ Once these declines occur, it is much harder to return to the baseline state.⁽¹⁰⁾ Of course not all hospital interventions show net harm,⁽¹¹⁾ so that individualized care plans that reflect realistic, patient-specific estimates of risk are needed.⁽¹²⁾ The risk, and therefore the need for assessment, can extend even to many common types of hospital admissions, from routine to high-risk care.^(9,11,12,13,14,15,16)

Reflecting such trade-offs, considerable emphasis has been placed on which older adults can safely be discharged home.⁽¹⁷⁾ While redesign of ED facilities and procedures for frail older adults typically seeks to reduce adults' wait times, admission rates, and costs⁽¹⁷⁾ achieving such goals requires detailed assessments of current practices. Here, we aimed to better understand, under current practices, which factors mandate hospitalization and which ones allow discharge. Our specific objectives therefore were to compare characteristics of patients admitted versus those discharged; services provided in each case, and; near-term (6-month) and 1-year outcomes.

METHODS

Setting and Sample

This is a case series from a Department of Medicine Quality Assurance project at Capital District Health Authority (CDHA). The first 100 consecutive older (ages 65+ years) adults were seen by a geriatrician (KR) working as Medicine's Senior Internist on a 1-week-a-month/9-month rotation in the ED between January 4, 2010 and February 15, 2011. As part of routine care, all older adults received a standardized Comprehensive Geriatric Assessment (CGA) in addition to a general medicine consultation. Introduced in 1998⁽¹⁸⁾ and detailed in an updated form elsewhere,⁽¹⁹⁾ the CGA typically is completed by house staff and reviewed by the geriatrician. The CGA form includes an assessment of the *present state* of cognition, mobility, balance, and instrumental and personal activities of daily living, as well as an estimate of the *baseline* state (i.e., functioning in these areas two weeks prior to admission). Typically, the information about prior functioning comes from interviewing the caregiver (although occasionally such data can come from the health record, especially for patients from long-term care). Caregivers' relationships were recorded. Caregivers were self-selected based on who accompanied the patient to the ED.

Measures

CGA forms and consultant notes were reviewed by the researchers who then designed an abstraction tool to capture information about the decision to discharge from the ED to home versus to admit from the ED to hospital. Evaluation of health records for hospitalized patients yielded additional themes, which were cross-checked against the records from

the ED. This allowed us to understand which services were supplied at home, compared to what was offered in hospital. Each of these points was also included in the data abstraction tool.

In addition, all patients were screened using a 0-point Clinical Frailty Scale* adapted from an original report⁽²⁰⁾ and now widely used in clinical studies.^(21,22,23) The degree of fitness/frailty was quantified using a frailty index (FI) based on the CGA.⁽²⁴⁾ The CGA form includes disease presentations and information on strength, cognition, special senses, sleep, nutritional status, motivation, and health attitude which, together with the diagnosis and medication data, allow for a 55-point FI-CGA. Several of these items assay mobility and balance. They are adapted from the most relevant items in a standard clinical assessment that has shown prognostic value in this patient population.⁽²⁵⁾

The CGA also includes information about social circumstances (e.g., marital status, living arrangements), caregiver relationships, and stress. This last is a judgment-based clinical assessment, typically evaluated toward the end of the caregiver interview, after the caregivers' exact role in how much care they provide has been elucidated. During that interview, caregivers also report the patient's health attitude and levels of function and mobility (the latter is also observed), allowing an estimate of the patient's level of frailty, using the Clinical Frailty Scale. As none of the information on social or caregiver factors (although included in the CGA) is captured in the calculation of the FI-CGA, those items can be combined separately in a social vulnerability index. Here, given the sample size, we restricted ourselves to a few items: caregiver relationship, residence prior to admission, and caregiver stress

Data Abstraction

A chart-abstracting record was designed to capture care needs at home, on admission, and on follow-up. The latter includes requirements for medications, convalescent, rehabilitation, and social services, specialty referrals, and tests. For admitted patients, we included the nursing unit, diagnoses, and treatment provided in the ED, along with deficits associated with admission. Reasons for admission were classified as follows: treatment, diagnosis, or rehabilitation. Follow-up data were gathered on residence at 30 days and mortality up to 1 year. Data were verified from health authority records.

Analysis

In the qualitative analyses, we used fundamental qualitative descriptions of written records (charts). Briefly, data were coded data from iterative, independent, and collaborative chart

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reviews.⁽²⁶⁾ For the quantitative analysis, we used MATLAB (MathWorks, Natick, MA) and included descriptive and analytical (*t*-test; chi-square) statistics. Descriptive statistics (numbers and proportions for categorical variables; means, standard deviations, and ranges for continuous variables) were reported for patient demographics, caregiver demographics, as well as any qualitatively defined patient subgroups. Statistical comparisons between qualitatively defined subgroups of patients were performed when appropriate (and when numbers were sufficient). Note that any such analyses must be considered hypothesis generating. Statistical significance was determined at the $p < .05$ level.

Ethics

The Capital District Health Authority Research Ethics Board approved secondary analysis of routinely collected data.

RESULTS

One hundred consecutive patients were included of whom 23 were discharged, 75 were admitted, and 2 died in the ED. Twenty-eight patients were admitted to the Medical Teaching Unit (MTU), 18 to the Community Health Unit (CHU), 23 to the Geriatric Assessment Unit, and 6 to other locations (chiefly the Intermediate Medical Care Unit, positioned for patients too ill for regular ward care). Most patients (67) came from the community, with 10 from assisted living and 23 from nursing homes.

There were no significant differences in the proportion of women admitted versus those discharged, in their mean ages, or the proportions from community versus long-term care (Table 1). Patients admitted to hospital tended to be frailer, as evidenced both by significantly higher mean FI and Clinical Frailty Scale scores (Table 1). Likewise, significantly more admitted patients were dependent in mobility and diagnosed with delirium.

There were no systematic differences in the caregiver relationships (e.g., family versus non-family member) or in the proportion with/without a caregiver in the same home, or even in the degree of caregiver stress (70% in both groups rated as having no or low stress). Caregivers of admitted patients also showed about the same level of frailty themselves, as estimated by the Clinical Frailty Scale as did the caregivers of patients who were discharged (Table 1).

Services Provided to Admitted and Discharged Patients

Of the 75 who were admitted, 63 had medication adjustments compared with each of the 23 discharged patients. Of the 75 who were admitted, severity of illness was cited in 60 cases: 37 for diagnosis and treatment, 13 for rehabilitation, 5 for palliation, and 5 for chronic wound care that had failed treatment at home.

Services provided to discharged patients included physician clarification of care needs/goals with patients and families. Care options arranged from the ED for home included home care (6) and private care (3). One patient required urgent placement in a nursing home. Follow-ups provided for discharged patients included specialist referrals (12), family doctor follow-up (10), geriatric medicine home visits (8), nursing (6), social work (5), and physiotherapy (< 5).

Outcomes in Relation to Admission Status

The 30-day mortality rate of patients who were admitted was 13/75 (17%) compared with no one who was sent home ($p = .02$). Likewise, one-year mortality was 19/75 (25%) in the admitted group, versus one death in those sent home (Table 2) ($p < .01$).

DISCUSSION

Of 100 patients who were consulted to internal medicine from the Emergency Department of a large, tertiary care teaching hospital, 23 were discharged home, 75 were admitted to the hospital and two died in the ED. There was no difference between the groups in their age, sex, or health, or the extent of stress of their caregivers. Instead, patients admitted to the hospital were typically frailer than those discharged, as indicated by both a screening frailty measure (CFS) and a more detailed one (FI-CGA). Notably, within the items defining frailty, mobility problems, especially problems concerning walking without assistance, were seen more often in people admitted to hospital. Admitted patients tended to be more ill, as they had higher mortality rates at both 30 days and 1 year, compared to the patients discharged. Even so, patients who were sent home had an important degree both of frailty and of caregiver burden.

Our data must be interpreted with caution. The sample size was small, affecting power (e.g., notably with regard to delirium as a risk), in addition, all participants were from the same city and assessed by the same attending physician. In consequence, each of these factors importantly limits generalizability. Material gathered came from usual clinical care, albeit in a clinical research environment. Also, several key items were judgment-based, including the degree of frailty and of caregiver stress. The difference in the mean FI-CGA scores between people admitted and discharged was small, albeit statistically significant. It appears also to be clinically important, corresponding, for example, to the difference in mean scores between moderately and severely frail people seen in the original report (0.36 [\pm SD 0.09] and 0.43 [\pm 0.08] respectively).⁽²⁴⁾

Just under 10% of the patients discharged home were admitted within 30 days. This proportion was smaller than the 30-day readmission rate of the group initially admitted. Given the adverse outcomes associated with both ED visits^(8,16) and hospital admission,^(16,25,27) there is growing

TABLE 1.

Demographic and clinical characteristics of Emergency Department referrals admitted to hospital versus those sent home

<i>Outcome</i>	<i>Discharged %</i>	<i>N</i>	<i>Admitted %</i>	<i>N</i>	<i>p-value</i>
Mean Age (SD)	81.8 (8.44)	23	82.5 (8.47)	75	.73
% women	61	14	59	44	.88
Living Arrangements					
Alone	26	6	24	18	
Caregiver	44	10	41	31	
Assisted Living/NH	31	7	35	26	.37
Mean FI (SD)	0.39 (0.16)	23	0.48 (0.13)	75	<.01
Mean Patient CFS (SD)	5.0 (2.30)	23	5.8 (1.90)	75	.01
Mean Caregiver CFS (SD)	1.5 (1.70)	10	1.8 (2.00)	31	.32
Delirium	17	4	31	22	.14
Walking					
Independent	35	8	28	20	
Standby/Assisted	56	13	29	23	
Dependent	9	2	43	32	<.01
Transfers					
Independent	65	15	37	28	
Assisted	26	6	21	16	
Dependent	9	2	41	31	.01

TABLE 2.

Outcomes of patients admitted from the ED versus those sent home

<i>Outcome</i>	<i>Vital Status at 30 days</i>				
	<i>Discharged %</i>	<i>N</i>	<i>Admitted %</i>	<i>N</i>	<i>p</i>
Home	91	21	51	38	
Hospital (re)-admission	9	2	32	24	
Dead at 30 days	0	0	17	13	.02
Dead within one year	5	1	25	19	<.01

interest in alternatives to hospital admission for frail older adults who present to the ED.^(28,29) Notably, the proportion of patients admitted, after being initially discharged from the ED is comparable with a recent report from the Mayo Clinic for patients with complex needs not receiving a specific community intervention package.⁽³⁰⁾ Through providing other options such as the “home hospital” and 24-hour support services of multidisciplinary teams, discharge can occur quicker and unnecessary admission can be avoided.⁽²⁸⁾ These options have been reported as having higher patient/carer satisfaction, reduced mortality, and reduced readmission rates,⁽²⁸⁾ and showing improvements in functional status.⁽⁴⁾ Such services must be timely — a delay in these services can decrease the improvement often seen in home care.⁽⁴⁾

These data support other reports showing the critical importance of mobility assessment.^(25,31,32) Patients who were

admitted showed increased mobility problems, with 42.7% being dependent during walking and only 8.7% of patients discharged being considered dependent. Similar numbers were seen for patients during transfers (Table 1). Although mobility impairment is widely seen as an important part of frailty,^(25,32,33,34,35) it must be recalled that only when frailty is at least at a moderate-severe level will all frail older adults have mobility limitations.⁽³⁶⁾

This study is also of interest in relation to other reports about the value of geriatrician services in the ED. For example, geriatricians’ readily availability for consultation in the ED typically result in a reduction of average wait times to be seen (e.g., in one report by more than half from 1171 minutes to 515 minutes⁽¹⁷⁾). Through a “discharge to assess” plan, whereby patients were able to have assessment and treatment in their home, bed occupancy decreased on average by 20 beds and the in-hospital mortality rate fell by 12%.⁽¹⁷⁾ As well, patients who took part in a randomized home-hospital study saw a decrease of total days of care by 45%.⁽³⁷⁾

The goal of geriatric assessment is not the assessment, but the care plan that follows. Care planning is key in allowing safe discharge. For all patients discharged, the medical team provided specific clarification of care needs and goals with either the patient, or the patient and the family. Of critical importance was being able to set care plans with patients and families so that they knew what to expect upon returning home. Developing care plans takes time. Some patients can be (and in this case many were) cognitively impaired, so that understanding how care plans would address that risk (mitigation, consideration

in relation to risks and benefits from alternate courses, acceptance) is important. This work is best done by people such as social workers, who understand how the system operates, can especially aid in situations where neglect must be considered,⁽³³⁾ and who know what options are realistically available. For this, clarity in providing carers with direction about which changes in illness or function might prompt follow-up is necessary, so that understanding outcomes of common conditions also needs to be part of the social worker's repertoire. For the results to be generalized, access to home visits, ways to prioritize returns to the family physician, the ED or rapid follow-up in a relevant clinic, all need to be in place. Any future plan to facilitate discharge will need to pay specific attention to making these links clear and to recognize the time needed for this crucial step.

Future studies need to address which factors facilitate, and which militate against, safe discharge. Use of novel means of outreach, such as using the web and telehealth to assess and support caregivers at risk,^(38,39,40) also need to be explored. A more comprehensive understanding of such factors can help improve decision making about how best to care for frail older adults who present to the Emergency Department. Future studies should also look at the extent to which high mortality rates in patients admitted to hospital reflect solely the acuity of illness versus the impact of current hospital practices.

CONCLUSION

Discharge decisions in relation to frail older adults require assessment of medical, functional, and social problems, which are key components of a Comprehensive Geriatric Assessment. Notably here, patient factors, especially the degree of mobility impairment, more than caregiver factors, were associated with the ability to be able to discharge patients to the home. The extent to which this occurs in other series is motivating additional inquiries by our group.

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