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Injury-Related Visits to Hospital Emergency Departments: United States, 1992

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During the 12-month period from January 1992 through December 1992, an estimated 89.8 million visits were made to hospital emergency departments. Of these, 34.0 million visits (37.8 percent) were injury related.

This report summarizes injury data from the 1992 National Hospital Ambulatory Medical Care Survey (NHAMCS), a national probability sample survey conducted by the Division of Health Care Statistics, Centers for Disease Control and Prevention. Statistics are presented on patient and visit characteristics of injury visits to hospital emergency departments in the United States. An earlier report presents a general overview of findings from the first year of the NHAMCS emergency data (1).

The National Center for Health Statistics inaugurated the NHAMCS in December 1991 to gather and disseminate information about the health care provided by hospital emergency and outpatient departments to the population of the United States. The survey, which is endorsed by the American Hospital Association, the Emergency Nurses Association, and the American College of Emergency Physicians, collected data on more than 36,000 visits to emergency departments (ED) in non-Federal, short-stay and general hospitals.

Because the estimates presented in this report are based on a sample rather than on the entire universe of hospital ED visits, they are subject to sampling variability. The technical notes found at the end of this report include a brief overview of the sample design used in the 1992 NHAMCS and an explanation of sampling errors. A detailed description of the 1992 NHAMCS sample design and survey methodology has been published (2).

The ED Patient Record is used by hospitals participating in the NHAMCS to record information about patient visits. This form is reproduced in figure 1 and is intended to serve as a reference for readers as they review the survey findings presented in this document. For this report, a visit was considered to be injury related if "injury, first visit" or "injury, follow-up" was recorded in item 9 or if a cause of injury was provided in item 10. Data for item 9 were missing on less than 1.5 percent of the records; missing responses to this item were not imputed. Visits not specified as injury related in item 9 but had a cause of injury provided in item 10 accounted for 6.3 percent of the visits in this analysis.

Data highlights

- In 1992, 34 million ED visits (37.8 percent) were injury related.
- There were 13.5 injury visits to hospital emergency departments for every 100 persons in the population.
- Males had a significantly higher rate of injury-related visits than females had.
- Accidental falls and motor vehicle accidents were the leading causes of injuries resulting in visits to an emergency department. Together, they accounted for 41 percent of specified causes of injury. They represent 13 percent of all visits to an emergency department.
- Persons in the age groups under 15 years and 65 years and over had higher rates of visit for accidental falls compared with those 15–24 years, 25–44 years, and 45–64 years of age.
- "Open wound of head" was the most frequent principal diagnosis for injury-related ED visits.
- Wound care was performed at one-third of the injury-related visits.
- Medication was administered or prescribed at the majority of injury-related visits, with general analgesics most commonly mentioned.
- Over 9.2 billion dollars were spent on injury-related ED visits in 1992.

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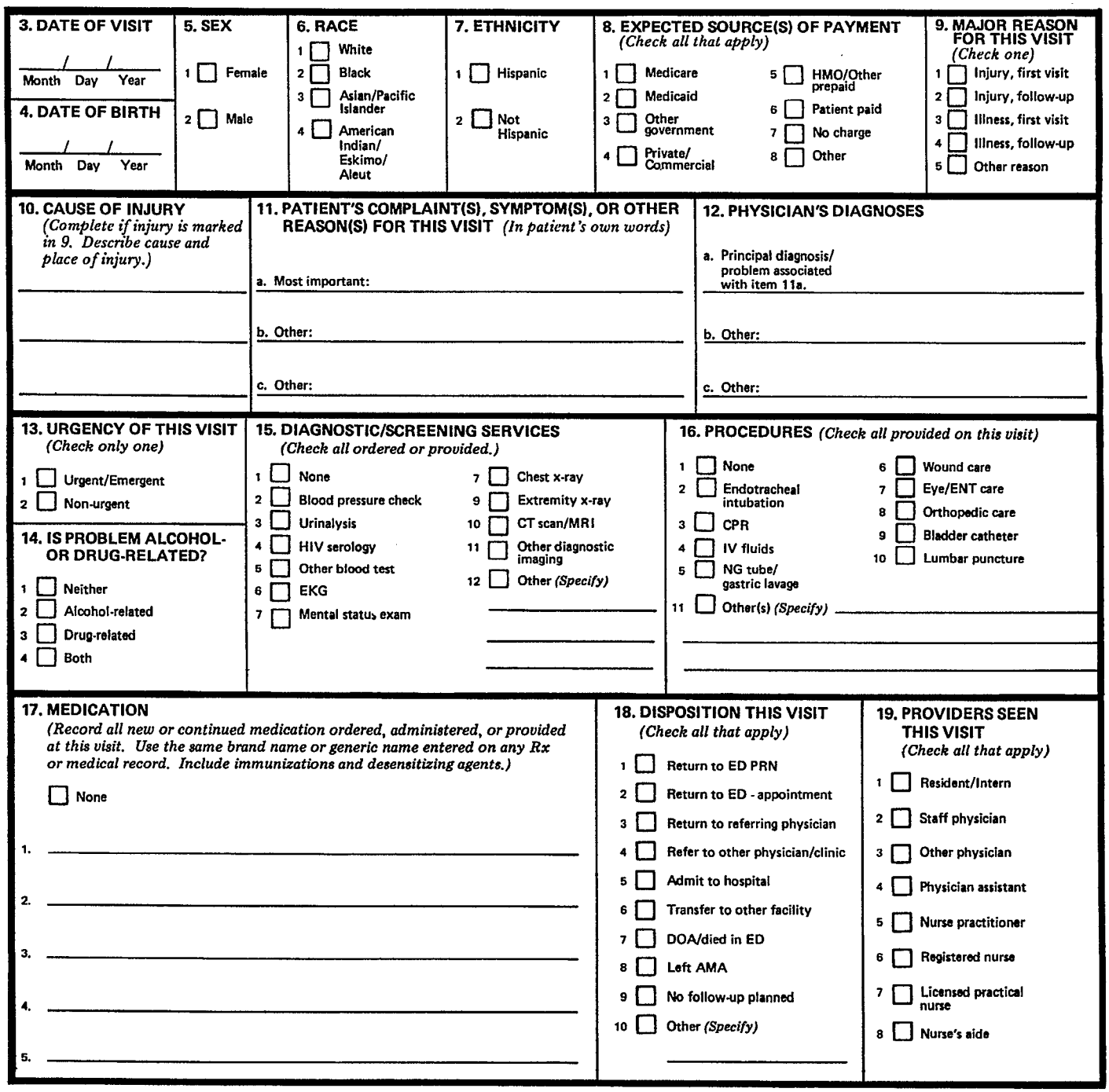

Figure 1. National Hospital Ambulatory Medical Care Survey Emergency Department Patient Record

Patient characteristics

In 1992, an estimated 89.8 million visits were made to emergency departments of non-Federal, short-stay, and general hospitals in the United States—about 35.7 visits per 100 persons. Of these visits, 34.0 million (37.8 percent) were injury related. This results in an annual rate of 13.5 injury visits per 100 persons to a hospital emergency department. Injury-related visits by patient's age, sex, and race are shown in table 1. Persons 15–24 years of age had the highest ED injury visit rate (20.2 visits per 100 persons) of the six age categories analyzed. Males had a higher rate of injury-related visits than females did, using both crude and age-adjusted rates, and they accounted for 56.4 percent of all ED injury visits. This differs from ED visits in general, where there was no significant difference in the visit rates for males and females. Figure 2 shows the visit rates by age and sex. Males had significantly higher rates of injury-related visits compared with females for each age group under 45 years.

White persons made 82.9 percent of all injury-related ED visits, with black persons, Asian/Pacific Islanders, and American Indians/Eskimos/Aleuts accounting for 14.7 percent, 1.5 percent, and 0.8 percent, respectively. While the

Table 1. Number, percent distribution, percent that are injury related, and annual rate of injury-related emergency department visits, by selected patient and visit characteristics: United States, 1992

Patient and visit characteristic	*Number of visits in thousands*	*Percent distribution*	*Percent injury related*[1]	*Number of visits per 100 persons per year*[2]
Patient characteristic				
All injury-related visits	33,950	100.0	37.8	13.5
Age:				
Under 15 years	8,714	25.7	38.7	15.4
15–24 years	6,937	20.4	46.7	20.2
25–44 years	11,277	33.2	41.4	13.9
45–64 years	3,959	11.7	31.6	8.2
65–74 years	1,458	4.3	25.1	7.9
75 years and over	1,605	4.7	23.4	13.0
Sex and age:				
Female	14,812	43.6	31.8	11.5
Under 15 years	3,567	10.5	35.0	12.9
15–24 years	2,670	7.9	33.2	15.4
25–44 years	4,714	13.9	33.6	11.4
45–64 years	1,796	5.3	27.1	7.1
65–74 years	940	2.8	28.1	9.2
75 years and over	1,124	3.3	25.9	14.6
Male	19,138	56.4	44.3	15.7
Under 15 years	5,147	15.2	41.8	17.8
15–24 years	4,267	12.6	62.8	25.0
25–44 years	6,564	19.3	49.7	16.4
45–64 years	2,163	6.4	36.8	9.3
65–74 years	518	1.5	21.1	6.3
75 years and over	480	1.4	19.0	10.4
Race and age:				
White	28,154	82.9	39.9	13.4
Under 15 years	7,227	21.3	42.8	16.1
15–24 years	5,823	17.2	50.2	21.2
25–44 years	8,970	26.4	43.6	13.2
45–64 years	3,331	9.8	32.9	8.0
65–74 years	1,283	3.8	25.6	7.8
75 years and over	1,520	4.5	24.2	13.6
Black	4,987	14.7	29.1	15.9
Under 15 years	1,311	3.9	25.5	14.6
15–24 years	972	2.9	33.8	19.1
25–44 years	1,974	5.8	33.8	20.2
45–64 years	524	1.5	24.8	10.5
65–74 years	138	0.4	20.1	8.4
75 years and over	67	0.2	13.3	6.9
All other races	808	2.4	37.3	7.7
Asian/Pacific Islander	529	1.5	37.8	...
American Indian/Eskimo/Aleut	279	0.8	35.3	...
Emergency department characteristic				
Geographic region:				
Northeast	6,346	20.1	37.4	13.6
Midwest	9,268	29.4	35.9	16.1
South	9,692	30.7	32.8	12.4
West	6,261	19.8	35.7	12.3

[1]Percent of all emergency department visits in each category that are injury related.
[2]Based on U.S. Bureau of the Census estimates of the civilian, noninstitutionalized population of the United States as of July 1, 1992.

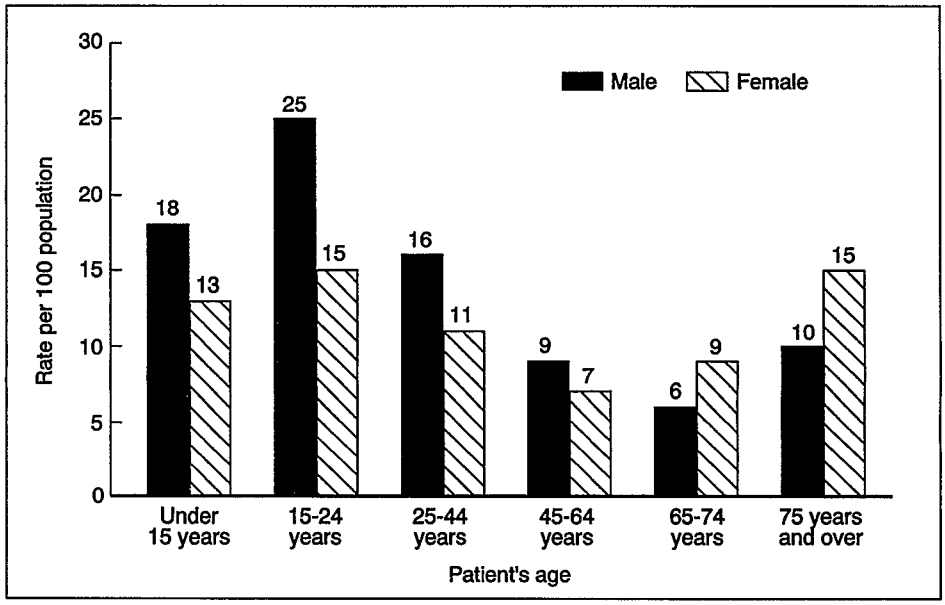

Figure 2. Annual rate of injury-related visits to emergency departments by patient's age and sex: United States, 1993

Table 2. Number, percent distribution, and annual rate of visit to hospital emergency departments by major reason for visit: United States, 1992

Visit characteristic	Number of visits in thousands	Percent distribution	Number of visits per 100 persons per year[1]
All ED visits[2]	89,796	100.0	35.7
All injury-related visits	33,950	37.8	13.5
Injury—first visit	28,388	31.6	11.3
Injury—follow-up visit	3,178	3.5	1.3
Stated cause of injury[3]	2,383	2.7	0.9
Illness—first visit	1,467	1.6	0.6
Illness—follow-up visit	129	0.1	0.1
Other reason[4]	787	0.9	0.3
All other visits	55,846	62.2	22.2

[1]Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.
[2]ED is emergency department.
[3]Includes visits not recorded as injury related but had a cause of injury recorded in item 10.
[4]Includes visits with blank or other major reasons recorded in item 9, yet had a cause of injury in item 10.

overall ED visit rate for black persons was significantly higher than for white persons, there was no significant difference between the ED injury visit rates for white and black persons, whether using crude or age-adjusted rates. However, black persons between the ages of 25 and 44 did have a significantly higher injury-related visit rate than did white persons in that age category.

Examining the percent of ED visits that were injury related for each population subgroup in table 1 shows that while overall one-third of the ED visits were for injuries, almost two-thirds of the ED visits for males aged 15–24 years were for injuries. White persons in all age groups tended to have a higher proportion of ED visits for injuries compared with black persons.

Visit characteristics

Geographic region

There were slight regional differences in the utilization of ED services for injuries. The Midwest had a higher injury visit rate (16 visits per 100 persons) than the South and West (12 visits per 100 persons) did (table 1).

Prior-visit status

The majority of injury-related visits (87.9 percent) were first-time visits. While just 5 percent of illness-related visits to ED's were classified as follow-up visits, 9.7 percent of the injury-related visits were follow-up visits from a previous injury visit. The majority of ED visits (62.2 percent) were made for illness and 37.8 percent were made for injury (table 2).

Urgency of this visit

Almost half of the first-visit injury cases were classified as urgent by hospital staff. In comparison, only 15.8 percent of follow-up injury visits were classified as urgent. Urgency of visit was defined as those visits in which the patient requires immediate attention for an acute illness or injury that threatens life or function and where delay would be harmful to the patient. Hospitals made slightly different interpretations about how they determined urgency for the survey. In some cases, the determination of urgency was based upon the severity of the patient's symptom(s); in other cases, it was based upon the patient's diagnosis or the nature of the treatment provided.

Cause of injury

Up to three external causes of injury were coded and classified according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM) (3). Table 3 shows the number of annual injury-related ED visits for the first-listed cause of injury, using the major cause of injury categories specified by the ICD–9–CM (E-codes) along with any subclassification codes that had reliable estimates. E-code data were reported for 84 percent of the injury-related visits. In visits where the place of occurrence was listed as the first cause, the second cause was used for purposes of this analysis. Almost one-third of the injury-related visits

Table 3. Number and percent distribution of injury-related emergency department visits by cause of injury: United States, 1992

Cause of injury and E code[1]		*Number of visits in thousands*	*Percent distribution*
All injury-related visits		33,950	100.0
Other accidents	E916–E928	10,368	30.5
Struck by falling object	E916	639	1.9
Striking against or struck by objects or persons	E917	3,018	8.9
Caught in or between objects	E918	670	2.0
Machinery	E919	488	1.4
Cutting or piercing instruments	E920	3,077	9.1
Firearm missile	E922	87	0.3
Hot substance, caustic or corrosive material	E924	473	1.4
Overexertion	E927	1,587	4.7
Other and unspecified causes	E928	195	0.6
Accidental falls	E880–E888	7,706	22.7
Fall from stairs	E880	639	1.9
Fall from ladders	E881	201	0.6
Fall from building	E882	162	0.5
Fall into hole	E883	171	0.5
Other fall from one level to another	E884	987	2.9
Fall on same level	E885	1,289	0.4
Other and unspecified falls	E888	4,223	12.4
Motor vehicle accidents, traffic and non-traffic	E810–E825	4,130	12.2
Other motor vehicle accident involving collision with another motor vehicle	E812	403	1.2
Motor vehicle accident involving collision with other vehicle	E813	62	0.2
Motor vehicle collision with pedestrian	E814	178	0.5
Other motor vehicle accident involving collision on highway	E815	101	0.3
Motor vehicle accident due to loss of control without collision on highway	E816	114	0.3
Noncollision motor vehicle accident while boarding or alighting	E817	73	0.2
Other noncollision motor vehicle accident	E818	333	1.0
Unspecified motor vehicle accident	E819	2,694	7.9
Other motor vehicle nontraffic accident	E824	86	0.3
Homicide and injury purposely inflicted by other persons	E960–E969	1,554	4.6
Fight, brawl, rape	E960	588	1.7
Assault by cutting/piercing instrument	E966	173	0.5
Unspecified assault	E968	731	2.2
Accidents due to natural and environmental factors	E900–E909	1,374	4.0
Venomous animals and plants	E905	442	1.3
Other injury caused by animals	E906	864	2.5
Accidents caused by submersion, suffocation, and foreign bodies	E910–E915	1,040	3.1
Foreign body in eye	E914	646	1.9
Foreign body in other orifice	E915	324	1.0
Other road vehicle accidents	E826–E829	638	1.9
Other road accident	E826	547	1.6
Accident involving animal being ridden	E828	73	0.2
Surgical and medical procedures as the cause of abnormal reaction of patient or later complication without mention of misadventure at the time of procedure	E878–E879	404	1.2
Due to surgical/medical procedure	E878	226	0.7
Due to other medical procedure	E879	178	0.5
Drugs, medicinal and biological substances causing adverse effects in therapeutic use	E930–E949	370	1.1
Due to unspecified drugs	E947	118	0.3
Accidental poisoning by drugs, medicinal substances, and biologicals	E850–E858	333	1.0
Poisoning by analgesics, antipyretics, and antirheumatics	E850	90	0.3
Poisoning by other drugs	E858	171	0.5
Accidental poisoning by other solid and liquid substances, gases, and vapors	E860–E869	192	0.6
Suicide and self-inflicted injury	E950–E959	160	0.5
Attempted suicide by solid or liquid substances	E950	90	0.3
Accidents caused by fire and flames	E890–E899	127	0.4
Unspecified fires	E899	74	0.2
Other[2]		202	0.6
Unknown[3]		5,351	15.8

[1]Based on the *International Classification of Diseases,* 9th Revision, Clinical Modification (ICD–9–CM) (3).
[2]Includes all other major E-code categories where the estimate was too low to be reliable.
[3]Includes uncodable, illegible, and blank E-codes.

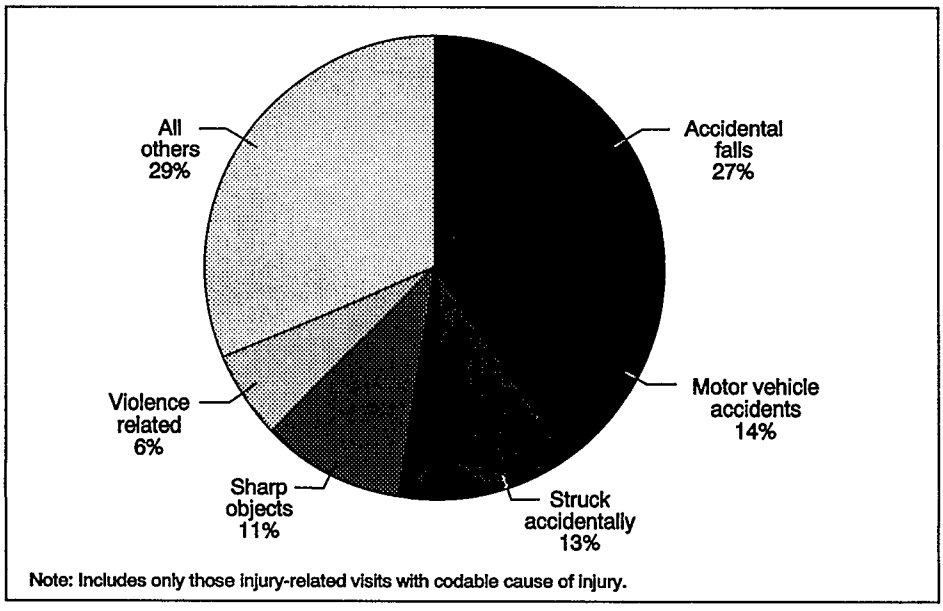

Figure 3. Percent distribution of leading causes of injury treated at emergency department visits: United States, 1992

were under the general category of "Other accidents" (E916–E928) (30.5 percent). "Accidental falls" (E880–E888) (22.7 percent) and "motor vehicle accidents" (E810–E825) (12.2 percent) were the second and third largest categories. Table 3 also presents the estimates for individual 3-digit codes within the larger categories. The codes listed were those for which the numbers of visits were large enough to provide a reliable estimate. The most frequently occurring 3-digit E-code was "unspecified fall" (E888) (12.4 percent of total). The category "other road vehicle accidents" (E826), which includes bicycle accidents, accounted for over half a million ED injury visits. "Unspecified assault" (E968), "fight, brawl, rape" (E960), and "assault by cutting or piercing instruments" (E966) have reliable estimates within the broader category of "homicide and injury purposely inflicted by other persons." Together these 3 codes accounted for 96 percent of the specific causes within the larger category.

Combining various E-code categories at and above the 3-digit level yields interesting results for summarization purposes. The major groupings in table 3 might be combined in a better way because some of the individual E-codes within "other accidents" have a greater frequency of occurrence than do some of the major categories. Figure 3 presents the top five causes of injury if E-codes are categorized in a slightly different manner. Still, "accidental falls" and "motor vehicle accidents," as defined above, accounted for 41 percent of the injury-related visits with E-codes. However, combining "accidentally struck by persons or objects" (E916) with "struck by falling objects" (E917) places this category, labeled "struck accidentally" in figure 3, among the leading causes. "Accidents caused by cutting or piercing instruments or objects" (E920) alone accounted for 11 percent of the causes of injury-related visits. Combining "homicide and injury purposely inflicted" (E960–E969) with "suicide and self-inflicted injury" (E950–E959), as a measure of injury caused by violence, places it among the top five causes of injury in visits to emergency departments. These five causes accounted for over 70 percent of injury-related visits in 1992 where a cause was specified. It should be noted that although the E-code classification of injury causes includes the terms "homicide" and "suicide," very few visits with these causes ended in death in the emergency department. In fact, there were so few cases observed in the sample that reliable population estimates could not be made. The term "intentional injury" (either by self or others) is perhaps a better label when using the classification for morbidity purposes.

Table 4 shows the annual visit rates and percent distribution of these top five injury causes by selected patient characteristics. The data show that persons in the age categories under 15 years and 65 years and over had higher rates of visits for accidental falls than the other age categories. Not surprisingly, persons between 15 and 24 years had the highest rate of visits for motor vehicle accidents. The rates of visits related to intentional injuries were highest among persons between 15 and 44 years. The data also show that black persons were more likely than white persons to make an ED visit because of violence (3:1) and motor vehicle accidents (5:3). On the other hand, white persons were more likely to make a visit due to accidental falls than were black persons (3:2). Figure 4 displays ED injury-related visit rates by race for the top five causes of injury.

Using the E-code data at the fourth digit level, the estimates may be combined to provide reliable estimates of certain categories of injuries. For example, table 5 shows the number of visits to ED's related to firearms, pedal cyclists, pedestrians, and motorcyclists.

Place of occurrence information was provided for less than 15 percent of the injury-related visits with appropriate causes of injury (e.g., E850–E869 or E880–E928) and is therefore not discussed in further detail. A separate item for place of occurrence was added to the 1993–94 Patient Record form to improve reporting of this information.

Alcohol- or drug-related problem

The proportion of visits that were alcohol related was higher for injury-related ED visits (3.6 percent) compared with noninjury related visits (2.3 percent). Nelson and Stussman (4) examined E-code data for different responses to item 14, "Is problem alcohol or drug related?", on the ED Patient Record and found that an injury was three times as likely to be classified as "homicide and injury purposely

Table 4. Number, annual rate, and percent distribution of injury-related emergency department visits by selected patient characteristics, according to the top five causes of injury: United States, 1992

Selected characteristic	Total	Cause of injury[1]					
		Accidental falls	Motor vehicle accidents	Struck accidentally	Cut by sharp objects	Violence	Other[2]
		Number of visits in thousands					
All injury-related visits	33,950	7,706	4,130	3,657	3,077	1,714	13,666
		Rate per 1,000 persons[3]					
All injury-related visits	135.0	30.6	16.4	14.5	12.2	6.8	54.3
Age							
Under 15 years	154.4	44.8	9.4	20.0	12.7	2.9	64.7
15–24 years	201.7	27.4	36.1	26.0	19.3	15.9	77.0
25–44 years	138.7	21.5	19.1	13.4	14.3	10.4	59.9
45–64 years	81.6	20.5	10.2	7.6	8.1	2.9	32.4
65 years and over	99.5	48.6	10.1	5.8	4.6	*0.6	29.7
Sex							
Female	114.6	30.8	15.3	10.2	8.1	5.3	44.7
Male	156.6	30.5	17.6	19.1	16.6	8.4	64.5
Race							
White	134.4	32.2	15.2	14.8	12.1	5.3	54.7
Black	158.5	24.7	25.5	15.5	13.5	17.7	61.6
Other	76.8	17.5	13.1	5.9	10.6	*4.1	25.6
		Percent distribution					
All injury-related visits	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Age							
Under 15 years	25.7	32.8	12.8	30.8	23.2	9.5	26.7
15–24 years	20.4	12.2	30.1	24.4	21.6	32.0	19.4
25–44 years	33.2	22.7	37.6	29.9	37.8	49.3	35.7
45–64 years	11.7	12.9	11.9	10.1	12.8	8.1	11.5
65 years and over	9.0	19.4	7.5	4.9	4.6	*1.1	6.7
Sex							
Female	43.6	51.7	48.0	36.1	34.1	40.3	42.3
Male	56.4	48.3	52.0	63.9	65.9	59.7	57.7
Race							
White	82.9	87.5	77.2	85.0	82.6	65.0	83.8
Black	14.7	10.1	19.4	13.3	13.8	32.5	14.2
Other	2.4	2.4	3.3	1.7	3.6	*2.5	2.0

[1]Based on the *International Classification of Diseases*, 9th Revision, Clinical Modification (3), Accidental falls (E880–E888); Motor vehicle accidents (E810–E825); Struck accidentally (E916–E917); Sharp objects (E920); Violence (E950–E969).
[2]Other includes visits for causes other than those listed in table plus uncodable causes and blank causes of injury.
[3]Based on U.S. Bureau of Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.

inflicted" in an alcohol- and drug-related visit in comparison with all other visits. Alcohol and drug use was determined by the hospital staff if the patient indicated or staff suspected that alcohol or drugs played a part in the injury, whether by the patient or another person. Patient's use of alcohol or drugs was not necessarily verified by blood or urine tests. These data undoubtedly underestimate the role of alcohol and drugs in ED injury visits. Notwithstanding, visits classified as related to alcohol and/or drugs had a greater likelihood (6:1) of being caused by violence than were visits not so classified.

Reason for visit

In item 11 of the ED Patient Record, the patient's (or patient surrogate's) "complaint(s), symptom(s), or other reason(s) for this visit in the patient's own words" is recorded. Up to three reasons for visit are classified and coded according to *A Reason for Visit Classification for Ambulatory Care* (RVC) (5). The principal reason is the problem, complaint, or reason listed in item 11a of the ED Patient Record.

The RVC is divided into the eight modules or groups of reasons displayed in table 6. Half of all injury-related visits were made for reasons classified in the injuries and adverse effects module. About 43.2 percent were in the symptoms module with the largest being symptoms referable to the

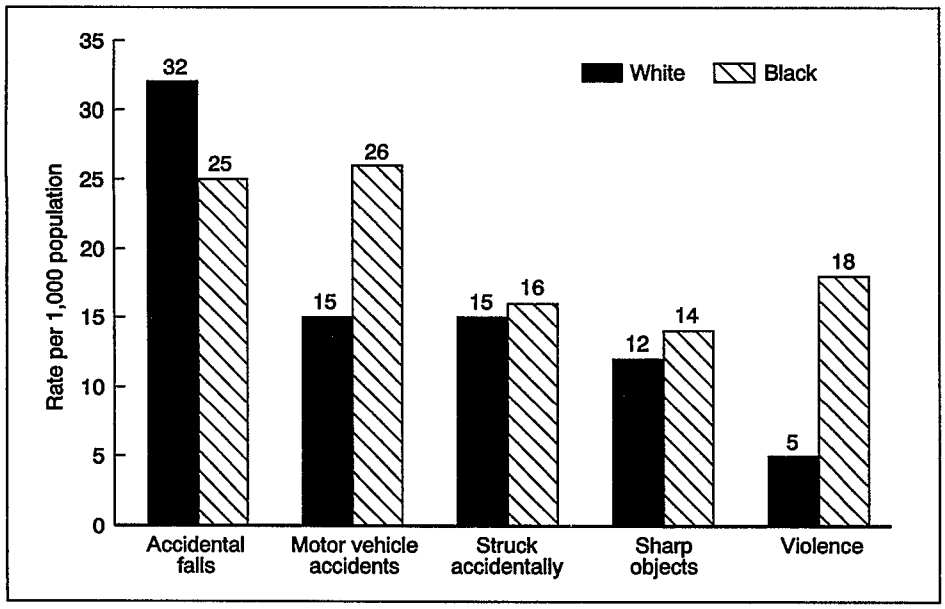

Figure 4. Annual rate of injury-related visits to emergency department by patient's race and leading causes of injury: United States, 1992

Table 5. Number, percent, and rate of visits to emergency departments by selected causes of injury: United States, 1992

Selected cause[1]	*Number of visits in thousands*	*Percent of injury visits*	*Rate per 1,000 persons*[2]
Firearms	112	0.3	0.4
Pedal cyclists	321	0.9	1.3
Pedestrians	74	0.2	0.3
Motorcyclists	62	0.2	0.2

[1]Based on the *International Classification of Diseases*, 9th Revision, Clinical Modification (3): Firearms (E922, E955.0–.4, E965.0–.4, E970, and E985.0–.4); Pedal cyclists (E800–E807(.3), E810–E825(.6), E826–E829(.1)); Pedestrians in motor vehicle accidents (E810–E825(.7)); Motorcyclists (E810–E825(.2)).
[2]Based on U.S. Bureau of the Census estimates of the civilian noninstitutionalized population of the United States as of July 1, 1992.

musculoskeletal system, accounting for 27.4 percent of the visits.

The 20 most frequently mentioned principal reasons for visit, representing 52.6 percent of all visits, are shown in table 7. It is important to note that the rank ordering presented in this and other tables may not always be reliable because near estimates may not differ from each other due to sampling variability. "Upper extremity lacerations" was the most frequently mentioned specific reason for visit (6.8 percent).

Principal diagnosis

The principal diagnosis or problem associated with the patient's most important reason for visit and any other significant current diagnoses are recorded in item 12. Up to three diagnoses are coded and classified according to the ICD–9–CM (3). As expected, injury and poisoning (ICD–9–CM codes 800–999) accounted for 81 percent of all visits, and diseases of the musculoskeletal system (710–739) accounted for 5 percent. Supplementary classification diagnoses (those unrelated to injury or illness such as general examination) were made for 4 percent of the injury-related visits. The remaining 10 percent were distributed over all the other major categories.

Within the main ICD–9–CM injury category (N-codes), most of the principal diagnoses were "open wounds" (870–897) (24.1 percent), "sprains and strains of joints and adjacent muscles" (840–848) (14.4 percent), "contusions" (920–924) (14.0 percent), and "fractures" (800–829) (11.2 percent). There were no sex differences for the principal diagnoses except that males tended to have a higher percent of their diagnoses as "open wounds" compared to females (28.2 and 18.7 percent respectively). There were few race differences in diagnoses although white persons tended to have higher rates of "fractures" and "crushing injuries" (925–929) than black persons had. There were 1.8 million visits that had an injury diagnosis (N-code) that were not indicated by hospital staff to be injury related or to have a cause of injury recorded in item 10 of the Patient Record. These visits are not included in this report as injury visits.

The type of N-code most frequently found for the principal diagnosis differed, as expected, by age of patient and cause of injury. Visits for patients 65 years and over were twice as likely to have a principal diagnosis of "fracture" compared to younger patients. Patients between the ages of 15 and 44 years were twice as likely to have a principal diagnosis of "sprains and strains" compared to other age groups. Children under 15 years were one and a half times more likely to have an open wound diagnosis than were older patients. Similarly, of the top five causes of injury visits to emergency departments, visits resulting from accidental falls were more likely to result in a "fracture" diagnosis than were other causes (2:1). Visits due to motor vehicle accidents more likely resulted in a principal diagnosis of "sprains and strains" compared to other causes (2:1). "Open wounds" was found most often for visits caused by cuts from sharp objects (86.7 percent). "Open wounds" was also the leading principal diagnosis for patients struck accidentally or who were victims of intentional injuries (about 28 percent each).

The 20 most frequently reported principal diagnoses are shown in table 8. These are categorized at the three-digit coding level of the ICD–9–CM and account for 55.5 percent of all injury-related ED visits. The most commonly recorded diagnosis was "open wound of head other than eye or ear" (873),

Table 6. Number and percent distribution of injury-related emergency department visits by patient's principal reason for visit: United States, 1992

Principal reason for visit and RVC code[1]		Number of visits in thousands	Percent distribution
All visits		33,950	100.0
Symptom module	S001–S999	14,663	43.2
General symptoms	S001–S099	1,949	5.7
Symptoms referable to psychological/mental disorders	S100–S199	197	0.6
Symptoms referable to the nervous system (excluding sense organs)	S200–S259	1,016	3.0
Symptoms referable to the cardiovascular/lymphatic system	S260–S299	42	0.1
Symptoms referable to the eyes and ears	S300–S399	704	2.1
Symptoms referable to the respiratory system	S400–S499	403	1.2
Symptoms referable to the digestive system	S500–S639	606	1.8
Symptoms referable to the genitourinary system	S640–S829	120	0.4
Symptoms referable to the skin, hair, and nails	S830–S899	327	1.0
Symptoms referable to the musculoskeletal system	S900–S999	9,298	27.4
Disease module	D001–D999	84	0.2
Diagnostic/screening and preventive module	X100–X599	151	0.4
Treatment module	T100–T899	1,276	3.8
Injuries and adverse effects module	J001–J999	17,061	50.3
Injury by type and/or location	J001–J799	14,691	43.3
Injury, NOS	J800–J899	1,965	5.8
Poisoning and adverse effects	J900–J999	405	1.2
Test results module	R100–R700	*24	*0.1
Administrative module	A100–A140	*24	*0.1
Other[2]	U990–U999	666	2.0

[1]Based on *A Reason for Visit Classification for Ambulatory Care* (RVC) (5).
[2]Includes problems and complaints not elsewhere classified, entries of "None," blanks, and illegible entries.

Table 7. Number, percent distribution, and cumulative percent of injury-related emergency department visits by the 20 principal reasons for visit most frequently mentioned by patients: United States, 1992

Principal reason for visit and RVC code[1]		Number of visits in thousands	Percent distribution	Cumulative percent
All injury visits		33,950	100.0	...
Upper extremity lacerations	J225	2,321	6.8	6.8
Face lacerations	J210	1,483	4.4	11.2
Hand and finger symptoms	S960	1,225	3.6	14.8
Head, neck, and face injury	J505	1,065	3.1	18.0
Hand and finger injury	J570	993	2.9	20.9
Neck symptoms	S900	933	2.7	23.6
Back symptoms	S905	913	2.7	26.3
Knee symptoms	S925	880	2.6	28.9
Ankle symptoms	S930	838	2.5	31.4
Foot and toe symptoms	S935	780	2.3	33.7
Head and neck lacerations	J205	728	2.1	35.8
Suture-insertion/removal	T555	693	2.0	37.9
Accident NOS	J810	687	2.0	39.9
Shoulder symptoms	S940	642	1.9	41.8
Arm symptoms	S945	635	1.9	43.6
Pain, specified site not referable	S055	621	1.8	45.5
Headache, pain in head	S210	621	1.8	47.3
Leg symptoms	S920	601	1.8	49.1
Low back symptoms	S910	601	1.8	50.8
Wrist symptoms	S955	591	1.7	52.6
All other reasons		15,634	46.0	98.6
Blank		466	1.4	100.0

[1]Based on *A Reason for Visit Classification for Ambulatory Care* (RVC) (5).

Table 8. Number, percent distribution, and cumulative percent of injury-related emergency department visits by the 20 principal diagnoses most frequently rendered by hospital staff: United States, 1992

Principal diagnosis and ICD–9–CM code[1]		Number of visits in thousands	Percent distribution	Cumulative percent
All visits		33,950	100.0	...
Open wound of head (other than eye or ear)	873	2,561	7.5	7.5
Contusion of lower limb and other unspecified sites	924	1,755	5.2	12.7
Open wound of finger	883	1,604	4.7	17.4
Sprains and strains of unspecified parts of back	847	1,597	4.7	22.1
Sprains and strains of ankle and foot	845	1,311	3.9	26.0
Open wound of other and unspecified sites, except limbs	879	1,257	3.7	29.7
Contusion of upper limb	923	1,255	3.7	33.4
Contusion of face, scalp, and neck except eyes	920	863	2.5	35.9
Contusion of trunk	922	744	2.2	38.1
Injury, other and unspecified	959	720	2.1	40.3
Open wound of hand, except finger	882	675	2.0	42.2
Intracranial injury of other and unspecified nature	854	564	1.7	43.9
Open wound of knee, leg (except thigh), and ankle	891	548	1.6	45.5
Encounter for other and unspecified procedures and aftercare	V58	540	1.6	47.1
Fracture of radius and ulna	813	518	1.5	48.6
Sprains and strains of wrist and hand	842	518	1.5	50.2
Sprains and strains of knee and leg	844	509	1.5	51.7
Fracture of one or more phalanges of hand	816	482	1.4	53.1
Superficial injury of eye and adnexa	918	442	1.3	54.4
Unspecified disorders of the back	724	392	1.2	55.5
All other diagnoses		15,095	44.5	100.0

[1]Based on the *International Classification of Diseases*, 9th Revision, Clinical Modification (ICD–9–CM) (3).

Table 9. Number and percent distribution of emergency department visits and percent of total visits that are injury related, by selected diagnostic and/or screening services: United States, 1992

Diagnostic and/or screening service ordered or provided by physician[1]	Number of visits in thousands	Percent distribution	Percent injury related[2]
All injury-related visits	33,950	100.0	37.8
Blood pressure	25,202	74.2	38.1
Extremity x ray	12,091	35.6	89.3
Other diagnostic imaging	4,147	12.2	44.3
Other blood test	3,397	10.0	13.2
Chest x ray	2,657	7.8	17.6
Mental status exam	2,044	6.0	38.7
Urinalysis	2,063	6.1	15.1
Electrocardiogram (EKG)	1,495	4.4	12.6
CT scan/MRI[3]	860	2.5	39.8
HIV serology[4]	92	0.3	34.2
Other	4,584	13.5	25.9
None	3,819	11.2	35.2

[1]Total may exceed total number of visits because more than one service may be reported per visit.
[2]Percent of all emergency department visits in each category that are injury related.
[3]CT is computerized tomography. MRI is magnetic resonance imaging.
[4]HIV is human immunodeficiency virus.

occurring at 7.5 percent of all injury visits.

Diagnostic and screening services

Statistics on various diagnostic and screening services ordered or provided by hospital staff during an injury-related ED visit are displayed in table 9.

Approximately 88.8 percent of all injury-related ED visits included one or more diagnostic or screening service. The most frequently mentioned diagnostic service was blood pressure check, recorded at 74.2 percent of visits. Extremity x ray (35.6 percent) was the second most frequent diagnostic procedure. About 9 of every 10 ED visits with extremity x rays were injury related. Half of all injury-related visits for accidental falls involved an extremity x ray. Visits due to motor vehicle accidents or violence were more likely to have blood tests and urinalysis performed compared to injury visits for other causes.

Readers should note that for items 8, 15, 16, 18, and 19, hospital staff were asked to check all of the applicable

Table 10. Number and percent distribution of injury-related emergency department visits and percent that are injury related, by selected procedures: United States, 1992

Procedure provided by hospital staff[1]	Number of visits in thousands	Percent distribution	Percent injury related[2]
All visits	33,950	100.0	37.8
Wound care	10,757	31.7	93.1
Orthopedic care	6,706	19.8	94.8
Intravenous fluids	2,075	6.1	16.0
Eye and/or ear, nose, and throat care	1,241	3.7	49.9
Bladder catheter	415	1.2	17.9
Nasogastric tube and/or gastric lavage	372	1.1	42.4
Endotracheal intubation	110	0.3	27.0
CPR[3]	63	0.2	21.6
Other	2,470	7.3	36.9
None	13,296	39.2	25.7

[1]Total may exceed total number of visits because more than one procedure may be reported per visit.
[2]Percent of all emergency department visits in each category that are injury related.
[3]CPR is cardiopulmonary resuscitation.

Table 11. Number and percent distribution of injury-related emergency department visits and percent that are injury related, by number of medications provided or prescribed: United States, 1992

Number of medications	Number of visits in thousands	Percent distribution	Percent injury related[1]
All injury-related visits	33,950	100.0	37.8
None	12,812	37.7	46.2
One	12,244	36.1	41.8
Two	5,691	16.8	30.2
Three	2,004	5.9	24.8
Four	723	2.1	22.4
Five or more	476	1.4	17.9

[1]Percent of all emergency department visits in each category that are injury related.

Table 12. Number, percent distribution, cumulative percent, and therapeutic classification of the 15 drugs most frequently provided or prescribed in injury-related emergency department visits by entry name of drug: United States, 1992

Entry name of drug[1]	Number of mentions in thousands	Percent distribution	Cumulative percent	Therapeutic classification[2]
All drug mentions	34,910	100.0	...	...
Tetanus-related biologicals	3,311	9.5	9.5	Vaccines and antiserums
Tylenol	2,592	7.4	16.9	General analgesics
Motrin	2,216	6.3	23.3	General analgesics
Tylenol with codeine	1,790	5.1	28.4	General analgesics
Toradol	1,079	3.1	31.5	General analgesics
Demerol	1,017	2.9	34.4	General analgesics
Advil	873	2.5	36.9	General analgesics
Vicodin	794	2.3	39.2	General analgesics
Keflex	701	2.0	41.2	Cephalosporins
Darvocet-N	669	1.9	43.1	General analgesics
Lidocaine	635	1.8	44.9	Local anesthetics
Ibuprofen	627	1.8	46.7	General analgesics
Neosporin	607	1.7	48.4	Antibacterial agents
Flexeril	546	1.6	50.0	Muscle relaxants
Benadryl	507	1.5	51.5	Antihistamines
All other mentions	16,948	48.5	100.0	...

[1]The entry made by the hospital staff on the prescription or other medical records. This may be a trade name, generic name, or desired therapeutic effect.
[2]Therapeutic classification is based on the *National Drug Code Directory,* 1985 Edition (6).

Table 13. Number, percent distribution, and cumulative percent of drug mentions for the 15 most frequently used generic substances in injury-related emergency department visits: United States, 1992

Generic substance	Number of mentions in thousands[1]	Percent distribution	Cumulative percent
All drug mentions	45,207	100.0	...
Acetaminophen	6,759	15.0	15.0
Ibuprofen	3,869	8.6	23.5
Tetanus toxoid	2,793	6.2	29.7
Codeine	2,008	4.4	34.1
Diphtheria toxoid	1,873	4.1	38.3
Lidocaine	1,230	2.7	41.0
Bacitracin	1,195	2.6	43.6
Meperidine	1,086	2.4	46.0
Ketorolac Tromethamine	1,079	2.4	48.4
Dihydrocodeine	924	2.0	50.5
Polymyxin B	848	1.9	52.3
Cephalexin	792	1.8	54.1
Naproxen	741	1.6	55.7
Neomycin	734	1.6	57.4
Propoxyphene	715	1.6	58.9
All other mentions	18,561	41.1	100.0

[1]Frequency of mention combines single-ingredient agents with mentions of the agent as an ingredient in a combination drug.

Table 14. Number and percent distribution of emergency department visits and percent of total visits that are injury related, by patient's expected source of payment: United States, 1992

Expected source of payment[1]	Number of visits in thousands	Percent distribution	Percent injury related[2]
All visits	33,950	100.0	37.8
Private and/or commercial	13,869	40.9	42.9
Medicaid	5,072	14.9	24.9
Patient-paid	5,006	14.7	40.4
Medicare	3,129	9.2	23.0
HMO and/or other prepaid	2,701	8.0	41.1
Other government	1,759	5.2	43.6
No charge	213	0.6	27.4
Other	3,677	10.8	60.1
Unknown	484	1.4	32.2

[1]Total may exceed total number of visits because more than one pay source may be coded for each visit.
[2]Percent of all emergency department visits in each category that are injury related.

Table 15. Number and percent distribution of emergency department visits and percent of total visits that are injury related, by type of provider seen: United States, 1992

Type of provider[1]	Number of visits in thousands	Percent distribution	Percent injury related[2]
All visits	33,950	100.0	37.8
Staff physician	28,466	83.8	38.4
Registered nurse	28,350	83.5	38.0
Other physician	3,799	11.2	36.1
Resident and/or intern	3,750	11.0	30.5
Nurse's aide	3,210	9.5	37.8
Licensed practical nurse	2,039	6.0	34.9
Physician assistant	864	2.5	49.2
Nurse practitioner	554	1.6	31.7

[1]Total may exceed total number of visits because more than one provider may be reported per visit.
[2]Percent of all emergency department visits in each category that are injury related.

Table 16. Number, percent distribution of injury-related emergency department visits and percent that are injury related, by disposition of visit: United States, 1992

Disposition[1]	Number of visits in thousands	Percent distribution	Percent injury related[2]
All visits	33,950	100.0	37.8
Refer to other physician/clinic	13,548	39.9	40.8
Return to emergency department as needed	8,928	26.3	39.8
Return to referring physician	6,957	20.5	36.6
Return to emergency department appointment	2,891	8.5	66.9
No followup planned	2,325	6.8	43.6
Admit to hospital	2,072	6.1	17.1
Transfer to other facility	340	1.0	31.1
Left against medical advice	316	0.9	30.2
Dead on arrival or died in emergency department	*51	*0.2	*18.2
Other	1,650	4.9	36.0

[1]Total may exceed total number of visits because more than one disposition may be reported per visit.
[2]Percent of all emergency department visits in each category that are injury related.

categories for that item, with the result that multiple responses could be coded for each visit.

Procedures

Procedures were performed at 60.8 percent of injury-related ED visits (table 10), which was twice the percent for illness-related visits. The most frequently mentioned procedure was wound care, recorded at 31.7 percent of the visits. Orthopedic care was the procedure with the second highest frequency, occurring at one-fifth of the visits. Roughly 94 percent of all visits with wound care or orthopedic care were identified as related to an injury. Injury visits were less likely to require the use of intravenous fluids compared with illness-related visits (6.1 and 19.5 percent respectively).

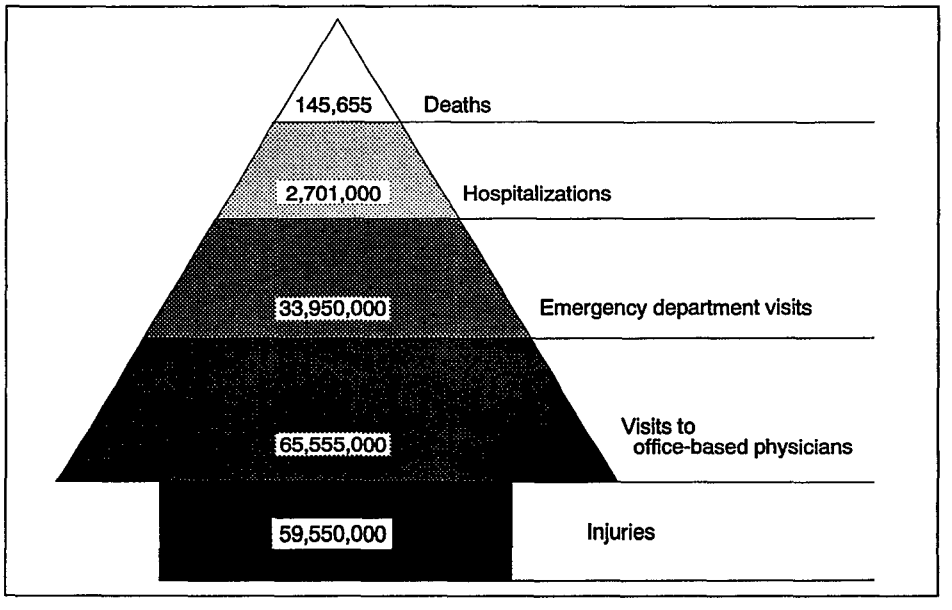

Figure 5. The injury pyramid: United States, 1992

Medication therapy

Medication was used at 62.3 percent of the injury-related visits. Hospital staff were instructed to record all new or continued medications ordered or provided at the visit, including prescription and nonprescription preparations, and immunizing and desensitizing agents. As many as five medications or drug mentions could be coded per visit. Visits with one or more drug mentions are termed "drug visits" for this report. Table 11 shows the frequency and percent of numbers of medications administered or prescribed during the visit. There was an average of 1.1 drug mentions per injury-related ED visit or 1.8 mentions per injury-related drug visit. Only one drug mention was recorded at 36.1 percent of the injury-related visits. Medications were administered or prescribed less frequently for injury-related visits compared with illness-related visits (62.3 and 73.3 percent respectively).

The 15 most frequently mentioned medications in injury-related ED visits are presented in table 12 according to the name written on the ED Patient Record by the health care provider regardless of whether it is a brand name, generic name, or therapeutic effect. Tetanus-related biologicals, Tylenol, and Motrin were the three drugs or immunizing agents most frequently provided or prescribed during injury-related ED visits. They accounted for about one-quarter of all drug mentions. Of the top drug names mentioned, most are classified as general analgesics. This is based on the therapeutic categories used in the *National Drug Code Directory*, 1985 edition (NDC) (6).

The 15 most frequently used generic substances for 1992 injury-related ED visits are shown in table 13. Drug products containing more than one ingredient (combination products) are included in the data for each ingredient. For example, acetaminophen with codeine is included in both the count for acetaminophen and the count for

codeine. Acetaminophen was the generic ingredient most frequently used in drugs ordered or provided by hospital staff, occurring in 15 percent of drug mentions. The top 15 generic substances accounted for almost 60 percent of all drug mentions. As expected, the top generic substances in injury-related visits are different from those for illness-related ED visits. Only acetaminophen, ibuprofen, and codeine appear on both lists of top 15 generic substances.

Expected source of payment

Expected source of payment for injury-related visits (table 14) was most often private/commercial insurance (40.9 percent). "Medicaid" and "patient-paid" each accounted for about 15 percent of the injury-related visits. "HMO/other prepaid" and "Medicare" were each mentioned at about 8 percent of injury-related ED visits. The patient-paid category includes the patient's contribution toward "co-payments" and "deductibles." While injuries made up 37.5 percent of the ED workload, they accounted for 60 percent of the visits whose payment source was categorized as "other" on the form. It is possible that visits paid by worker compensation were recorded under "other." A separate category for worker compensation was placed on the 1995–96 Patient Record to provide better information for future analyses. About 40 percent of the "Other Government," "HMO/Other prepaid," "Private commercial," and "Patient-paid" visits are injury related. Only about 24 percent of the Medicare and Medicaid visits are injury related.

Providers seen this visit

A registered nurse or staff physician was seen at 84 percent of injury-related ED visits (table 15). These percents are not significantly different from those corresponding to all ED visits.

Disposition of this visit

The most frequent disposition was to refer the patient to another physician or clinic (39.9 percent). Only 6.1 percent of injury-related ED visits resulted in hospital admission (table 16). This is lower than the 18 percent of illness-related visits that ended in hospitalization. Roughly one-quarter of the injury-related visits had a disposition of "Return to ED as needed." This means no followup is planned, but if the condition worsens, the patient should return. Patients in injury-related visits were more likely to be scheduled for another ED appointment compared with illness-related visits (8.5 and 2.6 percent, respectively). Visits resulting from accidental falls and motor vehicle accidents were more likely to result in a hospital admission for the patient (9.2 and 11.2 percent respectively) than were injury visits for other causes (5.2 percent).

Impact of data

The NHAMCS data present a better picture of the impact of injuries on health care utilization. Figure 5 presents the injury pyramid indicating the national estimates from which relative rates of various health care events and death may be determined. The following rates are based on 59.6 million reported injuries that were obtained from the 1992 National Health Interview Survey (7). For every 100 injuries requiring medical attention or resulting in the loss of at least one-half day from usual activities, there were 110 physician office visits (8); 57 emergency department visits; 4.5 hospitalizations (9); and 0.24 deaths (10). Another way of comparing the relative impact of injuries is using the number of deaths as the base. For each death in 1992 resulting from an injury, there were 19 hospitalizations, 233 ED visits, and 450 physician office visits.

The impact of injuries comprises a significant portion of health care expenditures in the United States. The average cost of an ED visit in 1987 was $166 (11). After adjusting for changes in the consumer price index between 1987 and 1992, the cost in 1992 dollars would be $271. Based on this cost, the annual national cost of visits to ED's alone for injury-related purposes is over 9.2 billion dollars. The 1992 NHAMCS data revealed that the rates of injuries resulting in ED visits are highest among males 15–24 years of age. Close to two-thirds of all ED visits for this population were for injuries. Continued reliance on injury prevention programs, especially targeted to this population, should help to reduce resources spent in health care, loss of productivity, loss of life, and loss of quality of life as a result of personal injuries. These data support the injury prevention programs that emphasize nonviolent solutions to conflicts, elimination of alcohol and drug abuse, and increased education in home, school, recreational, workplace, and transportation safety procedures and practices. The 1992 NHAMCS data provide the first national data on nonfatal causes of injury resulting in emergency medical care. Analysis of data by E-codes supports the prevention efforts that promote individual practices and behaviors that reduce a person's risk of injury, such as proper storage of firearms in the home, avoiding drinking and driving, using safety restraints while riding in an automobile, and wearing a helmet when riding a bicycle or motorcycle.

Additional reports that utilize the 1992 NHAMCS data will be published. In addition, a computer tape containing both the emergency and outpatient department data is available at a nominal cost from the National Technical Information Service. These data will also be available on CD-ROM and diskettes. Questions regarding this report may be directed to the Ambulatory Care Statistics Branch by calling (301) 436–7132.

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Technical notes

Source of data and sample design

The information presented in this report is based on data collected in the 1992 National Hospital Ambulatory Medical Care Survey (NHAMCS) from December 2, 1991 through December 27, 1992. The data were adjusted to produce annual estimates. The target universe of NHAMCS includes visits made in the United States by patients to emergency departments (ED's) and outpatient departments (OPD's) of non-Federal, short-stay, and general hospitals. Telephone contacts are excluded.

A four-stage probability sample design is used in NHAMCS. It involves samples of primary sampling units (PSU's), hospitals with ED's and/or OPD's within PSU's, ED's within hospitals and/or clinics within OPD's, and patient visits within ED's and/or clinics. For 1992, a sample of 524 non-Federal, short-stay, and general hospitals was selected from the SMG Hospital Market Database. Of this group, 474 hospitals were in scope, or eligible to participate in the survey. The hospital response rate for the NHAMCS during this period was 93 percent. Hospital staff were asked to complete a Patient Record (figure 1) for a systematic random sample of patient visits occurring during a randomly assigned 4-week reporting period. The number of Patient Record forms completed for ED's was 36,271.

Characteristics of the hospital, such as ownership and expected number of ED visits, were obtained from the hospital administrator during an induction interview. The U.S. Bureau of the Census, Housing Surveys Branch, was responsible for the survey's data collection. Data processing operations and medical coding were performed by the National Center for Health Statistics, Health Care Surveys Section, Research Triangle Park, North Carolina.

Sampling errors

The standard error is primarily a measure of the sampling variability that occurs by chance when only a sample, rather than an entire universe, is surveyed. The standard error also reflects part of the measurement error, but does not measure any systematic biases in the data. The chances are 95 out of 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error.

The standard errors that were used in tests of significance for this report were calculated using generalized linear models for predicting the relative standard error for estimates based on the linear relationship between the actual standard error, as approximated using SUDAAN software, and the size of the estimate. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (12). The relative standard error (RSE) of an estimate is obtained by dividing the standard error by the estimate itself. The result is then expressed as a percent of the estimate.

Relative standard errors for emergency department estimates are shown in tables I and II. Standard errors for estimates in percents of visits and drug mentions are shown in tables III and IV. Multiplying the estimate by the RSE will provide an estimate of the standard error for the estimate.

Alternatively, relative standard errors for aggregate estimates may be calculated using the following general formula: where x is the aggregate of interest in thousands, and A and B are the appropriate coefficients from table V.

$$RSE\,(x) = \sqrt{A + \frac{B}{x}} \bullet 100$$

Similarly, relative standard errors for an estimate of a percent may be calculated using the following general formula:

$$RSE\,(x) = \sqrt{\frac{B \bullet (1-p)}{p \bullet x}} \bullet 100$$

where p is the percent of interest, expressed as a proportion, and x is the denominator of the percent in thousands, using the appropriate coefficients from table V.

Table I. Approximate relative standard errors for estimated numbers of emergency department visits: National Hospital Ambulatory Medical Care Survey, 1992

Estimated number of emergency department visits in thousands	*Relative standard error in percent*
10	71.1
20	50.4
50	32.0
58	29.7
100	22.8
200	16.4
500	10.8
1,000	8.1
2,000	6.4
5,000	5.1
10,000	4.6
20,000	4.3
50,000	4.1
100,000	4.0

NOTE: The smallest reliable estimate for visits to hospital emergency departments is 58,000. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by by NCHS standards.
Example of use of table: An aggregate estimate of 20 million visits has a relative standard error of 4.3 percent or a standard error of 860,000 visits (4.3 percent of 20 million).

Table II. Approximate relative standard errors for estimated numbers of drug mentions at emergency department visits: National Hospital Ambulatory Medical Care Survey, 1992

Estimated number of drug mentions in thousands	*Relative standard error in percent*
10	71.9
20	50.9
50	32.4
59	29.9
100	23.1
200	16.6
500	11.1
1,000	8.5
2,000	6.8
5,000	5.5
10,000	5.0
20,000	4.8
50,000	4.6
100,000	4.5
200,000	4.5

NOTE: The smallest reliable estimate of drug mentions at visits to hospital emergency departments is 59 million. Estimates below this figure have a relative standard error greater than 30 percent and are deemed unreliable by NCHS standards.
Example of use of table: An aggregate estimate of 10 million drug mentions has a relative standard error of 5.5 percent or a standard error of 550,000 drug mentions (5.5 percent of 10 million).

Adjustments for hospital nonresponse

Estimates from NHAMCS data were adjusted to account for sample

Table III. Approximate standard errors of percents of estimated numbers of emergency department visits: National Hospital Ambulatory Medical Care Survey, 1992

Base of percent (visits in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
10	7.1	15.5	21.3	28.4	32.5	34.8	35.5
20	5.0	10.9	15.1	20.1	23.0	24.6	25.1
50	3.2	6.9	9.5	12.7	14.6	15.6	15.9
100	2.2	4.9	6.7	9.0	10.3	11.0	11.2
200	1.6	3.5	4.8	6.4	7.3	7.8	7.9
500	1.0	2.2	3.0	4.0	4.6	5.9	5.0
1,000	0.7	1.5	2.1	2.8	3.3	3.5	3.6
2,000	0.5	1.1	1.5	2.0	2.3	2.5	2.5
5,000	0.3	0.7	1.0	1.3	1.5	1.6	1.6
10,000	0.2	0.5	0.7	0.9	1.0	1.1	1.1
20,000	0.2	0.3	0.5	0.6	0.7	0.8	0.8
50,000	0.1	0.2	0.3	0.4	0.5	0.5	0.5
100,000	0.1	0.2	0.2	0.3	0.3	0.3	0.4

Example of use of table: An estimate of 40 percent based on an aggregate estimate of 10 million visits has a standard error of 1.1 percent or a relative standard error of 2.8 percent (1.1 percent divided by 40 percent).

Table IV. Approximate standard errors of percents of estimated numbers of drug mentions at emergency department visits: National Hospital Ambulatory Medical Care Survey, 1992

Base of percent (drug mentions in thousands)	Estimated percent						
	1 or 99	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Standard error in percentage points						
10	7.1	15.6	21.5	28.7	32.9	35.1	35.9
20	5.0	11.1	15.2	20.3	23.2	24.8	25.4
50	3.2	7.0	9.6	12.8	14.7	15.7	16.0
100	2.3	4.9	6.8	9.1	10.4	11.1	11.3
200	1.6	3.5	4.8	6.4	7.4	7.9	8.0
500	1.0	2.2	3.0	4.1	4.6	5.0	5.1
1,000	0.7	1.6	2.2	2.9	3.3	3.5	3.6
2,000	0.5	1.1	1.5	2.0	2.3	2.5	2.5
5,000	0.3	0.7	1.0	1.3	1.5	1.6	1.6
10,000	0.2	0.5	0.7	0.9	1.0	1.1	1.1
20,000	0.2	0.3	0.5	0.6	0.7	0.8	0.8
50,000	0.1	0.2	0.3	0.4	0.5	0.5	0.5
100,000	0.1	0.2	0.2	0.3	0.3	0.3	0.4
200,000	0.1	0.1	0.2	0.2	0.2	0.2	0.3

Example of use of table: An estimate of 50 percent based on an aggregate estimate of 10 million visits has a standard error of 1.1 percent or a relative standard error of 2.2 percent (1.1 percent divided by 50 percent).

hospitals that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding hospitals data from visits to similar hospitals. For this purpose, hospitals were judged similar if they were in the same region, ownership control group, and metropolitan statistical area control group.

Adjustments for ED and/or clinic nonresponse

Estimates from NHAMCS data were adjusted to account for ED's and sample clinics that were in scope but did not participate in the study. This adjustment was calculated to minimize the impact of response on final estimates by imputing to nonresponding ED's or clinics' data from visits to similar ED's or clinics. For this purpose, ED's or clinics were judged similar if they were in the same ED or clinic group.

Test of significance and rounding

The determination of statistical inference is based on the *t*-test. The Bonferroni inequality was used to establish the critical value for statistically significant differences (0.05 level of significance over all analyses performed on estimates in a table). Terms relating to differences such as "higher than" indicate that the difference is statistically significant. A lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found to be not significant.

In the tables, estimates of ED visits have been rounded to the nearest thousand. Consequently, estimates will not always add to totals. Rates and percents were calculated from original unrounded figures and do not

necessarily agree with percents calculated from rounded data.

Definition of terms

Patient—An individual seeking personal health services who is not currently admitted to any health care institution on the premises.

Hospital—All hospitals with an average length of stay for all patients of less than 30 days (short-stay) or hospital whose specialty is general (medical or surgical) or children's general. Federal hospitals, hospital units of institutions, and hospitals with fewer than six beds staffed for patient use are excluded.

Emergency department—Hospital facility for the provision of unscheduled outpatient services to patients whose conditions require immediate care and which is staffed 24 hours a day. If an ED provided emergency services in different areas of the hospital, then all these areas were selected with certainty into the sample. Off-site emergency departments open less than 24 hours are included if staffed by the hospital's emergency department.

Visit—A direct personal exchange between a patient and a physician or other health care provider working under the physician's supervision, for the purpose of seeking care and receiving personal health services.

Urgent/emergent—A visit wherein the patient requires immediate attention for an acute illness or injury that threatens life or function and where delay would be harmful to the patient.

Non-urgent—A visit wherein the patient does not require attention immediately or within a few hours.

Injury-related visit—A visit during which hospital staff indicated that the visit was a result of any kind of accident or injury including but not limited to falls; lacerations; burns; intentional injuries; unintentional poisonings by drugs, medicinal substances, biologicals, gases, or vapors; adverse reaction to drugs; complications of surgical and medical procedures; and insect and animal bites.

Table V. Coefficients appropriate for determining relative standard error by type of estimate for hospital emergency departments: National Hospital Ambulatory Medical Care Survey, 1992

Type of estimate	Coefficient with use for estimates in thousands	
	A	B
Visits	0.00158	5.04053
Drug mentions	0.00235	5.14293

Symbols	
- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

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