

# End-of-life Care Planning and Fragility Fractures of the Hip: Are We Missing a Valuable Opportunity?

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## Abstract

**Background** Approximately 20% of all geriatric patients who sustain low-energy hip fractures will die within 1 year of the injury, and approximately 3% will die during the initial inpatient hospital stay. Accordingly, the event of a geriatric hip fracture might be an apt prompt for discussing end-of-life care: in light of the risk of death after this injury, the topic of mortality certainly is germane. However, it is not clear to what degree physicians and patients engage in end-of-life planning even when faced with a hospital admission for this potentially life-threatening condition.

**Questions/purposes** We assessed the frequency with which end-of-life care discussions were documented among a sample of geriatric patients admitted for hip fracture surgery.

**Methods** We studied 150 adult patients, 70 years and older, admitted between September 2008 and July 2012 for the care of an isolated low-energy hip fracture, who did not have documented evidence of end-of-life care planning

before the time of admission. For each patient, the medical record was scrutinized to identify documentation of end-of-life care discussions, an order changing “code status,” or a progress note memorializing a conversation related to the topic of end-of-life care planning.

**Results** Of the 150 subjects who had no documented evidence of end-of-life care planning at the time of admission, 17 (11%) had their code status changed during the initial hospitalization for hip fracture, and an additional four patients (3%) had a documented conversation regarding end-of-life care planning without a subsequent change in code status. Accordingly, there were 129 (86%) patients who had no record of any attention to end-of-life care planning during the hospital stay for hip fracture surgery.

**Conclusions** Our findings suggest that physicians may be missing a valuable opportunity to help patients and their families be better prepared for potential future health issues. End-of-life care planning respects patient autonomy and enhances the quality of care. Accordingly, we recommend that discussion of goals, expectations, and preferences should be initiated routinely when patients present with a fragility fracture of the hip.

**Level of Evidence** Level IV, therapeutic study.

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Each author certifies that his or her institution approved the human protocol for this investigation, that all investigations were conducted in conformity with ethical principles of research, and that informed consent for participation in the study was obtained.

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## Introduction

The aim of end-of-life care planning is to help clinicians provide care consistent with their patients' underlying preferences [18], especially when the patients' powers to make decisions or communicate them might be lost one day. End-of-life care planning has been shown to improve patient satisfaction and to augment the quality of life for the surviving relatives [6].

Neuman et al. [13] stated that because of the “extreme rates of mortality and functional disability” for patients with hip fractures who are in nursing homes, it is particularly important to engage in end-of-life care planning with them. Yet this assertion might be more reasonably applied to all geriatric patients with hip fractures, not just those in nursing homes. Geriatric fragility fractures of the hip are a marker for mortality in the near, but not immediate, term: 20% or more of all geriatric patients who sustain low-energy hip fractures will die within 1 year of their injury [14], whereas the inpatient mortality rate for this condition is approximately 3% [2].

A hospital admission for hip-fracture surgery therefore would appear to be a suitable moment for physicians and their patients to consider end-of-life care planning. Nonetheless, the extent to which physicians, patients, and patients’ families are using this prospect is not known. Accordingly, we assessed the frequency with which end-of-life care discussions were documented among geriatric patients admitted for hip fracture surgery.

## Patients and Methods

A retrospective cohort of patients admitted to the University of Pennsylvania Health System for treatment of an isolated hip fracture was assembled. Approval for the study was obtained from the University of Pennsylvania Office of Regulatory Affairs institutional review board. Based on an a priori calculation, we selected a sample size of 150 patients, which would produce an approximate 8% margin of error with 95% confidence. Inclusion criteria for the cohort were age of 70 years or older, acutely admitted between September 2008 and July 2012 with a hip fracture (intertrochanteric, pertrochanteric, subtrochanteric, femoral neck) with a low-energy mechanism (such as a fall from standing). Exclusion criteria were major injury other than hip fracture, high-energy mechanism, or evidence of prior end-of-life care planning (namely, any of the following: a living will, an advanced directive, preexisting do-not-resuscitate order, a Durable Power of Attorney for Healthcare, or hospice care). For each identified patient, the medical record was reviewed and pertinent data were extracted. The charts of 205 patients were reviewed sequentially for inclusion and exclusion criteria until we reached our desired cohort of 150 patients.

For each patient in the cohort, all physician’s orders were reviewed to detect any change in “code status.” Furthermore, the admission note, all progress notes, and the discharge summary were read in detail to identify documentation of discussion related to end-of-life care planning.

Each patient was categorized by binary descriptors: those having documented evidence of end-of-life care planning or do-not-resuscitate status change and those without. Statistical significance of differences between these two patients groups was assessed by a two-tailed Student’s t-test, for means, and chi-square test, for proportions, respectively.

## Results

Of the 150 patients who had no documented evidence of end-of-life care planning at the time of admission, 17 (11%; 95% CI, 5.9%–16.1%) had their code status changed during the index hospitalization, and an additional four patients (3%; 95% CI, 0.4%–5.6%) had a documented

conversation regarding end-of-life care planning without a subsequent change in code status. Accordingly, there were 129 (86%; 95% CI, 80.4%–91.6%) patients who had no record of either.

There were no differences, with the numbers available, between the groups in terms of mean age, sex, or American Society of Anesthesiologists (ASA) physical status classification system scores, but the mean length of stay of 24 days was higher for those with evidence of end-of-life care planning compared with 8 days for the others ( $p < 0.001$ ; Table 1).

## Discussion

Fragility fractures of the hip are common. Although orthopaedic surgeons can treat the bone injury quite well, many patients fare poorly during subsequent months. Because the presence of a fragility fracture might be a sign of generalized frailty and medical decline, using the presence of such a condition as a springboard for end-of-life care discussion is reasonable. Hung et al. [10] wrote “discussion of management goals and choices with patients and proxies should be initiated early in the course of treatment of patients with hip fracture.” We agree. Nonetheless, the data presented here suggest that this opportunity is squandered: as noted, only 14% of patients studied at our center were documented to have these issues addressed during their acute care hospital stay. In addition, evidence of end-of-life care planning was associated with hospital stays nearly three times longer than baseline, although pre-operative ASA scores were comparable. This suggests that the end-of-life care planning was perhaps provoked by acute clinical deterioration. If so, the rate of “unprompted” end-of-life care planning is even lower than what we found.

**Table 1.** Patient characteristics

Patient characteristic	Patients with no end-of-life care planning	Patients for whom a DNR order was placed or an end-of-life care planning discussion was documented	p value
Mean age in years (SD)	83 (7.3)	84 (5.3)	0.3466
Percent female (number)	69% (89 of 129)	67%	0.8313
ASA score (SD)	3 (0.4)	3 (0.5)	0.1212
Length of stay in days (SD)	8 (5)	24 (19)	< 0.001

DNR = do not resuscitate; ASA, American Society of Anesthesiologists.

We acknowledge limitations with our study. First, we assumed that the medical record would capture evidence of all end-of-life care planning discussions, but it is possible that such discussions may have taken place in the hospital yet were not recorded. It also is possible that end-of-life care planning discussions were initiated by the patient's primary care physician outside the hospital setting. In addition, our health system is a tertiary care facility in a large city and therefore may not be representative of all hospitals. Further, our health system does not have a dedicated hip fracture service [1], although with such a program, there may be medical physicians or geriatricians who are in a better position to discuss goals of care with the patient and family.

There are state-to-state differences in regulations regarding end-of-life care planning. Pennsylvania, where our institution is located, does not require this and thus our results may not be generalizable to all states with different laws. In addition, our study population may be atypical, in that only 55 of 205 patients initially screened had evidence of end-of-life care planning before admission. Other studies [17, 19] found that approximately 70% of patients had participated in end-of-life care planning. However, these studies considered all points along the lifespan (up until the patients died), and thus their results may not be comparable to our data.

Another limitation is that some surgeons may believe that patients with "do not resuscitate" orders must have these orders suspended for surgery. (Awakening patients from anesthesia is a form of resuscitation, after all.) Perhaps physicians were inhibited in their discussion of end-of-life care as some may believe that such talk runs counter to the treatments offered. Still, this limitation may not apply, as there are other forms of end-of-life care planning in addition to "do not resuscitate" orders, and most patients were in the hospital for 5 or more days after completion of their surgery. However, this must be acknowledged (and, in the future, surmounted), as the tone for the entire hospital stay can be set by the initial surgical treatment.

We do note that one theoretical limitation, namely, that patients with hip fractures who were treated nonoperatively might have a higher frequency of end-of-life care planning conversations, did not apply in practice: there were no patients in our sample who otherwise met the inclusion criteria but who did not have surgery.

Despite these limitations, our findings may be important. Since Congress passed the Patient Self-Determination Act in 1990 [7], investigators have increasingly explored the effect of end-of-life care planning [3]. Several retrospective studies have shown that such planning, especially when done more than 30 days before death, is associated with greater use of hospice services, reduced concerns regarding communication, and decreased healthcare utilization in the final week of life [3]. A retrospective study at Duke, for example, revealed that discussing end-of-life care with patients who had ovarian cancer was associated with fewer hospitalizations, intensive care unit admissions, and invasive procedures during the last month of life [11]. End-of-life care planning also has been associated with substantially less Medicare spending [9], but even without the financial savings, end-of-life care planning can be justified and encouraged as a means of respecting patient autonomy and enhancing the quality of care.

Our findings parallel those reported by Freedman et al. [8], who reported that only 24% of women who sustained a low-energy distal radial fracture subsequently underwent either diagnostic evaluation or treatment of osteoporosis. Echoing what was revealed by Freedman et al., our data suggest that physicians may be missing an opportunity. This is particularly relevant because others [16] studying the topic of end-of-life care planning have cited the "lack of a clear threshold or prompting event" as a major impediment. A hip fracture may be such a prompting event, however it is not yet recognized as such.

Discussion of death and decline can be awkward, especially if the physician and patient do not have an established relationship. As such, the physicians treating the acute event of a hip fracture may not be the best ones to

bring up the subject; however, they should not let the chance lapse either. A comment added to the discharge report proposed by Bukata et al. [4], including notification of “the type of procedure that was performed, care providers in the hospital and their contact information, complications encountered, weightbearing status, expected course, a description of any unresolved issue, and specific plans for followup treatment and visits,” may be the best means to do so. This can dovetail nicely with the American Orthopaedic Association’s “Own the Bone” campaign, especially its emphasis on “customized letters to the primary-care physician” [20].

Neuman noted [12] that “acute orthopaedic care offers distinct opportunities to improve the overall experiences of dying patients and their families in ways that may extend beyond the care they deliver for a specific, presenting injury.” Our data suggest that, at least during the acute hospitalization period, these opportunities are not exploited with high frequency. Discussion of goals, expectations, and preferences should be initiated routinely when patients present with a fragility fracture of the hip.

It may be reasonable to provide better reminders to providers regarding end-of-life care planning, such as during grand rounds or other forums [5]. Based on the work of Pronovost [15], showing the benefits of checklists, we recommend that routine order sets include a request for consultation with a geriatrician for end-of-life care planning. Regardless of the methods they use, orthopaedic surgeons should strive to ensure that their attention is not limited to the presenting bony injury, but rather given to all facets of their patient’s condition. In particular, greater consideration to end-of-life care planning for patients with fragility fractures of the hip is needed.

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