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## Emergency Department and Outpatient Treatment of Acute Injuries Among Older Adults in the United States, 2009–2010

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### Abstract

**OBJECTIVES**—Studies of injury among older adults have primarily focused on hospitalizations, especially at trauma centers, which may result in a skewed understanding and underestimation of the burden of injury. We sought to describe epidemiologic patterns of acute injuries treated in both ED and outpatient primary care settings in the United States.

**DESIGN**—Retrospective cross-sectional analysis of data from the 2009 and 2010 National Health Care Surveys.

**SETTING**—EDs and outpatient primary care clinics.

**PARTICIPANTS**—Older adults (age ≥ 65) with initial visits for acute injuries.

**MEASUREMENTS**—Frequencies and incidence rates of medically-attended injury by patient characteristics and care setting.

**RESULTS**—Of the 19.7 million medically-attended acute injuries among older adults in 2009–2010, 50% were treated at EDs and 50% at outpatient primary care clinics. The annual incidence rate of medically-attended injuries rose with age, from 20.8 (95% Confidence Interval [CI]=17.0–24.6) per 100 among those aged 65 to 74 years up to 41.5 (95%CI=33.5–49.4) per 100 for those ≥ 85 years. Of injury-related ED visits, 60% occurred outside standard business hours, 36% were

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triaged as “low acuity,” and 25% resulted in admission. Only 9% of injury-related primary care visits had injury prevention counseling documented.

**CONCLUSION**—Medically-attended injuries occur in older adults at high incidence and increase with advancing age. Half of all initial visits for acute injuries among older adults are to primary care clinics. Most injured patients are discharged home but injury prevention counseling is rarely documented. In order to appropriately inform injury prevention efforts and avoid underestimating the burden of injury, future injury studies should include a range of outpatient and inpatient care settings.

### Keywords

Injury; ambulatory clinic; outpatient; older adult; emergency department

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## INTRODUCTION

Older adults are especially vulnerable to injuries and their consequences. Not only do physiologic changes of aging, medical conditions and medications increase the risk of injuries, but decreased physiologic reserves also impair recovery.<sup>1</sup> Trauma has been called a chronic disease<sup>2</sup> in that certain populations – including older adults<sup>3</sup> – face elevated risk for recurrent injuries and are important targets for injury prevention.

To date, most studies of injuries among older adults have been retrospective analyses of hospitalized patients with a focus on EDs and trauma centers and the treatment of acute, serious injuries.<sup>4</sup> Such research is important for understanding injury survival rates and functional outcomes among older adults. However, focusing on ED visits and hospitalizations, especially in trauma centers, limits the generalizability of findings because overweighting those with more severe injuries results in a skewed understanding. This focus on severe injuries (deaths, ED visits and hospitalizations)<sup>1, 3–11</sup> also underestimates the overall burden of injury by ignoring injuries treated at non-ED outpatient settings. One prior study documented that, among all age groups, 54% of initial visits for medically-attending injuries were to primary care physicians and other non-ED settings.<sup>12</sup> Thus, examining only injuries treated in EDs could be a significant omission and could miss potential opportunities for injury prevention interventions in non-ED settings. Effective injury prevention approaches for older adults exist<sup>13</sup> and prior work has demonstrated successful implementation of interventions in clinical settings,<sup>14</sup> but ideally interventions would be tailored according to epidemiologic patterns.

In this study, we therefore sought to: (1) use nationally-representative medical record data to estimate the annual incidence rate of nonfatal medically-attended injuries among older adults in the US; and (2) compare the patient, injury and visit characteristics of medically-attended injuries among older adults treated in EDs to those treated in outpatient primary care settings in the US. These data could provide more comprehensive estimates of the burden of nonfatal injury in the geriatric population and information concerning variations in the patterns of injuries treated in different ambulatory care settings.

## METHODS

### Study Design and Setting

This was a cross-sectional analysis of initial visits for acute injuries to EDs and outpatient primary care settings (physician offices, and hospital outpatient departments [OPDs]) in the US using data from the 2009 and 2010 National Hospital Ambulatory Medical Care Surveys (NHAMCS) and the 2009 and 2010 National Ambulatory Medical Care Surveys (NAMCS). These annual surveys are conducted by the National Center for Health Statistics and rely on multi-stage probability sampling to obtain national estimates of patient visits to care settings in the US.<sup>15</sup> A detailed description of the survey methods is available.<sup>15</sup> The Colorado Multiple Institutional Review Board approved this project for exemption.

### Study Population

Patients were included if they were aged 65 years or older and had an initial visit to an eligible ED or outpatient primary care setting for an acute injury. For this analysis, outpatient visits were only from the specialties of “General and family practice” or “Internal Medicine,” as we wanted to identify initial acute presentations for injuries to primary care providers and exclude first visits to specialists (e.g., orthopedic surgeons for fractures diagnosed in EDs). We defined visits as injury-related using the summary “injury” variable in each database.<sup>15</sup> This “injury” variable is determined by data abstractors who review the following fields: the first-, second-, and third-listed responses to the patient’s reason for the visit, the physician’s diagnoses, and the cause of injury (ED dataset only). For example, a visit with “fall” as the reason for visit would be classified as injury-related even without an injury diagnosis; a visit for “syncope” would be classified as injury-related if there was a diagnosed injury. The NHAMCS and NAMCS surveys also contain variables about the episode of care (“initial visit”; “follow-up visit”; “unknown”) and the major reason for the visit (“acute problem, < 3 months onset”; “routine chronic problem”; “flare-up of chronic problem”; “pre-/post-surgery”; “preventive care”). For this study, we included only those injury-related visits also identified as “initial” visits for an “acute” problem, as defined in the datasets. For our primary analyses, we combined physician offices and hospital OPDs to compare these outpatient primary care settings to EDs. In 2009 and 2010, physician office visits accounted for over 90% of these initial visits for acute injuries to non-ED outpatient primary care settings.

### Variables

We examined the same primary questions and coding of the patient and injury characteristics for EDs and outpatient primary care settings. We used standard NHAMCS and NAMCS definitions for all variables and the Barrell Injury Diagnosis Matrix<sup>16</sup> to categorize injury diagnoses (by International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM] codes). The NHAMCS and NAMCS surveys contain a general question about the intent of the injury (“unintentional injury/poisoning”; “intentional injury/poisoning”; “adverse effect of medical/surgical care or medicinal drug”; “unknown”). However, only the ED component of NHAMCS records the external causes of each injury; we clustered these using the Center for Disease Control and Prevention (CDC) groupings of ICD-9 CM External Causes of Injury and Poisoning codes.<sup>17</sup>

## Primary Data Analysis

Our first analyses used aggregate data from ED and outpatient primary care settings to estimate the frequencies and incidence rates of medically-attended injuries according to patient characteristics. We calculated the number of annual visits per 100 population using as denominators the civilian, non-institutionalized US population as of July 1, 2010, as estimated by the Census Bureau. All analyses were performed using Stata 11.0 (Stata Corporation, College Station, TX), using the program's survey commands designed for the analysis of weighted datasets. We compared EDs and outpatient primary care settings in terms of patient and injury characteristics using 95% confidence intervals (CIs). Because this study was descriptive rather than hypothesis-testing, we did not perform additional statistical analyses. In accordance with National Center for Health Statistics instructions, we do not report estimates that are based on fewer than 30 cases in the sample data or have a standard error of over 30%, as they are considered unreliable.

## RESULTS

During 2009 and 2010 in the United States, an estimated 19.7 million injuries among older adults were treated at either EDs (9.9 million) or outpatient primary care settings (9.8 million), yielding an overall average annual incidence rate of 24.5 medically-attended injuries per 100 population (Table 1). The annual incidence rate increased with age, from 20.8 among those aged 65 to 74 to 41.5 among those aged 85 years. Patient demographics were similar for injuries seen in EDs and in outpatient primary care settings.

Of initial visits related to acute injuries, 71% (95%CI=68–73) of those to EDs and 58% (95%CI=52–65) of those to outpatient primary care settings had at least one recorded ICD-9-CM injury diagnosis (Table 2). Some visits related to an injury mechanism (e.g., a fall) did not have a diagnosed physical injury but rather had nonspecific causes, symptoms, signs, or other conditions as their diagnoses (e.g. "syncope"). Among patients with a recorded injury diagnosis, the most common overall were contusion or superficial injuries (30%, 95%CI=25–35), open wounds (23%, 95%CI=19–29), and fractures (20%, 95%CI=17–23). Fractures were more commonly diagnosed in EDs than in outpatient offices (25%, 95%CI=23–27%; vs. 14%, 95%CI=8.7–21), as were dislocations (1.9%, 95%CI=1.3–2.8; vs. too small to estimate) and internal injuries (4.6%, 95%CI=3.3–6.2; vs. too small to estimate). The other primary injury diagnoses—including contusions, open wounds, sprain/strains, poisoning or complications of medical therapy, and dislocations—had similar frequencies at EDs and outpatient primary care settings.

At both EDs and outpatient primary care settings, many injuries had an unknown or undocumented intent of injury (26%, 95%CI=22–31% overall; Table 2). Of injuries with a known intent, the majority at both settings were unintentional injuries (85%, 95%CI=82–89% overall). The remainder were identified as adverse effects of medical or surgical care or medication; intentional injuries (e.g., self-harm and assaults) were too infrequently identified to generate reliable estimates for either EDs or outpatient offices. Among injuries with a documented mechanism (recorded only in the ED component of NHAMCS), falls were the most commonly listed external cause (61%, 95%CI=58–64), followed by adverse effects of medical treatment (11%, 95%CI=8.6–13), motor vehicle crashes (6.7%, 95%CI=5.4–7.9),

being struck by something (5.2%, 95% CI=4.1–6.3), being cut by something (3.1%, 95% CI=2.2–4.0), overexertion (2.8%, 95% CI=2.0–3.6), and environmental effects (2.7%, 95% CI=1.8–3.6).

Forty percent of injury-related visits to EDs occurred during standard business hours on weekdays, and over a third had a low ED triage acuity (“semi-urgent” or “nonurgent;” 36%, 95% CI=34–39; Table 3). Imaging was more likely in EDs than in outpatient primary care visits (72%, 95% CI=69–75 vs. 20%, 95% CI=15–26), and 32% (95% CI=30–35) of older patients visiting an ED for an acute injury had a computed tomography scan. Only 25% (95% CI=22–28) of older ED patients with acute injuries were admitted to the hospital. ED visits were more likely than outpatient primary care visits to have nurse involvement (91%, 95% CI=89–93 vs. 32%, 95% CI=25–40). Only 9% (95% CI=5.2–14) of primary care visits for an acute injury had documented counseling on injury prevention (variable not available in ED data set).

## DISCUSSION

In this national study, we found that half of the 19.7 million initial visits for acute injuries among older adults were to outpatient primary care settings. Although most injured older adults were discharged home, very few visits addressed home safety as measured by documented injury prevention counseling, which is problematic since older adults may be at risk for repeat injury without modifications to their home environment, medications, or other underlying risk factors.<sup>1, 3, 9, 10, 18, 19</sup> An unexpected finding was while over half of ED visits for acute injuries occurred during times when clinics are typically open, a minority required hospitalization, which raises questions about why older patients with acute injury visit certain care settings. Our study provides new information about the patterns of initial care for acute injuries among older adults in the United States, information that could inform injury prevention and treatment efforts.

Most studies of geriatric injuries have relied on data from ED visits and hospitalizations, often at trauma centers.<sup>4</sup> Our study confirms that omitting injuries seen at non-ED outpatient sites significantly underestimates the overall burden of injury in the geriatric population. Since there are differences among injuries treated at ED and non-ED outpatient sites, a reliance on data from only one setting can lead to biased results. For example, using only ED data would suggest that 25% of all medically-attended injuries require hospitalization, while inclusion of visits to outpatient settings lowers this to 12.7%. Researchers and clinicians should pay heed when designing and interpreting studies; studies of severely injured older patients could appropriately use trauma center databases, but studies of functional outcomes after minor injuries should include both EDs and outpatient settings. Up to 40% of older patients discharged from EDs after injuries have functional decline,<sup>20–22</sup> but little is known about outcomes from outpatient settings, so longitudinal comparison studies would be extremely useful.

Understanding where various types of injuries are treated could inform targeted injury prevention programs. In this sample, injury prevention counseling was documented in only 9% of injury-related visits to outpatient primary care settings; the frequency of in EDs

cannot be determined from these databases but is likely even lower.<sup>18, 19, 23</sup> Injuries, even minor ones, can have a serious impact on older adults, with prolonged recovery time and significant functional decline.<sup>8, 21</sup> Injury prevention interventions—especially ones that employ a multidisciplinary care team approach (such as referral for exercise programs or occupational therapist involvement for home safety assessment)<sup>13, 14</sup>— could help older adults maintain their health and well-being after an injury and prevent future injury.<sup>9, 10, 19, 24, 25</sup> Appropriate interventions may vary among care settings; for example, a majority of ED patients but a minority of clinic patients saw a nurse on their injury-related visit, suggesting that nurse-delivered interventions may be less feasible in clinics.

Among injuries treated in EDs, falls were by far the most common external cause, consistent with national statistics.<sup>26</sup> Others have found that older adults with falls present to the ED and to their general practitioner in equal proportions,<sup>27</sup> similar to our findings. Therefore, fall-specific research should consider the recruitment biases of limiting studies to only one type of study site. Currently, many intervention trials for older adults with falls recruit patients based on their place of presentation.<sup>28, 29</sup> More research is needed to understand the potential differences between patients presenting at differing sites to ensure valid conclusions.

Over a third of injury-related visits to EDs were classified at triage as semi- or non-urgent acuity, suggesting that an outpatient setting might have been appropriate for these patients. Interestingly, we did not see a relationship between triage acuity and whether the ED visit was outside of typical clinic hours (including weekends). This finding raises questions about why these low acuity injured patients visited an ED rather than an outpatient site. Possibilities might include difficulty in making same-day clinic appointments, recommendation of the primary care physician's office, patient preference, and need for EMS help.

Limitations to this kind of survey data include sampling and non-sampling errors, including coding inaccuracies, misclassification of episode of care, non-response and double-counting of individuals. However, NHAMCS and NAMCS are well-established surveys that minimize these problems through multiple methods, including quality control and weighting adjustment for non-response. Another general limitation is the issue of missing information. Some variables may be poorly documented in the medical records on which the surveys are based; examples include injury mechanism and injury prevention counseling, which may occur but not be documented. Other variables, such as injury mechanism, severity or outcome, are not recorded in one or both of the surveys. Our results are estimates only of medically-attended acute injuries and do not include any injuries not evaluated by a provider at an ED or clinic. Finally, our use of the NCHS classification of visits as “injury-related” may have resulted in overestimation of actual physical injuries, as visits may have been related to an injury mechanism (e.g., falls) that did not cause physical harm. As an example, in this study there were an estimated 166,000 injury-related visits that resulted in death (before ED arrival, in the ED, or during hospitalization), which is higher than the estimated 94,845 injury deaths in 2009–2010 from the CDC.<sup>30</sup> This discrepancy arises because our estimate includes all injury-related visits while the CDC figure is based on death certificate injury diagnoses.

In conclusion, from 2009–2010, half of the 19.7 million initial visits for acute injuries among older adults were to outpatient primary care settings and half were to EDs. There were significant differences between settings in terms of the injury and visit characteristics. Studies that focus on ED visits or hospitalizations—as most to date have done—risk underestimating the true burden of injury and providing a skewed description of injury care in the U.S. Future studies should more closely examine the care of injuries in both outpatient settings and EDs in terms of injury evaluation, treatment, and counseling or prevention initiatives.

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Table 1

Estimated Frequencies and Incidence Rates of Acute, Medically-Attended Injuries<sup>†</sup> among Older Adults by Patient Characteristics, United States 2009–2010<sup>‡</sup>

Demographic characteristic	EDs			Outpatient Offices			Total			
	n*	Weighted (Millions)	% of ED injury visits (95%CI)	n*	Weighted (Millions)	% of outpatient injury visits (95%CI)	n*	Weighted (Millions)	% of total injury visits (95%CI)	Annual incidence rate per 100 population (95%CI) <sup>‡</sup>
<b>Total</b>		9.9			9.8			19.7		24.5 (21.6–27.4)
<b>Age (Years)</b>										
65–74	1,081	4.0	41% (38–43)	187	5.0	51% (42–60)	1,268	9.0	46% (40–51)	20.8 (17.0–24.6)
75–84	918	3.4	35% (32–40)	151	2.7	28% (22–35)	1,069	6.2	31% (28–35)	23.6 (20.0–27.2)
85	655	2.5	25% (23–27)	72	2.1	21% (15–30)	727	4.6	23% (19–23)	41.5 (33.5–49.4)
<b>Gender</b>										
Female	1,561	5.8	59% (56–61)	270	5.8	59% (49–70)	1,831	11.6	59% (54–64)	26.5 (23.1–30.0)
Male	1,093	4.1	41% (39–44)	140	4.0	41% (31–51)	1,233	8.1	41% (36–46)	23.8 (19.3–28.3)
<b>Ethnicity/Race</b>										
Non-Hispanic White	2,134	8.1	82% (79–85)	344	8.3	84% (78–89)	2,478	16.0	83% (79–86)	25.5 (22.2–28.7)
Non-Hispanic Black	285	1.0	10% (8–13)	36	0.9	9.2% (5.6–15)	321	1.9	9.8% (7.3–13.0)	28.7 (19.1–38.3)
Hispanic	149	0.5	5.3% (4.0–7.1)	20	---	---	169	0.9	4.4% (3.2–6.0)	15.5 (10.4–20.7)
Other	86	0.2	2.3% (1.3–3.8)	10	---	---	96	0.5	2.8% (1.7–4.4)	16.9 (9.3–24.4)
<b>Geographic Region</b>										
Northeast	751	2.1	22% (19–25)	55	0.8	8.5% (6.2–11)	806	3.0	15% (13–18)	19.1 (16.9–21.2)
Midwest	595	2.3	23% (18–49)	142	2.7	27% (20–35)	737	5.0	25% (21–30)	27.5 (22.4–32.5)
South	808	3.5	35% (30–41)	124	3.4	35% (25–45)	932	6.9	35% (29–41)	23.1 (17.5–28.6)
West	500	2.0	20% (17–24)	89	2.9	30% (20–42)	589	4.9	25% (20–31)	28.9 (21.0–36.7)
<b>Metropolitan Statistical Areas (MSA)</b>										
MSA	2,167	7.7	78% (65–87)	308	8.2	83% (71–91)	2,475	15.9	81% (69–89)	24.7 (20.4–29.2)
Non-MSA	487	2.2	22% (13–35)	102	1.6	17% (8.8–29)	589	3.8	19% (11–31)	23.4 (11.1–35.7)
<b>Insurance Coverage</b>										
Any private	1,299	5.0	50% (46–54)	210	5.5	56% (45–65)	1,509	10.4	53% (47–58)	N/A

Demographic characteristic	EDs			Outpatient Offices			Total			
	n*	Weighted (Millions)	% of ED injury visits (95%CI)	n*	Weighted (Millions)	% of outpatient injury visits (95%CI)	n*	Weighted (Millions)	% of total injury visits (95%CI)	Annual incidence rate per 100 population (95%CI) <sup>‡</sup>
Medicare only	886	3.2	33% (29–36)	156	3.6	37% (29–46)	1,042	6.9	35% (30–40)	N/A
Medicare and Medicaid	253	0.9	9.1% (7.7–11)	25	---	---	278	1.4	7.0% (5.2–9.3)	N/A
Medicaid only	59	0.2	2.5% (1.8–3.4)	5	---	---	64	0.3	1.3% (1.0–1.8)	N/A
Other	90	0.3	3.5% (2.5–4.8)	8	---	---	98	0.5	1.9% (0.7–0.5)	N/A
Unknown	67	0.2	2.2% (1.5–3.1)	6	---	---	73	0.3	1.5% (0.9–2.3)	N/A

CI: Confidence Interval

<sup>†</sup> Defined as initial visits for an acute injury to emergency departments (EDs) or outpatient primary care offices.

<sup>‡</sup> All rates calculated per 100 population using US Census Bureau estimates from July 1, 2010, with the exception of rates by MSA, which use estimates from 2009; CI: Confidence Interval. Rates not calculated by insurance coverage because of limitations of stratum-specific denominator data.

\* Refers to number of cases in unweighted survey sample.

--- Estimate not reported as it was based on fewer than 30 cases in the sample data or had a SE > 30% and therefore was considered unreliable.

N/A Not available in this dataset.

**Table 2**

Estimated Frequencies of Acute, Medically-Attended Injuries<sup>†</sup> among Older Adults by Injury (a) Diagnosis and (b) Intent, United States 2009–2010

	EDs			Outpatient Offices			Total		
	n*	Weighted (Millions)	% of ED injury visits (95%CI)	n*	Weighted (Millions)	% of outpatient injury visits (95%CI)	n*	Weighted (Millions)	% of total injury visits (95%CI)
<b>(a) Injury Diagnosis (ICD-9-CM)<sup>‡</sup></b>									
Contusion/Superficial (910–924)	559	2.2	31% (28–34)	67	1.6	29% (20–39)	626	3.8	30% (26–35)
Open (870–874; 890–894)	377	1.4	20% (18–23)	56	1.6	28% (19–41)	433	3.0	24% (19–29)
Fracture (800–829)	464	1.7	25% (23–27)	35	0.8	14% (8.7–21)	499	2.5	20% (17–23)
Sprain/strain (840–848)	226	0.8	11% (9.6–14)	41	0.8	14% (8.6–23)	267	1.6	13% (9.8–16)
Poisoning/complications of medical therapy (960–999)	247	0.9	13% (11–15)	28	---	12% (7.3–20)	275	1.6	13% (10–16)
Dislocation (830–839)	33	0.1	1.9% (1.3–2.8)	5	---	---	38	0.3	2.4% (0.9–6.3)
Internal (850–854; 860–869; 952; 995.55)	70	0.3	4.6% (3.3–6.2)	0	---	---	70	0.3	2.5% (1.8–3.5)
Unspecified (959)	191	0.7	9.6% (8.0–11)	10	---	---	201	0.8	6.3% (5.1–7.9)
<b>(b) Injury Intent</b>									
Unknown intent/Blank	558	2.1	21% (19–23)	125	2.9	32% (25–40)	683	5.2	26% (22–31)
Known intent	2,096	7.8	79% (70–88)	285	6.7	68% (53–83)	2,381	14.5	73% (75–96)
Unintentional	1,859	6.9	88% (86–90)	237	5.5	82% (73–88)	2,096	12.4	85% (82–89)
Intentional	22	---	---	2	---	---	24	---	---
Adverse effect of medical/surgical care or medication	215	0.8	10% (8.5–13)	46	1.1	17% (11–26)	261	2.0	13% (10–17)

CI: Confidence Interval

<sup>†</sup> Defined as initial visits for an acute injury to emergency departments (EDs) or outpatient primary care offices.

<sup>‡</sup> ICD-9-CM groupings based on the Barrell Injury Diagnosis Matrix<sup>16</sup>

\* Refers to number of cases in unweighted survey sample.

--- Estimate not reported as it was based on fewer than 30 cases in the sample data or had a SE > 30% and therefore was considered unreliable.

**Table 3**

Visit Characteristics of Initial Visits for Acute, Medically-Attended Injuries<sup>†</sup> among Older Adults by Site of Visit, United States 2009–2010

	EDs				Outpatient Offices				
	n*	Weighted (Millions)	% (95%CI)	n*	Weighted (Millions)	% (95%CI)	n*	Weighted (Millions)	% (95%CI)
Total	2,564	9.9		410	9.8				
Afterhours/weekend visit	1,559	5.9	60 (58–62)	18	---	---			---
Arrival by ambulance	1,177	4.5	45 (42–49)	N/A	N/A	N/A			N/A
Triage acuity (Emergency Severity Index)									
Immediate (level 1)	68	0.2	2.2 (1.6–3.0)	N/A	N/A	N/A			N/A
Emergent (level 2)	355	1.4	15 (12–17)	N/A	N/A	N/A			N/A
Urgent (level 3)	1,160	4.4	47 (44–49)	N/A	N/A	N/A			N/A
Semi-urgent (level 4)	799	3.0	32 (29–34)	N/A	N/A	N/A			N/A
Nonurgent (level 5)	134	0.5	4.8 (3.8–6.0)	N/A	N/A	N/A			N/A
Other triage system	138	0.5	4.8 (2.9–7.6)	N/A	N/A	N/A			N/A
Nursing home residence	397	1.5	15 (13–17)	N/A	N/A	N/A			N/A
Services provided during visit									
Any imaging	1,889	7.1	72 (69–75)	99	2.0	20 (15–26)			
X-ray	1,551	5.8	59 (56–62)	73	1.4	14 (9.7–20)			
Any CT scan	829	3.2	32 (30–35)	15	---	---			---
Head CT scan	658	2.5	25 (23–28)	N/A	N/A	N/A			N/A
Suturing/Wound care	240	0.9	8.9 (7.5–10)	57	1.3	13 (9.0–19)			
Cast/Splint	326	1.1	11 (9.8–13)	21	---	---			---
Provider seen									
Physician	2,441	9.0	91 (88–93)	367	9.5	96 (93–98)			
Midlevel provider (without physician)	147	0.6	5.9 (4.1–8.3)	31	---	---			---
RN/LPN	2,419	9.1	92 (89–94)	190	4.0	41 (30–52)			
Consulting physician	322	1.3	13 (10–16)	N/A	N/A	N/A			N/A
Mean length of ED visit (minutes, 95%CI)		217	202–231		N/A	N/A			N/A
Disposition <sup>‡</sup>									
Died (in ED or dead on arrival)	24	---	---	N/A	N/A	N/A			N/A

	EDs			Outpatient Offices		
	n*	Weighted (Millions)	% (95%CI)	n*	Weighted (Millions)	% (95%CI)
Admit to hospital <sup>∞</sup>	645	2.5	25 (22–28)	19	---	---
LOS (mean, range)		6.1	5.6–6.2	N/A	N/A	N/A
Refer/Follow-up at clinic	1,493	5.4	55 (51–58)	N/A	N/A	N/A
Return at specified time	N/A	N/A	N/A	220	6.3	64 (55–71)
Return/Follow-up as needed	716	2.7	27 (24–31)	N/A	N/A	N/A
Refer to other MD	N/A	N/A	N/A	85	1.5	15 (11–22)
No follow-up planned	108	0.4	3.9 (2.7–5.6)	N/A	N/A	N/A
Left against medical advice or before visit complete	10	---	---	N/A	N/A	N/A
Other	25	---	---	100	1.9	19 (14–25)
No disposition listed	10	---	---	16	---	---

CI: Confidence Interval

N/A Not available in this database

<sup>‡</sup> Defined as initial visits for an acute injury to emergency departments (EDs) or outpatient primary care offices.

<sup>‡</sup> Disposition categories not mutually exclusive.

<sup>∞</sup> For outpatient offices, variable defined in database as “referral to ED or admission to hospital”

\* Refers to number of cases in unweighted survey sample.

--- Estimate not reported as it was based on fewer than 30 cases in the sample data or had a SE > 30% and therefore was considered unreliable.