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# Palliative care and aggressive interventions after falling: A Nationwide Inpatient Sample analysis

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## Original Article

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## Abstract

**Objective.** The purpose of this study is to identify whether there is an opportunity for improvement to provide palliative care services after a serious fall. We hypothesized that (1) palliative care services would be utilized in less than 10% of patients over the age of 65 who fall and (2) more than 20% of patients would receive aggressive life-sustaining treatments (LSTs) prior to death.

**Methods.** Using the 2017 Nationwide Inpatient Sample, we identified patients who were admitted to the hospital with a fall (ICD-10 W00-W19) and were hospitalized at least two days with valid discharge data. Palliative care services (Z51.5) or LSTs (cardiopulmonary resuscitation, ventilation, reintubation, tracheostomy, feeding tube placement, vasopressors, transfusion, total parenteral nutrition, and hemodialysis) were identified with ICD-10 codes. We examined the use of palliative care or LSTs by discharge destination (home, facility, and death). Logistic regression was used to identify factors associated with palliative care.

**Results.** In total, 155,241 patients were identified (median 82 years old, interquartile range 74–88); 2.5% died in hospital, and 69.4% were transferred to a facility. Palliative care occurred in 4.5% of patients, and LST occurred in 15.1%. Patients who died were significantly more likely to have had palliative care (50.1% vs. 3.4% of home or facility discharges) and were more likely to have an LST [53.0% vs. 9.8% (home) vs. 15.9% (facility)]. Palliative care was associated with both death [adjusted odds ratio (AOR) 19.84, 95% confidence interval (CI) 18.39–21.41, $p < 0.001$] and LST (AOR 1.36, 95% CI 1.27–1.46, $p < 0.001$).

**Significance of results.** Palliative care is associated with both death and LST, suggesting that physicians use palliative care as a last resort after aggressive measures have been exhausted. Patients who fall would likely benefit from the early use of palliative care to align future goals of care.

## Introduction

Falls are the leading cause of injury-related deaths among persons over 65. According to the Centers for Disease Control and Prevention (CDC), the rate of death for patients who experience a fall increased 31% from 2007 to 2016, with the largest increase occurring in patients over 85 years old (Bergen et al., 2016; Burns et al., 2016; Burns and Kakara, 2018). Americans over the age of 65 comprise up to one-quarter of trauma inpatient admissions (Haas et al., 2011), and most of these hospitalizations are due to falls. Injury among older patients can have severe and distressing consequences, including prolonged hospitalizations, lasting functional impairments, and death (Florence et al., 2018). For patients who survive hospitalization, the risk of death continues to be high. Palliative care, or specialized medical care for individuals living with serious illness, would likely be appropriate for many of these patients, to help with surgical and end-of-life decision-making as well as symptom management. The provision of palliative care services can help to increase the quality of life, reduce unnecessary treatments, and align the intensity of care at the end of life with patient preferences. Specifically, palliative care at the index trauma admission may help with subsequent trauma-related symptom management, reduce suffering, and encourage the use of less burdensome end-of-life care for those patients who die after discharge (Lilley et al., 2018).

For many of our older patients, a serious fall is the end result of a multifactorial decline in health. Several single-center studies on palliative care suggest that palliative care consults are requested when death is imminent and treatment options have been exhausted (Rivet et al., 2017; Bhangu et al., 2020), leaving little time for palliative care services to have the desired effect of improving the quality of life and relieving symptoms. There are likely many opportunities to expand this service to patients who are not only imminently dying but also seriously ill or are experiencing a major life change, such as a transition to a nursing facility as a result of

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**Table 1.** ICD-10 codes utilized

| Item | ICD-9 codes | ICD-10 codes |
|---|---|---|
| Fall | E880-E888 | W00-W19 |
| Palliative care | V66.7 | Z51.5 |
| LSTs | | |
| Cardiopulmonary resuscitation | 99.60, 99.62-3 | 5A1.2012, 5A2.204Z, 5A1.2012 |
| Feeding gastrostomy | 43.11, 43.19 | 0DH.63UZ, 0DH.64UZ, 0D1.6074, 0D1.60J4, 0D1.60K4, 0D1.60Z4, 0D1.63J4, 0D1.6474, 0D1.64J4, 0D1.64K4, 0D1.64Z4, 0D1.6874, 0D1.68J4, 0D1.68K4, 0D1.68Z4, 0DH.60UZ |
| Hemodialysis | 39.95 | 5A1.D00Z, 5A1.D60Z |
| Mechanical ventilation | 96.70–2 | 5A1.935Z 5A1.945Z 5A1.955Z |
| Reintubation | 96.04 | 0BH.17EZ, 0BH.18EZ |
| Total parenteral nutrition | 99.15 | 3E0.336Z, 3E0.436Z, 3E0.536Z, 3E0.636Z |
| Tracheostomy | 31.1, 31.29 | 0B1.10F4, 0B1.10Z4, 0B1.13F4, 0B1.13Z4, 0B1.14F4, 0B1.14Z4 |
| Transfusion | 99.0x | 302.33H1, 302.43H1, 302.53H1, 302.63H1, 302.33H0, 302.33N0, 302.33W0, 302.43H0, 302.43N0, 302.43W0, 302.53H0, 302.53N0, 302.53W0, 302.63H0, 302.63N0, 302.63W0, 302.33H1, 302.43H1, 302.53H1, 302.63H1, 302.33N1, 302.33P1, 302.43N1, 302.43P1, 302.53N1, 302.53P1, 302.63N1, 302.63P1, 302.33R1, 302.43R1, 302.53R1, 302.63R1, 302.33J1, 302.33K1, 302.33L1, 302.33M1, 302.43J1, 302.43K1, 302.43L1, 302.43M1, 302.53J1, 302.53K1, 302.53L1, 302.53M1, 302.63J1, 302.63K1, 302.63L1, 302.63M1, 3E0.33GC, 3E0.43GC, 3E0.53GC, 3E0.53GC |
| Vasopressors | 00.17 | 3E0.30XZ, 3E0.33XZ, 3E0.40XZ, 3E0.43XZ, 3E0.50XZ, 3E0.53XZ, 3E0.60XZ, 3E0.63XZ |

traumatic injury. Nearly half of patients discharged to a nursing facility after a fall die within a year, as they have a threefold greater risk of death in 1 year compared to patients who are discharged to home with no assistance (Ayoung-Chee et al., 2014). The scope of the use of palliative care services and the utilization of aggressive life-sustaining measures in this patient population are currently unknown. The identification of this need would quantify opportunities for improvement and palliation in this vulnerable patient population.

Unfortunately, specialized palliative care services in this patient population are likely underutilized and represent an opportunity to improve the lives of this segment of the population. The characterization of this gap in care will quantify this unmet need in our patients. The purpose of our study was to identify opportunities for improvement due to the underutilization of palliation after a serious fall in our oldest patients. Our secondary aim was to examine aggressive life-sustaining treatments [LSTs; cardiopulmonary resuscitation (CPR), mechanical ventilation, reintubation, tracheostomy, total parental nutrition, vasopressors, dialysis, or gastrostomy tube placement] in patients who were admitted after a fall. We hypothesized that (1) palliative care services would be utilized in less than 10% of patients over the age of 65 who fall and (2) more than 20% of patients would receive LSTs prior to death.

## Methods

We utilized the Nationwide Inpatient Sample (NIS) from the year 2017 and included all patients over 65 who were admitted for a fall and were hospitalized for two days or more. NIS data are available from the Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project (HCUP). This NIS is a large, publicly available all-payer inpatient health-care database that includes approximately 7 million discharges per year. Patients with missing or invalid discharge destinations were excluded. Patients who were admitted for a fall were identified using the ICD-10 external cause of morbidity codes (Table 1). Injury data were extracted from all diagnosis code fields and were translated to Abbreviated Injury Scale scores. The major therapeutic procedure was identified using the ICD-10 procedure codes available through the HCUP website.

Patients who received dedicated palliative care services were identified with the ICD-10 code Z51.5 from all possible diagnosis code fields. We also identified LSTs via ICD-10 procedure codes and modified from a method previously identified by Cooper et al. (2016) Hernandez et al. (2015). All procedures were identified from any of 25 possible procedure code positions; as these methods were previously described using ICD-9 codes, Table 1 is provided as a crosswalk to the ICD-10 codes that we utilized in our study. LSTs were defined as the presence of at least one of the following procedures: CPR, feeding gastrostomy tube placement, hemodialysis, mechanical ventilation, reintubation, use of total parenteral nutrition (TPN), tracheostomy, transfusion, or use of vasopressors. Discharge destination was also identified from the NIS and was categorized into three groups: home, facility, or death. Patients were categorized as discharged home or likely home if they were discharged to home, home with services, left against medical advice, or had unknown locations but were known to be alive. Patients were categorized as discharged to a facility if they were transferred to other acute hospitals or to a nursing facility.

We describe the injury and comorbidity patterns of the patients using admission diagnosis-related groups (DRGs), injury severity scores (ISSs), and Elixhauser comorbidities (Elixhauser et al., 1998). We then describe the use of palliative care or LSTs for multiple strata of patients including by age group deciles (65–74, 75–84, and >85) and by discharge destination (home, facility, and death) to identify possible opportunities for palliative care consultation or the use of less aggressive care for patients with a poor prognosis. Multiple group comparisons were

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**Table 2.** Patient characteristics and outcomes by age decile

| | Age 65–74, *N* = 40,009 (25.8%) | Age 75–85, *N* = 53,978 (34.8%) | 85 and older, *N* = 61,253 (39.5%) | *p*-value |
|---|---|---|---|---|
| Female | 23,251 (58.1%) | 34,613 (64.1%) | 43,260 (70.6%) | <0.001 |
| ISS | 4 (1–9) | 4 (1–9) | 4 (1–9) | <0.001 |
| Elixhauser count | 4 (2–5) | 4 (2–5) | 4 (2–5) | <0.001 |
| Death | 780 (2.0%) | 1,306 (2.4%) | 1,851 (3.0%) | <0.001 |
| Palliative care | 1,047 (2.6%) | 2,004 (3.7%) | 3,853 (6.3%) | <0.001 |
| Major OR procedure | 18,996 (47.5%) | 25,185 (46.7%) | 26,365 (43.0%) | <0.001 |
| Aggressive interventions | | | | |
| Any aggressive intervention | 6,121 (15.3%) | 8,382 (15.5%) | 8,931 (14.6%) | <0.001 |
| CPR | 286 (0.7%) | 282 (0.5%) | 250 (0.4%) | <0.001 |
| Gastrostomy | 313 (0.8%) | 433 (0.8%) | 310 (0.5%) | <0.001 |
| Dialysis | 953 (2.4%) | 892 (1.7%) | 329 (0.5%) | <0.001 |
| Ventilator | 1,654 (4.1%) | 1,658 (3.1%) | 1,077 (1.8%) | <0.001 |
| Reintubation | 1,274 (3.2%) | 1,298 (2.4%) | 875 (1.4%) | <0.001 |
| TPN | 72 (0.2%) | 79 (0.2%) | 66 (0.1%) | 0.01 |
| Tracheostomy | 187 (0.5%) | 145 (0.3%) | 48 (0.1%) | <0.001 |
| Transfusion | 3,711 (9.3%) | 5,940 (11.0%) | 7,433 (12.1%) | <0.001 |
| Vasopressors | 221 (0.6%) | 235 (0.4%) | 190 (0.3%) | <0.001 |

performed using Chi-square comparisons for categorical variables and the Kruskal–Wallis test for continuous variables. Logistic regression was performed to identify factors associated with the use of palliative care consultation; variables included in regression were age, sex, Elixhauser comorbidity count, ISS, death, aggressive interventions, and major therapeutic procedure and were adjusted for insurance payer and rural/urban location. All analysis was performed using STATA MP, version 16.1 (StataCorp LLC, College Station, TX). Trauma-related codes were implemented using R version 3.6.3 (Vienna, Austria) and the ICDPIC-R module. STATA modules for Elixhauser and ICD-10 procedure code were also utilized. The use of these data was deemed exempt by the Institutional Review Board of MetroHealth Medical Center (IRB20-00856).

## Results

In total, 170,164 patients aged 65 or older were identified from the NIS with a fall in 2017; 14,923 had a length of stay less than two days or no discharge destination and were excluded, leaving 155,241 patients for analysis. These patients had a median age of 82 [interquartile range (IQR) 74–88], and 101,124 (65.1%) were female. Patients had a median of 4 (IQR 2–5) comorbidities as defined by the Elixhauser criteria; the most common comorbidities were hypertension (complicated or uncomplicated, 78.2%), cardiac arrhythmias (36.6%), and fluid and electrolyte disorders (35.3%). Other comorbidities present in more than 20% of the population were chronic pulmonary disease (22.5%), renal failure (22.5%), congestive heart failure (22.2%), and hypothyroidism (22.5%). Eight percent of the population had private insurance, Medicaid, or other insurance listed as the primary payer.

Six of the eight most common DRGs (481, 470, 480, 536, 482, and 469) indicated hip, femur, or knee fractures or procedures, accounting for 34.6% of the population. Other common DRGs included medical back problems (DRG 552, in 5,225 or 3.4%), orthopedic injury of joints and bones other than hip/femur/pelvis/thigh (DRG 563, in 5,076 or 3.3%), traumatic coma (DRG 86, in 3,538 or 2.3%), and sepsis (DRG 871, in 2,793 or 1.8%). The median ISS was 4 (IQR 1–9). Nine percent (13,875) met criteria for severe injury with an ISS of 15 or higher. Nearly half of patients [70,546 (45.4%)] had a major therapeutic operative procedure during this admission, and 12,967 (8.4%) had more than one major therapeutic operation. In total, 3,937 (2.5%) died during the hospital admission, 43,507 (28.0%) were discharged to home or presumed to home, and 107,797 (69.4%) were transferred to another facility.

Palliative care consultation was noted in 6,904 (4.5%) of patients; 28.6% of consultations occurred in patients who died, and 50.1% of patients who died had a palliative care consultation. LSTs were provided for 23,464 patients (15.1%). Of the 3,937 patients who died, 2,086 (53.0%) underwent LSTs. For LSTs, 818 (0.5%) received CPR, 1,056 (0.7%) received a feeding tube, 2,174 (1.4%) had dialysis, 646 (0.4%) had vasopressors, 4,389 (2.8%) received mechanical ventilation, 3,447 (2.2%) were reintubated, 380 (0.2%) had a tracheostomy, 217 (0.1%) had TPN, and 17,084 (11.0) had a transfusion.

Patient characteristics and outcomes of interest stratified by age groups are presented in Table 2. Older patients were more likely to be female, had slightly higher injury severity, and had slightly higher rates of death. Older patients were less likely to receive operative procedures (47.5% for age 65–74, 46.7% for age 75–84, and 43.0% for age 85 and older) and were more likely to receive palliative care (2.6% for age 65–74, 3.7% for age 75–84, and 6.3% in patients aged 85 and older). In general, about 15% of all patients received aggressive interventions, although the oldest group was slightly less likely to receive these (15.3% for age 65–74, 15.5% for age 75–84, and 14.6% in patients aged 85 and older). The oldest group was more likely to receive transfusions

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**Table 3.** Patient characteristics and outcomes by discharge destination

| Factor | Home $N = 43,506$ (28.0%) | Facility $N = 107,797$ (69.4%) | Death $N = 3,937$ (2.5%) | *p*-value |
|---|---|---|---|---|
| Female | 25,972 (59.7%) | 73,226 (67.9%) | 1,926 (48.9%) | <0.001 |
| ISS | 4 (1–9) | 4 (1–9) | 9 (4–16) | <0.001 |
| Elixhauser count | 3 (2–5) | 4 (2–5) | 5 (3–6) | <0.001 |
| Palliative care | 1,479 (3.4%) | 3,454 (3.2%) | 1,971 (50.1%) | <0.001 |
| Major OR procedure | 12,876 (29.6%) | 56,315 (52.2%) | 1,355 (34.4%) | <0.001 |
| Aggressive interventions | | | | |
| Any aggressive intervention | 18.15 (9.8%) | 17,094 (15.9%) | 2,086 (53.0%) | <0.001 |
| CPR | 163 (0.4%) | 297 (0.3%) | 358 (9.1%) | <0.001 |
| Gastrostomy | 85 (0.2%) | 894 (0.8%) | 77 (2.0%) | <0.001 |
| Dialysis | 584 (1.3%) | 1,414 (1.3%) | 176 (4.5%) | <0.001 |
| Ventilator | 498 (1.1%) | 2,400 (2.2%) | 1,491 (37.9%) | <0.001 |
| Reintubation | 379 (0.9%) | 1,790 (1.7%) | 1,278 (32.5%) | <0.001 |
| TPN | 42 (0.1%) | 146 (0.1%) | 29 (0.7%) | <0.001 |
| Tracheostomy | 16 (0.0%) | 319 (0.3%) | 45 (1.1%) | <0.001 |
| Transfusion | 3,073 (7.1%) | 13,342 (12.4%) | 669 (17.0%) | <0.001 |
| Vasopressors | 87 (0.2%) | 338 (0.3%) | 221 (5.6%) | <0.001 |

but less likely to receive the other interventions such as CPR, feeding tube placement, dialysis, and mechanical ventilation.

Patient characteristics and outcomes of interest stratified by discharge destination are presented in Table 3. Patients who died were much less likely to be female, were significantly older, and had more comorbidities than those who were discharged to home or to a facility. Patients who died were much more likely to have a palliative care consult (50.1%); 3.4% of patients who were discharged home and 3.2% of those who were discharged to a facility had palliative care consults. Patients who were discharged home were less likely to have a major operative procedure (29.6% vs. 52.2% in patients discharged to a facility and 34.4% in patients who died). Patients who died were more likely to have an aggressive intervention (53.0% vs. 9.8% in homegoing and 15.9% in patients who were discharged to a facility). Ventilator use and reintubations were the most commonly utilized aggressive therapies in those who died. It is also important to note that only 7% of patients who had a transfusion (3,073 of 17,084) and 13% of patients who had vasopressor therapy (87 of 646) ended up being discharged to home. For patients who survived, palliative care occurred more frequently in patients who did not undergo operations (4.4% vs. 1.9%, $p < 0.001$).

For the logistic regression, we included age, sex, Elixhauser comorbidity count, ISS, death, use of aggressive interventions, and major operating room (OR) procedures as factors that would possibly be associated with the use of palliative care. Additional variables from the NIS were included in the model to adjust for possible bias, including primary payer and rural/urban location of the hospital. All included variables were significantly associated with the use of palliative care consult. Death had the strongest positive association with the use of a palliative care consultation [odds ratio (OR) 19.84, 95% confidence interval (CI) 18.38–21.41, $p < 0.001$]; the use of aggressive interventions was also positively associated with the use of palliative care (OR 1.364, 95% CI 1.27–1.46, $p < 0.001$). Patients with higher comorbidity, higher injury severity, and older age were also associated with the use of palliative care. Females (OR 0.92, 95% CI 0.87–0.97, $p < 0.001$) and patients who had underwent a major operative procedure (OR 0.43, 95% CI 0.40–0.45, $p < 0.001$) were significantly less likely to receive palliative care consultation (Table 4).

**Table 4.** Logistic regression for factors associated with palliative care consultation

| Factor | OR | 95% CI | *p*-value |
|---|---|---|---|
| Age | 1.06 | 1.06–1.06 | <0.001 |
| Female sex | 0.92 | 0.87–0.97 | 0.003 |
| Elixhauser count | 1.15 | 1.14–1.17 | <0.001 |
| ISS | 1.06 | 1.05–1.06 | <0.001 |
| Death | 19.84 | 18.39–21.41 | <0.001 |
| Aggressive intervention | 1.36 | 1.27–1.46 | <0.001 |
| Major OR procedure | 0.43 | 0.40–0.45 | <0.001 |

Model includes adjustments for insurance payer and rural/urban location. Pseudo $R^2 = 0.184$.

## Discussion

Across the USA, patients who fall are often octogenarians with a relatively low injury burden. These patients can be treated with aggressive measures such as surgery, transfusions, and mechanical ventilation, and fewer than 30% are discharged to home. Although the mortality for the index hospitalization in our study was only 2.5%, more than two-thirds of these patients were discharged to a facility rather than to home, indicating a high burden of physical limitations at the time of discharge. The most common diagnosis was lower extremity or pelvis fractures, which are known to be associated with poor outcomes such as long-term morbidity, mortality, loss of independence,

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and financial burden. The provision of geriatric-focused palliative care in these patients can help optimize the quality of life, reduce suffering, and may be associated with less burdensome end-of-life care for patients who die after discharge (Lilley et al., 2018). Unfortunately, inpatient palliative care usage is low; in our study, fewer than 5% of patients had palliative care consultations, which usually occurred in patients who died in the hospital. Patients who died were also more likely to have received aggressive life-sustaining therapy measures such as reintubation, transfusions, CPR, dialysis, TPN, vasopressors, and placement of a tracheostomy or feeding tube. In logistic regression, palliative care consults were associated with both aggressive measures and death, suggesting that palliative care may be instituted as a last resort option when death is imminent after treatment options have been exhausted rather than as an opportunity to improve the quality of life in high-risk patients.

Palliative care is an interdisciplinary specialty dedicated to improving the quality of life for individuals with serious illness. In addition, palliative care aims to connect the medical treatment of symptoms with communication and coordination about goals of care to ensure that medical goals are concordant with patient preferences (Kelley et al., 2017). Many older patients who fall meet the criteria of having serious illness, with multiple comorbidities, at least one fall with consequences, high rates of utilization of skilled facilities, and a hospital admission related to the fall (Kelley and Morrison, 2015). However, in the setting of admission to the hospital for a fall with an injury, palliative care is often offered after aggressive treatments are ineffective or patients fail to improve and death is imminent (Rivet et al., 2017; Bhangu et al., 2020). Our study reveals that there may be an opportunity to close the gap and offer palliative care to patients before they are imminently dying.

As expected, the most common diagnosis treated in this population was hip fractures. Over 250,000 hip fractures are sustained annually in the USA (NHDS, 2019), which are typically treated with a focus on restoring patients to independent function. Although estimates vary, the reported 1-year mortality rate after hip fracture can range from 12% to 58% depending on the population, with the highest mortality in previously institutionalized individuals (Aharonoff et al., 1997; Roche et al., 2005; Rapp et al., 2008; Schnell et al., 2010). The acute admission for a fall in this population may be the opportune occasion to discuss long-term goals of care and patient-centered goals, although current literature suggests that these interventions are underutilized (Dunn et al., 2016; Johnston et al., 2018; Koso et al., 2018). Unfortunately, many of these patients present with functional vulnerability before the fall, which renders rehabilitation to independent function unlikely (Ritchie et al., 2016). While it may be reasonable to perform surgery or other aggressive interventions to prolong life or limit pain from the fracture, poor prognosis in this patient population is expected (Leibson et al., 2002; Farahmand et al., 2005). The index fall admission may be an opportune moment to discuss goals of care not only with both patients who are dying but also with those with high likelihood of new dependence on others or transition to nursing facilities.

In our study, palliative care consults were seldom used in this patient population. There are several barriers to the use of palliative care in trauma patients. The sudden onset of the injury condition can make patients, families, and physicians hopeful that a recovery to the previous level of function can also be rapid. In addition, surgeons often place emphasis on cure and short-term quality metrics such as survival to 30 days, whereas death may be seen as a failure of care. In our data, patients who received surgery were significantly less likely to receive palliative care (5.9% in patients without surgery vs. 2.7% in patients who received surgery, $p < 0.001$). In addition, there is likely a continued misunderstanding about the differences between palliative care, to be used in seriously ill patients with any disease and any age, and hospice, which is to be used in patients with expected mortality within 6 months. Some suggestions to counteract these barriers specifically targeted to surgical caregivers. Structured integration of palliative care in the intensive care unit can increase goals of care discussions (Mosenthal et al., 2008). Another suggestion is to encourage and disseminate communication techniques designed to foster goal concordant care (Cooper et al., 2016). Alternatively, a shift to focus quality metrics in trauma intensive care units from 30-day mortality to measurements of achievement of patient treatment preferences may prioritize patient beneficence and autonomy (O'Connell and Maier, 2016).

This study has multiple limitations. The use of the NIS relies on discharge coding and accuracy. Administrative codes, especially injury codes or the palliative care billing code (Z51.5), may be underutilized, and therefore there may be more patients with falls or more patients who received palliative care and who were not identified. The use of ICD-10 codes for billing may undercode other diagnoses as well, which would have led to underestimated levels of injury or comorbidities in this population (Hua et al., 2017; Feder et al., 2018). We did find that the use of the palliative care code was present in a large number of patients who died, suggesting that this code was not routinely omitted from billing records. Even if this were undercoded, the large difference in palliative care coding in patients who died and those who did not die suggests that this finding is genuine. Given these limitations, the findings of this large population-based study suggest a substantial opportunity for improvement in the care of older patients who fall.

In conclusion, this study showed that patients who fall have high rates of discharge to facility and death, but very low rates of the use of palliative care. In addition, we showed that palliative care consultation is much more likely to be utilized for patients who die in the hospital and is being reserved for patients who are receiving aggressive interventions. The routine use of palliative care early in the hospitalization may help to align goals of care with patient preferences for a vulnerable population, but may also help to limit the use of aggressive interventions in patients who are imminently dying after trauma.

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