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## Proposed ICD–10–CM Surveillance Case Definitions for Injury Hospitalizations and Emergency Department Visits

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### Abstract

This report describes a collaboration between the National Center for Health Statistics and the National Center for Injury Prevention and Control to develop proposed surveillance case definitions for injury hospitalizations and emergency department (ED) visits for use with administrative data sets coded using the *International Classification of Diseases, Tenth Revision, Clinical Modification* (ICD–10–CM). The proposed ICD–10–CM surveillance case definitions were developed by applying General Equivalence Mappings to the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM) definitions. As with the ICD–9–CM definitions, there are slight differences between the proposed ICD–10–CM surveillance case definition for injury hospitalizations and the one for ED visits. The inclusion criteria for an injury hospitalization requires a case to have a principal diagnosis of one of the included nature-of-injury (injury diagnosis) codes. The inclusion criteria for an injury ED visit requires the case to have either a principal diagnosis of one of the included nature-of-injury codes or the presence of selected external-cause codes. The ICD–10–CM nature-of-injury and external-cause codes included in the proposed definitions are presented and caveats for use of the proposed definitions are described.

**Keywords:** *International Classification of Diseases, Tenth Revision, Clinical Modification* (ICD–10–CM) • administrative data • nonfatal injury • General Equivalence Mapping

### Introduction

Over the past 2 decades, the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS) and the National Center for Injury Prevention and Control (NCIPC) have collaborated with injury surveillance and epidemiology partners to improve the use of data to monitor

fatal and nonfatal injuries in the United States. One aspect of this collaboration is the development of standard case definitions for injury surveillance based on selected codes from the *International Classification of Diseases* (ICD) (1). Surveillance definitions provide uniform criteria for case selection to ensure the standard analysis and interpretation

of surveillance data used to study and identify trends in a population. In 2003, NCHS and NCIPC representatives, in collaboration with other injury epidemiologists and researchers, served on an Injury Surveillance Workgroup (ISW) of the Safe States Alliance to develop a recommended surveillance case definition for injury hospitalizations based on codes from the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM) (2). The definition developed by ISW has been in use for more than a decade and serves as the standard for case selection and analysis for CDC's Injury Indicators Reports (3).

The ICD–9–CM surveillance definition for injury hospitalization is generally applied to hospital discharge data, which are often based on billing information collected using the Uniform Billing Form (UB–04) (4). Data sets based on UB–04 include ICD codes for the principal diagnosis (i.e., the condition that resulted in the patient being admitted for care) as well as other secondary diagnoses, complications, and comorbidities. In the ICD–9–CM surveillance definition, injury hospitalizations are defined as those hospitalizations with a principal diagnosis of ICD–9–CM codes 800–994,



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995.5, and 995.80–995.85, excluding 909.3 and 909.5 ([Table A](#)). These nature-of-injury codes include diagnoses related to anatomic injuries, poisoning and toxic effects, late effects of injuries, traumatic complications, and child and adult maltreatment. Readmissions, transfers, and deaths in the hospital are included in this definition. Excluded from the definition are adverse effects from therapeutic use of drugs, adverse effects of medical or surgical care, and late effects of those adverse effects.

In addition to the surveillance definition for injury hospitalization, an ICD–9–CM surveillance definition for emergency department (ED) visits for injury has also been established (5,6). Injury ED visits are defined as those visits with either a principal diagnosis of an ICD–9–CM code as listed in [Table A](#) or the presence of selected ICD–9–CM external-cause codes (7). For surveillance of injury ED visits, the selected ICD–9–CM external-cause codes include E800–E848, E850–E869, E880–E929, and E950–E999. These codes reflect the external-cause codes included in the CDC-recommended framework for reporting injury morbidity data by mechanism and intent of injury (7).

As of October 2015, the U.S. Department of Health and Human Services (HHS) requires all hospitals

and health care providers covered by the Health Insurance Portability and Accountability Act (HIPAA) to use the *International Classification of Diseases, Tenth Revision, Clinical Modification* (ICD–10–CM) to report medical information (8). ICD–10–CM, developed by NCHS for use in morbidity coding in the United States, has been publicly available for more than a decade (9). The coding structure of ICD–10–CM is foundationally based on the ICD–10 published by the World Health Organization; however, the classification scheme has been greatly expanded to capture the diagnostic detail needed in morbidity data. The ICD–10–CM code set has nearly five times the number of codes found in ICD–9–CM (approximately 68,000 codes in ICD–10–CM compared with 14,000 codes in ICD–9–CM), and has the potential to provide greater utility in capturing the detailed information needed for billing, documentation of clinical care, and public health surveillance and practice. Codes to describe injury, poisoning, and certain other consequences of external causes (i.e., nature-of-injury codes) are found in Chapter 19, and codes to describe external causes of morbidity (i.e., external-cause codes) are found in Chapter 20 of the ICD–10–CM code set (9).

With the transition to the use of ICD–10–CM, a surveillance case definition for injury hospitalizations and ED visits based on ICD–10–CM is needed. For continuity and comparability with current practice, the proposed ICD–10–CM surveillance definitions should be based on the current ICD–9–CM definitions and should reflect similar concepts and decision-making principles regarding the codes to be included.

This report describes the methods used to develop the proposed ICD–10–CM injury surveillance case definitions for injury hospitalizations and ED visits, the recommended codes for inclusion, and considerations that will require additional review when ICD–10–CM coded data become available for testing.

## Methods for Developing Proposed Case Definitions

The approach used to develop the proposed ICD–10–CM surveillance definition for injury hospitalizations is summarized in the [Figure](#).

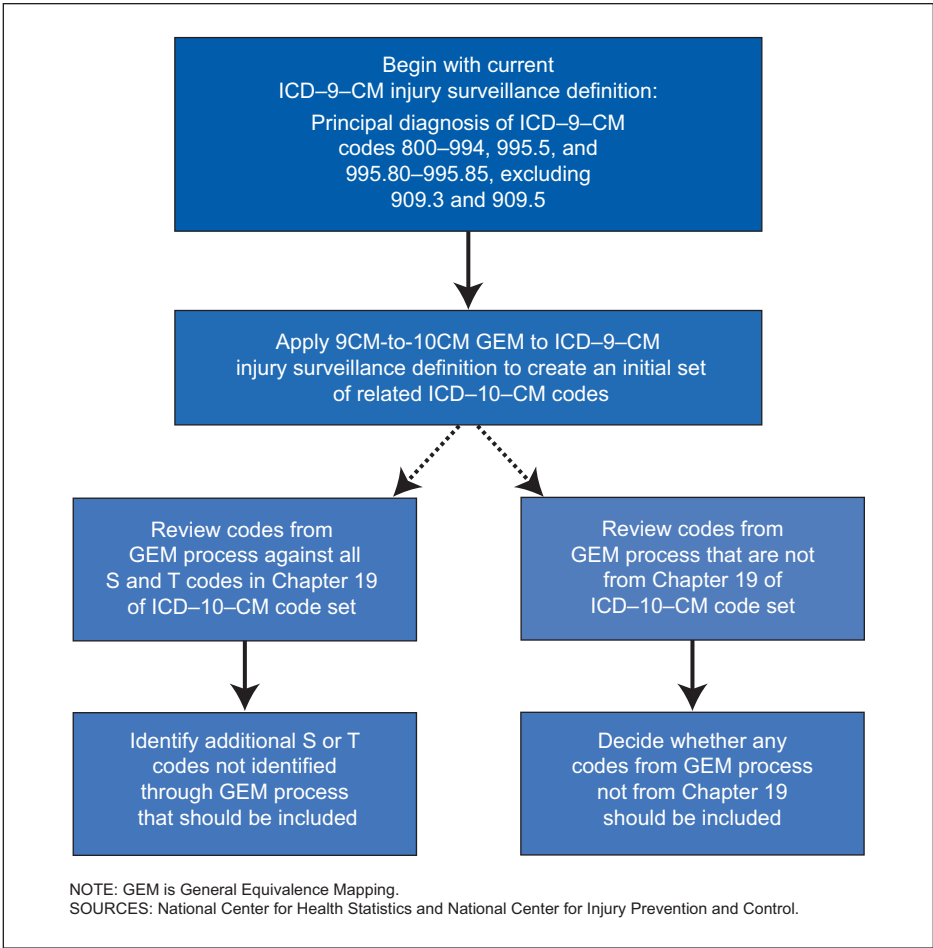
As with the ICD–9–CM definition, the proposed ICD–10–CM definition is based on selected ICD–10–CM nature-

**Table A. Inclusion and exclusion criteria using ICD–9–CM nature-of-injury codes in the principal diagnosis field**

| Nature-of-injury code                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Including:                                                |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 800–909.2, 909.4, 909.9 . . . . .                         | Fractures; dislocations; sprains and strains; intracranial injury; internal injury of thorax, abdomen, and pelvis; open wound of the head, neck, trunk, upper limb and lower limb; injury to blood vessels; late effects of injury, poisoning, toxic effects, and other external causes, excluding late effects of complications of surgical and medical care or drugs, medicinal or biological substances |
| 910–994.9 . . . . .                                       | Superficial injury; contusion; crushing injury; effects of foreign body entering through orifice; burns; injury to nerves and spinal cord; traumatic complications and unspecified injuries; poisoning and toxic effects of substances; other and unspecified effects of external causes                                                                                                                   |
| 995.5–995.59. . . . .                                     | Child maltreatment syndrome                                                                                                                                                                                                                                                                                                                                                                                |
| 995.80–995.85. . . . .                                    | Adult maltreatment, unspecified; adult physical abuse; adult emotional/psychological abuse; adult sexual abuse; adult neglect (nutritional); other adult abuse and neglect                                                                                                                                                                                                                                 |
| Excluding:                                                |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Codes below 800. . . . .                                  | Health conditions other than injury                                                                                                                                                                                                                                                                                                                                                                        |
| 909.3, 909.5. . . . .                                     | Late effects of complications of surgical and medical care; late effects of adverse effects of drug, medicinal or biological substance                                                                                                                                                                                                                                                                     |
| 995.0–995.4, 995.6–995.7, 995.86, 995.89, 995.9 . . . . . | Other anaphylactic shock; angioneurotic edema; unspecified adverse effect of drug, medicinal and biological substance; allergy, unspecified; shock due to anesthesia; anaphylactic shock due to adverse food reaction; malignant hyperpyrexia or hypothermia due to anesthesia                                                                                                                             |
| 996–999. . . . .                                          | Complications due to certain specified procedures; complications affecting specified body systems, not elsewhere classified (NEC); other complications of procedures, NEC; complications of medical care, NEC                                                                                                                                                                                              |

of-injury codes. General Equivalence Mappings (GEMs) were applied to the ICD-9-CM case definition to generate a set of possible ICD-10-CM codes to consider for inclusion in the proposed ICD-10-CM case definition. GEMs, developed by NCHS and the Centers for Medicare & Medicaid Services (CMS), assist in translating between different versions of ICD (10). Application of GEMs resulted in a set of possible ICD-10-CM codes, some of which are S and T codes found in Chapter 19 of the ICD-10-CM code set and some of which are found in other chapters of ICD-10-CM. The S and T codes identified through the GEM process were compared with all S and T codes from Chapter 19 to identify additional S and T codes that should be considered for inclusion in the proposed ICD-10-CM surveillance definition. Codes from the GEM process that are not S or T codes (see [Technical Notes](#)) were also reviewed. As a final step, GEMs were applied to the ICD-9-CM codes that are specifically excluded from the ICD-9-CM injury definition to determine whether any additional S or T codes should be included in the proposed ICD-10-CM definition. None were identified.

As noted earlier, the ICD-9-CM surveillance definition for injury ED visits differs slightly from that of the surveillance definition for hospitalizations. The ICD-9-CM surveillance definition for ED visits is based on the presence of either an included nature-of-injury code as the principal diagnosis or the presence of one of the included external-cause codes. To create the proposed ICD-10-CM surveillance definition for injury ED visits, a list of included ICD-10-CM external-cause codes comparable with the included ICD-9-CM external-cause codes is also needed. Using a similar GEM process, selected ICD-10-CM external-cause codes comparable with those in the ICD-9-CM definition have been identified. The process for selecting these codes is described in a report that outlines the development of a proposed framework for reporting injury data by mechanism and intent of injury using ICD-10-CM external-cause-of-injury codes (11). All V, W, and X codes and selected Y codes from Chapter 20 of the



**Figure. Process for developing a proposed ICD-10-CM surveillance definition for injury hospitalizations**

ICD-10-CM code set are included. Some of the external causes included as E codes in ICD-9-CM are assigned to nature-of-injury codes (T codes) in ICD-10-CM (11). All of the T codes considered to contain external cause information are included in the list of selected nature-of-injury codes for case selection in the proposed ICD-10-CM surveillance case definitions for injury hospitalizations and ED visits ([Table B](#)).

### Proposed Inclusion Criteria for ICD-10-CM Surveillance Case Definition for Injury Hospitalizations

For administrative data coded in ICD-10-CM, an injury hospitalization is defined as a hospitalization record with a principal diagnosis of one of the nature-of-injury codes from [Table B](#).

- As with the ICD-9-CM surveillance definition, cases are selected based on a principal diagnosis of one of the nature-of-injury codes listed in [Table B](#).
- As with the ICD-9-CM surveillance definition, codes related to adverse effects from therapeutic use of drugs are not included in the proposed ICD-10-CM surveillance definition for injury hospitalizations.
- ICD-10-CM includes codes to indicate medical consequences that result from underdosing of drugs used therapeutically. For comparability with the ICD-9-CM surveillance definition, these codes are not included in the proposed ICD-10-CM surveillance definition for injury hospitalization.
- A new concept in ICD-10-CM is the presence of a 7th character in the ICD-10-CM code that indicates the type of encounter when the diagnosis was made. A 7th character

**Table B. ICD–10–CM nature-of-injury codes in the proposed surveillance definition for injury hospitalizations**

| ICD–10–CM nature-of-injury code <sup>1</sup>                                                                                                                                  | Types of injuries                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All S codes . . . . .                                                                                                                                                         | Anatomic injuries                                                                                                                                                   |
| T07–T34 . . . . .                                                                                                                                                             | Foreign bodies, burns, corrosions, frostbite                                                                                                                        |
| T36–T50 with a 6th character of 1, 2, 3, or 4 (Exceptions: T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with a 5th character of 1, 2, 3, or 4) . . . . . | Drug poisoning (excludes adverse effects and underdosing)                                                                                                           |
| T51–T65 . . . . .                                                                                                                                                             | Toxic effects of substances nonmedicinal as to source                                                                                                               |
| T66–T76 . . . . .                                                                                                                                                             | Other and unspecified effects of external causes (radiation, heat, light, hypo/hyperthermia, asphyxiation, child/adult abuse, lightning, drowning, motion sickness) |
| T79 . . . . .                                                                                                                                                                 | Certain early complications of trauma, not elsewhere classified                                                                                                     |

<sup>1</sup>Any 7th character except S (sequela from previous injury). T07, T14, and T30–T32 do not have a 7th character.

of A, B, or C indicates an initial encounter with each care provider; a character of D through R indicates a subsequent encounter with the care provider; and a character of S indicates sequelae from a previous injury (12). For comparability with the current ICD–9–CM surveillance definition, only codes with a 7th character of A through R or missing a 7th character are included. Records with a principal diagnosis of one of the codes listed in Table B with a 7th character of S are excluded.

## Proposed Inclusion Criteria for ICD–10–CM Surveillance Case Definition for Injury ED Visits

For administrative data coded in ICD–10–CM, an ED visit for injury is defined as an ED record with a principal diagnosis of one of the nature-of-injury codes from Table B or one of the selected external-cause-of-injury codes listed in Table C. For the external-cause codes:

- All V, W, and X codes are included.
- Only selected Y codes are included. Y codes not considered for injury surveillance purposes include Y62–Y84, Complications of medical and surgical care; and Y90–Y99, Supplementary factors related to causes of morbidity classified elsewhere.
- As with nature-of-injury codes,

ICD–10–CM external-cause-of-injury codes also include a 7th character to indicate the type of encounter when the diagnosis was made. In the proposed ICD–10–CM surveillance definition for injury ED visits, only external-cause codes with a 7th character of A for initial encounter or D for subsequent encounter, or for which the 7th character is missing, are included.

## Discussion

Standard surveillance case definitions for injury hospitalizations and ED visits have been used in the United States for more than a decade (2,6). Routine use of these surveillance case definitions allows for the comparison of rates across jurisdictions (e.g., states, national) and over time. NCHS and NCIPC have promoted the use of these standard definitions, for example, by incorporating them as integral components for case selection in CDC's Injury Indicators Reports (3).

The HHS requirement that hospitals and health care providers use ICD–10–CM to code clinical data beginning on October 1, 2015, necessitated the development of new surveillance case definitions based on the ICD–10–CM code set.

To maintain consistency with the existing definitions, the proposed ICD–10–CM definitions were developed by applying GEMs to the ICD–9–CM definitions. Although this method is a reasonable approach, the proposed

definitions have not yet been tested using actual ICD–10–CM coded data. The proposed definitions are meant as a common starting place for further exploration. As ICD–10–CM coded data become more widely available and studies are conducted to test the proposed definitions, NCHS and NCIPC will revise the definitions as needed and publish final recommendations.

When using the proposed definitions, researchers and epidemiologists should consider several issues:

- The proposed definitions were developed for the purposes of injury surveillance and are considered surveillance case definitions, not clinical case definitions. Surveillance definitions are designed to study trends in a population by providing standardized criteria for selecting and aggregating cases for analysis. This is in contrast to clinical case definitions that generally use clinical, diagnostic, and laboratory data to determine a diagnosis for an individual patient.
- A key concept in the proposed surveillance definitions is selection based on an included nature-of-injury code as the principal diagnosis, rather than selection based on any mention of an included nature-of-injury code. The use of principal diagnosis is consistent with previous practice and allows for standardized implementation (2). For data based on UB–04, the principal diagnosis field is the one diagnostic field for which there is a generally accepted coding rule—it contains the code corresponding to the reason the patient was admitted, as determined by the attending physician or nurse. For the other diagnostic fields, no national standard has been established for the order in which the codes are assigned. Therefore, the presence of an injury diagnosis code in other fields does not necessarily identify an injury of sufficient severity to warrant hospitalization or an ED visit on its own. For consistency, the concept of selection based on principal diagnosis has been maintained in the proposed

**Table C. ICD–10–CM external-cause-of-injury codes in the proposed surveillance definition for injury emergency department visits**

| ICD–10–CM codes <sup>1</sup> | Types of external causes of injury                                       |
|------------------------------|--------------------------------------------------------------------------|
| 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 |

<sup>1</sup>7th character of A, D, or 7th character missing.

- ICD–10–CM definitions; however, the implications of this choice should be considered when testing the new proposed surveillance definitions.
- ICD–10–CM nature-of-injury and external-cause-of-injury codes have a 7th character that indicates whether the visit represents an initial encounter (7th character of A, B, or C for nature-of-injury codes, A for external-cause codes), subsequent encounter (D through R for nature-of-injury codes, D for external-cause codes), or sequelae of an injury (S for both nature-of-injury codes and external-cause codes). In developing the proposed ICD–10–CM surveillance definitions, a decision was made to include only those codes that represent an initial or subsequent encounter or for which the 7th character is missing. Codes with a 7th character indicating sequelae of an injury are not included in the proposed case definitions. This difference (i.e., inclusion of late effects of injury in the ICD–9–CM definition and exclusion of late effects or sequelae in the ICD–10–CM definition) should be noted when comparing results from ICD–9–CM coded data and ICD–10–CM coded data. As data become available, it will be important to assess the implications of including only initial and subsequent encounters and excluding codes that reflect sequelae of injury.
  - ICD–10–CM includes an extensive number of codes that describe adverse effects of drugs and conditions resulting from underdosing of drugs. While these codes are in the same range as the poisoning (or “overdose”) codes (T36–T50), many injury epidemiologists and researchers argue that adverse effects and conditions resulting from underdosing should not be included for the purposes of injury surveillance. The decision to exclude these codes should continue to be evaluated before the surveillance case definitions are finalized.
  - The proposed ICD–10–CM surveillance case definitions described in this report were specifically developed to identify injury hospitalizations and ED visits using administrative data based on UB–04. The proposed definitions might not be directly applicable to other data sets for injury morbidity, such as data sets from paramedic trip reports, outpatient settings, or syndromic surveillance systems. Testing and validation of these definitions using data from other sources should be conducted to determine whether the definitions can be used directly or if they need to be modified for application to a particular data source.
  - Each year, NCHS and CMS update the ICD–10–CM code set to add or delete codes, revise descriptions, modify includes- and excludes- notes, and make other adjustments as needed. Thus, the surveillance definitions will continually need to be updated to address future changes to the ICD–10–CM code set.

Conclusions

The proposed ICD–10–CM surveillance definitions for injury hospitalizations and ED visits provide a common starting point for injury epidemiologists, researchers, and others to begin exploring the implications of the new ICD–10–CM classification system on injury surveillance. Because the proposed definitions have not been tested using actual ICD–10–CM coded data or by medical record review to confirm the accuracy of case selection based on the definitions, the proposed definitions are not considered to be final. NCHS and NCIPC will continue to collaborate with injury researchers and epidemiologists to test the case definitions and determine the sensitivity and specificity of the proposed surveillance definitions. As more is learned about the subtleties of ICD–10–CM coded data and as validation studies are completed, modifications may be needed before the definitions are finalized.

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## Technical Notes

In developing the proposed *International Classification of Diseases, Tenth Revision, Clinical Modification* (ICD-10-CM) surveillance definitions for injury hospitalizations and emergency department (ED) visits, General Equivalence Mappings (GEMs) (9) were applied to the nature-of-injury codes in the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) case definition. This generated a set of possible ICD-10-CM codes to consider for inclusion in the ICD-10-CM case definition. The application of GEMs resulted in a set of possible ICD-10-CM codes, some of which are S and T codes found in Chapter 19 of the ICD-10-CM code set and some of which are found in other ICD-10-CM chapters. Codes from the GEM process that are not S or T codes are listed in the next section. Most of these codes are related to late effects of injuries and resulted from application of GEMs to ICD-9-CM codes 905.2–905.5 and 905.8, Late effects of injury. These codes are not included in the proposed surveillance case definitions.

### ICD-10-CM codes from application of GEMs to ICD-9-CM surveillance definitions that are not S or T codes

1. L08.89, Other local infections of the skin
  - a. ICD-9-CM codes for superficial injuries with infection are mapped to two codes in ICD-10-CM: one for the specific superficial injury and L08.89, Other local infections of the skin.
  - b. L08.89 is not included in the proposed surveillance definitions; however, the codes for the superficial injuries are included.
2. L59.9, Disorder of the skin, subcutaneous related to radiation
  - a. Mapped from ICD-9-CM code 909.2, Late effect of radiation.
  - b. Not included in the proposed surveillance definitions because it corresponds to an ICD-9-CM late-effect code.
3. M1A.10X1, Lead-induced chronic gout, unspecified
  - a. Mapped from ICD-9-CM code 984.9, Toxic effect of unspecified lead compound.
  - b. 984.9 also maps to T56.0X1A–T56.0X4A, Toxic effects of lead and its compounds, which are included in the proposed surveillance definitions.
4. M67.90, Unspecified disorder of synovium and tendon, unspecified site
  - a. Mapped from ICD-9-CM code 905.8, Late effect of tendon injury.
  - b. Not included in the proposed surveillance definitions because it corresponds to an ICD-9-CM late-effect code.
5. M84.369S, Stress fracture, unspecified tibia and fibula, sequelae
  - a. Mapped from ICD-9-CM code 905.4, Late effect of fracture of lower extremities.
  - b. 905.4 also maps to M84.376S, M84.453S, and M84.469S and S79.009S, S82.009S, S82.90XS, S92.909S, and S92.919S.
  - c. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.
6. M84.376S, Stress fracture, unspecified foot, sequelae
  - a. Mapped from ICD-9-CM code 905.4, Late effect of fracture of lower extremities.
  - b. 905.4 also maps to M84.369S, M84.453S, and M84.469S and S79.009S, S82.009S, S82.90XS, S92.909S, and S92.919S.
  - c. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.
7. M84.40XS, Pathological fracture, unspecified site, sequelae
  - a. Mapped from ICD-9-CM code 905.5, Late effect of fracture of multiple and unspecified bones.
  - b. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.
8. M84.429S, Pathological fracture, unspecified humerus, sequelae
  - a. Mapped from ICD-9-CM code 905.2, Late effect of fracture of upper extremities.
  - b. 905.2 also maps to M84.439S and S42.209S, S42.309S, S42.409S, S42.90XS, S52.90XS, and S62.90XS.
- c. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.
9. M84.439S, Pathological fracture, unspecified ulna and radius, sequelae
  - a. Mapped from ICD-9-CM code 905.2, Late effect of fracture of upper extremities.
  - b. 905.2 also maps to M84.429S and S42.209S, S42.309S, S42.409S, S42.90XS, S52.90XS, and S62.90XS.
  - c. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.
10. M84.453S, Pathological fracture, unspecified femur, sequelae
  - a. Mapped from ICD-9-CM code 905.4, Late effect of fracture of lower extremities.
  - b. 905.4 maps to M84.369S, M84.376S, and M84.469S and S79.009S, S82.009S, S82.90XS, S92.909S, and S92.919S.
  - c. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.
11. M84.459S, Pathological fracture, hip, unspecified, sequelae
  - a. Mapped from ICD-9-CM code 905.3, Late effect of fracture of neck of femur.
  - b. 905.3 also maps to S72.009S, Fracture of unspecified part of neck of unspecified femur.
  - c. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.
12. M84.469S, Pathological fracture, unspecified tibia and fibula, sequelae
  - a. Mapped from ICD-9-CM code 905.4, Late effect of fracture of lower extremities.
  - b. 905.4 maps to M84.369S, M84.376S, and M84.453S and S79.009S, S82.009S, S82.90XS, S92.909S, and S92.919S.
  - c. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.
13. M84.48XS, Pathological fracture, other site, sequelae
  - a. Mapped from ICD-9-CM code 905.5, Late effect of fracture of multiple and unspecified bones.
  - b. Not included in the proposed surveillance definitions because it reflects sequelae of an injury.

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