Current Trends in Geriatric Emergency Medicine

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KEYWORDS

• Geriatric emergency medicine • US health spending • Geriatric screening
• Geriatric trauma • Palliative care

KEY POINTS

- As the number (and percentage) of Americans 65 years and older continues to grow, the number (and percentage) of geriatric emergency department (ED) visits will continue to rise significantly.
- The aging of the United States population is a force that is driving up the cost of health care.
- There is a growing movement in the United States to incorporate features into EDs to make them friendlier for elderly patients.
- Geriatric patients are often sicker than their younger counterparts and may be lacking many classic features of disease states.
- Recognizing delirium in the elderly ED patient is an essential component of geriatric emergency medicine.

BACKGROUND

According to the Administration on Aging (AoA), US Department of Health and Human Services, 14.1% of the population in the United States, totaling 44.7 million Americans, was 65 years of age or older in 2013. AoA projects that older Americans will make up 21.7% of the population by 2040 and that there will be 98 million older persons living in America by 2060[1] (**Fig. 1**).

The National Center for Health Statistics of the Centers for Disease Control reports 136.3 million emergency department (ED) visits in 2011,[2] of which 20.4 million (15%) were senior citizens (age $\geq$65 years) (**Table 1**).[3] More recent statistics estimate the current percentage of ED visits of patients older than 65 years at 18%[4], with patients 75 and older having the highest visit rate compared with all other demographics.[5]

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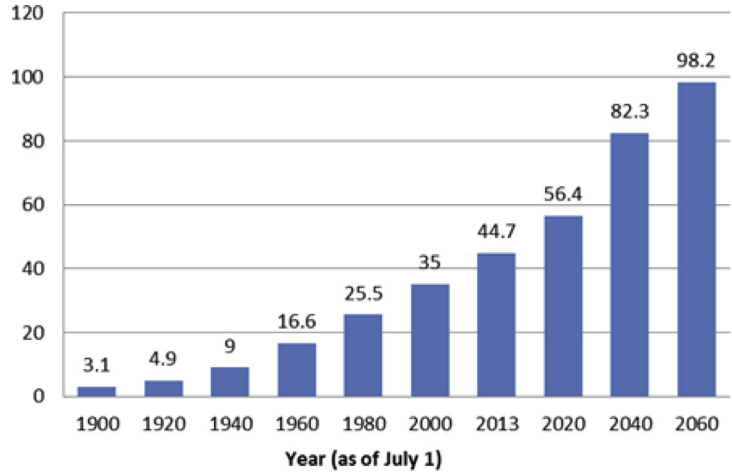

Fig. 1. This chart shows the large increases in the older population from 3.1 million people in 1900 to 44.7 million in 2013 and projected to be 98.2 million in 2060. Source: U.S. Census Bureau, Population Estimates and Projections.

Senior citizens presenting to the ED are more likely to be triaged to higher levels of urgency (levels 1, 2, and 3) (**Table 2**), spend more time in the ED for diagnostic testing, and use more resources compared with their younger counterparts.[6]

A review of hospital administrative data for the 10-year period from 2002 to 2012 in Switzerland revealed a 27.6% overall increase in ED visits, with 42.3% increase in the subset of patients older than 65 years.[7]

UNITED STATES HEALTH SPENDING

The Center for Medicare and Medicaid Services reported in *Health Affairs* in 2015 that US health spending is expected to increase by 5.8% per year over the next 10 years due to faster economic growth, aging of the population, and expanded insurance coverage through the Affordable Care Act (ACA).[8,9] *Health Affairs* further reports that health care spending will consume 19.6% of US gross domestic product in 2024, up from 17.4% in 2013.[8]

GERIATRIC EMERGENCY DEPARTMENTS

EDs are often not designed with the care of the elder patient in mind. The bright lights, bright floors, high noise level, uncomfortable stretchers, and lack of easily accessible bathrooms may unsettle an elderly patient who has fewer coping skills than younger people. Emergency care itself is not generally geared toward the elderly. The rapid pace of triage, evaluation, and treatment may overwhelm the elderly patient, who may have been sent to the ED and may not even know why she or he is there.[10] In response to this need, many US hospitals have developed geriatric-friendly EDs. Many hospitals do not have the resources to build a geriatric ED but can still make the existing ED geriatric-friendly.

The American College of Emergency Physicians, The American Geriatrics Society (AGS), Emergency Nurses Association, and Society for Academic Emergency Medicine have developed "Geriatric Emergency Department Guidelines" to serve as a framework for creating senior-friendly EDs.[11] These guidelines outline not only the physical plans that are conducive to emergency care but also review the recommended staffing needed to make the geriatric ED work. Additional resources needed for

Table 1
Emergency department visits by patient age, sex, and residence: United States, 2011

Selected Patient Characteristics	Number of Visits in Thousands (Standard Error in Thousands)		Percent Distribution (Standard Error of Percent)		Number of Visits per 100 Persons per Year[a] (Standard Error of Rate)	
All visits	136,296	(6413)	100.0	—	44.5	(2.1)
Age[a]						
Younger than 15 y	24,823	(1724)	18.2	(0.9)	40.6	(2.8)
Younger than 1 y	3485	(303)	2.6	(0.2)	87.3	(7.6)
1–4 y	9773	(737)	7.2	(0.4)	60.5	(4.6)
5–14 y	11,565	(823)	8.5	(0.4)	28.2	(2.0)
15–24 y	22,150	(1140)	16.3	(0.3)	51.7	(2.7)
25–44 y	39,124	(1997)	28.7	(0.6)	48.7	(2.5)
45–64 y	29,828	(1537)	21.9	(0.5)	36.4	(1.9)
65 y and older	20,372	(1172)	14.9	(0.5)	50.8	(2.9)
65–74 y	8208	(518)	6.0	(0.2)	36.9	(2.3)
75 y and older	12,163	(729)	8.9	(0.3)	68.2	(4.1)
Sex and age[a]						
Female	74,621	(3622)	54.7	(0.4)	47.6	(2.3)
Younger than 15 y	11,385	(820)	8.4	(0.5)	38.1	(2.7)
15–24 y	13,289	(746)	9.8	(0.2)	62.6	(3.5)
25–44 y	22,534	(1192)	16.5	(0.4)	55.1	(2.9)
45–64 y	15,381	(862)	11.3	(0.3)	36.4	(2.0)
65–74 y	4353	(296)	3.2	(0.2)	36.6	(2.5)
75 y and over	7678	(498)	5.6	(0.2)	72.1	(4.7)
Male	61,676	(2890)	45.3	(0.4)	41.2	(1.9)
Younger than 15 y	13,439	(945)	9.9	(0.5)	43.0	(3.0)
15–24 y	8861	(463)	6.5	(0.2)	41.0	(2.1)
25–44 y	16,590	(906)	12.2	(0.3)	42.1	(2.3)
45–64 y	14,446	(768)	10.6	(0.3)	36.4	(1.9)
65–74 y	3855	(283)	2.8	(0.1)	37.2	(2.7)
75 y and older	4485	(293)	3.3	(0.2)	62.4	(4.1)
Patient residence						
Private residence[a]	126,297	(5984)	92.7	(0.4)	41.2	(2.0)
Nursing home[b]	2557	(184)	1.9	(0.1)	74.2	(5.3)
Homeless[c]	1092	(160)	0.8	(0.1)	171.7	(25.1)
Other	1401	(135)	1.0	(0.1)	0.5	(0.0)
Unknown or blank	4949	(475)	3.6	(0.3)	1.6	(0.2)

—, Category not applicable. 0.0. Quantity more than zero but less than 0.05. Note: numbers may not add to totals because of rounding.

[a] Visit rates for age, sex, and private residence are based on the July 1, 2011, set of estimates of the civilian noninstitutionalized population of the United States as developed by the Population Division, US Census Bureau.

[b] Visit rates for nursing home residents are based on the 2011 population denominators from the Center for Clinical Standards and Certification Group, Centers for Medicare and Medicaid Services.

[c] Visit rates for the homeless people are based on The 2011 Annual Homeless Assessment Report to Congress by the US Department of Housing and Urban Development.

Data from CDC/NCHS. National Hospital Ambulatory Medical Care Survey. Available at: http://www.cdc.gov/nchs/fastats/emergency-department.htm. Accessed October 14, 2015.

Table 2
Triage status of emergency department visits, by selected patient characteristics: United States, 2011

Patient and Visit Characteristics	Number of Visits in Thousands	Total	Level 1 (Immediate)		Level 2 (Emergent)		Level 3 (Urgent)		Level 4 (Semiurgent)		Level 5 (Nonurgent)		No triage[1]	
		Percent distribution (standard error of percent)												
All visits	136,296	100.0	1.2	(0.2)	10.7	(0.6)	42.3	(1.1)	35.5	(1.0)	8.0	(0.7)	*2.2	(0.8)
Age														
Younger than 15 y	24,823	100.0	0.7	(0.2)	6.2	(0.9)	31.1	(1.5)	47.0	(1.6)	13.1	(1.5)	*1.9	(0.7)
Younger than 1 y	3485	100.0	*	—	6.5	(1.9)	31.7	(2.3)	46.5	(2.6)	13.1	(2.0)	*	—
1–4 y	9773	100.0	*	—	5.1	(0.8)	31.8	(1.9)	47.4	(2.0)	13.3	(1.5)	*1.5	(0.6)
5–14 y	11,565	100.0	*	—	6.9	(0.9)	30.3	(2.0)	46.8	(1.9)	13.0	(1.6)	*2.3	(0.8)
15–24 y	22,150	100.0	1.1	(0.3)	7.6	(0.7)	40.1	(1.5)	39.8	(1.3)	9.0	(1.0)	*2.4	(1.0)
25–44 y	39,124	100.0	1.1	(0.2)	8.9	(0.7)	42.8	(1.3)	37.0	(1.0)	8.0	(0.9)	*2.1	(0.8)
45–64 y	29,828	100.0	1.3	(0.3)	14.8	(1.0)	45.3	(1.3)	30.3	(1.2)	6.1	(0.7)	*2.2	(0.8)
65 y and older	20,372	100.0	*1.9	(0.6)	17.1	(1.0)	53.0	(1.6)	21.8	(1.4)	3.7	(0.6)	*2.4	(0.9)
65–74 y	8208	100.0	*2.2	(0.9)	17.9	(1.3)	50.3	(1.8)	23.2	(1.5)	4.0	(0.7)	*2.4	(1.0)
75 y and older	12,163	100.0	*1.7	(0.5)	16.6	(1.2)	54.9	(1.9)	20.9	(1.6)	3.6	(0.6)	*2.4	(0.9)
Sex														
Female	74,621	100.0	0.9	(0.2)	10.1	(0.7)	44.2	(1.3)	35.0	(1.2)	7.6	(0.7)	*2.2	(0.8)
Male	61,676	100.0	1.6	(0.3)	11.4	(0.7)	40.0	(1.0)	36.2	(0.9)	8.6	(0.8)	*2.1	(0.8)

Race[2,3]													
White	98,147	100.0	1.3	(0.3)	11.2	(0.7)	42.5	(1.3)	34.6	(1.1)	8.0	(0.8)	*2.4	(0.9)
Black or African American	32,627	100.0	1.0	(0.2)	9.4	(0.8)	41.6	(1.4)	38.3	(1.5)	8.5	(0.9)	*1.3	(1.1)
Other	5523	100.0	*	—	9.2	(1.3)	43.4	(2.6)	35.9	(2.2)	6.7	(1.3)	*3.8	(2.6)
Ethnicity and race[2,3]														
Hispanic or Latino	19,206	100.0	0.8	(0.2)	9.3	(1.0)	41.4	(2.0)	37.2	(1.7)	10.0	(1.4)	*1.3	(1.0)
Not Hispanic or Latino	117,091	100.0	1.3	(0.3)	10.9	(0.7)	42.5	(1.2)	35.3	(1.0)	7.7	(0.7)	*2.3	(0.8)
White	81,185	100.0	1.4	(0.3)	11.6	(0.8)	42.8	(1.4)	34.2	(1.2)	7.6	(0.8)	*2.5	(0.9)
Black or African American	31,514	100.0	1.0	(0.2)	9.6	(0.8)	41.4	(1.5)	38.3	(1.6)	8.4	(0.9)	*1.4	(1.2)
Other	4392	100.0	*	—	9.3	(1.3)	44.8	(2.9)	34.5	(2.2)	5.9	(1.2)	*4.5	(3.2)
Expected sources of payment[4]														
Private insurance	47,600	100.0	1.3	(0.4)	11.9	(0.7)	45.3	(1.4)	32.6	(1.1)	6.8	(0.8)	*2.2	(0.8)
Medicaid or CHIP[5]	43,327	100.0	0.8	(0.2)	9.6	(0.9)	38.7	(1.3)	38.4	(1.4)	9.8	(1.0)	*2.6	(1.1)
Medicare	25,060	100.0	1.7	(0.5)	16.4	(1.0)	50.2	(1.4)	24.8	(1.4)	4.4	(0.5)	*2.6	(1.1)
Medicare and Medicaid[6]	5771	100.0	*	—	16.3	(1.7)	46.8	(2.2)	27.0	(2.2)	5.3	(0.8)	*3.4	(1.8)
No insurance[7]	21,744	100.0	1.4	(0.3)	9.2	(0.8)	39.7	(1.3)	39.2	(1.2)	8.7	(1.0)	*1.9	(0.8)
Workers' compensation	1503	100.0	*	—	*	—	22.1	(3.0)	57.7	(3.5)	*	—	*	—
Other	5592	100.0	*	—	10.3	(1.1)	44.5	(2.6)	37.1	(1.6)	6.4	(1.3)	*	—
Unknown or blank	7867	100.0	*	—	7.5	(1.3)	42.2	(2.5)	37.3	(2.1)	10.1	(1.3)	*	—

—, Category not applicable.
* Figure does not meet standards of reliability or precision (see author's note on page 447).
Data from National Hospital Ambulatory Medical Care Survey: 2011 Emergency Department Summary Tables. Available at: http://www.cdc.gov/nchs/fastats/emergency-department.htm. Accessed October 14, 2015.

geriatric assessments are discussed, including access to pharmacists, social workers, and case managers, who are all needed in the facilitation of clinical care and care transitions, which are the pillars of quality geriatric care. Finally, these guidelines review the importance of screening tools for geriatric patients, the appropriate use of urinary catheters, medication management, fall assessment, delirium and dementia assessments, and the introduction of palliative care. *Modern Healthcare* reports that "more than 50 US hospitals have opened EDs for elderly patients since 2011 and at least 150 more have senior-specific EDs in development," according to Emergency Care Research Institute.[12] The financial implications of developing a geriatric ED are potentially promising but are unclear at this time.

FRAIL SENIORS

Frailty encompasses a decline in resilience and physiologic reserves and ultimately places an elder at increased risk of poor outcomes.[13] One component of frailty is mobility, a question commonly asked by ED staff, particularly at the time of discharge. Based on a recent study by Dr Timothy Platts-Mills in *Annals of Emergency Medicine*, self-reporting may not be an accurate method of assessing seniors' mobility.[14] In this study, 12% of independently-living senior citizens who reported that they could get out of bed, walk 10 feet, turn around, and return to bed without assistance, actually needed help to complete this task. Of seniors who stated that they could complete the task independently with the aid of a cane or walker, 48% actually needed assistance or could not complete the task.[15] Dr Platts-Mills recommends direct observation of mobility of seniors being discharged to live independently.[14,15]

Toosizadeh and Mohler[16] (2015) report an objective measure of frailty that does not depend on gait. Slowness of elbow flexion, weakness, exhaustion, and flexibility were measured using wireless sensors. This technology may be applicable to older non-ambulatory individuals in the ED. Soong and colleagues[17] (2015) found that frailty syndromes based on hospital data alone can be a good predictor of mortality, institutionalization, and ED recidivism; however, further prospective studies are needed to assess its use.

PREHOSPITAL CARE

Another issue facing the future of health care with the aging of the population is how it will affect emergency medical service (EMS) usage. Elders use EMS more often than their younger counterparts. This was confirmed in a recent Canadian study by Goldstein and colleagues,[18] who found that close to 50% of the EMS call volume over a 1-year period was for people age older than 65 years.

Kodadek and colleagues[19] undertook a study to determine whether older trauma victims are appropriately triaged by reviewing the 2011 Nationwide Emergency Department Sample. After comparing new injury severity score with triage to levels 1 and 2 trauma centers or elsewhere, his analysis demonstrates a significant undertriage of trauma patients of age older than 55 years.

Nelson-Williams and colleagues[20] recently reviewed the Nationwide Emergency Department Sample from 2006 to 2010 of isolated hip fracture patients older than 65 years. He concludes that patients with isolated hip fractures triaged to higher level trauma centers (levels 1 and 2) do not have a significant difference in mortality or discharge disposition when compared with those triaged to a level 3 trauma center or nondesignated trauma center.

Currently, there is an ongoing program evaluation underway in Ontario, Canada, to reduce EMS calls and improve health care in seniors' apartment buildings. Through

the Community Health Assessment Programme with EMS, paramedics have weekly sessions in which they assess risk for cardiovascular disease, diabetes, and falls, and communicate with the person's primary care provider.[21] This is an ongoing study with no published results yet.

SCREENING AND PREDICTION TOOLS

There are multiple screening and prediction tools that have been developed to help determine the outcome of elderly patients after discharge from the ED.

Functional assessment tools include Activities of Daily Living and Instrumental Activities of Daily Living, both of which are incorporated into Older American Resources and Services. Other screening tools for functional assessment are the "get up and go" test and the short performance physical battery, among others.[22]

There are numerous tools used to predict functional decline after discharge from the ED, including identification of seniors at risk (ISAR), brief risk identification for geriatric health tool, and triage risk screening tool, among others.[22] The ISAR tool was recently reviewed by Yao and colleagues[23] to determine its predictive validity. In this systematic review, the ISAR tool was found to have poor validity related to ED return visits and hospital readmission.

Most recently, a large systematic review and meta-analysis performed by Carpenter and colleagues[24] determined that, although absence of dependency reduces the risk of 1-year mortality, no individual risk factor, frailty construct, or risk assessment instrument accurately predicts risk of adverse outcomes in older ED patients.

The Mayo Ambulatory Geriatric Evaluation questionnaire can be completed by elders during primary care provider visits to determine the relationship between geriatric symptoms and ED visits and/or hospitalization within 1 year.[25] Several symptoms were found to be associated with ED visits and/or hospitalization within 1 year: advanced age, self-report of worsening health, 2 or more falls, weight loss, and depressed mood.[25]

Launay and colleagues[26] recently used artificial neural networks to analyze a 10-item brief geriatric assessment in older ED patients admitted to an acute care hospital. The purpose was to determine which admitted seniors would have prolonged hospital stays. The investigators concludes that the 10-item assessment accurately predicts which patients will have prolonged length of stay, with the presence of chronic conditions being the most important contributor to predictive accuracy of the screening tool.

Inzitari and colleagues[27] recently reviewed 3 screening tools to help determine which elders can be transferred directly from the ED to intermediate care facilities instead of admission to acute care hospitals. The investigators reviewed ISAR, Silver Code, and the Walter indicator, and concluded that ISAR was independently associated with transfer to intermediate care from the ED but that predictive validity was poor and that further research is needed on this determination. Regardless of the tool selected, it is important for older adults discharged from the ED, either to home or to inpatient status, to receive a geriatric assessment. These assessments not only identify risk factors for poor outcomes but also increase the likelihood of a patient being alive and in their own home at up to 12 months.[28,29] An important question is who should perform geriatric screenings? Can screenings be performed by social workers or case mangers as opposed to emergency medicine clinicians? Although there is limited evidence in this area, future research is needed to understand these limitations and what ED instruments can be developed that use alternative variables such as a variety of social determinants of health, health literacy, and dementia, which are often clinically occult.

Finally, it is important to incorporate a caregiver's input into the decision-making process of admission or discharge because they often understand the patient's ability to successfully thrive in the outpatient setting far better than the transient snapshot ED providers obtain during their visit. Ae and colleagues[30] report that a caregiver daily impression rating instrument may detect illness severity beyond physical findings and propose that, once validated, it could be used by caregivers as part of their daily assessments.

MEDICATION SAFETY

The AGS reports that 35% of older adults living in the community experience an adverse drug event (ADE) every year, and that 2 out of 3 people living in skilled nursing facilities experience an ADE over 4 years. AGS further reports that nearly 1 of 3 hospital admissions in senior citizens is caused by an ADE. Risk factors for an ADE include multiple chronic diseases, multiple prescription medications, multiple medication doses per day, advanced age, and reduced creatinine clearance, among others.[31]

There are multiple age-related alterations in pharmacokinetics, which may predispose elderly people to an ADE. The frequency of bleeding events associated with anticoagulants, for example, increases with age. Medication review and reconciliation is essential in preventing ADEs in the elderly.[32] ED pharmacists can make a significant contribution to patient safety in elderly ED patients.

DETECTING DELIRIUM

Delirium is a common syndrome in hospitalized older adults and is associated with increased mortality, hospital costs, and long-term cognitive and functional impairment.[33,34] Recognition of delirium in older patients during ED visits, and differentiating it from dementia, is challenging yet of paramount importance.[35] *The International Statistical Classification of Diseases* 10th Revision, 2015, defines delirium as "an etiologically nonspecific organic cerebral syndrome characterized by concurrent disturbances of consciousness and attention, perception, thinking, memory, psychomotor behavior, emotion, and the sleep-wake schedule, the duration is variable and the degree of severity ranges from mild to very severe."[36] Delirium is generally acute in onset and can be caused by medical conditions that are reversible, with improvement in mental status when the underlying medical problem is treated.[37] The longer a patient is delirious, the worse the outcome, including an increase in the risk of death at 3 months.[37]

Extensive work on detecting delirium early in the ED can potentially reduce inpatient morbidity. Informal assessments of delirium are known to be inadequate[38] with several formal delirium tools being too cumbersome. Modified versions of the Confusion Assessment Method show good promise as a short, effective, and feasible tool that can be easily implemented in EDs[38–40] However, their sensitivity for older adults, particularly the intensive care unit version remains modest at best.[39]

Dementia, on the other hand, develops more gradually, presents with progressive cognitive deficits, and is generally not reversible.[41] It is particularly challenging to recognize delirium in the setting of pre-existing dementia.

The Richmond Agitation Sedation Scale (RASS), a rapid assessment tool for level of consciousness, was recently evaluated by Han and colleagues[42] for its use in detecting delirium in the ED. RASS is scored from minus 5 (unarousable) to plus 4 (combative), with 0 being alert and calm (**Table 3**). The investigators conclude that a RASS score greater than plus 1 or less than minus 1 is highly sensitive and specific for diagnosing delirium.[42]

Table 3
Richmond agitation-sedation scale

Step 1 Level of Consciousness Assessment			
Scale	**Label**	**Description**	
+4	Combative	Combative, violent, immediate danger to staff	
+3	Very agitated	Pulls to remove tubes or catheters, aggressive	
+2	Agitated	Frequent nonpurposeful movement, fights ventilator	
+1	Restless	Anxious, apprehensive, movements not aggressive	
0	Alert & calm	Spontaneously pays attention to caregiver	
−1	Drowsy	Not fully alert but has sustained awakening to voice (eye opening & contact >10 s)	Voice
−2	Light sedation	Briefly awakens to voice (eyes open & contact <10 s)	
−3	Moderate sedation	Movement or eye opening to voice (no eye contact)	
	If RASS is ≥ −3 proceed to CAM-ICU (Is patient CAM-ICU positive or negative?)		
−4	Deep sedation	No response to voice but movement or eye opening to physical stimulation	Touch
−5	Unarousable	No response to voice or physical stimulation	
	If RASS is −4 or −5 →	Stop (patient unconscious), recheck later	

From Refs.[72–74]

TRAUMA AND FALLS

The American College of Surgeons (ACS) has developed Geriatric Trauma Management Guidelines, in which ACS reports that "traumatic injury in the geriatric population is increasing in prevalence and is associated with higher mortality and complication rates compared with younger patients" (**Fig. 2**). There are also data to suggest that victims of falls are subject to poor outcomes and ED recidivism.[43] The ACS guidelines suggest a lower threshold of trauma team activation for elderly trauma victims (**Fig. 3**, **Table 4**).

ACS reported in 2013 that traumatic injuries in elderly patients are often underestimated.[44] Because of this, elderly trauma victims are sometimes not taken to trauma

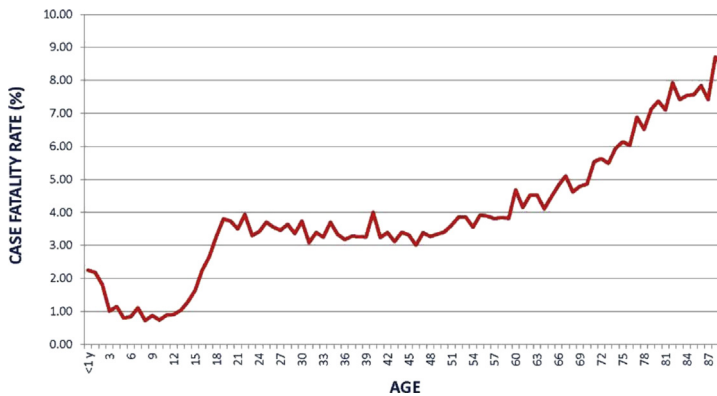

Fig. 2. Case fatality rate by age. (*Data from* NTDB 2013 Annual Report. Available at: www.facs.org/~/media/files/quality%20programs/trauma/ntdb/ntdb%20annual%20report%202013.ashx. Accessed October 14, 2015.)

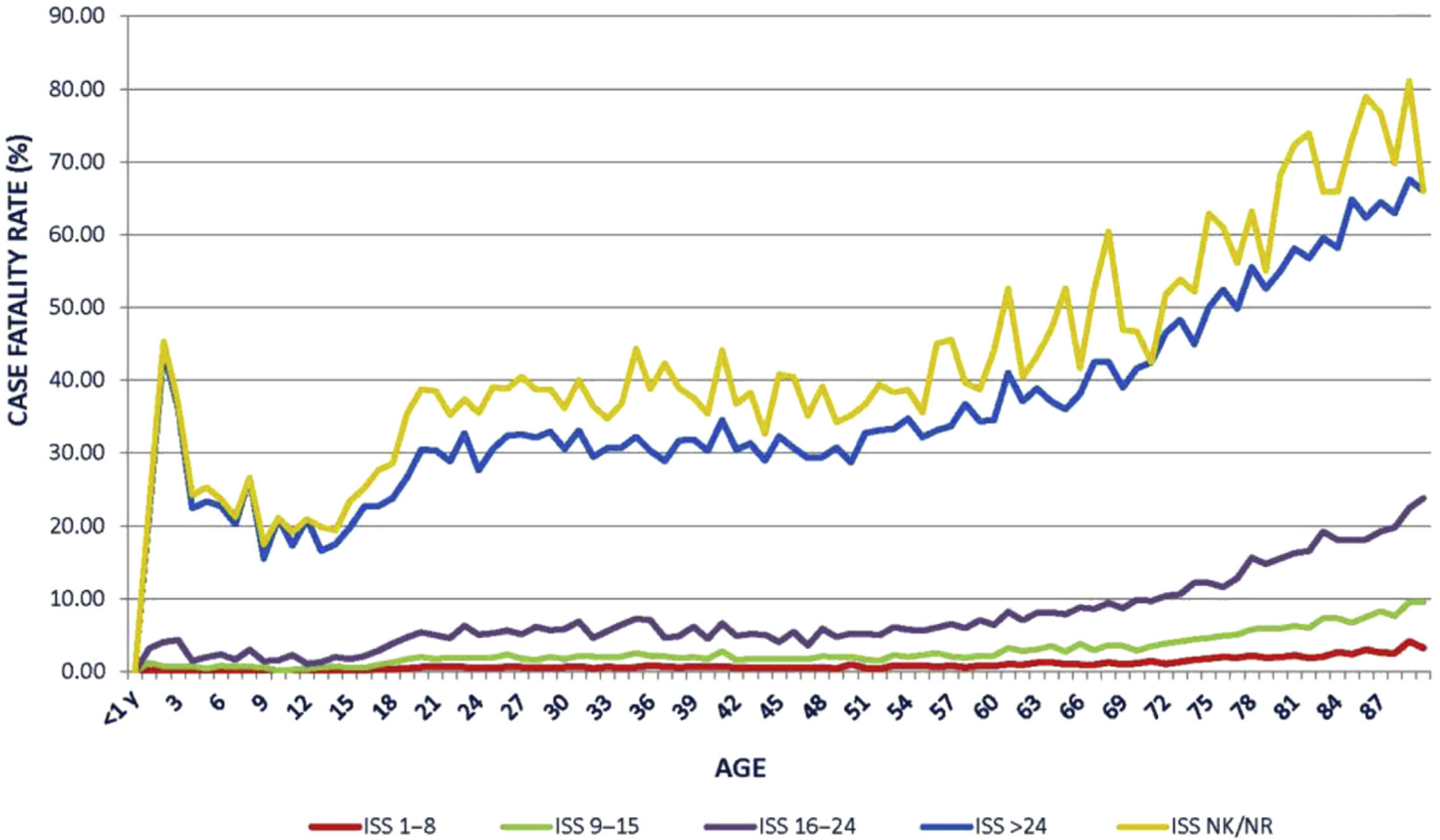

Fig. 3. Case fatality rate by injury severity score and age. Injury Severity Score definitions can be found in Appendix B. (*Data from* NTDB 2013 Annual Report. Available at: www.facs.org/~/media/files/quality%20programs/trauma/ntdb/ntdb%20annual%20report%202013.ashx, http://www.icudelirium.org/docs/RASS.pdf. Accessed October 14, 2015.)

Table 4
Case fatality rate by injury severity score and age

Age	ISS 1–8 Case Fatality Rate	ISS 9–15 Case Fatality Rate	ISS 16–24 Case Fatality Rate	ISS >24 Case Fatality Rate	ISS NK/NR Case Fatality Rate
<1 y	0.24	0.95	2.00	18.98	1.06
1–4	0.19	0.43	2.46	29.49	1.34
5–9	0.14	0.40	1.45	19.34	0.78
10–14	0.12	0.35	1.14	16.84	2.03
15–19	0.39	0.96	2.68	21.94	6.02
20–24	0.60	1.26	3.35	24.82	7.09
25–34	0.56	1.44	3.86	25.89	6.81
35–44	0.63	1.31	3.32	25.81	7.53
45–54	0.62	1.30	3.35	26.31	5.65
55–64	0.86	1.71	4.47	29.03	8.61
65–74	1.21	2.48	6.30	33.40	7.19
75–84	2.11	4.09	9.84	40.51	8.90
>84	3.43	6.50	13.11	44.98	8.38
NK/NR	33.33	58.33	12.50	88.89	100.00

Abbreviations: ISS, injury severity score; NK/NR, not known/not reported.

From National Trauma Databank 2013 Annual Report. Available at: www.facs.org/~/media/files/quality%20programs/trauma/ntdb/ntdb%20annual%20report%202013.ashx. Accessed October 14, 2015.

centers, even though their injuries are severe enough for trauma center evaluation and management. That said, the overall mortality of all geriatric trauma patients over the last 20 years is declining, in part due to streamlined trauma care whether at a trauma center or a nontrauma center.[45]

ACS further reports that the leading cause of traumatic injuries for the elderly is falls (**Fig. 4**, **Table 5**). This statistical has remained unchanged over the years, with data to suggest that victims of falls are subject to poor outcomes and ED recidivism.[43] There are many evidence-based falls prevention and fear of falling prevention programs in the community such as Tai Chi, Otago, Stepping On, and Matter of Balance.[46–52] Many referrals for these programs come from clinics but further studies are needed to assess the feasibility of referring patients from the ED and measuring the associated outcomes.

LONG-TERM CARE AND HOME HEALTH CARE

Long-term care encompasses home health care, skilled nursing facilities, hospices, residential care communities, and adult daycare centers.[53] A 2010 cross-sectional study demonstrated that nearly one-quarter of long-term care residents visit an ED within 6 months, with 24.6% of these presenting with an ambulatory sensitive condition (many ED visits resulted in hospitalization) and 11% presenting with a low acuity complaint. Until better access for other venues of ambulatory care and/or higher acuity services within long-term care facilities become available, EDs will still remain the source of their care.[54]

It is anticipated that the number of Americans requiring some form of long-term care will reach 27 million by 2050 (up from 13 million in 2000).[53] With the increasing number of people coming to EDs from long-term care facilities and being transferred back to these

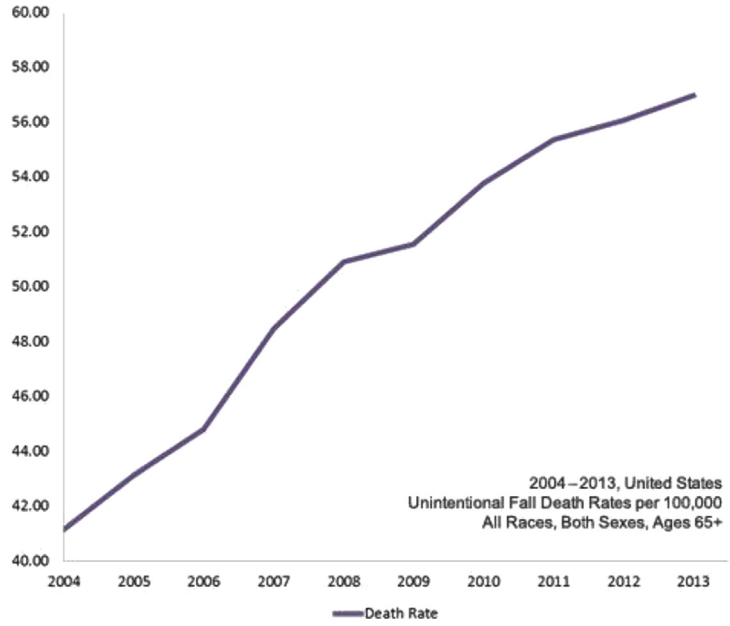

Fig. 4. Unintentional fall death rates, adults 65 years and older. (*Data from* www.cdc.gov/injury/wisqars. Accessed October 14, 2015.)

Table 5
Incidents by selected mechanism of injury and age

Age	Fall	Motor Vehicle Traffic	Struck by, Against	Transport, Other	Firearm	Cut or Pierce
<1 y	5249	460	423	38	43	45
1–4	13,803	3435	2194	628	173	487
5–9	14,422	4784	2204	1604	180	507
10–14	9403	6007	4497	3681	634	719
15–19	7863	23,423	6940	5132	5727	3502
20–24	8041	32,213	7471	4468	8563	6280
25–34	15,785	41,958	11,597	6287	10,182	10,005
35–44	18,113	31,775	8704	5514	4860	6757
45–54	31,624	34,825	8901	5927	3122	5363
55–64	42,195	26,739	4663	4153	1561	2506
65–74	44,660	14,996	1731	2166	646	901
75–84	63,458	9589	1007	1124	297	390
>84	64,182	3933	585	473	167	133
NK/NR	8	27	3	—	7	4
Total	338,806	234,164	60,920	41,195	36,162	37,599

From National Trauma Databank 2013 Annual Report. Available at: www.facs.org/~/media/files/quality%20programs/trauma/ntdb/ntdb%20annual%20report%202013.ashx. Accessed October 14, 2015.

facilities, communication between the sending facility and the ED is very important.[55] There are multiple studies demonstrating that poor communication during care transitions can lead to higher costs, increased health care use, and unnecessary duplication of services.[56–59] Therefore, developing a cohesive and organized method of information transfer is well established as an effective method to accomplishing this goal.[60]

Jones and colleagues[61] report, in a letter to the *Journal of the American Geriatrics Society*, that the number of home health care referrals for geriatric patients being released from acute care hospitals increased substantially from 2001 to 2012. This trend is partly fueled by Medicare imposing penalties for readmission of patients with heart failure, pneumonia, chronic obstructive pulmonary disease, and myocardial infarction within 30 days. Patients with heart failure had the highest percentage of home health care referrals in 2012.[61] For patients who are otherwise thriving in their home environment, these referrals are often beneficial and can frequently be initiated in the ED.

PALLIATIVE CARE

Public and professional awareness of palliative care has increased significantly over the past 10 years.[62] Palliative care is defined as "interdisciplinary care (medicine, nursing, social work, chaplaincy, and other specialties when appropriate) that focused on improving quality of life for persons of any age who are living with any serious illness and their families."[62] Hospice care, on the other hand, provides palliative care to dying individuals in their final months of life. Recent research in palliative care interventions in the ED show benefits in reduced hospital stays, hospice referrals, patient satisfaction, less intensive care utilization, and cost savings.[63–66] Although palliative care interventions are infrequently initiated in the ED, a systematic review described the feasibility of a screening and referral for palliative care consultation in the ED setting.[67]

Palliative care may be delivered at home, in long-term care settings, and in hospitals. Community-based palliative care is growing since the implementation of the ACA.[62]

Palliative care and hospice care are not synonymous with advance directives. Advance directives allow people to record their wishes about end-of-life care.[68] A living will allows people to state in advance what treatments they wish to receive when they are dying or irreversibly comatose. The durable power of attorney allows an individual to name a health care proxy, who will be empowered to make health care decisions for the individual if she or he becomes incapacitated.[68] Although physician orders for life-sustaining treatment forms are widely recognized, the implementation and acceptance has been slow and wrought with its own challenges.[69] That said, grassroots-level education and dissemination does show an improvement in uptake, especially in areas in which there is an active coalition to promote its use but work is still needed to expand this in lower income areas and in areas in and around for-profit hospitals.[70,71]

SUMMARY

In summary, the aging of the population, both in the United States and the rest of the world, presents many challenges and opportunities for improvement in the delivery of health care in the ED and across all medical disciplines.

AUTHOR'S NOTE

1 A visit which occurred in an emergency service area that does not conduct nursing triage. 2 The race groups, white, black or African American, and other include persons of Hispanic and not Hispanic origin. Persons of Hispanic origin may be of any race. For 2011, race data were missing for 14.8 percent of visits, and

ethnicity data were missing for 18.5 percent of visits. The National Center for Health Statistics uses model-based single imputation for NHAMCS race and ethnicity data. The race imputation is restricted to three categories (white, black, and other) based on research by an internal work group and on quality concerns with imputed estimates for race categories other than white and black. The imputation technique is described in more detail in the 2011 NHAMCS Public Use Data File documentation, available at: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHAMCS/doc11.pdf. 3 Other race includes the categories of Asian, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native, and persons with more than one race. 4 Total exceeds "all visits" because more than one source of payment may be reported per visit. 5 CHIP is the Children's Health Insurance Program. 6 The visits in this category are also included in both the Medicare and the Medicaid or CHIP categories. 7 "No insurance" is defined as having only self-pay, no charge, or charity as payment sources. The individual self-pay and no-charge or charity categories are not mutually exclusive. NOTES: The 2011 Patient Record Form (PRF) requested responses using a 1–5 scale. PRF responses were evaluated with reference to responses on the Ambulatory Unit Record, completed during induction, to the question, "How many levels are in this emergency service area's (ESA) triage system?" ESAs using 3 or 4 level triage systems had their responses rescaled to fit the 5 level system, such that, for 3-level ESAs, responses of 1, 2, and 3 were recoded to 2, 3, and 4. For ESAs using a 4–level system, responses were recoded from 1–4 to 2–5. The rescaling method was determined in consultation with subject matter experts and based on record analysis. Rescaling was required for about 12.0 percent of records. Also, missing responses (17.9%) were imputed to levels 1–5 using a hot deck (ie, current year's data) to identify donor records. Matching was based on the number of levels in the ESA's triage system, 3–digit ICD–9–CM code for primary diagnosis, the hospital's ED volume, and geographic region. This is unlike years 2005–2008 when "no triage" and "unknown," checkboxes used on the PRF in those years, were also valid imputation categories. Numbers may not add to totals because of rounding. SOURCE: CDC/NCHS, National Hospital Ambulatory Medical Care Survey.

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