

# State Injury Indicators Report: Instructions for Preparing 2017 Data



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## FOREWORD AND UPDATES

The Centers for Disease Control and Prevention's (CDC) National Center for Injury Prevention and Control (NCIPC) is pleased to provide this document to guide you in preparing the 2017 State Injury Indicators. It is also recommended that these methods be used for calculating the 2016 hospitalization and emergency department indicators.

Under Funding Opportunity Announcement CE16-1602, 23 states have been funded to collect and submit State Injury Indicator data. However, all states and U.S. territories are eligible to voluntarily submit data for inclusion in the multistate State Injury Indicators products. As more states and U.S. territories voluntarily participate in this surveillance effort, a broader picture of the burden of injuries can be presented and priorities for prevention can be targeted. NCIPC looks forward to continuing to work together to advance and improve injury surveillance.

The mortality methods outlined in this document are largely consistent with those used in previous cycles of Injury Indicator data collection.

The hospitalization and emergency department methods have been updated for use with International Classification of Diseases—Tenth Revision—Clinical Modification (ICD-10-CM)<sup>1</sup> coded data. The methods are consistent with the National Center for Health Statistics recommended ICD-10-CM based case definitions for injury surveillance<sup>2,3</sup> and analysis frameworks.<sup>4,5</sup> The CSTE ICD-10-CM Injury Transition Workgroup has participated in the exploratory analysis that resulted in some of the methods being updated. Additionally, resources for checking data quality and confirming programing code accuracy can be found in the ICD-10-CM toolkit located on the CSTE website.<sup>6</sup>

Ongoing partner feedback is important as CDC continuously modifies and updates the instructions and methodologies outlined in this document. Comments and suggestions can be sent to [injuryprevention@cdc.gov](mailto:injuryprevention@cdc.gov).

## Changes for the 2017 Data Collection Cycle

### Changes related to the ICD-10-CM transition include:

Coding of medical provider data used for injury surveillance was updated to the ICD-10-CM on October 1, 2015. The structural and conceptual differences between the ICD-9-CM and the ICD-10-CM have resulted in several significant methodologic changes to the Injury Indicators.

1. Most ICD-10-CM injury-related diagnosis and external cause codes include a 7th character which indicates encounter type (e.g., initial, subsequent, sequela). For the indicators, only cases with initial or missing encounter types are included.
2. Under ICD-10-CM, some injury diagnosis codes also include information on external cause of injury. Because of this, the methodology for counting external cause for a particular indicator has been changed from counting the first valid

external cause code in the record to counting any mention of an external cause code in a record.

This means a record can potentially be included in more than one indicator (e.g., motor vehicle crash and nondrug poisoning). However, a record will only be counted once per indicator, even if it has multiple codes for that same indicator.

3. The methodology for creating the injury subset for the **emergency department data** has been changed. For ICD-10-CM data, a record is included in the injury subset if an injury diagnosis appears in any field or an external cause code appears in any field. (For ICD-9-CM it was an injury diagnosis in the first field or an external cause code in any field.)
4. The individual indicators for hospitalization and emergency department data have been updated to reflect the new ICD-10-CM codes.



### **Changes not directly related to the ICD-10-CM transition include:**

1. The poisoning indicators collected through the State Injury Indicators have been limited to nondrug poisonings. With NCIPC's expansion of drug overdose prevention work, recommendations for the drug poisoning indicators are now handled separately.
2. The age groupings on the spreadsheets have been changed to make them more useful for presenting data for children and young adults.
3. Deaths should be excluded from both hospitalization and emergency department data to minimize double-counting.
4. The Hip Fracture Hospitalization and Emergency Department Indicators have been clarified to search for hip fracture codes only in records with a fall external cause of injury.
5. The TBI Fatality Indicator deletes the codes that were not considered valid in the U.S. (T01.0, T02.0, T04.0, and T06.0).



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## INTRODUCTION

Injury surveillance is one of the most important and basic elements of injury prevention and control. It helps determine the magnitude of injury morbidity and mortality, the leading causes of injury, and the population groups and behaviors associated with the greatest risk of injury. Surveillance data are also fundamental to determining program and prevention priorities. Furthermore, these data are crucial for evaluating the effectiveness of program activities and for identifying problems that need further investigation.

Injury continues to be the leading cause of death and disability among children and young adults.<sup>7</sup> In 2017, over 243,000 people died from injuries in the United States. Among them about 27% died from unintentional poisonings; 19% died from suicide; 16% died from motor-vehicle traffic crashes; and 8% died from homicide.<sup>7</sup> In 2017, over 30 million people were treated for injuries in U.S. emergency departments.<sup>7</sup> The total lifetime medical and work loss costs of injuries and violence in the United States was \$671 billion in 2013.<sup>8,9</sup>

The mission of public health includes prevention, mitigation, assurance that the injured have access to treatment, and the reduction of injury-related disability and death.<sup>10</sup> The scope of public health encompasses injuries involving any mechanism (e.g., firearm, motor vehicle, burn) and includes both violence and unintentional injuries. An important part of the public health mission is to emphasize that injuries are preventable and to dispel the misconception that injuries are unavoidable.



## PURPOSE

This manual was created to guide states and U.S. territories in collecting, preparing, and submitting injury surveillance data. All states and U.S. territories are eligible to voluntarily submit data.

Information obtained from participants will be reviewed and assembled for inclusion in various State Injury Indicators products. This process provides state and U.S. territory injury programs with a standardized method for evaluating injury data and for producing an Injury Indicator data product that is comparable across states and U.S. territories.

This manual provides straightforward information to encourage participation of all states and U.S. territories regardless of their epidemiologic infrastructure and capabilities. Participation in this report should not be seen as limiting by states of higher capacity, but rather as a place of commonality and a starting point for developing more sophisticated analyses.

The process of preparing indicators is simplified in that it doesn't include the linking and unduplicating of individual cases found in multiple data sets. For simplicity, the methodology limits datasets to cases that would be unique to the dataset. For example, deaths are excluded from both hospitalization and ED data because they are best identified in the death data.

Statewide, centralized electronic vital statistics, hospital discharge, and emergency department data are used to calculate the indicators prepared and submitted by states and U.S. territories. It is important to keep in mind that the quality of the Injury Indicators is dependent on the completeness and accuracy of external cause-of-injury coding found within individual state and U.S. territory data sets.

Injuries resulting in or occurring from the following are currently included in the State Injury Indicators: all injury, drowning, fall-related injury, fire-related injury, firearm-related injury, homicide/assault, motor vehicle-related injury, nondrug poisoning, suicide/intentional self-harm, and traumatic brain injury (TBI). Overlap exists among these indicators. For example, a firearm-related homicide would be included in both the Firearm-related Death Indicator and the Homicide Indicator.





## PREPARING THE DATA SETS

### Mortality: Vital Statistics Data

#### Background

Vital statistics data contain an underlying cause of death field which in the case of an injury death must be coded with an external cause-of-injury code. This coding requirement makes it possible to identify all deaths due to injury.

#### Step 1: Prepare the basic dataset

- Use calendar year of data based on date of death.
- Include deaths for state residents only.

#### Step 2: Create an injury subset

Include records that have one of the following diagnosis codes (Table 1) **in the underlying cause of death field.**

Table 1: Injury Fatality ICD-10 Codes

CODE(S)	DESCRIPTION
V01–Y36, Y85–Y87, Y89, U01–U03	Injury and poisoning

#### Step 3: Calculate the specific indicators

- Consult the individual indicator pages that begin on page 13.
- Death rates should be age-adjusted to the 2000 standard using the NCHS population distribution.<sup>11</sup>



## Nonfatal Hospital Discharge Data

### Background

Hospital discharge data contain a principal diagnosis field which, according to coding rules, is coded to correspond to the reason for the hospitalization as determined by the attending medical provider. As a result of the presence of the principal diagnosis, cases which are admitted for an injury can be identified and use of the phrase “hospitalized injuries” is accurate.

### Step 1: Prepare the basic dataset

- Use calendar year of data based on date of discharge.
- Only include data from nonfederal, acute care-affiliated facilities; exclude Veterans Affairs (VA) and other federal hospitals, rehabilitation centers, and psychiatric hospitals.
- Include hospitalizations for state residents only. If data on out-of-state hospitalizations for state residents are available, please include them.
- **Exclude deaths.**
- Include readmissions and transfers.

### Step 2: Create an injury subset

Include records that have one of the following diagnosis codes (Table 2) **in the principal diagnosis field.**

Table 2: ICD-10-CM Injury Diagnosis Codes\*

CODE(S)	DESCRIPTION
S00–S99	Anatomic injuries
T07–T34	Foreign bodies, burns, corrosions, frostbite
T36–T50 with a <b>6th character</b> of 1, 2, 3, or 4 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with a <b>5th character</b> of 1, 2, 3, or 4 (Intent information for these codes is included in the 5 <sup>th</sup> character and not the 6 <sup>th</sup> )	Poisoning by drugs, medicaments, and biological substances (Includes accidental, intentional self-harm, assault, and underdetermined intents; Excludes adverse effects and underdosing)
T51–T65	Toxic effects of substances nonmedicinal as to source
T66–T76	Other and unspecified effects of external causes
T79	Certain early complications of trauma, not elsewhere classified
O9A.2–O9A.5	Traumatic injuries and abuse complicating pregnancy, childbirth, and the puerperium
T84.04**	Periprosthetic fracture around internal prosthetic joint
M97**	Periprosthetic fracture around internal prosthetic joint

\*Only include cases if the 7th character of the code is A, B, C, or missing (reflects initial encounter, active treatment). T30-T32 do not have a 7th character.

\*\* T84.04 was retired and replaced by M97 in the FY2017 version of ICD-10-CM which went into effect on Oct 1, 2016.



### Step 3: Check the data quality

- Refer to the ICD-10-CM toolkit located on the CSTE website for resources to check basic data quality.<sup>6</sup>
- Calculate the external cause-of-injury completeness of the hospital discharge data.

$$\text{Percentage of HDD nonfatal injury hospitalizations with external cause-of-injury coding} = \frac{\text{All hospital discharge records with a principal diagnosis of injury (Table 2) AND a code containing external cause-of-injury information (Table 3) in any diagnosis or external cause-of-injury field}}{\text{All hospital discharge records with a principal diagnosis of injury (Table 2)}} \times 100\%$$

**Table 3: Codes\* that contain external cause-of-injury information (the subset of T, V, W, X, and Y codes found in the ICD-10-CM external cause matrix)**

CODE(S)	DESCRIPTION
V00–V99	Transport accidents
W00–X58	Other external causes of accidental injury
X71–X83	Intentional self-harm
X92–Y09	Assault
Y21–Y33	Event of undetermined intent
Y35–Y38	Legal intervention, operations of war, military operations and terrorism
T14.91	Suicide attempt
T15–T19	Effects of foreign body entering through natural orifice
T36–T50 with a <b>6th character</b> of 1, 2, 3, or 4 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with a <b>5th character</b> of 1, 2, 3, or 4 (Intent information for these codes is included in the 5 <sup>th</sup> character and not the 6 <sup>th</sup> )	Poisoning by drugs, medicaments, and biological substances
T51–T65	Toxic effects of substances chiefly non-medicinal as to source
T71	Asphyxiation
T73	Effects of deprivation
T74, T76	Adult and child abuse, neglect, and other maltreatment, confirmed or suspected
T75.0–T75.4	Effects of lightning, drowning, and vibration, motion sickness, electrocution

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Step 4: Calculate the specific indicators

Consult the individual indicator pages that begin on page 13.

- Nonfatal hospital discharge rates should be age-adjusted to the 2000 standard using the NCHS population distribution.<sup>11</sup>



## Nonfatal Emergency Department (ED) Visit Data

### Background

ED data contain a first-listed diagnosis field instead of a principal diagnosis field. Coding rules stipulate that the first-listed diagnosis contains a code which indicates the reason the person presented to the ED. This reason may or may not result in an injury diagnosis. For example, someone who fell from a tree may or may not have broken their leg. The visit to the ED establishes whether there was indeed an injury or not. As a result of the coding guidelines, for the ED injury case definition, it is important to include all cases that are seen for an injury event, regardless of if an injury diagnosis is ultimately made. This includes cases with an injury diagnosis in any field and also cases that have an external cause of injury yet no injury diagnosis.

### Step 1: Prepare the basic dataset

- Use calendar year of data based on date of ED discharge.
- Only include data from nonfederal, acute care-affiliated facilities; exclude Veterans Affairs (VA) and other federal hospitals, rehabilitation centers, and psychiatric hospitals.
- Include ED visits for state residents only. If data on out-of-state ED visits for state residents are available, please include them.
- **Exclude deaths.**
- If necessary, exclude records of patients that are seen in the ED and then admitted to the hospital. For most states, these records are not included in their ED data.

### Step 2: Create an injury subset

Include records that have one of the following diagnosis codes (Table 4) **in any field** OR one of the following external cause codes (Table 5) **in any field**.

Table 4: Diagnosis Codes\*

CODE(S)	DESCRIPTION
S00–S99	Anatomic injuries
T07–T34	Foreign bodies, burns, corrosions, frostbite
T36–T50 with a <b>6th character</b> of 1, 2, 3, or 4 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with a <b>5th character</b> of 1, 2, 3, or 4 (Intent information for these codes is included in the 5 <sup>th</sup> character and not the 6 <sup>th</sup> )	Poisoning by drugs, medicaments, and biological substances (Includes accidental, intentional self-harm, assault, and underdetermined intents; Excludes adverse effects and underdosing)
T51–T65	Toxic effects of substances nonmedicinal as to source
T66–T76	Other and unspecified effects of external causes
T79	Certain early complications of trauma, not elsewhere classified
O9A.2-O9A.5	Traumatic injuries and abuse complicating pregnancy, childbirth, and the puerperium

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CODE(S)	DESCRIPTION
T84.04**	Periprosthetic fracture around internal prosthetic joint
M97**	Periprosthetic fracture around internal prosthetic joint

\*Only include cases if the 7th character of the code is A, B, C, or missing (reflects initial encounter, active treatment). T30–T32 do not have a 7th character.

\*\*T84.04 was retired and replaced by M97 in the FY2017 version of ICD-10-CM which went into effect on Oct 1, 2016.

**Table 5: External cause-of-injury codes\***

CODE(S)	DESCRIPTION
V00–V99	Transport accidents
W00–X58	Other external causes of accidental injury
X71–X83	Intentional self-harm
X92–Y09	Assault
Y21–Y33	Event of undetermined intent
Y35–Y38	Legal intervention, operations of war, military operations, and terrorism

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Step 3: Check the data quality

- Refer to the ICD-10-CM toolkit located on the CSTE website for resources to check basic data quality.<sup>6</sup>
- Calculate the external cause-of-injury completeness of the ED visit data.

$$\begin{array}{l}
 \text{Percentage of nonfatal} \\
 \text{injury ED visits with external} \\
 \text{cause-of-injury coding}
 \end{array}
 =
 \frac{
 \begin{array}{l}
 \text{[All ED visit records with an injury diagnosis in} \\
 \text{any field (Table 4) OR an external cause code} \\
 \text{in any field (Table 5)] AND a code containing} \\
 \text{external cause-of-injury information (Table 6) in} \\
 \text{any diagnosis or external cause-of-injury field}
 \end{array}
 }{
 \begin{array}{l}
 \text{All ED visit records with an injury} \\
 \text{diagnosis in any field (Table 4) OR an} \\
 \text{external cause code in any field (Table 5)}
 \end{array}
 }
 \times 100\%$$

**Table 6: Codes that contain external cause-of-injury information (the subset of T, V, W, X, and Y codes\* found in the ICD-10-CM external cause matrix)**

CODE(S)	DESCRIPTION
V00–V99	Transport accidents
W00–X58	Other external causes of accidental injury
X71–X83	Intentional self-harm
X92–Y09	Assault
Y21–Y33	Event of undetermined intent
Y35–Y38	Legal intervention, operations of war, military operations and terrorism
T14.91	Suicide attempt
T15–T19	Effects of foreign body entering through natural orifice

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CODE(S)	DESCRIPTION
T36–T50 with a <b>6th character</b> of 1, 2, 3, or 4 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with a <b>5th character</b> of 1, 2, 3, or 4 (Intent information for these codes is included in the 5 <sup>th</sup> character and not the 6 <sup>th</sup> )	Poisoning by drugs, medicaments, and biological substances
T51–T65	Toxic effects of substances chiefly non-medicinal as to source
T71	Asphyxiation
T73	Effects of deprivation
T74, T76	Adult and child abuse, neglect, and other maltreatment, confirmed or suspected
T75.0–T75.4	Effects of lightning, drowning, and vibration, motion sickness, electrocution

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

#### Step 4: Calculate the specific indicators

- Consult the individual indicator pages that begin on page 13.
- Nonfatal ED visit rates should be age-adjusted to the 2000 standard using the NCHS population distribution.<sup>11</sup>



## CALCULATING AND SUBMITTING RATES

Preformatted rate calculation spreadsheets have been prepared for the vital records, hospital discharge, and ED-based indicators. These spreadsheets can be obtained from Karen Thomas at [KThomas@cdc.gov](mailto:KThomas@cdc.gov). Completion of the spreadsheets require:

- Answering a few background questions on the data.
- Inserting state population data.
- Entering case counts for the individual indicators.
- Renaming the spreadsheets to reflect state and submission number.

Rate calculations include several types of rates (e.g., age-specific crude rates, age-adjusted rates). The following rate calculation specifications have been preprogrammed into the spreadsheets. If you are preparing these data independent of the spreadsheets, please be sure to follow the same specifications.

- Use the following age categories to calculate counts and population estimates:
  - Under 1 year
  - 1–4 years
  - 5–9 years
  - 10–14 years
  - 15–19 years
  - 20–24 years
  - 25–34 years
  - 35–44 years
  - 45–54 years
  - 55–64 years
  - 65–74 years
  - 75–84 years
  - 85 years and older
- Use the estimated population for the year of data. This information may be obtained from several sources:
  - U.S. Census Bureau obtained either from the U.S. Census directly or from NCHS ([https://www.cdc.gov/nchs/nvss/bridged\\_race.htm](https://www.cdc.gov/nchs/nvss/bridged_race.htm)).
  - Your state's demographic center.
- Compute rates per 100,000 population.
- For each indicator, report age-adjusted rates overall and by sex.

Note: It is possible to obtain an anomalous looking overall age-adjusted rate, which does not fall between the two sex-specific age-adjusted rates. Such outcomes are mathematically possible and should be included.
- Calculate age-adjusted rates using the age-specific U.S. standard population weights from Table 7 for indicators for all ages. Use Table 8 for the hospitalization and ED visit indicators for fall-related hip fractures in persons aged 65 years and older.

Table 7: Age Adjustment Table for all ages<sup>11</sup>

AGE GROUP	U.S. 2000 STANDARD POPULATION (1,000S)	ADJUSTMENT WEIGHTS
<1 year	3,795	0.013818
1–4 years	15,192	0.055317
5–9 years	19,920	0.072533
10–14 years	20,057	0.073032
15–19 years	19,820	0.072169
20–24 years	18,257	0.066478
25–34 years	37,233	0.135573
35–44 years	44,659	0.162613
45–54 years	37,030	0.134834
55–64 years	23,961	0.087247
65–74 years	18,136	0.066037
75–84 years	12,315	0.044841
85 years and older	4,259	0.015508
All ages	274,634	1.0

Table 8: Age Adjustment Table for persons aged 65 years and older

AGE GROUP	U.S. 2000 STANDARD POPULATION (1,000S)	ADJUSTMENT WEIGHTS
65–74 years	18,136	0.522501
75–84 years	12,315	0.354797
85 years and older	4,259	0.122702
Total for 65 years and older	34,710	1.0





## INJURY INDICATORS

The following pages contain specific case definitions for each of the individual Injury Indicators. These case definitions should be applied when determining case counts. Once the case counts are determined, they should be entered into the provided spreadsheets for rate calculation and submission to CDC.



## ALL-INJURY INDICATOR 1: Injury Fatalities

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

### Injury Fatality ICD-10 Codes

CODE(S)	DESCRIPTION
V01–Y36, Y85–Y87, Y89, U01–U03	Injury and poisoning

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator corresponds with the “All Injury” column of the ICD-10 external cause-of-injury mortality matrix.<sup>12</sup>
- The case count for injury fatalities should equal the number of records in the injury death subset.
- Includes operations of war (Y36).

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## ALL-INJURY INDICATOR 2: Nonfatal Hospitalizations for All Injuries

### Numerator:

- Nonfatal hospitalizations with any of the following ICD-10-CM diagnostic codes **in the principal diagnosis field**.

### ICD-10-CM Diagnosis Codes\* for All Injuries

CODE(S)	DESCRIPTION
S00–S99	Anatomic injuries
T07–T34	Foreign bodies, burns, corrosions, frostbite
T36–T50 with a <b>6th character</b> of 1, 2, 3, or 4 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with <b>5th character</b> of 1, 2, 3, or 4 (Intent information for these codes is included in the 5th character and not the 6th)	Poisoning by drugs, medicaments, and biological substances (Includes accidental, intentional self-harm, assault, and undetermined intents; Excludes adverse effects and underdosing)
T51–T65	Toxic effects of substances nonmedicinal as to source
T66–T76	Other and unspecified effects of external causes
T79	Certain early complications of trauma, not elsewhere classified
O9A.2–O9A.5	Traumatic injuries and abuse complicating pregnancy, childbirth, and the puerperium
T84.04**	Periprosthetic fracture around internal prosthetic joint
M97**	Periprosthetic fracture around internal prosthetic joint

\*Only include cases if the 7th character of the code is A, B, C, or missing (reflects initial encounter, active treatment). T30-T32 do not have a 7th character.

\*\* T84.04 was retired and replaced by M97 in the FY2017 version of ICD-10-CM which went into effect on Oct 1, 2016.

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- This indicator corresponds with the recommended Injury case definition for hospitalizations.<sup>2</sup>
- The case count for nonfatal hospitalizations for all injuries should equal the number of records in the nonfatal injury hospitalization subset.
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that



of cases with an injury diagnosis anywhere in the record, 36% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal diagnosis of these cases are mental, behavioral, and neurodevelopmental disorders (15%), diseases of the circulatory system (15%), diseases of the respiratory system (10%), and certain infectious and parasitic diseases (10%).

**Limitations of data source:**

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding.



## ALL-INJURY INDICATOR 3: Nonfatal Emergency Department Visits for All Injuries

### Numerator:

- Nonfatal ED records that include one of the following diagnosis codes **in any field** OR one of the following external cause codes **in any field**.

### ICD-10-CM Diagnosis Codes\* for All Injuries

CODE(S)	DESCRIPTION
S00–S99	Anatomic injuries
T07–T34	Foreign bodies, burns, corrosions, frostbite
T36–T50 with a <b>6th character</b> of 1, 2, 3, or 4 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with <b>5th character</b> of 1, 2, 3, or 4 (Intent information for these codes is included in the 5th character and not the 6th)	Poisoning by drugs, medicaments, and biological substances (Includes accidental, intentional self-harm, assault, and undetermined intents; Excludes adverse effects and underdosing)
T51–T65	Toxic effects of substances nonmedicinal as to source
T66–T76	Other and unspecified effects of external causes
T79	Certain early complications of trauma, not elsewhere classified
O9A.2–O9A.5	Traumatic injuries and abuse complicating pregnancy, childbirth, and the puerperium
T84.04**	Periprosthetic fracture around internal prosthetic joint
M97**	Periprosthetic fracture around internal prosthetic joint

\*Only include cases if the 7th character of the code is A, B, C, or missing (reflects initial encounter, active treatment). T30-T32 do not have a 7th character.

\*\*T84.04 was retired and replaced by M97 in the FY2017 version of ICD-10-CM which went into effect on Oct 1, 2016.

### ICD-10-CM External Cause-of-injury Codes\* for All Injuries

CODE(S)	DESCRIPTION
V00–V99	Transport accidents
W00–X58	Other external causes of accidental injury
X71–X83	Intentional self-harm
X92–Y09	Assault
Y21–Y33	Event of undetermined intent
Y35–Y38	Legal intervention, operations of war, military operations, and terrorism

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.



### **Measures of frequency:**

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### **Period for case definition:**

- Calendar year based on date of ED discharge.

### **Indicator notes:**

- This indicator corresponds with the recommended Injury case definition for ED visits.<sup>3</sup>
- The case count for nonfatal injury ED visits should equal the number of records in the nonfatal injury ED visit subset.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.
- This indicator does not include cases that were admitted to the hospital.

### **Limitations of data source:**

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding.



## DROWNING INDICATOR 1: Unintentional Drowning Fatalities

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

### ICD-10 Codes for Unintentional Drowning Fatalities

CODE(S)	DESCRIPTION
W65–W74	Accidental drowning and submersion
V90	Accident to watercraft causing drowning and submersion
V92	Water-transport-related drowning and submersion without accident to watercraft

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator does not correspond with the unintentional “Drowning” cell of the ICD-10 external cause-of-injury mortality matrix.<sup>12</sup> This indicator includes all unintentional drowning mortality codes in the cell (W65–W74) as well as drownings and submersions related to watercraft accidents (V90 and V92).

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## DROWNING INDICATOR 2: Nonfatal Drowning-related Injury Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM diagnosis or external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Drowning-related Injuries

CODE(S)	DESCRIPTION
T75.1	Drowning and nonfatal submersion
V90	Drowning and submersion due to accident to watercraft
V92	Drowning and submersion due to accident on board watercraft, without accident to watercraft
W16 with 6th character=1, W16.41, W16.91	Fall, jump, or diving into water causing drowning and submersion
W22.041	Striking against wall of swimming pool causing drowning and submersion
W65–W74	Accidental non-transport drowning and submersion
X71	Intentional self-harm by drowning and submersion
X92	Assault by drowning and submersion
Y21	Drowning and submersion, undetermined intent

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- This indicator corresponds to the “Drowning” row of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- The T75.1 diagnosis code does not include intent information. As a result, this indicator cannot be restricted to unintentional drownings. (This drowning diagnosis code does not exist in ICD-10 and thus, death data can be restricted to unintentional drownings.)
- Includes drownings and submersions related to watercraft accidents.
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with a drowning code anywhere in the record, 40% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal





diagnosis of these cases are diseases of the respiratory system (57%), mental, behavioral, and neurodevelopmental disorders (10%), and diseases of the circulatory system (10%). Studies focused specifically on drownings may want to explore these additional cases.

**Limitations of data source:**

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding.



## DROWNING INDICATOR 3: Nonfatal Drowning-related Injury Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM diagnosis or external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Drowning-related Injuries

CODE(S)	DESCRIPTION
T75.1	Drowning and nonfatal submersion
V90	Drowning and submersion due to accident to watercraft
V92	Drowning and submersion due to accident on board watercraft, without accident to watercraft
W16 with 6th character=1, W16.41, W16.91	Fall, jump, or diving into water causing drowning and submersion
W22.041	Striking against wall of swimming pool causing drowning and submersion
W65-W74	Accidental non-transport drowning and submersion
X71	Intentional self-harm by drowning and submersion
X92	Assault by drowning and submersion
Y21	Drowning and submersion, undetermined intent

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- This indicator corresponds to the “Drowning” row of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- Includes all intents because the intent for cases identified just using the T75.1 diagnosis code can’t be determined.
- Includes drownings and submersions related to watercraft accidents.
- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.



### **Limitations of data source:**

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding.



## FALL INDICATOR 1: Unintentional Fall-related Fatalities

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

### ICD-10 Codes for Unintentional Fall-related Fatalities

CODE(S)	DESCRIPTION
W00–W19	Falls

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator corresponds to the unintentional “Fall” cell in the ICD-10 external cause-of-injury mortality matrix.<sup>12</sup>

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## FALL INDICATOR 2: Nonfatal Unintentional Fall-related Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Unintentional Fall-related Injuries

CODE(S)	DESCRIPTION
V00 with 6th character=1	Falls related to pedestrian conveyance
W00–W15, W17, W19	Falls
W16 with 6th character=2, W16.42, W16.92	Fall, jump, or diving into water
W18.1–W18.3	Other falls

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- This indicator corresponds with the unintentional “Fall” cell of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with a fall code anywhere in the record, 39% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal diagnosis of these cases are diseases of the circulatory system (20%), diseases of the genitourinary system (10%), and diseases of the musculoskeletal system and connective tissue (10%). Studies focused specifically on falls may want to explore these additional cases.

### Limitations of data source:

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## FALL INDICATOR 3: Nonfatal Unintentional Fall-related Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Unintentional Fall-related Injuries

CODE(S)	DESCRIPTION
V00 with 6th character=1	Falls related to pedestrian conveyance
W00–W15, W17, W19	Falls
W16 with 6th character=2, W16.42, W16.92	Fall, jump, or diving into water
W18.1–W18.3	Other falls

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- This indicator corresponds with the unintentional “Fall” cell of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

### Limitations of data source:

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## FALL INDICATOR 4: Nonfatal Fall-related Hip Fracture Hospitalizations in Persons Aged 65 Years and Older

### Numerator:

- **Nonfatal unintentional fall-related hospitalizations** identified in the previous indicator (nonfatal unintentional fall hospitalizations on page 25) in people 65 years and older that have one of the following ICD-10-CM diagnosis codes **in any field**.

### ICD-10-CM Codes\* for Fall-related Hip Fractures

CODE(S)	DESCRIPTION
S72.0	Fracture of head and neck of femur
S72.1	Petrochanteric fracture
S72.2	Subtrochanteric fracture
T84.040**	Periprosthetic fracture around internal prosthetic right hip joint
T84.041**	Periprosthetic fracture around internal prosthetic left hip joint
M97.0**	Periprosthetic fracture around internal prosthetic hip joint

\*Only include cases if the 7th character of the code is A, B, C or missing (reflects initial encounter, active treatment)

\*\*T84.04 was retired and replaced by M97.0 in the FY2017 version of ICD-10-CM which went into effect on Oct 1, 2016

### Denominator:

- Midyear population of people 65 years and older for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal fall hospitalizations in people 65 years and older with a hip fracture code anywhere in the record, 3% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal diagnosis of these cases are diseases of the circulatory system (24%), certain infectious and parasitic diseases (21%), and diseases of the musculoskeletal system and connective tissue (11%).

### Limitations of data source:

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## FALL INDICATOR 5: Nonfatal Fall-related Hip Fracture Emergency Department Visits in Persons Aged 65 Years and Older

### Numerator:

- **Nonfatal unintentional fall-related ED visits** identified in the previous indicator (nonfatal unintentional fall ED visits on page 26) in people 65 years and older that have one of the following ICD-10-CM diagnosis codes **in any field**.

### ICD-10-CM Codes\* for Fall-related Hip Fractures

CODE(S)	DESCRIPTION
S72.0	Fracture of head and neck of femur
S72.1	Pertrochanteric fracture
S72.2	Subtrochanteric fracture
T84.040**	Periprosthetic fracture around internal prosthetic right hip joint
T84.041**	Periprosthetic fracture around internal prosthetic left hip joint
M97.0**	Periprosthetic fracture around internal prosthetic hip joint

\*Only include cases if the 7th character of the code is A, B, C or missing (reflects initial encounter, active treatment)

\*\*T84.04 was retired and replaced by M97.0 in the FY2017 version of ICD-10-CM which went into effect on Oct 1, 2016

### Denominator:

- Midyear population of people 65 years and older for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

### Limitations of data source:

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.





## FIRE-RELATED INDICATOR 1: Unintentional Fire-related Fatalities

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

### ICD-10 Codes for Unintentional Fire-related Fatalities

CODE(S)	DESCRIPTION
X00–X09	Exposure to smoke, fire, and flames

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator corresponds to the unintentional “Fire or Flame” cell in the ICD-10 external cause-of-injury mortality matrix.<sup>12</sup>

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## FIRE-RELATED INDICATOR 2: Nonfatal Unintentional Fire-related Injury Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Unintentional Fire-related Injuries

CODE(S)	DESCRIPTION
X00–X08	Exposure to smoke, fire, and flames

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- This indicator corresponds with the unintentional “Fire/flame” cell of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with a fire code anywhere in the record, 23% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal diagnosis of these cases are diseases of the respiratory system (33%) and mental, behavioral, and neurodevelopmental disorders (16%). Studies focused specifically on fires may want to explore these additional cases.

### Limitations of data source:

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## FIRE-RELATED INDICATOR 3: Nonfatal Unintentional Fire-related Injury Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Unintentional Fire-related Injuries

CODE(S)	DESCRIPTION
X00–X08	Exposure to smoke, fire, and flames

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- This indicator corresponds with the unintentional “Fire/flame” cell of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

### Limitations of data source:

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## FIREARM-RELATED INDICATOR 1: Firearm-related Fatalities

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

### ICD-10 Codes for Firearm-related Fatalities

CODE(S)	DESCRIPTION
W32–W34	Exposure to inanimate mechanical forces—firearm discharge
X72–X74	Intentional self-harm by firearm discharge
X93–X95	Assault by firearm discharge
Y22–Y24	Firearm discharge of undetermined intent
Y35.0	Legal intervention involving firearm discharge
U01.4	Terrorism involving firearms

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator corresponds to the “Firearm” row in the ICD-10 external cause-of-injury mortality matrix.<sup>12</sup>
- Includes rifle pellets or rubber bullets (these are included in the legal intervention Y35.0 code).
- Does include airgun and BB gun discharges because they are included in the other and unspecified firearm discharge codes (W34, X74, X95, Y24).

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## FIREARM-RELATED INDICATOR 2: Nonfatal Firearm-related Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Firearm-related Injuries

CODE(S)	DESCRIPTION
W32, W33, W34.00, W34.09, W34.10, W34.19	Accidental discharge or malfunction of firearm
X72, X73, X74.8, X74.9	Intentional self-harm by firearm
X93, X94, X95.8, X95.9	Assault by firearm
Y38.4	Terrorism involving firearms
Y22, Y23, Y24.8, Y24.9	Firearm discharge of undetermined intent
Y35.00-Y35.03, Y35.09	Legal intervention involving firearm discharge

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- The “Firearm” row of the ICD-10-CM external cause-of-injury matrix<sup>4</sup> is the basis for this indicator. However, this indicator excludes firearm injuries due to war/military operations (Y36.42, Y36.43, Y37.42, Y37.43, Y37.92).
- Includes accidental malfunctions of firearms.
- Includes rifle pellets (in the legal intervention codes), but not rubber bullets.
- Does not include gas, air or spring-operated guns (airgun, BB gun, paintball gun).
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with a firearm code anywhere in the record, 4% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapter for the principal diagnosis of these cases is mental, behavioral, and neurodevelopmental disorders (23%).



### **Limitations of data source:**

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## FIREARM-RELATED INDICATOR 3: Nonfatal Firearm-related Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Firearm-related Injuries

CODE(S)	DESCRIPTION
W32, W33, W34.00, W34.09, W34.10, W34.19	Accidental firearm discharge and malfunction
X72, X73, X74.8, X74.9	Intentional self-harm by firearm
X93, X94, X95.8, X95.9	Assault by firearm
Y38.4	Terrorism involving firearms
Y22, Y23, Y24.8, Y24.9	Firearm discharge of undetermined intent
Y35.00–Y35.03, Y35.09	Legal intervention involving firearm discharge

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- The “Firearm” row of the ICD-10-CM external cause-of-injury matrix<sup>4</sup> is the basis for this indicator. However, this indicator excludes firearm injuries due to war/military operations (Y36.42, Y36.43, Y37.42, Y37.43, Y37.92).
- This indicator does not include cases that were admitted to the hospital.
- Includes accidental malfunctions of firearms.
- Includes rifle pellets (legal intervention).
- Does not include gas, air or spring-operated guns (airgun, BB gun, paintball gun) or rubber bullets.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.



### Limitations of data source:

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.





## HOMICIDE/ASSAULT INDICATOR 1: Homicides

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

#### ICD-10 Codes for Homicides

CODE(S)	DESCRIPTION
X85–Y09	Assault
Y87.1	Sequelae of assault
U01	Terrorism-assault
U02	Sequelae of terrorism-assault

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator corresponds to the “Homicide” column in the ICD-10 external cause-of-injury mortality matrix.<sup>12</sup>

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## HOMICIDE/ASSAULT INDICATOR 2: Nonfatal Assault-related Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM diagnosis or external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Assault-related Injuries

CODE(S)	DESCRIPTION
X92–Y09	Assault by various mechanisms including drowning/submersion, firearm, explosive material, fire/flame, hot vapors/objects, sharp object, blunt object, pushing from a high place, pushing or placing in front of a moving object, crashing of motor vehicle, bodily force, other specified means
T36–T50 with <b>6th character</b> =3 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with <b>5th character</b> =3 (Intent information for these codes is included in the 5th character and not the 6th)	Assault by poisoning by drugs, medications, and biological substances
T51–T65 with <b>6th character</b> =3 Note: Include T51.9, T52.9, T53.9, T54.9, T56.9, T57.9, T58.0, T58.1, T58.9, T59.9, T60.9, T61.0, T61.1, T61.9, T62.9, T63.9, T64, and T65.9 with a <b>5th character</b> = 3 (Intent information for these codes is included in the 5th character and not the 6th)	Assault by toxic effects of nonmedicinal substances, corrosives, venomous animals and plants, and harmful algae and algae toxins
T71 with 6th character=3	Assault by asphyxiation, suffocation, hanging
T74	Adult and child abuse, neglect, and other maltreatment, confirmed
T76	Adult and child abuse, neglect, and other maltreatment, suspected
Y38	Terrorism

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

**Indicator notes:**

- This indicator corresponds with the “Assault” column of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with an assault code anywhere in the record, 26% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapter for the principal diagnosis of these cases is mental, behavioral, and neurodevelopmental disorders (39%). Studies focused specifically on assaults may want to explore these additional cases.

**Limitations of data source:**

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## HOMICIDE/ASSAULT INDICATOR 3: Nonfatal Assault-related Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM diagnosis or external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Assault-related Injuries

CODE(S)	DESCRIPTION
X92-Y09	Assault by various mechanisms including drowning/submersion, firearm, explosive material, fire/flame, hot vapors/objects, sharp object, blunt object, pushing from a high place, pushing or placing in front of a moving object, crashing of motor vehicle, bodily force, other specified means
T36–T50 with <b>6th character</b> =3 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with <b>5th character</b> =3 (Intent information for these codes is included in the 5th character and not the 6th)	Assault by poisoning by drugs, medications, and biological substances
T51–T65 with <b>6th character</b> =3 Note: Include T51.9, T52.9, T53.9, T54.9, T56.9, T57.9, T58.0, T58.1, T58.9, T59.9, T60.9, T61.0, T61.1, T61.9, T62.9, T63.9, T64, and T65.9 with a <b>5th character</b> = 3 (Intent information for these codes is included in the 5th character and not the 6th)	Assault by toxic effects of nonmedicinal substances, corrosives, venomous animals and plants, and harmful algae and algae toxins
T71 with 6th character=3	Assault by asphyxiation, suffocation, hanging
T74	Adult and child abuse, neglect, and other maltreatment, confirmed
T76	Adult and child abuse, neglect, and other maltreatment, suspected
Y38	Terrorism

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

**Indicator notes:**

- This indicator corresponds with the “Assault” column of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

**Limitations of data source:**

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## MOTOR VEHICLE INDICATOR 1: Unintentional Motor Vehicle Traffic Fatalities

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

### ICD-10 Codes for Unintentional Motor Vehicle Traffic Fatalities

CODE(S)	DESCRIPTION
V02–V04 (.1, .9), V09.2	Pedestrian injured in transport accident
V12–V14 (.3–.9), V19.4–V19.6	Pedal cyclist injured in transport accident
V20–V28 (.3–.9), V29.4–V29.9	Motorcycle rider injured in transport accident
V30–V39 (.4–.9)	Occupant of three-wheeled motor vehicle injured in transport accident
V40–V49 (.4–.9)	Car occupant injured in transport accident
V50–V59 (.4–.9)	Occupant of pick-up truck or van injured in transport accident
V60–V69 (.4–.9)	Occupant of heavy transport vehicle injured in transport accident
V70–V79 (.4–.9)	Bus occupant injured in transport accident
V80.3–V80.5, V81.1, V82.1, V83–V86 (.0–.3), V87.0–V87.8, V89.2	Other land transport accidents

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator corresponds to the unintentional “Motor vehicle traffic” cell in the ICD-10 external cause-of-injury mortality matrix.<sup>12</sup>

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## MOTOR VEHICLE INDICATOR 2: Nonfatal Unintentional Motor Vehicle Traffic-related (MVT) Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Unintentional Motor Vehicle Traffic-related Injuries

CODE(S)	DESCRIPTION
V02–V04 (.1, .9), V09.2, V09.3	MVT Pedestrian
V12–V14 (.3–.9), V19.4–V19.6, V19.9	MVT Pedal cycle
V20–V28 (.3–.9), V29.4–V29.9	MVT Motorcycle
V30–V79 (.4–.9), V83–V86 (.0–.3), V87.0–V87.8, V89.2	MVT Occupant
V80.3–V80.5, V81.1, V82.1	MVT Other

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- This indicator corresponds with the unintentional “Motor vehicle traffic” cell of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- In the ICD-10-CM external cause matrix, there is no longer a separate category for unintentional MVT Unspecified like in ICD-9-CM or ICD-10.
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with a motor vehicle traffic code anywhere in the record, 11% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal diagnosis of these cases are diseases of the circulatory system (16%), symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (12%), and diseases of the musculoskeletal system and connective tissues (10%). Studies focused specifically on motor vehicle traffic incidents may want to explore these additional cases.



### **Limitations of data source:**

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.





## MOTOR VEHICLE INDICATOR 3: Nonfatal Unintentional Motor Vehicle Traffic-related (MVT) Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Unintentional Motor Vehicle Traffic-related Injuries

CODE(S)	DESCRIPTION
V02–V04 (.1, .9) V09.2, V09.3	MVT Pedestrian
V12–V14 (.3–.9), V19.4–V19.6, V19.9	MVT Pedal cycle
V20–V28 (.3–.9), V29.4–V29.9	MVT Motorcycle
V30–V79 (.4–.9), V83–V86 (.0–.3), V87.0–V87.8, V89.2	MVT Occupant
V80.3–V80.5, V81.1, V82.1	MVT Other

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- This indicator corresponds with the unintentional “Motor vehicle traffic” cell of the ICD-10-CM external cause-of-injury matrix.<sup>4</sup>
- In the ICD-10-CM external cause matrix, there is no longer a separate category for unintentional MVT Unspecified like in ICD-9-CM or ICD-10.
- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

### Limitations of data source:

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## POISONING INDICATOR 1: Nondrug Poisoning Fatalities

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

### ICD-10 Codes for Nondrug Poisoning Fatalities

CODE(S)	DESCRIPTION
X45–X49	Accidental poisoning by nondrugs
X65–X69	Intentional self-poisoning by nondrugs
X86–X90	Assault by nondrug poisoning
Y15–Y19	Poisoning by and exposure to nondrugs, undetermined intent
Y35.2	Legal intervention involving gas
U01.6, U01.7	Terrorism involving biological or chemical weapons

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator does not correspond to a cell, row, or column of the ICD-10 external cause-of-injury mortality matrix<sup>12</sup> because the matrix does not separate between drug and nondrug poisonings. However, the codes do match those for nondrug poisoning deaths used in WISQARS.<sup>7</sup>
- The indicator includes poisonings by such substances as alcohol, organic solvents and halogenated hydrocarbons, other gases and vapors, pesticides, and other and unspecified chemicals.

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## POISONING INDICATOR 2: Nonfatal Nondrug Poisoning Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM diagnosis or external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Nondrug Poisonings

CODE(S)	DESCRIPTION
T51–T53, T55–T62, T64	Toxic effects of nonmedicinal substances
T54.0	Toxic effects of phenol and phenol homologues
T65.0–T65.81, T65.83, T65.89, T65.9	Toxic effects of other and unspecified substances
Y38.7	Terrorism due to chemical weapons
Y35.2	Legal intervention involving gas

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- The “Nondrug Poisoning” row of the ICD-10-CM external cause-of-injury matrix<sup>4</sup> is the basis for the indicator. However, this indicator excludes war/military operations involving chemical weapons (Y36.7, Y37.7).
- The nondrug poisoning codes include toxic effects of alcohol (T51.0).
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with a nondrug poisoning code anywhere in the record, 41% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal diagnosis of these cases are mental, behavioral, and neurodevelopmental disorders (43%), diseases of the respiratory system (11%), and diseases of the digestive system (10%). Studies focused specifically on nondrug poisonings may want to explore these additional cases.

### Limitations of data source:

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding.



## POISONING INDICATOR 3: Nonfatal Nondrug Poisoning Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM diagnostic or external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Nondrug Poisonings

CODE(S)	DESCRIPTION
T51–T53, T55–T62, T64	Toxic effects of nonmedicinal substances
T54.0	Toxic effects of phenol and phenol homologues
T65.0–T65.81, T65.83, T65.89, T65.9	Toxic effects of other and unspecified substances
Y38.7	Terrorism due to chemical weapons
Y35.2	Legal intervention involving gas

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- The “Nondrug Poisoning” row of the ICD-10-CM external cause-of-injury matrix<sup>4</sup> is the basis for the indicator. However, this indicator excludes war/military operations involving chemical weapons (Y36.7, Y37.7).
- The nondrug poisoning codes include toxic effects of alcohol (T51.0).
- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

### Limitations of data source:

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding.



## SUICIDE/INTENTIONAL SELF-HARM INDICATOR 1: Suicides

### Numerator:

- Deaths with any of the following ICD-10 codes **in the underlying cause of death field**.

### ICD-10 Codes for Suicides

CODE(S)	DESCRIPTION
X60–X84	Intentional self-harm
Y87.0	Sequelae of intentional self-harm
U03	Terrorism-intentional self-harm

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator corresponds to the “Suicide” column in the ICD-10 external cause-of-injury mortality matrix.<sup>12</sup>

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## SUICIDE/INTENTIONAL SELF-HARM INDICATOR 2: Nonfatal Intentional Self-Harm Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM diagnosis or external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Intentional Self-Harm Injuries

CODE(S)	DESCRIPTION
X71–X83	Self-harm by drowning/submersion, firearm, explosive material, fire/flame, hot vapors/objects, sharp object, blunt object, jumping from a high place, jumping or lying in front of a moving object, crashing of motor vehicle, other specified means
T36–T50 with <b>6th character</b> =2 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with <b>5th character</b> =2 (Intent information for these codes is included in the 5th character and not the 6th)	Self-harm by poisoning by drugs, medications, and biological substances
T51–T65 with <b>6th character</b> =2 Note: Include T51.9, T52.9, T53.9, T54.9, T56.9, T57.9, T58.0, T58.1, T58.9, T59.9, T60.9, T61.0, T61.1, T61.9, T62.9, T63.9, T64, and T65.9 with a <b>5th character</b> = 2 (Intent information for these codes is included in the 5th character and not the 6th)	Self-harm by toxic effects of nonmedicinal substances
T71 with 6th character=2	Self-harm by asphyxiation, suffocation, hanging
T14.91	Suicide attempt

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

**Indicator notes:**

- This indicator corresponds with the “Intentional self harm” column of the ICD-10-CM external cause-of-injury matrix<sup>4</sup> as well as the proposed self-harm case definition.<sup>13</sup>
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with an intentional self-harm code anywhere in the record, 34% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapter for the principal diagnosis of these cases is mental, behavioral, and neurodevelopmental disorders (89%). Studies focused specifically on intentional self-harm may want to explore these additional cases.

**Limitations of data source:**

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## SUICIDE/INTENTIONAL SELF-HARM INDICATOR 3: Nonfatal Intentional Self-Harm Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM diagnostic or external cause-of-injury codes **in any field**.

### ICD-10-CM Codes\* for Intentional Self-Harm Injuries

CODE(S)	DESCRIPTION
X71–X83	Self-harm by drowning/submersion, firearm, explosive material, fire/flare, hot vapors/objects, sharp object, blunt object, jumping from a high place, jumping or lying in front of a moving object, crashing of motor vehicle, other specified means
T36–T50 with <b>6th character</b> =2 Note: Include T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with <b>5th character</b> =2 (Intent information for these codes is included in the 5th character and not the 6th)	Self-harm by poisoning by drugs, medications, and biological substances
T51–T65 with <b>6th character</b> =2 Note: Include T51.9, T52.9, T53.9, T54.9, T56.9, T57.9, T58.0, T58.1, T58.9, T59.9, T60.9, T61.0, T61.1, T61.9, T62.9, T63.9, T64, and T65.9 with a <b>5th character</b> =2 (Intent information for these codes is included in the 5th character and not the 6th)	Self-harm by toxic effects of nonmedicinal substances
T71 with 6th character=2	Self-harm by asphyxiation, suffocation, hanging
T14.91	Suicide attempt

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.



**Indicator notes:**

- This indicator corresponds with the “Intentional self harm” column of the ICD-10-CM external cause-of-injury matrix<sup>4</sup> as well as the proposed self-harm case definition.<sup>13</sup>
- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

**Limitations of data source:**

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding. The overall completeness of external cause-of-injury coding is of particular interest and should be reviewed in conjunction with the indicator.



## TRAUMATIC BRAIN INJURY INDICATOR 1: Traumatic Brain Injury Fatalities

### Numerator:

- Deaths from the injury death subset (see methods on page 5) that have at least one of the following ICD-10 codes in any of the multiple cause of death fields.

### ICD-10 Codes for Traumatic Brain Injury Fatalities

CODE(S)	DESCRIPTION
S01.0–S01.9	Open wound of head
S02.0, S02.1, S02.3, S02.7–S02.9	Fracture of skull and facial bones
S04.0	Injury of optic nerve and pathways
S06.0–S06.9	Intracranial injury
S07.0, S07.1, S07.8, S07.9	Crushing injury of head
S09.7–S09.9	Other and unspecified injuries of head
T90.1, T90.2, T90.4, T90.5, T90.8, T90.9	Sequelae of injuries of head

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of deaths, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of death.

### Indicator notes:

- This indicator is essentially equivalent to the TBI Mortality indicator in previous versions of the Injury Indicator Instructions.<sup>14</sup> However, it deletes the codes that were not considered valid in the U.S. (T01.0, T02.0, T04.0, and T06.0). The updated indicator also corresponds to the TBI mortality case definition used by CDC.<sup>15</sup>

### Limitations of data source:

- Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.
- The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying cause of death field.



## TRAUMATIC BRAIN INJURY INDICATOR 2: Proposed TBI Case Definition Diagnosis Codes—Nonfatal Hospitalizations

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with any of the following ICD-10-CM diagnosis codes **in any field**.

### ICD-10-CM Diagnosis Codes\* for the Proposed TBI Case Definition

CODE(S)	DESCRIPTION
S02.0, S02.1	Fracture of skull
S02.8, S02.91	Fracture of other specified skull and facial bones; unspecified fracture
S04.02, S04.03, S04.04	Injury of optic chiasm; injury of optic tract and pathways; injuries of visual cortex
S06	Intracranial injury
S07.1	Crushing injury of skull
T74.4	Shaken infant syndrome

\*Only include cases if the 7th character of the code is A, B, or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- This indicator reflects the proposed case definition for TBI published by NCHS.<sup>5</sup> This proposed case definition doesn't include S09.90 (unspecified injury of head). This code is being tracked separately for potential future inclusion.
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with a TBI code anywhere in the record, 9% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal diagnosis of these cases are diseases of the circulatory system (22%), symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (11%), and diseases of the nervous system (11%). Studies focused specifically on TBI may want to explore these additional cases.

### Limitations of data source:

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding.



## TRAUMATIC BRAIN INJURY INDICATOR 3: Proposed TBI Case Definition Diagnosis Codes—Nonfatal Emergency Department Visits

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with any of the following ICD-10-CM diagnosis codes **in any field**.

### ICD-10-CM Diagnosis Codes\* for the Proposed TBI Case Definition

CODE(S)	DESCRIPTION
S02.0, S02.1	Fracture of skull
S02.8, S02.91	Fracture of other specified skull and facial bones; unspecified fracture
S04.02, S04.03, S04.04	Injury of optic chiasm; injury of optic tract and pathways; injuries of visual cortex
S06	Intracranial injury
S07.1	Crushing injury of skull
T74.4	Shaken infant syndrome

\*Only include cases if the 7th character of the code is A, B, or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- This indicator reflects the proposed case definition for TBI published by NCHS.<sup>5</sup> This proposed case definition doesn't include S09.90 (unspecified injury of head). This code is being tracked separately for potential future inclusion.
- This indicator does not include cases that were admitted to the hospital.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

### Limitations of data source:

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding.



## TRAUMATIC BRAIN INJURY INDICATOR 4: Nonfatal Hospitalizations with S09.90 but None of the Codes in the Proposed TBI Case Definition

### Numerator:

- Nonfatal hospitalizations from the injury hospital discharge subset (see methods on page 6) with the following ICD-10-CM diagnosis code **in any field**.

### ICD-10-CM Diagnosis Code\* for Unspecified Head Injury

CODE(S)	DESCRIPTION
S09.90	Unspecified injury of head

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of hospitalizations, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of hospital discharge.

### Indicator notes:

- S09.90 is being considered for future inclusion in the TBI case definition.
- This indicator for use with hospitalization data is restricted to cases where the principal diagnosis is injury. An analysis of 2016 Health Care Utilization Project (HCUP) National Inpatient Sample (NIS) data identified that of nonfatal hospitalizations with a S09.90 code anywhere in the record, 63% did not have an injury diagnosis in the principal diagnosis field. A preliminary analysis indicates that the most common chapters for the principal diagnosis of these cases are disease of the circulatory system (19%), symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (12%), mental, behavioral, and neurodevelopmental disorders (11%), and diseases of the genitourinary system (10%). Studies focused specifically on S09.90 may want to explore these additional cases.

### Limitations of data source:

- Injuries that result in hospitalization only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding.



## TRAUMATIC BRAIN INJURY INDICATOR 5: Nonfatal Emergency Department Visits with S09.90 but None of the Codes in the Proposed TBI Case Definition

### Numerator:

- Nonfatal ED visits from the injury ED visit subset (see methods on page 8) with the following ICD-10-CM diagnosis code **in any field**.

### ICD-10-CM Diagnosis Code\* for Unspecified Head Injury

CODE(S)	DESCRIPTION
S09.90	Unspecified injury of head

\*Only include cases if the 7th character of the code is A or missing (reflects initial encounter, active treatment)

### Denominator:

- Midyear population for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

### Measures of frequency:

- Annual number of ED visits, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population.<sup>11</sup>

### Period for case definition:

- Calendar year based on date of ED discharge.

### Indicator notes:

- This code is being considered for future inclusion in the TBI case definition.
- This indicator does not include cases that were admitted to the hospital.
- Previous analysis indicates that S09.90 (unspecified head injury) may account for a substantial number of potential TBI cases that present to the ED.
- This indicator for use with ED data includes cases with either an injury diagnosis code in any field or an external cause-of-injury code in any field. This broad definition results in the capture of all cases of injury or potential injury seen in the ED.

### Limitations of data source:

- Injuries that result in ED visits only represent a portion of the overall burden of injury. These injuries should be considered in the context of both less- and more-severe injuries.
- The accuracy of indicators based on codes found in ED data is limited by the completeness and quality of coding.



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