

# **Home Health - Falls with Major Injury Respecification Technical Specification Report**

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## 1. Introduction

The Centers for Medicare & Medicaid Services (CMS) develop and maintain quality measures for post-acute care (PAC) and long-term care Quality Reporting Programs. Measures included in the Quality Reporting Programs are designed to improve care quality and enable Medicare beneficiaries and their caregivers to make informed choices when selecting health care providers. CMS routinely evaluates and refines quality reporting program measure sets to ensure cross-setting alignment, facilitate and implement improvements, and maintain measure effectiveness for each care setting even as care practices change and CMS priorities evolve over time.

The CMS Division of Chronic & Post-Acute Care (DCPAC) in the Quality Measurement and Value Incentives Group (QMVIG) contracted with RTI International and Abt Global to support quality measurement as part of the Development, Maintenance, and Support for Quality Reporting and Value Based Purchasing Programs and Nursing Home Care Compare and the Home Health (HH) Quality Measurement, Value-based Purchasing Model and Hospice Assessment Instruments Development and Maintenance programs.

### ***Falls with a Major Injury and Quality of Care in Home Health and Post Acute and Long-Term Care Settings***

Approximately 20–30% of older adults ( $\geq 65$  years old) experience one or more falls each year. These falls are associated with substantial burden to the health care system, individuals, and families from resulting injuries, fractures, and reduced functioning and quality of life.<sup>1</sup> Overall health as well as healthcare costs are significantly impacted by falls in the older adult population. Falls among older adults are a major public health concern because of the \$30 billion in direct US healthcare costs annually as well as the immense psychological and physical impacts.<sup>2</sup> Evidence from national surveillance data and research indicates falls are the leading cause of injury-related death in persons aged 65 years or older.<sup>3</sup> Multifactorial interventions may reduce the rate of falls compared with usual care or attention control.<sup>4</sup>

The Falls with Major Injury (FMI) (Consensus-Based Entity ID 0674) measure was adopted by the Nursing Home Quality Initiative (NHQI) for long stay (LS) Nursing Home (NH) residents in 2011. Following the IMPACT Act of 2014, home health and PAC providers are required to report data on the incidence of major falls in clinical assessments of patients, and an application of the NH LS measure was adopted by the Skilled Nursing Facility (SNF), Inpatient

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<sup>1</sup> Pillay J, Gaudet LA, Saba S, Vandermeer B, Ashiq AR, Wingert A, Hartling L. *Falls prevention interventions for community-dwelling older adults: systematic review and meta-analysis of benefits, harms, and patient values and preferences*. Syst Rev. 2024 Nov 26;13(1):289.

<sup>2</sup> Hosseini H. *Optimizing Falls-related Planning and Intervention for Nursing Facilities by Ownership Type*. Hosp Top. 2024 Oct-Dec;102(4):231-236.

<sup>3</sup> Colón-Emeric CS, McDermott CL, Lee DS, Berry SD. *Risk Assessment and Prevention of Falls in Older Community-Dwelling Adults: A Review*. JAMA. 2024 Apr 23;331(16):1397-1406.

<sup>4</sup> Hopewell S, Adedire O, Copsey BJ, Boniface GJ, Sherrington C, Clemson L, Close JC, Lamb SE. *Multifactorial and multiple component interventions for preventing falls in older people living in the community*. Cochrane Database Syst Rev. 2018 Jul 23;7(7).

Rehabilitation Facility (IRF), Long-term Care Hospital (LTCH), and HH Quality Reporting Programs.

Specifically, the FMI quality measure reflects the percentage of home health episodes with one or more falls with major injury (defined as injuries including bone fractures, joint dislocations, and closed-head injuries with altered consciousness, or subdural hematoma) during the home health episode. The current version of the measure is consistent across post-acute care and home health settings, such that an FMI is identified when both a fall and major injury are indicated on the patient assessment (i.e., numerator includes item J1800 identifying that there was a fall indicated on the assessment and item J1900C identifying that there was a major injury indicated on the assessment).

### ***FMI Respecification***

FMI measure respecification is recommended, based on recent research and a U.S. Department of Health & Human Services Office of the Inspector General (OIG) report documenting substantial underreporting for falls with a major injury in the current measure. Recent studies found substantial underreporting of FMIs in assessment data, specifically citing that approximately 50% of FMIs are not reported across settings. Sanghavi et al. (2020) found that only 57.5% of claims-identified FMI events were reported in MDS assessments by skilled nursing facilities,<sup>5</sup> and a 2023 report reviewing the home health setting released by the OIG found that only 45% of claims-identified FMI events were reported by home health agencies in Outcome and Assessment Information Set (OASIS) assessment data.<sup>6</sup> Additionally, home health agencies (HHAs) with the lowest FMI scores as reported on Care Compare tended to have the highest levels of underreporting.

CMS tasked the RTI and Abt Global teams with exploring approaches to address underreporting of FMI events as documented in these studies. Throughout the re-specification process, the RTI and Abt Global teams worked with stakeholders to gather and incorporate their input. Specifically, the teams sought feedback from patients and caregivers through a Patient and Family Engagement Listening Session and from clinicians and other experts through two Technical Expert Panels (TEP) on different re-specification approaches for the current cross-setting measure used in HH, IRF, LTCH, SNF and NH.

This report presents the technical measure specifications for the HH FMI measure. Section 2 provides an overview of the measure and is a high-level summary of the key features of the re-specified measure. Section 3 describes the methodology used to construct the FMI measure, including its data sources, study population, measure outcome, and steps for calculating the final measure score. Section 4 discusses measure testing, including the measure's reportability, variability, reliability, and validity results. Lastly, the Appendix shows the assessment-based items used to assess falls and resultant level of injury, a table listing the claims diagnosis codes

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<sup>5</sup> Sanghavi, P., Pan, S., & Caudry, D. (2020). Assessment of nursing home reporting of major injury falls for quality measurement on nursing home compare. *Health Services Research*, 55(2), 201–210.

<sup>6</sup> Maxwell, A. (2023). Home health agencies failed to report over half of falls with major injury and hospitalization among their Medicare patients (OEI-05-22-00290). U.S. Department of Health & Human Services, Office of the Inspector General.

used in assessing major injury status, and a table listing claims-based External Cause of Injury codes used in assessing a recent fall associated with a major injury.

## 2. Overview of the Respecified FMI Measure

This section provides an overview of the FMI measure, summarizing the key points contained in the rest of the document. A more detailed explanation of the measure specifications is available in Section 3.

### 2.1 Measure Name

Falls with Major Injury

### 2.2 Measure Type

Outcome

### 2.3 Care Setting

Home Health

### 2.4 Data Sources

OASIS, Medicare fee-for-service (FFS) claims, Medicare Advantage encounter data, Medicaid claims and encounter data.

### 2.5 Brief Description of Measure

The re-specified quality measure reports the percentage of patients who experience one or more falls with major injury. A major injury includes, but is not limited to, traumatic bone fractures, joint dislocations/subluxations, internal organ injuries, amputations, traumatic spinal cord injuries, head injuries, and crush injuries. The measure uses OASIS, claims, and encounter data to identify falls with a major injury. Lower scores indicate better quality.

Exhibit 1 shows a graphical depiction of the steps for calculating the numerator of the re-specified FMI measure. In *Numerator Calculation Step 1*, OASIS assessment items J1800 and J1900C are examined for evidence of a fall with a major injury.

Beginning with *Numerator Calculation Step 2*, data from claims and encounter data linked to the HH quality episode are incorporated into the re-specified measure to increase the accuracy of the numerator. In this step, ICD-10 diagnosis codes on the claims are examined for evidence of a major injury that likely resulted from a fall. In *Numerator Calculation Step 3*, the external cause of injury codes are additionally examined for evidence of a fall. These steps are additive and evidence of both a fall and a major injury must be found in either the assessment data or claims data, or in both sources, to identify an FMI event.

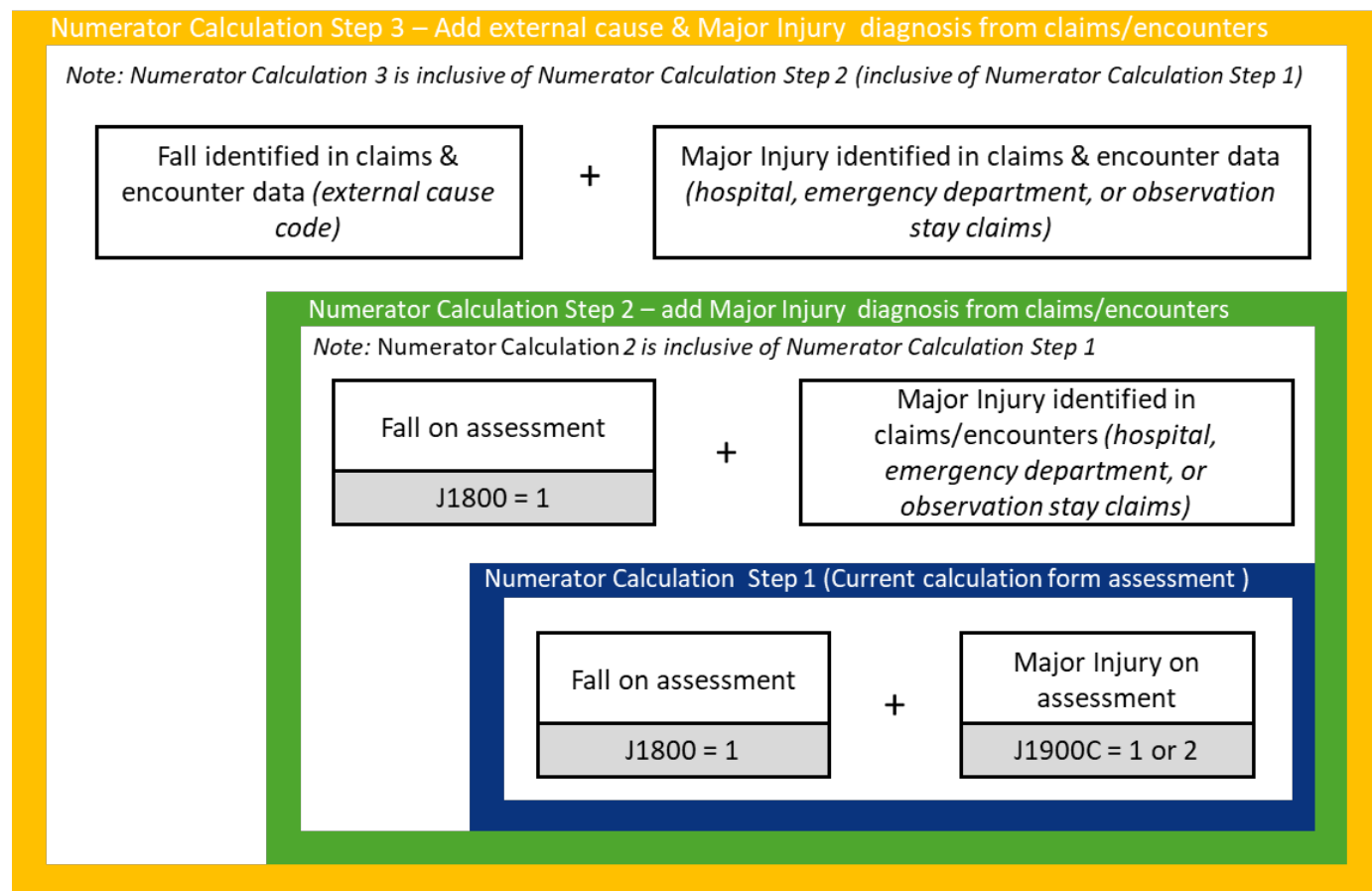
*Numerator Calculation Steps 2 and 3* use ICD-10 diagnosis codes in Medicare fee-for-service (FFS), Medicare Advantage, and Medicaid claims and encounter data to identify major injuries. *Numerator Calculation Step 3* also uses external cause of injury ICD-10 codes in Medicare FFS



## 2. OVERVIEW OF THE RESPECIFIED FMI MEASURE

and Medicare Advantage claims and encounter data to identify falls.<sup>7</sup> Every eligible HH episode is evaluated for an FMI using the three numerator calculation steps for calculating an FMI.

### Exhibit 1. Graphical Depiction of Steps for Calculating the Numerator of the Re-specified FMI Measure



<sup>7</sup> Medicare FFS and Medicare Advantage encounter data have separate fields for diagnosis codes and external cause of injury codes. Medicaid claims only have fields for diagnosis codes; however, external cause of injury codes are sometimes reported in the fields for diagnosis codes. Therefore, in the Medicaid claims, the fields for diagnosis codes are examined for evidence of both a fall and a major injury.

### 3. Measure Specifications

This section of the report describes the FMI measure following re-specification to address potential under-reporting of FMI events, as described in the introduction.

#### 3.1 Measure Time Period

This measure is calculated using 12 months (four quarters) of data. All quality episodes with a discharge date within a given 12 month reporting period, except those meeting denominator exclusion criteria, are included in the measure.

#### 3.2 Data Sources

##### *OASIS Assessment Data*

This measure uses data from the OASIS. As of July 1, 2025, home health agencies must submit OASIS assessment data for all of their patients receiving skilled home health services, regardless of insurance status,<sup>8</sup> with the exception of the following groups: patients under the age of 18, patients receiving maternity services, and patients receiving only personal care, housekeeping services, or chore services.

OASIS data are used to identify episodes of care, during which patients received home health services from a defined home health agency. OASIS data also provide information on FMI events, as described in greater detail below.

##### *Claims and Encounter Data*

This re-specified measure relies on data from Medicare's Enrollment Database, and data from the inpatient and outpatient settings from Medicare FFS claims, Medicare Advantage encounters, and the Medicaid Transformed Medicaid Statistical Information System (T-MSIS). The enrollment files provide beneficiary-level information such as date of birth, date of death, sex, reasons for Medicare eligibility, and enrollment history. The Medicare and Medicaid claims and encounter data files provide information about each inpatient hospital stay, emergency department (ED) visit and observation stay, including dates of admission and discharge, diagnoses and procedures, and indicators for care received during a hospital stay or in the emergency department.

Claims or encounter data files are used to construct for each patient the history of care during a home health episode, including whether the patient received care in the inpatient, ED, or observation stay settings, which is used to assess an injury via diagnosis codes and/or a fall via external cause of injury codes. Below are links to documentation for each of the specific files for the HH measure.

- Information about the Medicare Enrollment Database is available online at: <https://aspe.hhs.gov/centers-medicare-medicaid-services>.

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<sup>8</sup> Prior to July 1, 2025, OASIS data were only mandatory to submit for patients with Medicare FFS, Medicare Advantage, Medicaid FFS, and Medicaid managed care insurance.

- Documentation for the Medicare claims data is provided online by the Research Data Assistance Center (ResDAC). Data dictionaries for all standard analytical files (Inpatient, and Outpatient Research Identifiable Files) are available at: [https://resdac.org/cms-data?tid\\_1%5B1%5D=1&tid%5B4931%5D=4931](https://resdac.org/cms-data?tid_1%5B1%5D=1&tid%5B4931%5D=4931).
- Documentation for the Medicare Advantage encounter data is provided online by ResDAC, available at: <https://resdac.org/cms-data?tid%5B6056%5D=6056>.
- Information about the Medicaid T-MSIS data is available at: <https://www.medicaid.gov/medicaid/data-systems/macbis/transformed-medicaid-statistical-information-system-t-msis>.

### 3.3 Risk Adjustment

This measure is not risk-adjusted or stratified.

### 3.4 Measure Window

The measure window for this measure is the timeframe from the start of the HH episode through the end of the episode as determined by the OASIS assessment.

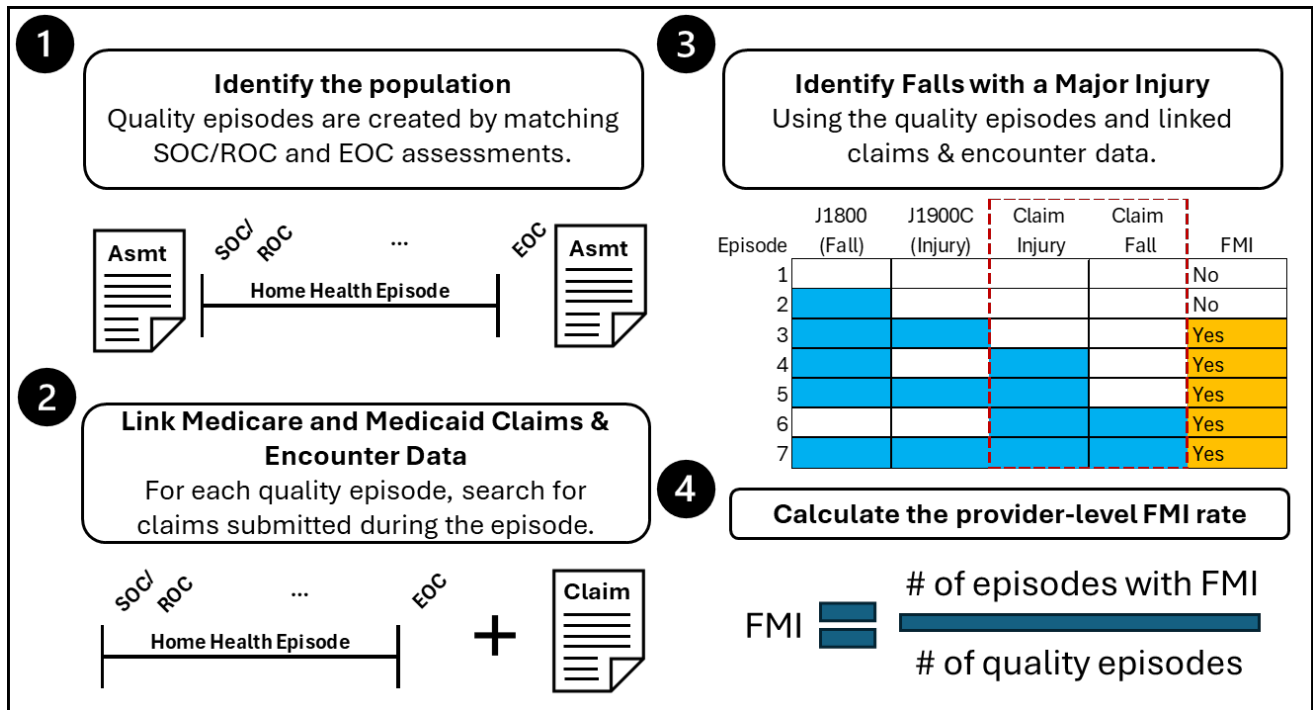
### 3.5 Measure Calculation

#### 3.5.1 Measure Calculation Overview

The following steps (See Exhibit 2 below) are used in the calculation of the re-specified FMI measure:

- **Step 1:** Create quality episodes (in Home Health) or stays (in the other PAC settings) by matching starting and ending assessments.
- **Step 2:** For each quality episode or stay, link claims or encounter data submitted during the episode or stay.
- **Step 3:** Using the quality episode or stay with linked hospital, ED, or observation stay claims and encounter data that occur during the patient's PAC stay/episode, identify falls with a major injury.
- **Step 4:** Calculate the provider-level FMI rate, which is the number of episodes or stays with FMI divided by the total number of episodes or stays.

**Exhibit 2: Measure Calculation Overview**



SOC = Start of care; ROC = Resumption of care; EOC = End of care

#### 3.5.2 Quality Measure Calculation Algorithm

The following steps are used to calculate the measure. Since this measure is not risk-adjusted or stratified, only the agency observed score is computed.

**Step 1.** Calculate the denominator count:

- Calculate the number of patient episodes (using assessment data), except for those who meet the exclusion criteria.

**Step 2.** Calculate the numerator count:

- Calculate the number of patient episodes during the selected time window for those who experienced one or more falls that resulted in major injury during the episode of care identified in assessment, claims, or encounter data.

**Step 3.** Calculate the agency's observed score:

- Divide the agency's numerator count (resulting from step 2) by its denominator count (resulting from step 1) multiplied by 100 and rounded to two decimal places to obtain the agency's observed score.

### 3.6 Denominator Calculation

#### 3.6.1 Denominator Definition

The re-specified FMI measure is considered a “hybrid” measure, incorporating both claims/encounters and assessment data. Although FMI incorporates claims/encounters and assessment data in the numerator, the denominator is constructed using a process typical of assessment-based measures. HH episodes are constructed by matching start of care (SOC) and resumption of care (ROC) assessments with end of care assessments to create a complete episode. Claims and encounter data are only used to improve the accuracy of capturing numerator events of FMI. SOC and ROC assessments are identified through assessment item M0100 (Reason for Assessment) = 1 (Start of care) or 3 (Resumption of care). End of care assessments are identified through assessment item M0100 (Reason for Assessment) = 6 (Transfer to inpatient facility – not discharged), 7 (Transfer to inpatient facility – discharged), 8 (Death at home), or 9 (Discharge from agency).

The FMI denominator includes all HH episodes of care other than those covered by generic and measure-specific denominator exclusions.

#### 3.6.2 Denominator Exclusions

The only current exclusions are standard OASIS-based exclusions. Medicare-certified home health agencies are currently required to collect and submit OASIS data only for adult (aged 18 and over), non-maternity Medicare and Medicaid patients who are receiving skilled home health care. Therefore, maternity patients, patients less than 18 years of age, non-Medicare/Medicaid patients, and patients who are not receiving skilled home services are all excluded from the measure calculation.

### 3.7 Numerator Calculation

#### 3.7.1 Numerator Statement

The numerator for this quality measure is the number of patients who experienced one or more falls that resulted in major injury during the episode of care, as determined from review of the OASIS (J1800 and J1900) and claims (diagnosis and external cause of injury codes) data.

#### 3.7.2 Numerator Calculation Step 1 – FMI from the Assessment

The OASIS assessment items used for this measure (See Appendix A) collect data indicating whether or not a fall took place (J1800), and, if so, the number of falls in each of the following categories (J1900):

- **Injury Related to Fall:** Any documented injury that occurred because of, or was recognized within, a short period of time (e.g., hours to a few days) after the fall and attributed to the fall.
- **Injury (Except Major):** Includes, but is not limited to, skin tears, abrasions, lacerations, superficial bruises, hematomas, and sprains; or any fall-related injury that causes the patient to complain of pain.

- **Major Injury:** Including, but not not limited to, traumatic bone fractures, joint dislocations/subluxations, internal organ injuries, amputations, traumatic spinal cord injuries, head injuries, and crush injuries.

In *Numerator Calculation Step 1*, FMI events must include an indication of a major injury, as indicated by item J1900C, which assesses whether a patient had one or more falls that resulted in major injury since the time of admission to home health.

#### 3.7.3 Numerator Calculation Step 2 – Fall Identified from assessment, indicator of major injury on Assessment, Claims, or Encounters

CMS is respecifying the FMI measure to include claims and encounter data. To improve the accuracy of the FMI measure, in *Numerator Calculation Step 2*, diagnosis codes found on inpatient and outpatient claims are used to determine if a patient with a documented fall on the OASIS **but no documented major injury on the OASIS** had diagnosis codes consistent with major injury after the documented fall. This refinement requires the identification of sets of ICD-10 diagnosis codes that identify falls in claims or encounters, in a logic analogous to that of the existing assessment-based measure. Only ICD-10 diagnosis codes found on claims or encounter data from the inpatient, outpatient ED, and outpatient observation stay settings with from dates during a given quality episode (as delineated by start and end of care dates on the clinical assessments) would be used to further identify FMI events in *Numerator Calculation Step 2*.

CMS organized a clinical workgroup to assess feedback from a cross-setting PAC TEP and patient/caregiver stakeholders on clinical diagnosis groups that would clinically meet the definition of a major injury.<sup>9</sup> This workgroup adopted a comprehensive set of diagnoses that include the following:

- Fracture (Traumatic)
- Joint Dislocation/Subluxation (Traumatic)
- Injury to the Head (with and without Loss of Consciousness)<sup>10</sup>
- Other Non-Fracture Bony Injury
- Organ Trauma
- Crush Injury
- Spine (Cord/Disc)

Exhibit 3 below outlines an example scenario that demonstrates how using claims and encounter data to determine a major injury diagnosis contributes to the numerator calculation. In this scenario, the HH episode would be included in the FMI numerator calculation because a fall is identified via the OASIS J1800 item and a diagnosis code from the patient's ED claim corresponded to a major injury diagnosis group. The ICD-10 diagnosis codes for major injury must co-occur with a fall on assessment data. Though the OASIS J1900 did not indicate a major

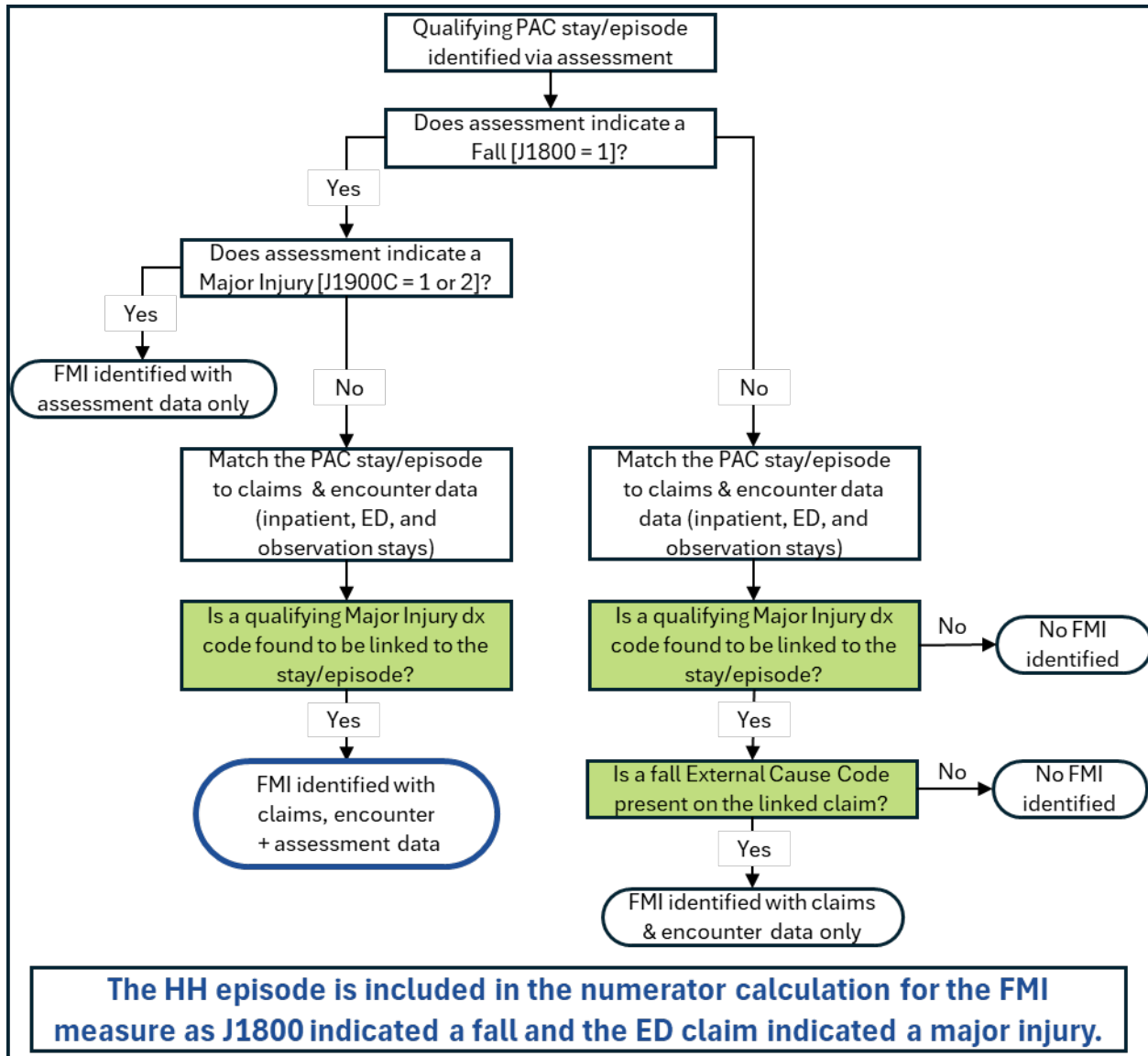
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<sup>9</sup> See TEP Summary Report available at <https://www.cms.gov/files/document/may-2025-cross-setting-falls-major-injury-tep-summary-report.pdf>

<sup>10</sup> Note: Formerly “Brain Injury,” renamed to match ICD-10 terminology for codes beginning with the same 4 characters in this section.

injury, the major injury identified via the ICD-10 code is sufficient to trigger the numerator. For a full listing of diagnoses that meet the comprehensive criteria of major injury, see Appendix B.

**Exhibit 3. Numerator Calculation Step 2 Scenario**



#### 3.7.4 Numerator Calculation Step 3 – Major Injury Identified via Claims or Encounter Diagnosis Codes, Fall Identified via or Encounter External Cause of Injury Code

*Numerator Calculation Step 3* uses claims or encounter data to identify both a fall documented in the external cause of injury codes and to identify if a major injury diagnosis code was present for the patient and co-occurred with the fall. External cause of injury codes are used to classify environmental events and circumstances as the cause of injury and other adverse effects. They

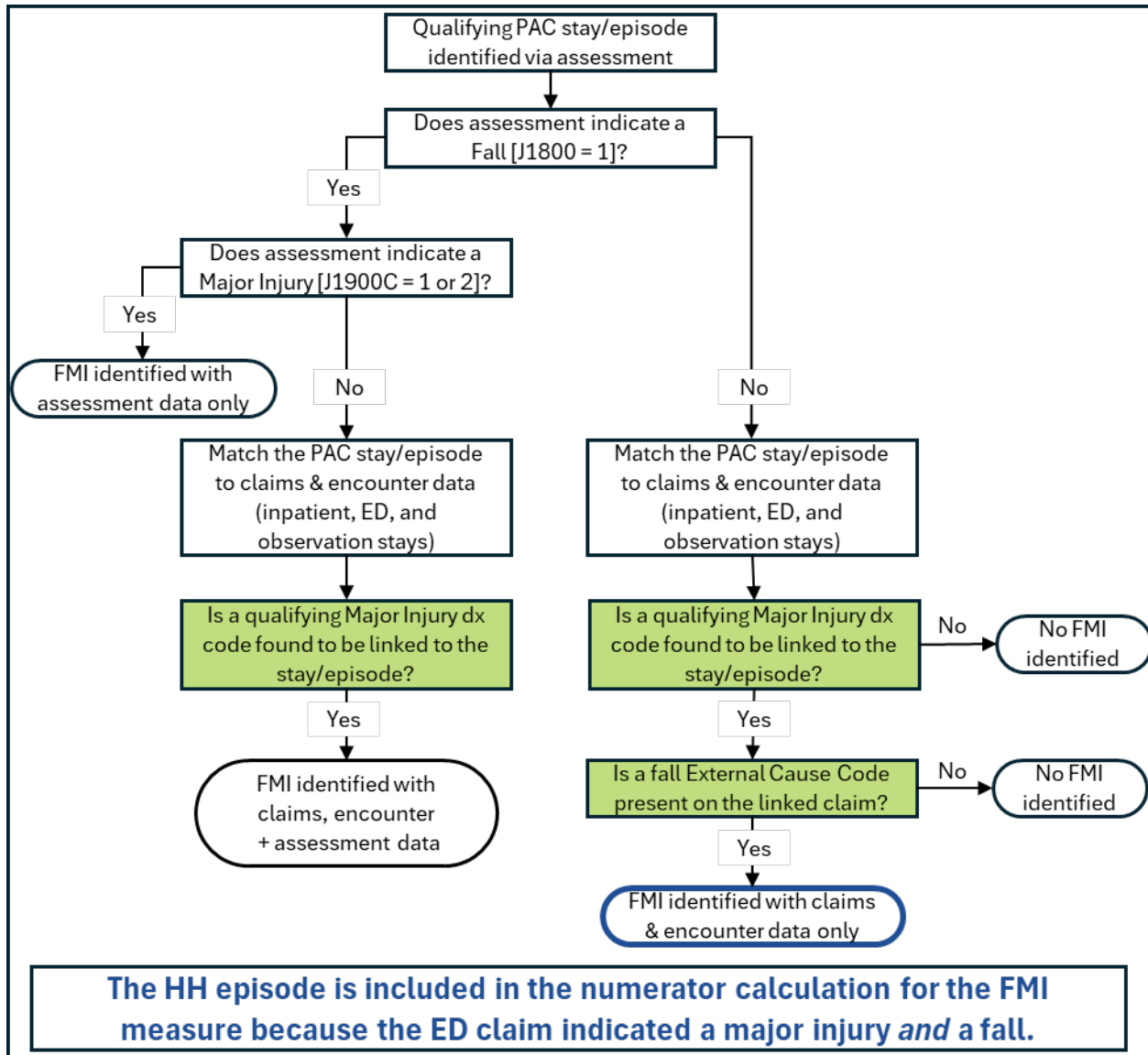
should only be coded when there is an injury coded on the claim. External cause of injury codes are voluntary, and they are used secondary to the codes that represent the injury or adverse effect.

Medicare FFS and Medicare Advantage claims have separate fields for diagnosis and external cause of injury codes. In the Medicaid claims, external cause of injury codes are sometimes reported in the diagnosis code fields. As such, the diagnosis code fields in the Medicaid claims are examined for both major injury and fall codes. As with *Numerator Calculation Step 2*, only ICD-10 diagnosis codes and external cause of injury codes found on claims data from the inpatient, outpatient ED, and outpatient observation stay settings with from dates during a given quality episode (as delineated by start and end of care dates on the clinical assessments) would be used to further identify FMI events in *Numerator Calculation Step 3*.

Exhibit 4 below outlines an example scenario that shows how an FMI event can be identified using only claims or encounter data. In this scenario, the HH episode would be included in the FMI numerator calculation because a fall is identified via the external cause of injury code and a diagnosis code from the patient's ED claim or encounter corresponded to a major injury diagnosis group. The ICD-10 diagnosis codes for major injury must co-occur with a fall from the external cause of injury code in the claims data. For a full listing of the external cause of injury codes, please see Appendix C.



**Exhibit 4. Numerator Calculation Step 3 Scenario**



#### 3.7.5 Numerator Exclusions

The following exclusions will be applied to numerator calculations using claims or encounter data:

**Exhibit 5. Numerator Exclusions**

Concern	Numerator Exclusion
Fall or major injury occurred prior to the episode/stay and patient is receiving continuing care.	<ul style="list-style-type: none"> <li>Exclude diagnosis codes (for fall or major injury) with a “sequela” suffix (indicating residual conditions resulting from a previous illness or injury, after the acute phase has resolved); include only initial encounters</li> </ul>

### 3. MEASURE SPECIFICATIONS

	<ul style="list-style-type: none"> <li>Exclude “subsequent encounter” codes (usually represented by a seventh character D)</li> </ul>
FMI event claim submitted on the date of PAC admission could have occurred prior to PAC episode/stay.	Exclude claims where: <ul style="list-style-type: none"> <li>From date = episode start date</li> </ul>
FMI event occurred in the hospital (Inpatient claims/encounters only).	Exclude diagnosis codes without a corresponding Present on Admission (POA) flag
FMI event occurred following discharge from PAC episode/stay.	Exclude claim when: <ul style="list-style-type: none"> <li>From date &gt; episode end date</li> <li>Episode ends with a discharge to home</li> </ul>

#### 3.8 Measure Results

Exhibit 6 shows average FMI rates across and the proportion of HH providers without any FMI events across *Numerator Calculation Steps 1, 2, and 3*. Including fall and major injury events from claims results in an increase in the rate of FMI events at the provider level, from 1.05% (*Numerator Calculation Step 1*, using only OASIS data) to 2.37% (*Numerator Calculation Step 3*). The percent of providers with no FMI events decreases from 28.1% (*Numerator Calculation Step 1*) to 14.5% (*Numerator Calculation Step 3*).

**Exhibit 6: Home Health FMI Rate by Numerator Calculation Step**

Numeration Calculation Step	Data Source	Mean FMI Rate	Percent Providers with No FMI Events
Numerator Calculation Step 1 (Assessment data only)	Assessment	1.053	28.1%
Numerator Calculation Step 2 (Assessment + Major Injury in Claims)	Assessment, Claims	1.73	17.6%
Numerator Calculation Step 3 (Assessment + fall or Major Injury in Claims)	Assessment, Claims	2.37	14.5%

## 4. Measure Testing

We conducted measure testing, as described below, using home health episodes that ended in calendar year (CY) 2024 (i.e., from January 1, 2024–December 31, 2024).

### 4.1 Reportability

Reportability testing examines the total number and proportion of quality episodes that would have at least 20 eligible quality episodes for the FMI measure in the reporting period. Among all HHAs with at least one episode where FMI could be measured (n=10,566), 82.5% (n=8,725) met this threshold. This indicates high reportability and usability of the data.

**Exhibit 7: Publicly Reportable HHAs, CY2024**

Unit of analysis	Total Number	Number among HHAs with ≥ 20 episodes
Episodes	7,417,801	7,403,867 (99.8%)
HHAs	10,566	8,725 (82.5%)

Source: CY2024 Home Health Episodes

### 4.2 Variability

Variability testing summarizes the distribution of the agency-level final FMI. The mean FMI rate among HHAs with at least 20 quality episodes was 2.37 (median: 1.90, IQR: 0.91 – 3.26). HH FMI rate ranged from a minimum rate of 0.00 to a maximum rate of 30.00. This wide variation indicates there may be a performance gap in FMI across HHAs.

**Exhibit 8: HHA-Level Distribution of FMI**

N	Mean Score	STD Dev.	Minimum	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile	75 <sup>th</sup> Percentile	Maximum
8725	2.38	2.27	0.00	0.91	1.90	3.26	30.00

Source: CY2024 Home Health Episodes

### 4.3 Reliability

The split-half reliability test examined agreement between two FMI measure scores for an HHA based on randomly-split, independent subsets of quality episodes in the same measurement period. Good agreement between the two performance measure scores calculated in this manner provides evidence that the measure is capturing an attribute of the HHA (quality of care) rather than the patient episodes (case-mix). For HHAs with at least 20 eligible quality episodes in CY 2024, each HHA's quality episodes were randomly divided into halves, thus ensuring that patient quality episodes were evenly distributed across the split-halves.

Provider measure scores for each split-half sample were calculated. The Shrout-Fleiss intraclass correlation coefficient (ICC (2, 1)) was calculated between the split-half scores to measure reliability, applying the Spearman-Brown correction.<sup>11</sup> The intraclass correlation coefficient for

<sup>11</sup> McGraw, K. O., & Wong, S. P. Forming inferences about some intraclass correlation coefficients. *Psychological methods*, 1996, 1(1), 30.

HHAs with more than 20 eligible quality episodes was 0.46 which indicates moderate reliability for this test.

The signal-to-noise ratio (SNR) assesses how well the FMI measure distinguishes true differences in performance across HHAs. The "signal" represents real variation in HHA performance, while the "noise" reflects random variation or measurement error. A higher SNR indicates that most of the observed variation is meaningful rather than due to chance. To ensure a stable estimate, the SNR calculation was limited to HHAs with at least 20 quality episodes in CY 2024. The resulting SNR for FMI is 0.73, which corresponds to moderate reliability.

#### 4.4 Validity

##### 4.4.1 Measure Scores

Validity refers to how well a measure reflects the concept it's intended to assess. In this case, the assessed concept is healthcare quality measured by falls with a major injury. Two common types of validity are convergent validity and face validity. Convergent validity assesses whether the measure correlates well with other measures similar in concept. Face validity refers to whether the measure appears reasonable to experts. The following subsections describe comparisons with other measures, and webinars convened to gather expert, patient, and caregiver perspectives.

##### *Convergent Validity*

To evaluate convergent validity, the relationships between FMI and related HH QRP measures were examined. Using Spearman's rank correlation, FMI was compared to the HH Discharge to Community (DTC), Potentially Preventable Hospitalizations (PPH), and the Medicare Spending Per Beneficiary (MSPB) measures. The analysis used CY 2024 data from providers with at least 20 quality episodes.

#### Exhibit 9: Correlations between FMI and Other Publicly Reported Measures

Measure	Spearman's Correlation	p-value
Discharge To Community (DTC)	-0.20	<0.001
Potentially Preventable Hospitalizations (PPH)	0.30	<0.001
Medicare Spending Per Beneficiary (MSPB)	0.18	<0.001

Source: CY2024 Home Health Episodes

Notes: Sample size: 7,913 home health providers with data for all relevant measures

Spearman correlation analysis revealed statistically significant associations between FMI and all measured outcomes (Exhibit 9). The respecified FMI measure had a weak negative correlation with DTC ( $r = -0.20$ ), indicating that a higher FMI rate is associated with fewer patients successfully returning to community settings. This negative correlation was expected, because FMIs are often treated in institutional settings, which would count against a successful rating on the DTC measure. FMI had a moderate positive correlation with potentially preventable hospitalizations ( $r = 0.30$ ), representing the strongest association observed and indicating increased risk of avoidable hospital admissions. This was also expected, because both measures

often represent use of hospital-based care. Additionally, FMI had a weak positive correlation with MSPB ( $r = 0.18$ ), indicating that HHAs with high rates of FMI events also tend to have higher average MSPB.

### *Face Validity*

To assess face validity of FMI, two Technical Expert Panel (TEP) meetings (July 2024 and May 2025), and one Patient and Family Engagement Listening Session, were convened.<sup>12</sup> TEP members showed strong support for the face validity of this measure. Votes taken during the meeting showed support for key components of the re-specified measure, including the conceptual and operational definition of updates to the measure. This included the addition of claims data.

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<sup>12</sup> July 2024 TEP Summary Report: <https://mmshub.cms.gov/sites/default/files/PAC-Home-Health-QRP-Cross-setting-TEP-Summary-Report-July-2024.pdf>; May TEP Summary Report : <https://www.cms.gov/files/document/may-2025-cross-setting-falls-major-injury-tep-summary-report.pdf>

## Appendix A. OASIS Items Used in FMI Calculation

### Percent of Residents or Patients Experiencing One or More Falls with Major Injury

J1800. Any Falls Since SOC/ROC, whichever is more recent	
Enter Code <input type="checkbox"/>	Has the patient had any falls since SOC/ROC, whichever is more recent? 0. No → Skip to M1400, Short of Breath at DC; Skip to M2005, Medication Intervention at TRN and DAH 1. Yes → Continue to J1900, Number of Falls Since SOC/ROC

J1900. Number of Falls Since SOC/ROC, whichever is more recent		
Coding: 0. None 1. One 2. Two or more	↓ Enter code in boxes	
	<input type="checkbox"/>	A. <b>No injury:</b> No evidence of any injury is noted on physical assessment by the nurse or primary care clinician; no complaints of pain or injury by the patient; no change in the patient's behavior is noted after the fall
	<input type="checkbox"/>	B. <b>Injury (except major):</b> As described in the OASIS manual
	<input type="checkbox"/>	C. <b>Major injury:</b> As described in the OASIS manual

Source: Outcome and Assessment Information Set (OASIS) E Manual | CMS

## Appendix B. Major Injury Diagnostic Codes

Fracture (Traumatic)	
<i>Pelvis/Hip</i>	
S321	Fracture of sacrum
S322	Fracture of coccyx
S323	Fracture of ilium
S324	Fracture of acetabulum
S325	Fracture of pubis
S326	Fracture of ischium
S328	Fracture of other parts of pelvis
S329	Fracture of unspecified parts of lumbosacral spine and pelvis
S720	Fracture of head and neck of femur
S721	Pertrochanteric fracture
<i>Lower Extremity / Ankle / Foot</i>	
S722	Subtrochanteric fracture of femur
S723	Fracture of shaft of femur
S724	Fracture of lower end of femur
S728	Other fracture of femur
S729	Unspecified fracture of femur
S820	Fracture of patella
S821	Fracture of upper end of tibia
S822	Fracture of shaft of tibia
S823	Fracture of lower end of tibia
S824	Fracture of shaft of fibula
S825	Fracture of medial malleolus
S826	Fracture of lateral malleolus
S828	Other fractures of lower leg
S829	Unspecified fracture of lower leg
S890	Physeal fracture of upper end of tibia
S891	Physeal fracture of lower end of tibia
S892	Physeal fracture of upper end of fibula
S893	Physeal fracture of lower end of fibula
S920	Fracture of calcaneus
S921	Fracture of talus
S922	Fracture of other and unspecified tarsal bone(s)
S923	Fracture of metatarsal bone(s)
S924	Fracture of great toe
S925	Fracture of lesser toe(s)
S928	Other fracture of foot, except ankle
S929	Unspecified fracture of foot and toe

<i>Axial Skeleton</i>	
S120	Fracture of first cervical vertebra
S121	Fracture of second cervical vertebra
S122	Fracture of third cervical vertebra
S123	Fracture of fourth cervical vertebra
S124	Fracture of fifth cervical vertebra
S125	Fracture of sixth cervical vertebra
S126	Fracture of seventh cervical vertebra
S128	Fracture of other parts of neck
S129	Fracture of neck, unspecified
S220	Fracture of thoracic vertebra
S222	Fracture of sternum
S223	Fracture of one rib
S224	Multiple fractures of ribs
S225	Flail chest
S229	Fracture of bony thorax, part unspecified
S320	Fracture of lumbar vertebra
<i>Shoulder Girdle</i>	
S420	Fracture of clavicle
S421	Fracture of scapula
S429	Fracture of shoulder girdle, part unspecified
<i>Upper Extremity / Wrist / Hand</i>	
S422	Fracture of upper end of humerus
S423	Fracture of shaft of humerus
S424	Fracture of lower end of humerus
S490	Physeal fracture of upper end of humerus
S491	Physeal fracture of lower end of humerus
S498	Other specified injuries of shoulder and upper arm
S499	Unspecified injury of shoulder and upper arm
S520	Fracture of upper end of ulna
S521	Fracture of upper end of radius
S522	Fracture of shaft of ulna
S523	Fracture of shaft of radius
S525	Fracture of lower end of radius
S526	Fracture of lower end of ulna
S529	Unspecified fracture of forearm
S590	Physeal fracture of lower end of ulna
S591	Physeal fracture of upper end of radius
S592	Physeal fracture of lower end of radius
S620	Fracture of navicular [scaphoid] bone of wrist



S621	Fracture of other and unspecified carpal bone(s)
S622	Fracture of first metacarpal bone
S623	Fracture of other and unspecified metacarpal bone
S625	Fracture of thumb
S626	Fracture of other and unspecified finger(s)
S629	Unspecified fracture of wrist and hand
<i>Skull/Face</i>	
S020	Fracture of vault of skull
S021	Fracture of base of skull
S022	Fracture of nasal bones
S023	Fracture of orbital floor
S024	Fracture of malar, maxillary and zygoma bones
S025	Fracture of tooth (traumatic)
S026	Fracture of mandible
S028	Fractures of other specified skull and facial bones
S029	Fracture of unspecified skull and facial bones
<b>Joint Dislocation / Subluxation (Traumatic)</b>	
<i>Pelvis/Hip</i>	
S334	Traumatic rupture of symphysis pubis
S730	Subluxation and dislocation of hip
<i>Lower Extremity / Ankle / Foot</i>	
S830	Subluxation and dislocation of patella
S831	Subluxation and dislocation of knee
S930	Subluxation and dislocation of ankle joint
S931	Subluxation and dislocation of toe
S933	Subluxation and dislocation of foot
<i>Axial Skeleton</i>	
S131	Subluxation and dislocation of cervical vertebrae
S132	Dislocation of other and unspecified parts of neck
S231	Subluxation and dislocation of thoracic vertebra
S232	Dislocation of other and unspecified parts of thorax
S331	Subluxation and dislocation of lumbar vertebra
S332	Dislocation of sacroiliac and sacrococcygeal joint
S333	Dislocation of other and unspecified parts of lumbar spine and pelvis
<i>Shoulder Girdle</i>	
S430	Subluxation and dislocation of shoulder joint
S431	Subluxation and dislocation of acromioclavicular joint
S432	Subluxation and dislocation of sternoclavicular joint
S433	Subluxation and dislocation of other and unspecified parts of shoulder girdle
<i>Upper Extremity / Wrist / Hand</i>	

S530	Subluxation and dislocation of radial head
S531	Subluxation and dislocation of ulnohumeral joint
S630	Subluxation and dislocation of wrist and hand joints
S631	Subluxation and dislocation of thumb
S632	Subluxation and dislocation of other finger(s)
S633	Traumatic rupture of ligament of wrist
S634	Traumatic rupture of ligament of finger at metacarpophalangeal and interphalangeal joint(s)
<i>Skull/Face</i>	
S030	Dislocation of jaw
S031	Dislocation of septal cartilage of nose
S032	Dislocation of tooth
<b>Traumatic Amputation</b>	
S081	Traumatic amputation of ear
S088	Traumatic amputation of nose
S282	Traumatic amputation of external genital organs
S480	Traumatic amputation of shoulder
S580	Traumatic amputation of elbow
S589	Traumatic amputation of forearm
S680	Traumatic metacarpophalangeal amputation of thumb
S681	Traumatic amputation of index finger
S685	Traumatic transphalangeal amputation of thumb
S686	Traumatic transphalangeal amputation of index finger
S687	Traumatic transmetacarpal amputation of left hand
S780	Traumatic amputation of hip
S880	Traumatic amputation of knee
S889	Traumatic amputation of leg
S981	Traumatic amputation of toe
S983	Traumatic amputation of midfoot
S989	Traumatic amputation of foot
<b>Complications of Surgical and Medical Care</b>	
T840	Complication of prosthesis
<b>Injury to the Head</b>	
<i>Intracranial (with Loss of Consciousness)</i>	
S060	Concussion
S061	Traumatic cerebral edema
S062	Diffuse traumatic brain injury
S063	Focal traumatic brain injury
S064	Epidural hemorrhage
S065	Traumatic subdural hemorrhage
S066	Traumatic subarachnoid hemorrhage

S068	Other specified intracranial injuries
S069	Unspecified intracranial injury
S06A	Traumatic brain compression and herniation
<b>Other Non-Fracture Bony Injury</b>	
<i>Axial Skeleton</i>	
M483	Traumatic spondylopathy
<b>Organ Trauma</b>	
<i>Lung</i>	
S270	Traumatic pneumothorax
S271	Traumatic hemothorax
S272	Traumatic hemopneumothorax
<i>Abdomen</i>	
S360	Injury of spleen
S361	Injury of liver and gallbladder and bile duct
S362	Injury of pancreas
S363	Injury of stomach
S364	Injury of small intestine
S365	Injury of colon
S366	Injury of rectum
S368	Injury of other intra-abdominal organs
S369	Injury of unspecified intra-abdominal organ
S370	Injury of kidney
S371	Injury of ureter
S372	Injury of bladder
S373	Injury of urethra
S374	Injury of ovary
S375	Injury of fallopian tube
S376	Injury of uterus
S378	Injury of other urinary and pelvic organs
S379	Injury of unspecified urinary and pelvic organ
<i>Eye</i>	
S050	Injury of conjunctiva and corneal abrasion w/o foreign body
S052	Ocular laceration and rupture with prolapse or loss of intraocular tissue
S053	Ocular laceration without prolapse or loss of intraocular tissue
S054	Penetrating wound of orbit with or without foreign body
S055	Penetrating wound with foreign body of eyeball
S056	Penetrating wound without foreign body of eyeball
S057	Avulsion of eye
S058	Other injuries of eye and orbit
S059	Unspecified injury of eye and orbit

<i>Heart</i>	
S260	Unspecified injury of heart with hemopericardium
S261	Injury of heart without hemopericardium
S269	Injury of heart, unspecified with or without hemopericardium
<i>Intrathoracic Organs</i>	
S273	Other and unspecified injuries of lung
S274	Injury of bronchus
S275	Injury of thoracic trachea
S276	Injury of pleura
S278	Injury of other specified intrathoracic organs
S279	Injury of unspecified intrathoracic organ
<b>Injury to the Head</b>	
<i>Intracranial (without Loss of Consciousness)</i>	
S060	Concussion
S061	Traumatic cerebral edema
S062	Diffuse traumatic brain injury
S063	Focal traumatic brain injury
S064	Epidural hemorrhage
S065	Traumatic subdural hemorrhage
S066	Traumatic subarachnoid hemorrhage
S068	Other specified intracranial injuries
S069	Unspecified intracranial injury
S080	Avulsion of scalp
<b>Crush Injury</b>	
<i>Pelvis/Hip</i>	
S770	Crushing injury of hip
S772	Crushing injury of hip with thigh
<i>Lower Extremity / Ankle / Foot</i>	
S771	Crushing injury of thigh
S870	Crushing injury of knee
S878	Crushing injury of lower leg
S970	Crushing injury of ankle
S971	Crushing injury of toe
S978	Crushing injury of foot
<i>Shoulder Girdle</i>	
S471	Crushing injury of right shoulder and upper arm
S472	Crushing injury of left shoulder and upper arm
S479	Crushing injury of shoulder and upper arm, unspecified arm
<i>Upper Extremity / Wrist / Hand</i>	
S570	Crushing injury of elbow

S578	Crushing injury of forearm
S670	Crushing injury of thumb
S671	Crushing injury of other and unspecified finger(s)
S672	Crushing injury of hand
S673	Crushing injury of wrist
S674	Crushing injury of wrist and hand
S679	Crushing injury of unspecified part(s) of wrist, hand and fingers
<b>Skull/Face</b>	
S070	Crushing injury of face
S071	Crushing injury of skull
S078	Crushing injury of other parts of head
S079	Crushing injury of head, part unspecified
<b>Cervical</b>	
S170	Crushing injury of larynx and trachea
S178	Crushing injury of other specified parts of neck
S179	Crushing injury of neck, part unspecified
<b>Abdomen</b>	
S380	Crushing injury of external genital organs
S380	Crushing injury of external genital organs
S381	Crushing injury of abdomen, lower back, and pelvis
S280	Crushed chest
<b>Spine (Cord / Disc)</b>	
<b>Axial Skeleton</b>	
S130	Traumatic rupture of cervical intervertebral disc
S140	Concussion and edema of cervical spinal cord
S141	Other and unspecified injuries of cervical spinal cord
S230	Traumatic rupture of thoracic intervertebral disc
S240	Concussion and edema of thoracic spinal cord
S241	Other and unspecified injuries of thoracic spinal cord
S330	Traumatic rupture of lumbar intervertebral disc
S340	Concussion and edema of lumbar and sacral spinal cord
S341	Other and unsp injury of lumbar and sacral spinal cord

## Appendix C. External Cause of Injury Code List

Diagnosis	Description
V00181A	Fall from other rolling-type pedestrian conveyance, initial encounter
V00281A	Fall from other gliding-type pedestrian conveyance, initial encounter
V00381A	Fall from other flat-bottomed pedestrian conveyance, initial encounter
V00811A	Fall from moving wheelchair (powered), initial encounter
V00831A	Fall from motorized mobility scooter, initial encounter
V00841A	Fall from standing electric scooter, initial encounter
V00891A	Fall from other pedestrian conveyance, initial encounter
W000XXA	Fall on same level due to ice and snow, initial encounter
W001XXA	Fall from stairs and steps due to ice and snow, initial encounter
W002XXA	Other fall from one level to another due to ice and snow, initial encounter
W009XXA	Unspecified fall due to ice and snow, initial encounter
W010XXA	Fall on same level from slipping, tripping and stumbling without subsequent striking against object, initial encounter
W0110XA	Fall on same level from slipping, tripping and stumbling with subsequent striking against unspecified object, initial encounter
W01110A	Fall on same level from slipping, tripping and stumbling with subsequent striking against sharp glass, initial encounter
W01111A	Fall on same level from slipping, tripping and stumbling with subsequent striking against power tool or machine, initial encounter
W01118A	Fall on same level from slipping, tripping and stumbling with subsequent striking against other sharp object, initial encounter
W01119A	Fall on same level from slipping, tripping and stumbling with subsequent striking against unspecified sharp object, initial encounter
W01190A	Fall on same level from slipping, tripping and stumbling with subsequent striking against furniture, initial encounter
W01198A	Fall on same level from slipping, tripping and stumbling with subsequent striking against other object, initial encounter
W04XXXA	Fall while being carried or supported by other persons, initial encounter
W050XXA	Fall from non-moving wheelchair, initial encounter
W051XXA	Fall from non-moving nonmotorized scooter, initial encounter
W052XXA	Fall from non-moving motorized mobility scooter, initial encounter
W06XXXA	Fall from bed, initial encounter
W07XXXA	Fall from chair, initial encounter
W08XXXA	Fall from other furniture, initial encounter
W090XXA	Fall on or from playground slide, initial encounter
W091XXA	Fall from playground swing, initial encounter
W092XXA	Fall on or from jungle gym, initial encounter
W098XXA	Fall on or from other playground equipment, initial encounter
W100XXA	Fall (on)(from) escalator, initial encounter
W101XXA	Fall (on)(from) sidewalk curb, initial encounter
W102XXA	Fall (on)(from) incline, initial encounter

W108XXA	Fall (on) (from) other stairs and steps, initial encounter
W109XXA	Fall (on) (from) unspecified stairs and steps, initial encounter
W11XXA	Fall on and from ladder, initial encounter
W12XXA	Fall on and from scaffolding, initial encounter
W130XXA	Fall from, out of or through balcony, initial encounter
W131XXA	Fall from, out of or through bridge, initial encounter
W132XXA	Fall from, out of or through roof, initial encounter
W133XXA	Fall through floor, initial encounter
W134XXA	Fall from, out of or through window, initial encounter
W138XXA	Fall from, out of or through other building or structure, initial encounter
W139XXA	Fall from, out of or through building, not otherwise specified, initial encounter
W14XXA	Fall from tree, initial encounter
W15XXA	Fall from cliff, initial encounter
W16011A	Fall into swimming pool striking water surface causing drowning and submersion, initial encounter
W16012A	Fall into swimming pool striking water surface causing other injury, initial encounter
W16021A	Fall into swimming pool striking bottom causing drowning and submersion, initial encounter
W16022A	Fall into swimming pool striking bottom causing other injury, initial encounter
W16031A	Fall into swimming pool striking wall causing drowning and submersion, initial encounter
W16032A	Fall into swimming pool striking wall causing other injury, initial encounter
W16111A	Fall into natural body of water striking water surface causing drowning and submersion, initial encounter
W16112A	Fall into natural body of water striking water surface causing other injury , initial encounter
W16121A	Fall into natural body of water striking bottom causing drowning and submersion, initial encounter
W16122A	Fall into natural body of water striking bottom causing other injury, initial encounter
W16131A	Fall into natural body of water striking side causing drowning and submersion, initial encounter
W16132A	Fall into natural body of water striking side causing other injury, initial encounter
W16211A	Fall in (into) filled bathtub causing drowning and submersion, initial encounter
W16212A	Fall in (into) filled bathtub causing other injury, initial encounter
W16221A	Fall in (into) bucket of water causing drowning and submersion, initial encounter
W16222A	Fall in (into) bucket of water causing other injury, initial encounter
W16311A	Fall into other water striking water surface causing drowning and submersion, initial encounter
W16312A	Fall into other water striking water surface causing other injury, initial encounter
W16321A	Fall into other water striking bottom causing drowning and submersion, initial encounter
W16322A	Fall into other water striking bottom causing other injury , initial encounter

W16331A	Fall into other water striking wall causing drowning and submersion, initial encounter
W16332A	Fall into other water striking wall causing other injury , initial encounter
W1641XA	Fall into unspecified water causing other drowning and submersion, initial encounter
W1642XA	Fall into unspecified water causing other injury, initial encounter
W170XXA	Fall into well, initial encounter
W171XXA	Fall into storm drain or manhole, initial encounter
W172XXA	Fall into hole, initial encounter
W173XXA	Fall into empty swimming pool, initial encounter
W174XXA	Fall from dock, initial encounter
W1781XA	Fall down embankment (hill), initial encounter
W1782XA	Fall from (out of) grocery cart, initial encounter
W1789XA	Other fall from one level to another, initial encounter
W1800XA	Striking against unspecified object with subsequent fall, initial encounter
W1801XA	Striking against sports equipment with subsequent fall, initial encounter
W1802XA	Striking against glass with subsequent fall, initial encounter
W1809XA	Striking against other object with subsequent fall, initial encounter
W1811XA	Fall from or off toilet without subsequent striking against object, initial encounter
W1812XA	Fall from or off toilet with subsequent striking against object, initial encounter
W182XXA	Fall in (into) shower or empty bathtub, initial encounter
W1830XA	Fall on same level, unspecified, initial encounter
W1831XA	Fall on same level due to stepping on an object, initial encounter
W1839XA	Other fall on same level, initial encounter
W1840XA	Slipping, tripping and stumbling without falling, unspecified, initial encounter
W1841XA	Slipping, tripping and stumbling without falling due to stepping on object, initial encounter
W1842XA	Slipping, tripping and stumbling without falling due to stepping into hole or opening, initial encounter
W1843XA	Slipping, tripping and stumbling without falling due to stepping from one level to another, initial encounter
W1849XA	Other slipping, tripping and stumbling without falling, initial encounter
W19XXXA	Unspecified fall, initial encounter