Institute *for* Healthcare Improvement

# IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events

AN IHI RESOURCE

20 University Road, Cambridge, MA 02138 • ihi.org

**How to Cite This Document:** Adler L, Moore J, Federico F. *IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events*. Cambridge, MA: Institute for Healthcare Improvement; November 2015. (Available at ihi.org)

## AUTHORS:

Lee Adler, DO: *Senior Advisor for Safety, Quality, and Innovation, Adventist Health System; Consultant for Patient Harm Research, Office of Inspector General, US Department of Health and Human Services; Associate Professor of Internal Medicine, University of Central Florida, College of Medicine*

Jeremy Moore, MPA: *Office of Evaluation and Inspections, Office of Inspector General, US Department of Health and Human Services*

Frank A. Federico, RPh: *Vice President, Institute for Healthcare Improvement*



**Acknowledgements:**
The authors would like to thank the following individuals for their contributions to the work: Ruth Ann Dorrill, MPA, Office of Evaluation and Inspections, Office of Inspector General, US Department of Health and Human Services; Steven M. Handler, MD, PhD, CMD, Associate Professor, University of Pittsburgh School of Medicine, Division of Geriatric Medicine and Department of Biomedical Informatics, and Director of Geriatric Telemedicine Programs, Chief Medical Informatics Officer, UPMC Community Provider Services; James Lett, II, MD, CMD, Board of Directors, National Transitions of Care Coalition, and Chair, Transitions of Care Committee, American Medical Directors Association; Susan M. Levy, MD, CMD, Nursing Home Medical Director and Consultant; Roger Resar, MD, Senior Fellow, Institute for Healthcare Improvement; Judith Samuels, RHIA, Director of Medical Review Services and Clinical Data Quality, FMAS; Karyl Witte, RN, Director of Clinical Operations, Adventist Care Centers. We also thank Val Weber and Jane Roessner of IHI for their support in developing and editing this content.

# Contents

# Executive Summary

Traditional efforts to detect adverse events have focused on voluntary reporting and tracking of errors. However, public health researchers have established that only 10 to 20 percent of errors are ever reported and, of those, 90 to 95 percent cause no harm to patients. Health care providers need a more effective way to identify events that cause harm to patients in order to quantify the degree and severity of harm, and to select and test changes to reduce harm.

The Institute for Healthcare Improvement's (IHI) Global Trigger Tool (GTT) methodology is a retrospective review of a random sample of inpatient hospital records using "triggers" (or clues) to identify possible adverse events. The methodology is designed to produce a sampling approach that is sufficient to determine harm rates and observe improvement over time. Many hospitals have used the IHI GTT methodology to identify adverse events, to assess the level of harm from each adverse event, and to determine whether adverse events are reduced over time as a result of improvement efforts.

Based on the GTT methodology, the IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events provides an easy-to-use method for accurately identifying adverse events (harm) and measuring the rate of adverse event incidence over time in skilled nursing facilities (SNFs). Identifying adverse events and the types of harm resulting from such adverse events can lead to opportunities to improve patient and resident safety. Tracking the rate of adverse events over time is a useful way to tell if changes being made are improving the safety of care processes. It is important to note that the IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events is not meant to identify every single adverse event in a patient record.

The IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events provides step-by-step instructions for using this methodology to identify adverse events in SNFs, guidance on designing a Trigger Tool review, detailed descriptions of the Trigger Tool components, and an extensive Frequently Asked Questions section. The guidance presented in this document represents the authors' suggestions for performing a Trigger Tool review within a skilled nursing facility and is based on the IHI GTT methodology.

Note: The views expressed in this document represent the authors' views and not necessarily the views or policies of their respective institutions. This document is not intended to be used as guidance to SNFs on how to meet any government requirements in effect or under consideration at the time of its publication.

# Definitions and Key Concepts

**IHI Global Trigger Tool (GTT) methodology:** A retrospective review of a random sample of medical records using "triggers" (or clues) to identify possible adverse events. Reviews are done within a recommend time limit (e.g., 20 minutes). The benefit of IHI GTT methodology is that it is scoped to conserve resources and expedite retrospective reviews of patient records to identify possible adverse events. To accomplish this, trained clinical reviewers review a random sample of patient records to identify possible adverse events and resulting harm. The reviewers assign the harm to a severity category. A physician then independently reviews the results and confirms or revises the determination. The IHI GTT methodology includes only those adverse events related to the active delivery of care (i.e., acts of commission), regardless of whether they are preventable or not preventable, and excludes, as much as possible, issues related to substandard care (i.e., acts of omission).

**Definition of an adverse event:** Unintended physical injury resulting from or contributed to by medical care that requires additional monitoring, treatment, or hospitalization, or that results in death.

**Definition of all-cause harm:** This term is used to distinguish between efforts focusing on patient harm or injury from any cause (e.g., medication, infection, surgery) and efforts focused on harm from a single source (e.g., medication).

**Distinguishing between medical errors and harm:** The overall goal of improved safety in health care is to reduce patient injury or harm (i.e., adverse events), which requires distinguishing between errors and harm. Medical errors are failures in processes of care and, while they have the potential to be harmful, are not always linked to harm or patient injury. Harm represents actual patient injury with clear clinical outcomes. There is particular value in quantifying adverse events because the clear clinical outcomes are likely to engage both clinicians and administrators in a thorough review of the system factors that led to the adverse event, with a clear focus on improving patient outcomes.

**Definition of skilled nursing facilities (SNFs):** Facilities primarily engaged in providing short-term skilled nursing and rehabilitation services to residents who require such care because of injury, disability, or illness, typically after a stay in an acute care hospital. More than 90 percent of SNFs are dually certified as a SNF and as a nursing home which typically provide less intensive, long-term care services.

**"Patient" versus "resident":** Although "resident" is the most common term used to describe those receiving treatment in SNFs, the terms "patient" and "resident" are used interchangeably in this document.

**Definition of triggers:** Signs, symptoms, or clinical interventions that could indicate an adverse event may have occurred. Presence of a trigger does not always indicate that the adverse event resulted in patient harm.

# Background

The systematic assessment of adverse event incidence can be challenging for those working to improve the safety of medical care. Adverse events — defined as unintended physical injury resulting from or contributed to by medical care that requires additional monitoring, treatment or hospitalization, or that results in death — are frequent and costly to patients, insurers, and providers. Passive adverse event detection methodologies (e.g., incident reporting systems) have been shown to be unreliable because most harm events are not reported using such methods.[1]

The Institute for Healthcare Improvement (IHI) developed the IHI Global Trigger Tool (IHI GTT) methodology to give hospitals a proactive, cost-efficient way to detect and describe adverse events within a structured review framework.[2] The IHI GTT methodology requires clinical reviewers to review a randomly selected sample of closed patient records for specific "triggers" — or clues — to identify possible adverse events. This document extends the concept of the IHI GTT to the skilled nursing facility (SNF) setting.

## The Value of Systematic Measurement of Harm Using Trigger Tool Reviews

The systematic measurement of adverse events through recurring Trigger Tool reviews can contribute important information for quality and safety improvement efforts within health care facilities or systems. The data generated by a Trigger Tool review can be used in a number of ways, such as calculating a facility-wide incidence rate of harm or identifying the nature of adverse events that routinely occur in a given facility. Quality performance and quality assurance committees may find the information collected from Trigger Tool reviews useful to their efforts to identify and target safety issues and design performance improvement projects within the SNF. The data may also be used to help determine if patient safety improvement efforts are effective in reducing adverse events and harm over time.

## Estimate of Adverse Event Incidence in SNFs

In 2014, the US Department of Health and Human Services' Office of Inspector General (OIG) reported that an estimated 33 percent of Medicare beneficiaries admitted to SNFs following a hospital stay experienced an adverse event during their SNF stays.[3] Fifty-nine percent of the identified harm events were preventable, largely because of substandard treatment, inadequate resident monitoring, and failure to provide necessary care. The report also found that hospital care resulting from adverse events in SNFs cost Medicare an estimated $208 million in one month and $2.8 billion in one year. See Appendix A for a detailed list of the adverse events in SNFs that the OIG identified during this review.

To measure the incidence of adverse events in SNFs, the OIG used a two-stage medical review to identify events experienced by a sample of 653 Medicare beneficiaries discharged from hospitals to SNFs for post-acute care. Sample beneficiaries had SNF stays of 35 days or less. The first stage was a screening process designed to identify sample beneficiaries who may have experienced an adverse event during their stays. A team of screeners (one nurse practitioner and four registered nurses) reviewed the medical records for evidence of harm that occurred during the SNF stays. To facilitate their reviews, the screeners used an early version of what would become the IHI SNF Trigger Tool for Measuring Adverse Events Worksheet (see Appendix C). In the second stage, a team of physicians reviewed the results of the screeners' reviews, looked for other events experienced by the beneficiaries, and made final determinations on which of the events met the study definition of an adverse event. See Appendix B for a comparison of the objectives and methods used in an IHI GTT review and the OIG's report on adverse events in SNFs.

Based on the OIG report results and findings, the Centers for Medicare & Medicaid Services (CMS) developed the Adverse Drug Event Trigger Tool and made a draft version available to nursing homes in 2015.[4] CMS defines the tool as a resource document that can help nursing homes evaluate systems of care around high-risk medications. The tool was designed to be a crosswalk that lists common potentially preventable adverse drug events, risk factors related to those events, triggers, and probes to assist surveyors in evaluating systems around high-risk medications.

## Initial Development and Testing of the IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events

The IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events is a combination of triggers and guidance adapted with modification from the IHI GTT and new triggers that are specific to the SNF setting. In collaboration with IHI and contracted experts, the OIG developed a list of triggers (operationalized in a worksheet) and guidance to facilitate medical record reviews for their 2014 study of adverse events in SNFs. The development process for the initial version included assessing the triggers in the IHI GTT and the accompanying guidance for applicability to the SNF setting, reviewing literature for other triggers,[5] creating new potential triggers and guidance specific to SNFs, iteratively testing and refining the list of draft triggers through a modified-Delphi decision making process, and finally producing a final list of triggers and guidance. The participants in the Delphi process included IHI GTT experts, geriatricians, a geriatric pharmacist, and nurses employed in SNFs. The authors and contributors to this document further refined the triggers and guidance in the initial version based on lessons learned during the OIG study of adverse events in SNFs, ultimately producing the IHI SNF Trigger Tool for Measuring Adverse Events.

## Measuring the Severity of Harm

The National Coordinating Council for Medication Error Reporting and Prevention's (NCC MERP) Medication Error Index (Index) is a frequently used tool to classify harm caused by adverse events.[6] The NCC MERP Index was originally developed to classify medication errors, based on the severity of the outcome, and included nine severity levels. Levels A through D describe near-miss events and Levels E through I describe harm that reached the patient (see Table 1). To make a determination on the level of harm caused by an error, the Index considers factors such as whether the error reached the patient and, if the patient is harmed, to what degree.

**Table 1. The NCC MERP Index for Categorizing Errors**

| | | |
|---|---|---|
| **Near Miss:** Harm does not reach patient or resident | A Level | Circumstances or events occurred that had the capacity to cause error. |
| | B Level | Error occurred but did not reach the patient or resident. |
| | C Level | Error occurred that reached the patient or resident but did not cause harm. |
| | D Level | Error occurred that reached the patient or resident and required monitoring to preclude harm or confirm that it caused no harm. |
| **Adverse Event:** Harm reaches patient or resident | E Level | Error occurred that may have contributed to or resulted in temporary harm and required intervention. |
| | F Level | Error occurred that may have contributed to or resulted in harm and required an initial or prolonged facility stay. |
| | G Level | Error occurred that contributed to or resulted in permanent patient or resident harm. |
| | H Level | Error occurred that required intervention to sustain the patient's or resident's life. |
| | I Level | Error occurred that may have contributed to or resulted in patient or resident death. |

Source: *NCC MERP Index for Categorizing Medication Errors (February 2001)*

# Step-by-Step Guide and Rules

The IHI SNF Trigger Tool methodology is laid out as a step-by-step process to help SNFs design and implement a Trigger Tool review. We suggest SNFs follow the steps as closely as possible to ensure data collected during reviews are reliable and the process used to generate the data stays consistent over time. SNFs may choose to add elements once they gain experience conducting reviews.

The guidance presented in this document represents the authors' suggestions for performing a Trigger Tool review within a SNF to identify possible adverse events for the purposes of informing patient safety improvement efforts. This document is not intended to be used as guidance to SNFs on how to meet any government requirement in effect or under consideration at the time of its publication.

## Step 1: Defining an Adverse Event

Before beginning a SNF Trigger Tool review, the SNF should define the objectives for their review and how they determine what is (or is not) an adverse event. The following guidelines are included to help facilities define what is considered to be an adverse event so review teams can consistently count such events over time.

- **Include all identified adverse events:** Broadly, adverse events are defined as unintended physical injury resulting from or contributed to by medical care that requires additional monitoring, treatment, or hospitalization, or that results in death. Harm is operationalized using a modified version the NCC MERP Index levels of harm (see Table 1 above). Appendix A provides examples of adverse events that can occur in SNFs.
- **Include adverse events regardless of whether the reviewer believes them to be preventable or not preventable:** Some adverse events may have been the result of medical errors, while others may have been seemingly impossible to avoid. Reviewers should capture all adverse events without trying to make a distinction between which adverse events are preventable and which are not preventable.
    - **Include adverse events related to acts of commission:** Reviewers should focus on adverse events related to the active delivery of care (acts of commission) and exclude, as much as possible, events related primarily to the failure to follow evidence-based practices (acts of omission). (See FAQs 2 and 3 below for additional information.) However, as reviewers gain experience, facilities may consider initially including adverse events due to acts of omission in their Trigger Tool reviews (then later exclude these types of events, once reviewers gain experience).
    - Example of harm associated with an act of commission: A patient to whom anticoagulants were administered who subsequently suffered a stroke from an intracerebral bleed.
    - Example of harm associated with an act of omission: A patient not appropriately treated for hypertension who subsequently experienced a stroke.

  Although the patient in the second example certainly experienced a medical catastrophe related to poor care, it can be difficult and costly to identify adverse events related to acts of omission using a Trigger Tool-style review (i.e., a review method that emphasizes conservation of resources). These events are likely to be overlooked or missed during Trigger Tool reviews because the evidence of the events is more subtle than evidence of events caused by acts of commission. This subtlety often requires reviewers to judge whether a lack of action resulted in an event, which may be challenging for inexperienced or non-physician reviewers and thereby increase the likelihood that these events will be missed, impacting the data collected during a review. Additionally, describing events related to omission can increase costs because reviewers often need extra time to find evidence of the factors that led to the events, describe the events, perform reviews of the literature on evidence-based factors or standards of care associated with the events, or consult with others (e.g., physicians, specialists).

  At a minimum, adverse events related to the omission of care should be referred to quality or risk departments as improvement opportunities when they are identified. These events are common and often serious, so a root cause analysis or other detailed review is likely to generate information that can be used to prevent future occurrences.

  Note: This does not mean that the SNF should exclude events that have *an element of omission*, but are *otherwise related to the active delivery of care*, from a Trigger Tool review. For example, include residents who suffer pressure ulcers or falls associated with medication-induced delirium. Although an omission of resident monitoring or care may have been a factor in the pressure ulcer or fall, facilities should count these and other similar events for which a reviewer can reasonably determine that active delivery of care contributed to the event.
- **Exclude near-miss events:** Near-miss events (e.g., wrong medication given but no patient harm resulted, falls without injury) and quality issues (e.g., failing to follow protocols but no

harm resulted) should not be included. When observed, such events or issues can be included in quality improvement efforts.

- **Include adverse events attributable to prior (or *qualifying)* hospital stays or health care providers:** An adverse event that is present on admission (referred to as "POA events") to the SNF should be included, provided that the event meets the definition of harm related to medical care. All such adverse events are counted because the measure is what the patient experienced, not what happened within the hospital. It is useful to keep track of which events occurred outside the SNF so that this can be noted when reporting data. Such data may indicate an opportunity to collaborate with others outside the SNF —hospitals, office practices, clinics, long-term care facilities — to improve patient and resident safety, even if the adverse events did not result from care provided in the SNF.

Additionally, SNFs are encouraged to read the *IHI Global Trigger Tool for Measuring Adverse Events*[3] before beginning their own record reviews. While the specific directions in the IHI GTT are applicable only to hospital reviewers, much of content in the Background, Tips for Leadership, and Stories from Experienced Organizations sections will benefit SNF reviewers and help them critically examine the guidelines above.

## Step 2: Establishing the Review Team

The review team should consist of three people:

- **Two trained clinicians who serve as the primary record reviewers.** They should have a background in SNF care and knowledge about the contents and layout of the resident record.
    - Note that hospitals that employ the IHI GTT methodology often use Registered Nurses as primary record reviewers. Options for the primary record reviewer in the SNF setting might include the Director of Nursing, Assistant Director of Nursing, unit managers, quality improvement nurse, and supervisors.
- **A physician who does not review the entire resident record, but instead checks and authenticates the adverse events and harm severity category recorded by the primary record reviewers.** The physician reviewer should also be available to answer specific questions the primary reviewers may have during their record reviews. The SNF's Medical Director may be an ideal physician to perform this review, but facilities may also consider using an external reviewer. To identify an external reviewer, SNFs may consider developing an agreement with a peer facility to exchange reviewers or contract for the services of a patient safety expert.

## Step 3: Defining and Drawing a Sample for Review

Like the IHI GTT, the SNF Trigger Tool is designed to collect meaningful results from reviews of small samples that are collected over many months or years. Data from these small samples may show wide variation from sample to sample. Aggregating results from these samples over time will enable facilities to understand and smooth out these variations and monitor overall trends in harm incidence.

At a minimum, we recommend that facilities select a random sample of 20 resident records every month for review using the Trigger Tool methodology. To ease the burden on reviewers, we

recommend all sampled records be reviewed as close to when they are selected as possible (i.e., within one month) rather than waiting to review several samples at once.

When selecting a sample, facilities conducting SNF Trigger Tool reviews should be sure to clearly define the population (e.g., all SNF residents vs. all SNF residents with urinary catheters) from which they will draw samples. When samples are drawn from the population at random, the results of the reviews should be representative of the trends within the broader population. Samples from a subset of the population will not be representative of the rate of harm. That sample, however, will provide information about the subpopulation that may be useful for specific patient safety efforts.

When drawing a sample, we recommend facilities consider the following:

- **Define the population:** SNFs should carefully define the population (or category of resident) that they want to review. For the purposes of a general review, use a random sample of 20 records drawn from the broader population that consists of all SNF residents. Note: The SNF Trigger Tool was tested on the SNF population (i.e., operationally defined as a length of stay in a SNF of 35 or fewer days) and may not be applicable to the long-term, non-SNF population.
- **Define the observation period for the review:** The observation period is a defined period of time (i.e., one calendar month or two calendar weeks) from which you will draw the sample records for a given review. Findings from the review will be applicable to that observation period only.
    - The observation period for a given review can either be one calendar month or two consecutive weeks. The next review will look at the next calendar month (or two-week window).
    - The observation period will shift forward by the length of the observation period (e.g., one month, two weeks) with each subsequent review.
- **Determine if the review will include only closed resident records, or both open and closed records:** It is preferable to use closed resident records for the review, but selecting a sample from only closed records may exclude residents with long stays and thereby limit the results to a subset of all SNF residents.
    - To ensure that results apply to all types of SNF residents, include open records in the sample if they are selected for review.
    - To reduce the likelihood that an open case is selected, the observation period should be no sooner than four months before the date of the review (e.g., for reviews conducted in May, the observation period would be January of that year). This will increase the likelihood that closed records are selected for the sample.
- **Draw the sample in a consistent, methodologically sound fashion:**
    - **Include only those stays that had an admission date during the observation period:** For example, do not include stays that extended into the observation period but began in the month prior. This will allow you to more easily describe your results as pertaining to stays that began in a particular month.
    - **Use a random sampling technique to draw your sample:** Use a standard random selection method and over-sample by 5 to 10 percent. Oversampling ensures that you're able to select a backup record if a selected record is not available. Because the results of the review rely on the sample being a true random sample, make every effort to collect all sampled records. Continually excluding a certain category of resident because it is

difficult to access records for these residents will bias the sample. See IHI's website for resources on sampling.[7]

- **Draw your sample at consistent intervals:** As noted above, we recommend facilities sample 20 records from the desired one-month observation period. Facilities could also select 10 records every two weeks from a two-week observation period. Either way, each sample should be treated as a single data point (e.g., do not select 20 records for the entire month and divide these 20 records into two 10-record samples).
- **Open records:** If a sampled resident record is open (i.e., the stay is still in progress), include this record in the review.

- **For the selected sample of records, collect complete medical record information:**
  - If possible, collect records for any transfer to a hospital (e.g., emergency department visit, inpatient admissions, observation stay) experienced by a sampled resident that occurred during or within seven days after the sampled SNF stay ended. Include these records in the SNF Trigger Tool review since the information in the records (such as documentation from emergency department visits or discharge summaries from admissions) can be key to an effective review (e.g., determining the extent to which a hospitalized patient was harmed by an adverse event).
  - Before attempting to collect records from another facility, ensure that all HIPAA compliance concerns are accounted for.
  - If it is not possible to access or review records from outside the SNF, reviewers should establish consistent rules for dealing with patients who are transferred to hospitals (e.g., assigning all possible adverse events identified for these residents during the SNF record review an F-level of harm, with the caveat that the true level of harm could not be determined).
  - Review time for non-SNF records should require less than 5 minutes per record. Review these records to determine whether a resident was harmed during their SNF stay, and, if yes, the severity of the harm event that led to an immediate transfer to a hospital. Reviewers should not review the post-SNF hospital records for harm that occurred in the hospital. Because these events did not occur in the SNF, they are not attributable to the SNF and are, therefore, outside the scope of the review. If the complete hospital record is not available, attempt to collect at the very least the discharge summaries, emergency department clinical notes, laboratory tests, and/or medication reconciliation documents.

## Step 4: Structuring the Review Process

The primary reviewer(s) should review each record independently using the SNF Trigger Tool as a guide. Use the review process described below.

- We recommend that reviewers focus on the first 30 days of any sampled SNF stay that is longer than 30 days.[8,9] Reviewing records of resident stays that are longer than 30 days is resource intensive and may require more review time than facilities can afford. If a selected record contains a SNF stay that is longer than 30 days, and the reviewer finishes the review in less than 25 minutes, they should not review any days after day number 30. It may be helpful to mark the end of the 30th day in the record.

- Set a 25-minute limit for review of each resident record once the training period for reviewers has been completed. Not all harms will be identified during the 25-minute review. The intent is to determine a rate of harm. However, based on experience, the majority of events — particularly more severe resident harms — will be identified within the 25-minute review timeframe. Additionally, the 25-minute timeframe will establish consistency in the review process and optimize resources.
- The record should only be reviewed to look for the presence of the triggers and relevant sections of the record associated with those triggers, not to do a comprehensive resident record review.
- Reviewers should familiarize themselves with the SNF Trigger Tool before reviewing the records. Note that, of the three triggers modules, the Patient Care and Medication modules are likely the most frequent triggers within SNFs.
- During the OIG study, experienced reviewers found it helpful to review the records in the following order:

| | | | |
|---|---|---|---|
| 1 | Hospital discharge summary | 9 | Nurse progress notes |
| 2 | Diagnoses/operative/coding information from preceding hospitalization | 10 | Physician progress notes |
| 3 | SNF admission diagnoses and intake assessment | 11 | Minimum Data Set (MDS) Care Area Assessments (CAAs) |
| 4 | Skin assessment (to determine new or worsening pressure ulcers) | 12 | Mental health records, including psychiatry, psychology, psychiatric social worker (particularly when on psychotropic medications) |
| 5 | Medication administration record (MAR) | 13 | Laboratory test results |
| 6 | Intake assessment | 14 | Diabetic treatment/glucose monitoring form |
| 7 | Prescriber orders | 15 | Social service notes (family complaints may be documented here) |
| 8 | Pharmacy medication regimen reviews (particularly if acute change in mental status or other possible drug effects) | 16 | If time permits, other areas of the record, such as physical therapy notes and nutrition notes |

# Step 5: Identifying Triggers and Determining Whether an Adverse Event Occurred

Primary record reviewers should examine the resident records for the designated SNF triggers (see the section on Triggers and Definitions). Limit reviews to the first 30 days of the SNF stay or the date of discharge from the SNF (including to a non-SNF, long-term care stay), whichever comes first.

If a trigger is identified in a record, the reviewer should further examine other relevant portions of the record — such as progress notes and orders that were documented in close proximity to the occurrence of the trigger — for evidence that an adverse event occurred. The presence of a trigger does not necessarily mean that there is an adverse event. Documentation that the resident experienced harm from medical care should be present to make the determination that an adverse event has occurred.

For example, an INR level greater than 6 would be a positive trigger. If identified, the reviewer should look for documentation of possible adverse events that can result from over-anticoagulation, such as bleeding or decreased hemoglobin. An abnormally high INR laboratory test in itself is not considered a harm event unless accompanied by bleeding. In another example, a fall identified in the record is a positive trigger. However, the fall is not considered an adverse event unless injury has also occurred.

## Determining Whether an Adverse Event Has Occurred

In determining whether an adverse event has occurred, consider the following four points:

- Does the event meet the definition of harm? If the event was related to medical care and caused harm equivalent to levels E through I on the harm scale, it's likely an adverse event.
- Would you be happy if the event happened to you or your family member? If no, then it's likely that harm occurred.
- Was the event part of the natural progression of the disease process, or a complication of treatment related to the disease process? The harm identified should be the result of some medical intervention. SNF residents may have advanced underlying diseases; advanced cognition disorders with impaired swallowing, immobility, disuse myopathy following hospitalization; vascular diseases; chronic renal impairment; and other conditions that will require reviewer and physician judgment to distinguish an attributable harm from underlying condition of residents.
- A subjective complaint of pain without evidence of harm or injury is not an adverse event. For example, pain while participating in physical therapy does not count as an adverse event. However, pain following a fall may be considered evidence of harm or injury.

## Documenting Review Findings on the SNF Trigger Tool Worksheet

Primary reviewers independently document their initial record review findings using the IHI SNF Trigger Tool Worksheet (see Appendix C), which lists all triggers, categorized into the three modules.

- When a primary reviewer identifies a trigger, the reviewer places a check in the column next to that trigger in the worksheet.

- If the primary reviewer then identifies an adverse event associated with the trigger, the reviewer notes a description and category of harm in the appropriate column.
- The reverse side of the worksheet is blank, and reviewers often use this space to make notes for discussion with other members of the review team or to capture questions that need to be reviewed with the physician.

After independently completing their record reviews on the same sample of records, the two primary reviewers meet to compare findings and come to consensus about the results. The physician reviewer then reviews the consensus findings with the primary reviewers to reach final agreement on the type, number, and severity of harm category for the events. The physician reviewer may refer to the worksheets completed by the two primary reviewers for more information, but does not perform a full review of each sampled resident record. The physician reviewer serves as a final decision maker as to whether or not an event occurred and the associated category of harm.

Other points to remember**:**

- If no adverse event is found, the reviewer should move on and look for other triggers in the record. Reviewers will find many positive triggers, but will identify many fewer triggers associated with adverse events.
- Some triggers (e.g., new infections) are also adverse events by definition. However, a positive trigger often is not an adverse event in itself; rather, the trigger is simply a clue that an event *may* have occurred.
- Occasionally, reviewers may discover an adverse event without a trigger while looking for triggers or other details in the record. These events should be included on the worksheet when recording findings, regardless of whether a trigger led the reviewer to identifying the adverse event.
- An adverse event that is POA to the SNF should be recorded, provided that it meets the criteria of harm related to medical care. To differentiate such an event from harm related to SNF care, it should be designated as a preadmission event.

## Step 6: Describing the Harm Event

Once an adverse event has been identified, the primary reviewers should describe the harm event in a data collection instrument (DCI). Using a DCI facilitates the structured collection of data from multiple reviewers and ensures that key questions are answered about each identified event.

The DCI should include questions (or data elements) that ask the reviewer to briefly describe the event, the clinical history of the patient, the evidence for the event, and the intervention needed to ameliorate the harm caused by the event. The DCI should ask the reviewer to note the severity of the harm caused by the event using a predetermined harm scale. The following is a list of data elements that should be included in the DCI, with guidance to reviewers on how to complete the data elements.

- Description: Brief description of the adverse event
- Background: Short summary of the clinical history of the resident
- Evidence for the Adverse Event: Lab values, staff actions, or other documented evidence for the event

- Intervention: Brief description of the care intervention needed to ameliorate the harm caused by the event
- Severity of Harm: Level of harm (E through I) as defined by the harm scale (see Table 2 below)

**Table 2. Categorizing the Level of Harm Caused by Adverse Events in SNFs**

| | |
|---|---|
| **E Level** | Harm occurred that required intervention but did not cause lasting harm.<br>*Note: Some intervention is required for a harm to be considered an E Level event.* |
| **F Level** | Harm occurred that prolonged the SNF stay or led to a transfer to a different SNF or other post-acute facility and/or hospitalization (i.e., admission to a hospital observation unit, emergency department, or inpatient care).<br>*Note: Prolongation of the SNF stay, emergency department transfer, or rehospitalization qualifies*. |
| **G Level** | Harm occurred that contributed to or resulted in permanent resident harm.<br>*Example: A fall associated with a medication that resulted in a hip fracture.* |
| **H Level** | Harm occurred that required intervention to sustain the resident's life.<br>*Note: Experienced reviewers have found it helpful to define "lifesaving intervention" as that which must be provided in one hour or less in order to prevent death. For example, a resident who develops severe respiratory depression and arrest from a narcotic requires immediate intervention, such as a narcotic reversal agent. In this case, failure to provide the narcotic reversal agent immediately would lead to death.* |
| **I Level** | Harm occurred that may have contributed to or resulted in resident death.<br>*Note: The event needs only to be contributory to the death.* |

Source: OIG's 2014 modified version of the *NCC MERP Index for Categorizing Medication Errors* (February 2001)

**A Note on Determining Harm for SNF Residents Readmitted to Hospitals**
Rehospitalization discharge summaries, history and physical forms, consultant dictations, or emergency department (ED) notes may be required to establish the severity of harm incurred by the resident. For example, a resident aspirates resulting in difficulty breathing and is transferred to the ED and subsequently hospitalized. This is considered an F Level harm event. However, if this harm contributed to the hospitalized patient's death, then it would likely be categorized an I Level harm event.

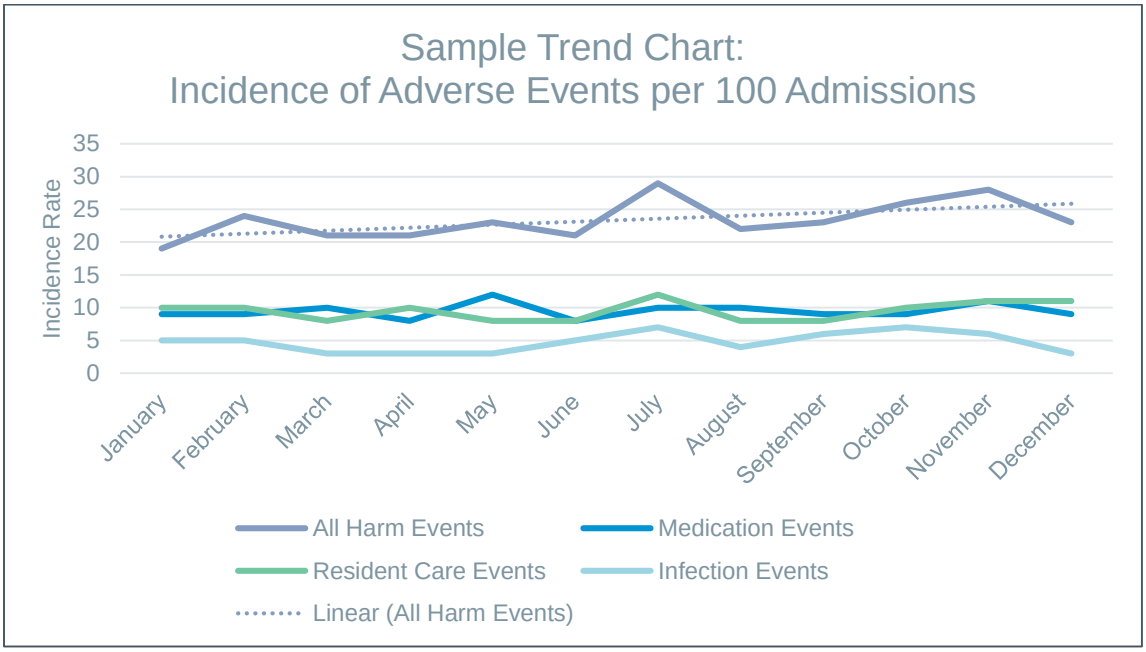
# Step 7: Analyzing Trigger Tool Review Data

Data from Trigger Tool reviews can be presented using trend, run, or control charts to depict trends in incidence in adverse events over time. One method for displaying data over time is to plot the overall incidence rate from each review as a single data point (i.e., one data point per month). The incidence rate can be presented in two ways:

- Adverse events per 100 SNF admissions
- Adverse events per 1,000 resident days **of review**

The trend chart in Figure 1 provides an example of how the incidence of events can be plotted to show trends over time. See IHI's website for resources on run charts.[10]

**Figure 1. Sample Trend Chart: Incidence of Adverse Events per 100 SNF Admissions**




In addition to tracking incidence of adverse events over time, we recommend that facilities analyze events by harm level, category, or other attribute. For example, SNFs may classify events using predefined descriptive categories (e.g., falls due to medication, internal bleeding due to anticoagulants, aspiration pneumonia) to estimate the relative frequency of these events within the facility. See Appendix A for examples and descriptions of adverse events in SNFs, or refer to the OIG report on adverse events in SNFs.[2]

# Skilled Nursing Facility Triggers and Definitions

The IHI SNF Trigger Tool organizes all triggers into three modules: Care Module Triggers, Medication Module Triggers, and Resident Care Module Triggers. This section provides a description of each trigger and considerations for determining the presence of an adverse event.

## Care Module Triggers

| | | | |
|---|---|---|---|
| C1 | Acute mental status change | C15 | Insertion or use of urinary catheter |
| C2 | Aspiration/spontaneous pneumonia | C16 | Significant Change in Status Assessment (SCSA) |
| C3 | Call to physician or family members | C17 | Resident incident or accident |
| C4 | Code or Emergency Medical Services (EMS) | C18 | Pressure ulcer |
| C5 | Death | C19 | ED visit |
| C6 | Drop in hemoglobin/hematocrit | C20 | Transfer to acute care hospital or observation unit |
| C7 | Studies for emboli, PE, or DVT | C21 | Restraint use |
| C8 | Fall | C22 | Rising serum creatinine |
| C9 | Family complaint | C23 | Urinary retention |
| C10 | Any infection | C24 | New onset diarrhea |
| C11 | New or increased diuretics | C25 | Prolonged constipation |
| C12 | High or low body temperature | C26 | Diagnostic radiology or imaging studies |
| C13 | In (SNF) stroke or TIA | C27 | Care-Other |
| C14 | New onset of incontinence | | |

**C1–Acute mental status change**
Medication toxic effects and drug-related problems can cause profound medical and safety consequences in geriatric residents (e.g., delirium caused by narcotic analgesics) and are considered adverse events. Review progress notes (e.g., nurse, physician/allied health, interdisciplinary) and scan the information derived from the Minimum Data Set/Confusion Assessment Method (MDS/CAM) evaluations for mental status change such as lethargy, increasing confusion, or oversedation. In elderly residents, an increase in confusion is often a signal to consider a urinary or respiratory tract infection as the source.

Also review vital signs; the medication administration record and prescriber orders (e.g., analgesics, muscle relaxants, psychoactive medications), especially for new or changed dosages; and mental health provider documentation. Note a change in ability to participate in physical therapy or new or worsening wandering behavior. Treatment that results in intentional oversedation is not considered an adverse event (e.g., comfort measures).

**C2–Aspiration/spontaneous pneumonia**
Aspiration of foreign material into the airway may be the result of abnormal swallowing or other contributory events. All harm resulting from aspirations (such as aspiration pneumonia, bronchitis, or acute respiratory distress) while the resident is under the care of the SNF are considered adverse events regardless of whether they are preventable. Spontaneous pneumonias may also occur due to subclinical aspiration while in the SNF and may be avoided through increasing mobility and positioning of the resident.

**C3–Call to physician or family members**
Telephone calls to physicians or family members regarding unanticipated deterioration of the resident's clinical status should be reviewed for potential harm events.

**C4–Code or Emergency Medical Services (EMS)**
All "codes," calls for an emergency response (e.g., EMTs), and cardiac or pulmonary arrests need to be carefully reviewed because they may have been caused by an adverse event. Reviewers should check for medication-related issues. Not all codes/arrests/emergency responses are adverse events, as some may be related to progression of a disease process. For example, sudden cardiac arrhythmia resulting in cardiac arrest may not be an adverse event, but rather related to underlying cardiac disease (unless related to a medication adverse event that resulted in cardiac toxicity).

**C5–Death**
Resident deaths in SNFs are not adverse events but should be reviewed to determine if an adverse event contributed to or resulted in the death. Advanced directives and "Do Not Resuscitate" orders do not mean a death should not be reviewed to determine whether an adverse event contributed to the resident's death.

**C6–Drop in hemoglobin/hematocrit**
A significant drop in hemoglobin or hematocrit (H&H) or evidence of blood loss should be investigated for documented vital sign changes or symptoms from any medical intervention, particularly if the decrease occurs within a short period of time (e.g., 72 hours or less). Significant decreases in H&H are considered an adverse event if they are the unintended result of a medical treatment (e.g., ASA, NSAIDS, anticoagulants) or a procedure. Clinical judgment is key to determining what constitutes a "significant" decrease; reviewers may use a 25 percent decrease in H&H as a general parameter.

**C7–Studies for emboli, PE, or DVT/VTE**
Development of a deep vein thrombosis (DVT) or pulmonary embolism (PE) during a SNF stay should be considered an adverse event unless clearly related to an underlying disease process (e.g., prostate cancer or clotting disorders). Rare exceptions may be those related to disease processes such as cancer or clotting disorders. However, in most patients this is considered harm related to medical care, even if all appropriate preventive measures appear to have been taken. If the hospitalization occurs due to a DVT or embolism, look for causation prior to admission that could be attributed to medical care such as a prior surgical procedure. The lack of prophylaxis with no DVT or PE is not an adverse event; it is an error of omission.

**C8–Fall**
Any fall in the care setting that causes injury, regardless of cause, is an adverse event; a fall without injury is not an adverse event. A fall in a care setting represents a failure of care and may be the result of medications, equipment failure, or failure of adequate staffing. Documented injuries might include fracture, lacerations, pain, and/or hematoma. The majority of falls will not represent an adverse event, but review for adverse events in all falls is necessary.

**C9–Family complaint**
Complaints for medical care issues or due to an unexpected deterioration in the resident's status should be reviewed for an adverse event. Family complaints are most likely documented in social worker notes.

**C10–Any infection**
Generally, resident harm associated with this trigger and attributable to the SNF will include infections diagnosed 48 hours or more after admission, such as bloodstream line infections, *Clostridium difficile* infection, sepsis associated with a device, catheter-associated urinary tract infections, or any other SNF-associated infection. Infections that began within the first 48 hours of the SNF stay may be POA. A positive blood culture at any time during the SNF stay must be investigated as an indicator of an adverse event. If a resident does not have a medical intervention preceding sepsis or septicemia, this likely is not an adverse event (such as urinary tract infections in residents without a Foley catheter progressing to sepsis).

Note: Generally, a positive urine culture without signs/symptoms (i.e., asymptomatic bacteriuria) is not considered an adverse event unless bacteremia and urine have the same culture. For example, the resident has an indwelling urinary catheter within seven days of a positive urine culture that is 100,000 organisms per cc. This type of colonization without signs or symptoms (asymptomatic bacteriuria) is typically not be considered an adverse event in the absence of symptoms such as pain or fever, even if physician documentation is present.

**C11–New or increased diuretics**
An introduction or increased dosing of diuretic are triggers for a potential fluid overload. Respiratory distress, increased leg edema, or weight change may indicate the presence of an adverse event.

Note: Decompensated heart failure in SNFs is likely the result of the progression of underlying cardiac disease and not an adverse event. However, heart failure because of unintentional fluid overload is considered an adverse event.

**C12–High or low body temperature**
Elderly residents in SNFs with infections may not generate a typical febrile response. Rather, infected residents may present with fever or as afebrile or even hypothermic. Hypothermia and fever are triggers that should result in a review of the medical record for a SNF-associated infection.

**C13–In (SNF) stroke or TIA**
Stroke or transient ischemic attack (TIA) is often due to an underlying disease process. However, these conditions may also result from anticoagulation excess (e.g., in residents with atrial fibrillation) or as a result of intracranial bleeding related to a medication intervention (an act of commission).

**C14–New onset of incontinence**
New or worsening bladder or bowel incontinence are triggers that may lead to the detection of an adverse event resulting from medications or infections. Incontinence leading to dehydration and electrolyte abnormalities may result in triggers captured by trigger C1 or trigger C8.

**C15–Insertion or use of urinary catheter**
Incontinent residents are frequently catheterized for many reasons. Both short- and long-term catheter use may result in adverse events (infections, falls, and urethra injuries) or changes in mental status due to oversedation. Insertion or use of a urinary catheter may be a trigger for an adverse event that has already occurred, or may also be a marker of a resident likely to experience harm.

**C16–Significant Change in Status Assessment (SCSA)**
SCSAs are unscheduled MDS assessments performed when necessary as part of SNF Resident Assessment and Care Screening. Reviewers should determine if the SCSA for a deterioration of resident status is due to an adverse event.

**C17–Resident incident or accident**
All resident incidents or accidents, including unexplained trauma and other injuries, should be reviewed for an adverse event. Examples include abuse, neglect, assault, restraint injuries, and suicide. Review the resident record for the cause of any injury.

**C18–Pressure ulcers**
The diagnosis or documentation of Stage 1 pressure ulcers can be variable based on skin tone, injury, or state of evolution. If a resident has light-toned skin with non-blanching redness resembling the picture of Pressure Ulcer Stage 1 on the skin assessment chart, then this is a confirmed adverse event. Inability to determine the stage due to dark-toned skin or insufficient documentation may require a discussion between the reviewer and physician to appropriately assess the stage of the ulcer, and determine if an adverse event occurred.

Note: Pressure ulcers that advance in stage while the resident is in the SNF's care are recorded as adverse events. For example, a pressure ulcer that is Stage 1 on arrival that escalates to Stage 3 during the SNF stay is considered an adverse event. Refer to the National Pressure Ulcer Advisory Panel (NPUAP) staging guidelines.[11]

**C19–ED visit**
SNF residents transferred from the SNF to an emergency department (ED) and then returned to the SNF should be reviewed to determine if an adverse event occurred. When such events occur, they are considered to be an F Level of harm, at a minimum.

Note: ED referrals are not always the result of an adverse event; such referrals may instead be due to a new diagnosis or exacerbation of an underlying condition.

**C20–Transfer to acute care hospital or observation (OBS) unit**
Transfers to an acute care hospital, either through the emergency department or as a direct admission, must be reviewed. Transfers may be the direct result of an adverse event or due to the deterioration of a resident secondary to an adverse event.

When investigating a resident transfer, first try to obtain records from the hospital. Look for the reasons for the transfer. For example, in the case of a transfer to the ED following respiratory arrest and intubation, determine if the respiratory arrest was a natural progression of an exacerbation of chronic obstructive pulmonary disease (COPD). If so, then it is not considered an

adverse event. If respiratory arrest was likely the result of oversedation from a medication, it is considered an adverse event.

**C21–Restraint use**
Whenever physical and/or chemical (use of medication to control behavior) restraints are used, review the documented reasons and evaluate the possible relationship between the use of restraints and confusion from drugs or complications such as falls that may result from the use of restraints, which indicates an adverse event. Restraint use without associated harm is not considered an adverse event for the SNF Trigger Tool because it doesn't meet the definition of an adverse event (i.e., no harm or injury), but this type of event is still subject to applicable federal and state laws.

**C22–Rising serum creatinine**
Review laboratory records for asymptomatic or symptomatic rising levels of serum creatinine. If a change of two times greater than baseline levels is found, review medication administration records for medications known to cause acute kidney injury. To determine serum creatinine baseline, it may be helpful to review laboratory tests, if available, from preceding hospitalization or within the resident's discharge summary, history and physical, or SNF records. Glomerular filtration rate (GFR) from serum creatinine in adults can be determined using the Modification of Diet in Renal Disease (MDRD) calculator.[12]

Prior to determining if an adverse event occurred, consider pre-existing disease by reviewing physician progress notes and the history and physical for other causes of renal failure, such as pre-existing renal disease. These residents may be at greater risk for renal failure, and this would not be considered an adverse event, but rather the progression of disease. Events may also be due to a medical intervention (e.g., aminoglycosides, diuretics, NSAIDs) or dehydration.

**C23–Urinary retention**
Urinary retention is the inability to empty the bladder. Acute urinary retention is usually an emergent condition. With chronic urinary retention, a SNF resident may have trouble starting a stream or emptying their bladder completely. Acute and chronic urinary retention due to underlying resident condition (e.g., prostate enlargement) is not considered an adverse event. However, retention associated with medical interventions (e.g., medications or post-Foley catheter withdrawal) would be considered an adverse event. Please note that SNF residents with urinary retention are at greater risk for falls, infections, and mental status changes.

**C24–New onset diarrhea**
Acute diarrhea (new onset) is defined as three or more loose or watery stools per day, usually liquid (taking the shape of the container). The most common causes are infections (e.g., *Clostridium difficile* infection) and medications (e.g., Milk of Magnesia). Review the SNF medication administration record (MAR), orders, laboratory tests, and clinician notes.

**C25–Prolonged constipation**
Prolonged constipation that results in symptoms (e.g., abdominal pain, bloating, significant discomfort, rectal bleeding from straining) or that is attributable to diagnostic evidence of obstruction is considered an adverse event. Constipation alone without signs and symptoms is not considered an adverse event. Obstipation is chronic constipation, often with signs or symptoms of severe and intractable constipation that may lead to obstruction. SNF residents are prone to constipation due to age, bed rest, and medications; however, residents typically respond to a daily bowel care treatment program. Residents may progress to obstipation or evidence of obstruction; review the record for medications associated with prolonged constipation (commission). Note that elimination difficulties are associated with increased likelihood of falls.

**C26–Diagnostic radiology or imaging studies**
Review any unplanned radiology study ordered during a resident's SNF stay for a potential adverse event such as fall with injury or SNF-acquired respiratory infection.

**C27–Other**
Use this trigger for care-related adverse events that are detected but not related to one of the Care triggers listed above.

## Medication Module Triggers

| | | | |
|---|---|---|---|
| M1 | Abnormal electrolytes | M10 | Sodium polystyrene administration |
| M2 | Abrupt medication stop | M11 | Abnormal drug levels |
| M3 | Anti-emetic use | M12 | Thrombocytopenia |
| M4 | Diphenhydramine use | M13 | Total WBC < 3000 |
| M5 | Elevated INR | M14 | Vitamin K administration |
| M6 | Epinephrine use | M15 | Antibiotics started in SNF |
| M7 | Glucose <50mg/dL, glucagon or dextrose supplement | M16 | Increasing pain medication needs |
| M8 | Abrupt onset hypotension | M17 | Administration of parenteral fluid |
| M9 | Naloxone use | M18 | Medication-Other |

**M1–Abnormal electrolytes**
In general, for example, the resident develops hypokalemia or hyponatremia (above or below lower limits of laboratory) without signs and symptoms such as lightheadedness, confusion, EKG changes, low blood pressure, or decrease in urinary output or difficulty breathing are not considered adverse events. Exceptions that may be considered adverse events based on lab values, even without signs or symptoms, are rising serum creatinine and hyperkalemia (see trigger M14).

**M2–Abrupt medication stop**
Although the discontinuation of medications is a common finding in the record, abruptly stopping medications is a trigger that requires further investigation for cause. A sudden change in resident condition requiring adjustment of medications is often related to an adverse event. This trigger is most useful when many medications are suddenly stopped, suggesting something dramatic has occurred to the resident. "Abrupt" is best described as an unexpected stop or deviation from typical ordering practice; for example, discontinuation of an intravenous antibiotic to switch to oral is not unexpected.

**M3–Antiemetic use**
Nausea and vomiting commonly are the result of drug administrations both in surgical and non-surgical settings. Antiemetics are commonly administered. Nausea and vomiting that interferes with feeding or delayed discharge suggests an adverse event. One or two episodes treated

successfully with antiemetics would not suggest an adverse event. Reviewer judgment is needed to determine whether harm occurred.

**M4–Diphenhydramine use**
Diphenhydramine is frequently used for allergic reactions to drugs, but can also be ordered as a sleep aid or for seasonal allergies. If the drug has been administered, review the record to determine if it was ordered for symptoms of an allergic reaction to a drug administered during the SNF stay. This would indicate an adverse event. Also diphenhydramine use in the elderly may result in adverse events due to its anticholinergic side effects (i.e., delirium, constipation, urinary retention, and hallucinations).

**M5–Elevated INR**
An elevated International Normalized Ratio (INR) laboratory test is not considered an adverse event unless the elevated INR is associated with signs and symptoms of bleeding. Look for evidence of bleeding due to medications to determine if an adverse event has occurred. Any value above the laboratory normal should be reviewed.

**M6–Epinephrine use**
Epinephrine use on a SNF resident with a severe allergic (i.e., anaphylactic) reaction is considered an adverse event, regardless of whether it was preventable.

**M7–Glucose <50mg/dL, glucagon or dextrose supplement given**
Review for symptoms such as lethargy and shakiness documented in nursing notes, and the administration of glucose, orange juice, or other intervention. In addition, an abnormal lab result with no symptoms is considered an adverse event if glucose <50mg/dL because most residents have physiologic changes that may not be documented or recognized by the resident due to cognitive disorders. If symptoms are present, or blood glucose <50mg/dL, review diabetic flow sheets, glucose monitoring flow sheets, nursing notes, laboratory tests orders, and medication administration record for symptoms, laboratory value, and associated use of insulin or oral hypoglycemic.

**M8–Abrupt onset hypotension**
Abrupt onset hypotension, defined as systolic blood pressure less than 90mmHg, may be due to the resident's underlying condition, but often may be related to an adverse event secondary to medications, including muscle relaxants, pain medications, sedatives, or diuretics. Review for symptoms such as resident feeling like he/she is going to pass out, has weakness, or has a lack of coherence. Look for actions such as paging the physician, flattening the bed, or starting IVs.

**M9–Naloxone use**
Naloxone is a powerful narcotic antagonist. Usage likely represents an adverse event since excess narcotic administration may result in a spectrum of clinical signs and symptoms, ranging from oversedation to respiratory failure.

**M10– Sodium polystyrene administration**
Sodium polystyrene sulfonate is used in the treatment of hyperkalemia and aids in the removal of excess potassium from the body. Look for the reason for hyperkalemia and whether the resident had been receiving potassium. Administration of sodium polystyrene may be in response to an overdose of potassium, which is considered an adverse event. Hyperkalemia should be considered an adverse event for any potassium (K+) greater than or equal to (≥) 6.5, regardless of whether there are associated signs and symptoms.

**M11–Abnormal drug levels**
If laboratory tests are sub-therapeutic (below therapeutic limit) or supra-therapeutic (above upper therapeutic limit), review the SNF record progress notes for documentation of a potential adverse event. Examples include inadequate seizure medication, serum drug levels leading to a seizure, or an elevated aminoglycoside serum drug level that leads to acute kidney injury.

**M12–Thrombocytopenia**
Certain medications can cause platelet counts in the blood to drop, placing residents at greater risk for bleeding. Look for adverse events related to bleeding such as strokes, hematomas, and hemorrhage requiring blood transfusions. Look for information about why the platelet count decreased to see if it was as a result of a medication. Usually, a platelet transfusion is an indication that the resident has a low platelet count. Events related to transfusions or bleeding may indicate that an adverse drug event may have occurred.

**M13–Total WBC count <3,000 (or >12,000)**
Follow the white blood cell (WBC) counts throughout the admission and see if the resident becomes symptomatic due to infection. An elevated WBC count may indicate a new infection or progression of an existing infection. In some cases, a low WBC count will occur in response to drug administration (and is not considered an adverse event, in this case). Infection is most likely to occur if the Absolute Neutrophil Count is less than 1,000. Intentional decrease in leukocyte count as part of planned chemotherapy is also not an adverse event. If a decrease in WBC count occurs in the absence of medications that may cause this, an adverse event related to drugs has not occurred; for example, when due to bone marrow infiltration by cancer, this is not considered an adverse event.

**M14–Vitamin K administration**
If Vitamin K was used as a response to a prolonged prothrombin time or elevated INR levels, it may signal an adverse event. If either lab value is high, review the resident record for evidence of bleeding. Look in the lab reports for a decrease in hematocrit or for guaiac-positive stools. Check the progress notes for evidence of excessive bruising or gastrointestinal bleeding. Less likely, a hemorrhagic stroke or other internal bleeding may have occurred. If any of these is found, it is likely that an adverse event has occurred.

**M15–Antibiotics started in SNF**
Review the SNF record for documentation of a SNF-acquired healthcare-associated infection or other signs or symptoms from unintentional medication side effects such as nausea, vomiting diarrhea, elevated serum creatinine, or allergic reactions (e.g., a rash).

**M16–Increasing pain medication needs**
Increases in pain medications may be required to control SNF residents' pain. However, increases may also signal an adverse event such as a fall with injury, procedural or post-operative complication, prolonged constipation, or worsening pressure ulcers.

**M17–Administration of parenteral fluid**
SNF residents may require administration of parenteral fluid if unable to maintain oral intake or if they develop dehydration or hypotension. These conditions may develop because of medications or infection (e.g., catheter-associated urosepsis). Dehydration may lead to mental status changes and increased likelihood of falls.

**M18–Other**
Use this trigger for drug-related adverse events that are detected but not related to one of the Medication triggers listed above.

## Procedure Module Triggers

| | |
|---|---|
| P1 | Postoperative/post-procedure complication |
| P2 | Procedure reintubation/BiPAP/new CPAP |
| P3 | Procedure-Other |

**P1–Postoperative/post-procedure complication**
A complication resulting from any procedure is an adverse event, even if informed consent is provided. Intravenous infiltrates are considered adverse events when there are symptoms (such as redness, swelling, or pain) that require intervention, including compresses or elevation.

Procedure notes rarely indicate complications, especially if they occur hours or days after the procedure note has been dictated. Review resident records for complications that are present on admission as noted in the intake SNF assessment or, if available, the hospital discharge summary.

Deep tissue or prosthesis infections post-surgery should be considered POA events. Superficial site infections that occur two calendar days after admission to the SNF should be attributed to the SNF and not considered POA events.

**P2–Procedure re-intubation/BiPAP/new CPAP**
Sedatives or pain medications can result in respiratory depression requiring the use of BiPAP/CPAP or a code requiring emergency responders who may perform an intubation. If the resident is on a ventilator, an adverse event related to re-intubation is dependent on the resident's care plan. For example, re-intubation following planned extubation as a trial for self-breathing or a planned transition to BiPAP generally are not considered adverse events. Alternatively, unplanned extubation with subsequent acute respiratory failure is always considered an adverse event, and an associated re-intubation or BiPAP is considered a life-sustaining intervention. Complications associated with any re-intubation (e.g., aspiration, anoxic encephalopathy) are always considered adverse events.

**P3–Other**
Use this trigger for procedure-related adverse events that are detected but not related to one of the Procedure triggers listed above.

# Frequently Asked Questions (FAQs)

The additional guidance below is intended to improve consistency among reviewers using the IHI SNF Trigger Tool methodology. This guidance was created from information provided in the IHI Global Trigger Tool and modified based on the experiences of the nurse and physician reviewers who participated in the OIG's study of adverse events in SNFs. However, each SNF is encouraged to create its own FAQs or modify rules as needed to establish consistency among their own record reviewers.

**1. Should the reviewer include adverse events that occurred prior to arrival at the SNF facility or campus?**

Yes, if the adverse events comply with the definition of harm caused by medical care. These events should be designated as "POA events" (i.e., present on admission) in the data collection system (e.g., a database used to track the results of the Trigger Tool review) so they can be easily separated from events attributable to the SNF in any analysis. The benefit of tracking POA events is that facilities will be able to identify sources of harm affecting the residents that enter their facility.

Examples of POA events:

- Complications from a procedure performed during a preceding hospitalization that were recognized upon admission and treated adequately by the SNF
- Pressure ulcers that developed in an acute care hospital prior to the SNF stay
- Complications from medications taken in the hospital that began before the SNF stay
- Patient with a complication that began at a hospital or different SNF and is now admitted/transferred to the SNF for the index stay
- Patient admitted to the SNF for a pressure ulcer that developed at the hospital prior to the SNF stay

**2. What's the difference between adverse events of commission and omission?**

The difference is attributable to the primary cause of the event.

**Adverse events of commission** occur because of a problem associated with the active delivery of care. Such events can often be associated with a clearly defined action such as administering an incorrect medication to a resident.

Example of adverse events related to commission:

- Patient with a known penicillin allergy receives penicillin and has an allergic reaction
- Patient is on a beta blocker that results in heart block requiring a pacemaker

**Adverse events associated with an omission of care** can be more difficult to identify, but represent serious and often preventable events. Per the OIG's report, errors of omission are frequent in the SNF setting. The primary causes of events related to omission are substandard care (e.g., using an outdated treatment plan), a lack of monitoring, or an omission of evidence-based treatments.

Examples of adverse events related to an omission of care:

- Failure to identify a patient's progressive weakness, which ultimately leads to a significantly decreased functional status

- Delayed diagnosis of pneumothorax and inadequate monitoring, which leads to significant worsening of condition characterized by life-threatening difficulty breathing
- Fatal pulmonary embolus with hospitalization due to inadequate resident monitoring
- Delay in treatment for pleural effusion, which leads to worsening of hypoxia (inadequate oxygen in blood) that requires transfer to hospital for a chest tube, drainage, and intubation

### 3. Should an adverse event associated with an omission of care be included in the SNF Trigger Tool review?

When beginning a SNF Trigger Tool review program in your facility, we suggest that reviewers focus on identifying events resulting from acts of **commission**. During the OIG reviews of adverse events in SNFs, the reviewers found that identifying and describing complex events associated with an omission in care were time consuming and costly. Once facilities gain experience with the Trigger Tool review methodology, they may choose to progress to include the more complex **errors of omission** (e.g., exacerbations of preexisting disease due to failure to adequately treat).

Facilities should, to the extent possible, try to refer events related to an omission of care that are identified during review to others in the facility for further investigation, or record them in any data collection instrument or database as "omission events." By designating these events as omission events, these events can be easily separated from the more systematically captured commission events in any analysis.

### 4. What is a "cascade" event?

A cascade event is an instance where an initial adverse event causes a series of additional, related events for the same patient. Always assign the highest level of harm (Level I) for the cascade event.

An example of a cascade event follows: A patient receives a central venous catheter, which is followed by sepsis, shock, hypotension, acute kidney injury, respiratory failure, and intubation, leading ultimately to patient death. This cascade is considered a single adverse event, categorized as Level I harm.

If a clinical non-physician record reviewer is unsure about whether multiple events should be combined into a single cascade event, the reviewer should ensure that all events are clearly identified and documented in the review — either separately or within the cascade — and ask the physician reviewer to determine whether a cascade event has occurred.

### 5. When are aberrant lab values in the absence of signs or symptoms considered patient harm?

Generally speaking, abnormal lab results with no symptoms are not considered harm (see FAQ 6 for exceptions), even if documented by a physician as harm.

For example, consider a patient that has an indwelling urinary catheter within seven days of a positive urine culture that is 100,000 organisms per cc and was diagnosed and treated in the SNF as having a CAUTI. This sort of colonization without signs or symptoms (asymptomatic bacteriuria) is typically not considered to be an adverse event in the absence of signs or symptoms such as pain or fever or altered mental status. See FAQ 25 on CAUTIs.

### 6. Are asymptomatic cases of abnormal electrolytes (e.g., hyponatremia, hypokalemia, hyperkalemia) considered harm?

Generally, no. Abnormal electrolytes should be considered as a potential risk for harm but are not necessarily harm, with some exceptions. Patients should be symptomatic before reviewers consider abnormal electrolytes harm. A patient may have a 3.4 mEq K+ from a diuretic and require replacement, but this is most likely potential risk and not harm. The degree of electrolyte abnormality will drive symptoms. Minor abnormalities will have no symptoms.

**Exceptions:** Asymptomatic laboratory test exceptions that are considered patient harm include rising serum creatinine (two times baseline), elevated Liver Function Tests (three to five times baseline), hypoglycemia (<50mg/dL), and hyperkalemia (>6.5 mEq).

### 7. How do you define Level F harm for the SNF Trigger Tool review?

Level F harm is any prolongation of the SNF stay or unplanned transfer to another post-acute setting for higher-level care, and/or hospitalization, including admission to an observation unit, emergency department, or inpatient care. These circumstances elevate a temporary event (Level E) to at least a category of Level F harm. An event is at least Level F harm if it causes the patient's SNF stay to be extended.

If an event results in unplanned transfer to another post-acute care setting or a hospital, it may be difficult to determine the extent of the harm caused by the adverse event beyond Level F unless post-SNF records are available for review.

### 8. When are expected side effects considered to be adverse events?

In general, expected side effects are considered to be adverse events when they are more severe or prolonged than normal and require intervention. Harm from complications is still considered an adverse event even when the complication was explained during informed consent.

Examples where clinical judgment is required to determine adverse events and assign a harm category:

- For patients demonstrating effect(s) of narcotic pain medication, judgment is required to determine if clinically significant enough to call an adverse event such as prolonged SNF stay or significant intervention. Ambulation status, feeding, fluids, bowel agents, and drugs all impact prolonged constipation and ileus.
- Nausea and vomiting are considered adverse events when the episode is prolonged or requires significant intervention (see specific guidance in FAQ 19).

### 9. Is a patient fall in a SNF without a known precipitating cause considered an adverse event?

Yes, remembering that a fall in the SNF is only an adverse event if there is documented injury (such as fracture, laceration, pain, significant skin tear, or hematoma) and requires an intervention.

### 10. What are the rules for contamination of blood cultures?

Skin contaminants in blood cultures may lead to false positives for bloodstream infections and are not necessarily considered an adverse event. If a common contaminant is found in a single blood culture, this is not considered an adverse event. It is helpful if the second blood culture is positive prior to a skin contaminant to be considered an adverse event. Some common skin contaminants include:

- Diphtheroids [Corynebacterium spp.]
- Bacillus [not B. anthracis] spp.
- Propionibacterium spp.
- Coagulase-negative staphylococci [including S. epidermidis]

**11. At what threshold is low blood glucose considered harm in the absence of signs or symptoms?**

A blood glucose below 50mg/dL should be flagged as a trigger and an adverse event. It is important for the physicians to review significant hypoglycemia laboratory results, even in the absence of documented signs or symptoms. For example, patients sedated on a ventilator or in a coma will be unlikely to exhibit usual signs or symptoms related to their hypoglycemia.

**12. Is it possible for harm to result from glycemic control with blood glucose above 50mg/dL?**

Yes; for example, a blood glucose in the 200s with a sudden drop to 60mg/dL with documented signs and symptoms of low blood glucose is considered an adverse event with associated harm.

Low blood glucose for patients experiencing low blood flow states (i.e., severe hypotension or code situations) may be inaccurate if identified through finger-stick. Reviewers should confirm these potential events by checking serum/plasma glucose level. Concern is that reliance on flawed technology may lead to over-identifying glycemic control adverse events.

**13. Can failing to administer a medication (error of omission) that causes harm be considered an event?**

No, failure to provide care that results in harm is an act of omission, not commission. As a reminder, if the SNF decides to capture omissions in its reviews, these events should be flagged as such in the database and separated from the incidence reporting.

**14. Is an abrupt stop of medication due to hypotension an adverse event?**

The abrupt stop of medication is considered only a trigger that may indicate an adverse event has possibly occurred. Patients should be symptomatic (i.e., lightheadedness, dizziness, confusion, fainting) to define as harm. It does not require an abrupt drop in blood pressure; however, that is helpful to know. The caveat is if the patient is restrained and bedridden, it is difficult to judge symptoms with a very low blood pressure.

Hypotension is a relative finding. Without some evidence of symptoms, there is no harm. Reviewers should be careful not to call normal low blood pressure an adverse event because elderly patients may have systolic blood pressure of 80-90 mmHg when prone. Reviewers should look for symptoms and evidence that the low blood pressure was associated with care (e.g., medications).

**15. Is administration of diphenhydramine for itching likely to be considered an adverse event?**

Drug-induced itching is considered an adverse event. Itching may be due to other medical interventions; however, drugs are the most likely culprits. Pruritus not associated with a medical intervention is considered an underlying condition rather than an adverse event.

**16. What are the specific medication issues in the geriatric population that might be considered adverse events?**

Medication toxic effects and drug-related problems are likely to cause profound medical and safety consequences in geriatric patients (e.g., delirium caused by opioids or benzodiazepines). Atypical antipsychotic medications require an indication and judicious use in SNF patients since they may lead to adverse events (see FAQ 18). Potential examples of side effects include movement disorders, sedation, postural hypotension cardiac arrhythmia, and sudden cardiac death.

**17. Is intertrigo or thrush while on an antibiotic considered an adverse event?**

If the intertrigo or thrush is due to a yeast infection, such as Candida, this is considered an adverse event (i.e., unintentional side effect of the medication).

**18. What if the patient is on any atypical antipsychotic drugs?**

Check mental health records (e.g., psychiatrist, psychologist, psychiatric social worker) for any documentation of change in mental status due to medication. In the patient record, review the pharmacist drug regimen assessment.

**19. When are nausea and vomiting considered adverse events?**

Some conditions and treatments, such as chemotherapy, are known to cause increased nausea and vomiting. To make a determination of an adverse event, focus on the length of time and the extent of the intervention.

Examples that are considered adverse events:

- Administration of anti-emetics at least 6 times during a 24-hour period
- Associated signs/symptoms such as projectile vomiting, dehydration, and/or hypotension

**20. Is prolonged obstipation considered an adverse event, such as a patient who experienced five days of obstipation with discomfort and possibly signaling inadequate bowel prep?**

Yes, this would be considered an adverse event if symptomatic (i.e., discomfort) and it requires intervention.

**21. When is constipation considered an adverse event?**

Constipation is considered an adverse event when it is prolonged and leads to significant symptomatic discomfort (i.e., pain, bloating, rectal bleeding from strain). Many SNF patients will have some constipation and require bowel care protocols (e.g., senna tablets, mobility, hydration, stool softeners) but without significant symptomatic discomfort, it is likely not an adverse event.

**22. Is diarrhea due to constipation agents an adverse event?**

Diarrhea is defined as three or more watery (takes the shape of a container) stools per day. However, calling this an adverse event depends on degree and clinical context. Reviewers should try to determine whether the patient was dehydrated, required an intervention, cause of diarrhea, and the frequency of the diarrheal stools.

**23. Are pressure ulcers that were present on arrival but increased in stage during the indexed SNF stay considered an adverse event?**

Yes, pressure ulcers that increase in stage while the resident is in the SNF's care count as adverse events. For example, a pressure ulcer that is Stage 1 on arrival but increases to Stage 3 during the

indexed SNF stay. (NOTE: All pressure ulcers are considered adverse events if present on admission.) We recommend reviewers indicate the stage of pressure ulcers based on medical record documentation in their description of the adverse event.

**24. What are the definitions for septicemia, sepsis, SIRS, and bacteremia used in the SNF Trigger Tool?**

- **Septicemia:** Systemic disease associated with the presence of pathological microorganisms or toxins in the blood, which can include bacteria, viruses, fungi, or other organisms.
- **Sepsis:** SIRS due to infection.
- **SIRS:** The systemic inflammatory response syndrome (SIRS) is the systemic response to infection or trauma; symptoms include fever, tachycardia, tachypnea, and leukocytosis.
- **Bacteremia:** The presence of bacteria in the blood. It can also be defined as a positive blood culture without signs and symptoms of illness.

**25. How do we determine UTIs in patients who may have had catheters during a preceding hospitalization?**

Symptomatic catheter-associated urinary tract infection (CAUTI) is considered an adverse event up to 48 hours post-discontinuation. The following two scenarios, based on a modified Centers for Disease Control and Prevention (CDC) definition, are considered CAUTIs for the SNF Trigger Tool:

- **Symptomatic CAUTI:** Patient had an indwelling urinary catheter in place at the time of specimen collection *and* at least one of the following signs or symptoms with no other recognized cause: fever (>38°C), suprapubic tenderness, or costovertebral angle pain or tenderness *and* a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than two species of microorganisms. Or, patient had indwelling urinary catheter removed within the 48 hours prior to specimen collection *and* at least one of the following signs or symptoms with no other recognized cause: acute mental status change, fever (>38°C), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness a*nd* a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than two species of microorganisms.
- **Asymptomatic Bacteremic CAUTI:** Patient with or without an indwelling urinary catheter *has no signs or symptoms* (i.e., no fever (>38°C) for patients ≤65 years of age*; and for any age, patient has no acute mental status change, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness, *and* a *positive urine culture* of $\geq 10^5$ CFU/ml with no more than two species of uropathogen microorganisms** *and* a positive blood culture with at least one matching uropathogen microorganism to the urine culture.
    - *Fever is not diagnostic for UTI in >65 years of age and therefore fever in this age group does not disqualify from meeting the criteria of an ABUTI.
    - **Uropathogen microorganisms are: Gram-negative bacilli, Staphylococcus spp., yeasts, beta-hemolytic Streptococcus spp., Enterococcus spp., G. vaginalis, Aerococcus urinae, and Corynebacterium (urease positive).
- Many patients in the SNF experience cognition impairment and acute mental status change (i.e., increasing confusion). This is added to the CDC Guidelines as an acceptable symptom in considering CAUTI diagnosis (Infectious Disease Society Guidelines).

**26. If a PORT, PICC, or Peripheral IV implanted for chemotherapy, or other permanent port, is clotted or has to be removed within a brief period of time, is that an adverse event?**

Yes, a device that was supposed to be "permanent" (e.g., a permanent or totally implanted vascular access device, such as a PORT implanted for chemotherapy) but has become clotted or otherwise defective is considered an adverse event, even in the absence of signs or symptoms. Determinations of harm resulting from clotted vascular access devices depend on whether the device is non-permanent, permanent, or totally implanted.

A non-permanent vascular access device, such as PICC line or peripheral IV, that is clotted or removed and reinserted should be considered a quality issue and not an adverse event unless there is other resulting patient harm such as a hematoma, vein thrombosis with associated signs and symptoms (e.g., pain, swelling), or infection.

**27. Is a minor skin injury (e.g., bruising, skin tears) an adverse event?**

Such types of skin injury will require clinical judgment.

- Falls with injury (skin tears, bruises) are defined as adverse events.
- Skin tears without documentation of a fall or other injury require clinical judgment to determine whether or not an adverse event has occurred.
- Multiple skin tears in a non-frail patient with normal skin on admission to the SNF may be an adverse event. However, as an example, a few minor skin tears in a fragile elderly patient are most likely not an adverse event.
- Even with a fall, a very minor skin abrasion needs to be evaluated carefully. Many elderly have fragile skin; therefore, this will be an issue of degree and requires clinical judgment.
- Steroids causing major skin changes (e.g., superficial infections or requiring special treatments) could be an event.

**28. For imaging for PE/DVT, a patient had a clot in the right heart by CT and was referred to the thrombophilia clinic. Is the clot considered an adverse event or simply related to disease?**

No, if the patient's clot in the right heart was due to thrombophilia and not due to a medical intervention (e.g., Swan Ganz catheter) it is considered an underlying disease of the patient and is not harm.

**29. Should we consider an infection that develops within the first 48 hours of a SNF stay as a SNF-attributable adverse event?**

No; however, these are considered POA events and should be recorded as POA events in any data collection system.

- A potential *exception* to the 48-hour rule is a CAUTI when the Foley is inserted the day of SNF admission and the patient develops symptomatic UTI within 48 hours. This is categorized as an adverse event attributable to the SNF.
- Deep wound tissue infections are almost always attributable to the surgery during the preceding hospitalization, and are thus counted and categorized as POA events.

# Appendix A: Examples of Adverse Events in Skilled Nursing Facilities

The following tables include select descriptions of the adverse events, as identified by the OIG in their 2014 review of resident harm events in SNFs,[13] organized by the three modules in the IHI SNF Trigger Tool: Care Module, Medication Module, and Procedure Module. We suggest reviewing the events listed in the table and using them as examples of the harm that reviewers are likely to find in SNF records.

Please note that because the OIG's methodology included identifying events caused by an omission of care, some events may not apply to facilities targeting only events of commission.

**Table A1. Adverse Events Related to Resident Care**

| Event Type | Description |
|---|---|
| **Acute kidney injury or insufficiency secondary to fluid maintenance** | Acute kidney insufficiency and confusion due inadequate hydration therapy resulting in hospitalization |
| | Acute kidney injury due to poor monitoring of hydration and inadequate diuretic therapy complicated by antipsychotics used to treat associated delirium |
| | Cascade event in which inadequate hydration led to acute kidney insufficiency, hypotension, and obtundation |
| | Cascade in which acute kidney injury due to inadequate hydration led to high potassium and uremia characterized by significant lethargy resulting in hospitalization |
| | Life-threatening acute kidney injury characterized by severe hyperkalemia due to inadequate monitoring of electrolytes and serum creatinine resulting in hospitalization |
| | Acute kidney injury due to progressive dehydration resulting in hospitalization and finally contributing to the resident's death |
| **Electrolyte disorders** | Cascade event in which failure to recognize postoperative delirium led to poor oral intake, hyperkalemia, and hypernatremia resulting in hospitalization |
| | Change in mental status due to electrolyte disorder caused by multiple free water gastrostomy tube flushes in a resident with a recent history of syndrome of inappropriate antidiuretic hormone secretion (SIADH) |
| | Hyponatremia with increased lethargy and change in mental due to free-water gastrostomy tube flushes resulting in hospitalization |
| | Severe hypernatremia due to inadequate hydration resulting in hospitalization |

**Table A1. Adverse Events Related to Resident Care (continued)**

| Event Type | Description |
|---|---|
| **Electrolyte disorders (continued)** | Significant dehydration due to inadequate hydration resulting in hospitalization |
| | Cascade event in which failure to adequately hydrate resident with dysphagia led to life-threatening hypovolemia, hypernatremia (electrolyte abnormality characterized by high sodium), hypotension, paroxysmal atrial tachycardia, need for cardioversion, non-STEMI myocardial infarction, and acute kidney injury resulting in transfer to hospital intensive care unit |
| | Cascade event in which insufficient monitoring of ileostomy led to leaking, excoriation around insertion site, significant dehydration, acute kidney injury, and high potassium |
| | Cascade event in which substandard monitoring of resident with known obstructive kidney disease resulted in progressive kidney failure, hyperkalemia(electrolyte abnormality characterized by high potassium), and finally cardiac arrest which contributed to the resident's death |
| **Exacerbations of preexisting conditions resulting from an omission of care** | Failure to properly assess resident in SNF and in preceding hospital stay, which led to delay in recognizing hip fracture that required hospitalization |
| | Failure to provide appropriate intervention for increasing hypothyroidism and monitoring of increasing heart failure, which led to episode of exacerbated heart failure that required hospitalization |
| | Hydronephrosis due to delay in needed post-hospital follow-up care for resident with significant urinary tract obstruction |
| | Jaundice, low hemoglobin, and lethargy due to a delay in recognition of acquired autoimmune hemolytic anemia resulting in hospitalization |
| | Suicide attempt by resident at risk for suicide characterized by self-inflicted cuts on wrists that required hospitalization due to inadequate compliance with a care plan that was not sufficient for the resident |
| | Reduction in diuretics and failure to adequately monitor increased weight gain (anasarca) associated with congestive heart failure and cirrhosis resulting in hospitalization and finally contributing to the resident's death |
| **Excessive bleeding related to resident care** | Excessive bleeding around wound vacuum pump site resulting in hospitalization |
| | Excessive bleeding from infection site resulting in hospitalization |
| | Hematuria secondary to Foley catheter resulting in hospitalization |

**Table A1. Adverse Events Related to Resident Care (continued)**

| Event Type | Description |
|---|---|
| **Fall or other trauma with injury associated with resident care** | Fall from motorized wheelchair resulting in multiple scrapes and abrasions |
| | Fall resulting in abrasions on face and elbow |
| | Fall resulting in elbow fracture |
| | Fall resulting in multiple skin tears on appendages and bruising on head |
| | Multiple falls resulting in skin tear on hand and elbow |
| | Trauma while in bed characterized by abrasions on temple and elbow |
| | Ankle fracture due to unwitnessed trauma in SNF |
| | Fall resulting in effusion and hematoma on knee resulting in hospitalization |
| | Fall resulting in hematoma on head resulting in hospitalization |
| | Fall resulting in multiple skin tears |
| | Fall with large hematoma on head resulting in hospitalization |
| | Fall with nasal fracture resulting in hospitalization |
| **Hypotension related to resident care** | Cascade event in which dehydration due to inadequate monitoring led to hypotension, sinus tachycardia, and atrial fibrillation resulting in hospitalization |
| | Hypotension and hematuria due to inadequate monitoring of Foley catheter resulting in hospitalization |
| **Other resident care events** | Cascade event in which failure to provide adequate skin care caused a skin friction abrasion that progressed to a stage II pressure ulcer and developed cellulitis resulting in hospitalization |
| | Omission of care, which led to progressive weakness and decreased bowel and overall functional status resulting in hospitalization |
| | Significant constipation resulting in hospitalization |
| | Substandard urinary catheter care, which led to urinary retention resulting in hospitalization |

**Table A1. Adverse Events Related to Resident Care (continued)**

| Event Type | Description |
|---|---|
| **Other resident care events (continued)** | Cascade event in which pulmonary overload led to decreased oxygenation, life-threatening respiratory failure, atrial flutter, and significant lethargy resulting in hospitalization |
| | Acute kidney injury secondary to inadequate monitoring of urinary retention |
| | Acute urinary retention |
| | Blistering caused by medical tape |
| | Cascade event in which inadequate monitoring led to severe dehydration with associated confusion leading to falls with minor injuries |
| | Failure to monitor resident, which led to dislodged enteral feeding tube requiring multiple replacement attempts |
| | Hypotension due to inadequate hydration therapy |
| | Multiple-day delay in appropriate treatment of excessive swelling in a resident recovering from a hip fracture, which resulted in difficulty breathing |
| **Pressure ulcers** | Multiple Stage 1 pressure ulcers on heels, elbow, scapula, and toe |
| | Progression of pressure ulcer on buttocks from Stage 1 to Stage 2 |
| | Progression of Stage 1 pressure ulcer to a Stage 2 pressure ulcer |
| | Progression of Stage 1 pressure ulcer to Stage 2 |
| | Progression of Stage 1 pressure ulcers on coccyx and heels to Stage 2 ulcers |
| | Stage 1 pressure ulcer |
| | Stage 1 pressure ulcer on coccyx |
| | Stage 1 pressure ulcer on heel |
| | Stage 1 pressure ulcers on buttocks and heel |
| | Stage 1 pressure ulcers on heels |
| | Stage 2 pressure ulcer on buttocks |

**Table A1. Adverse Events Related to Resident Care (continued)**

| Event Type | Description |
|---|---|
| **Pressure ulcers (continued)** | Stage 2 pressure ulcers on thigh and Stage 1 pressure ulcers on buttock and coccyx |
| | Stage 3 pressure ulcer on hand |
| | Unstaged pressure ulcer on left heel |
| | Unstaged pressure ulcer on right heel |
| **Respiratory issues (other than infections)** | Cascade event in which delay in treatment for pleural effusion led to worsening of hypoxia (inadequate oxygen in blood) that required transfer to hospital for a chest tube, drainage, and intubation |
| | Delay in diagnosis of pneumothorax and inadequate monitoring, which led to significant worsening of condition characterized by life-threatening difficulty breathing resulting in hospitalization |
| | Failure to provide adequate tracheostomy care resulted in life-threatening acute respiratory failure |
| | Hypoxia and life-threatening respiratory distress due to insufficient pulmonary suction resulting in hospitalization |
| **Skin tear, abrasion, or breakdown** | Abrasion on forearm caused by collision with railing |
| | Multiple skin breakdowns above the coccyx |
| | Multiple skin excoriations |
| | Pressure wound on leg associated with cast |
| | Skin tear on elbow |
| | Skin tear on leg |
| | Skin tear on right forearm |
| | Skin tears on arm and leg |
| **Stage 3 or 4 pressure ulcers** | Stage 3 pressure ulcer on sacrum and Stage 2 pressure ulcer on buttocks |
| | Stage 3 pressure ulcer on heel |

**Table A1. Adverse Events Related to Resident Care (continued)**

| Event Type | Description |
|---|---|
| **Venous thromboembolism, DVT, or pulmonary embolism related to resident monitoring** | Delay in recognition of pneumothorax resulted in hospitalization |
| | DVT and pulmonary embolism due to inadequate monitoring resulting in hospitalization |
| | DVT due to a failure to provide adequate DVT monitoring and prophylaxis resulting in hospitalization |
| | Significant DVT due to failure to provide sufficient DVT monitoring and prophylaxis resulting in hospitalization |
| | DVT due to insufficient DVT prophylaxis led to hospitalization and finally resulted in a fatal pulmonary embolus |
| | Fatal pulmonary embolus with hospitalization due to inadequate resident monitoring |

**Table A2. Adverse Events Related to Medication**

| Event Type | Description |
|---|---|
| **Allergic reactions to medications (e.g., rash, itching)** | Rash in groin area due to immunosuppressant (methotrexate) |
| | Allergic reaction to medication (fluoroquinolone antibiotic) characterized by pruritis |
| | Pruritus associated with narcotics |
| | Skin rash on abdomen and legs associated with medication |
| **Anemia and other blood count problems secondary to medication** | Anemia due to inadequate administration of epoetin alfa (anemia medication) in resident with chronic kidney failure resulting in hospitalization |
| | Cascade event in which provision of antibiotics led to pancytopenia, angina, and pneumonia resulting in hospitalization |
| **Constipation, obstipation, and ileus** | Significant constipation secondary to pain medication (opioids) and inadequate bowel care |
| | Significant constipation secondary to pain medication (opioids) |

**Table A2. Adverse Events Related to Medication (continued)**

| Event Type | Description |
|---|---|
| **Constipation, obstipation, and ileus (continued)** | Abdominal distention with ileus secondary to opiates |
| | Inadequate bowel care led to significant constipation secondary to opiates resulting in hospitalization |
| | Severe constipation due to pain medications (opioids) |
| | Significant constipation secondary to opiates resulting in hospitalization |
| | Significant ileus secondary to narcotics resulting in hospitalization |
| | Significant ileus secondary to opiates and inadequate bowel care resulting in hospitalization |
| **Excessive bleeding due to medication** | Coumadin toxicity led to gastrointestinal bleeding resulting in hospitalization |
| | Gastrointestinal bleeding due to anticoagulation treatment (aspirin) resulting in hospitalization |
| | Gastrointestinal bleeding secondary to anticoagulants resulting in hospitalization |
| | Anticoagulant overdose led to headache, nausea, vomiting, and subdural hematomas, which resulted in life-threatening hematemesis |
| | Cascade event in which anticoagulant (warfarin) toxicity led to life-threatening hematemesis (gastrointestinal bleeding) with kidney insufficiency and resultant hypotension resulting in hospitalization |
| | Life-threatening epistaxis (significant bleeding through nose) due to anticoagulant (warfarin) resulting in hospitalization |
| | Cascade event in which hematemesis (gastrointestinal bleeding) from an anticoagulant (warfarin) led to aspiration, which resulted in death |
| | Cascade event in which hemoptysis (coughing up blood) associated with anticoagulant led to aspiration, cardiac arrest, anoxic encephalopathy, and finally contributing to the resident's death |
| **Fall or other trauma with injury associated with medication** | Delirium and disorientation secondary to opiates for pain (oxycodone) resulting in multiple falls without injury |
| | Fall associated with anti-anxiety medications (lorazepam and escitalopram) and inappropriately prescribed atypical antipsychotic medication (risperidone) resulting in abrasion |

**Table A2. Adverse Events Related to Medication (continued)**

| Event Type | Description |
|---|---|
| **Fall or other trauma with injury associated with medication (continued)** | Fall associated with inappropriately prescribed anti-anxiety medication (clonazepam) resulting in injury to head |
| | Fall associated with inappropriately prescribed anticholinergic medication (amitriptyline and perphenazine) resulting in skin tear on forearm |
| | Fall associated with poor diabetes management (multiple episodes of hypoglycemia and hyperglycemia) resulting in abrasions |
| | Fall associated with psychotropic medications (alprazolam and risperidone) resulting in abrasions |
| | Multiple falls associated with inappropriately prescribed antidepressant (fluoxetine) and anti-anxiety medications (selective serotonin reuptake inhibitor and lorazepam) resulting in multiple skin tears and abrasions |
| | Fall associated with appropriately prescribed antipsychotic medication (haloperidol decanoate) resulting in injury to hand |
| | Fall associated with appropriately prescribed atypical antipsychotic (olanzapine) and antidepressant (escitalopram) resulting in hip fracture resulting in hospitalization |
| | Fall associated with inappropriately prescribed antipsychotics (haloperidol decanoate and risperidone) resulting in hematoma |
| | Fall associated with inappropriately prescribed atypical antipsychotic (quetiapine) resulting in femur fracture resulting in hospitalization |
| | Fall associated with inappropriately prescribed opiates for pain (hydromorphone, hydrocodone/APAP, tramadol) resulting in rib fracture |
| | Fall associated with atypical antipsychotic (quetiapine) resulting in right hip fracture resulting in hospitalization |
| | Cascade event in which hypoglycemic episode characterized by blood glucose of 53 resulted in a resident fall |
| **Hypoglycemic episodes (e.g., low or significant drop in blood glucose)** | Hypoglycemic episode characterized by a significant drop in blood glucose |
| | Fall associated with inappropriately prescribed atypical antipsychotic (quetiapine) resulting in femur fracture resulting in hospitalization |
| | Hypoglycemic episode characterized by blood glucose of 32 |

**Table A2. Adverse Events Related to Medication (continued)**

| Event Type | Description |
|---|---|
| **Hypoglycemic episodes (e.g., low or significant drop in blood glucose) (continued)** | Hypoglycemic episode characterized by blood glucose of 43 |
| | Hypoglycemic episode characterized by blood glucose of 49 and diaphoresis (excessive sweating) |
| | Hypoglycemic episode characterized by blood glucose of 59 and lethargy |
| | Hypoglycemic episode characterized by shaking and heart palpitations |
| | Hypoglycemic episode characterized by significant drop in blood glucose from baseline |
| | Hypoglycemic episodes characterized by significant drop in blood glucose and trembling |
| | Multiple hypoglycemic episodes characterized by blood glucose of 54 and 48 |
| | Multiple hypoglycemic episodes characterized by blood glucose of 55 and unresponsiveness |
| | Multiple hypoglycemic episodes characterized by blood glucoses of 30, 35, 30 and, 20 |
| | Multiple hypoglycemic episodes characterized by lowest blood glucose of 24 |
| | Multiple hypoglycemic episodes characterized by lowest blood glucose of 66 and diaphoresis |
| | Life-threatening hypoglycemic episode characterized by blood glucose of 31 |
| | Hypoglycemic episode characterized by a blood glucose of 20 resulting in hospitalization and finally contributing to the resident's death |
| | Hypoglycemic episode characterized by blood glucose of 38 resulting in hospitalization and finally contributing to the resident's death |
| **Hypotension secondary to medication** | Hypotension secondary to ACE inhibitor resulting in hospitalization |
| | Syncope with atrial fibrillation and hypotension secondary to overdose of levothyroxine and liothyronine resulting in hospitalization |

**Table A2. Adverse Events Related to Medication (continued)**

| Event Type | Description |
|---|---|
| **Ketoacidosis, hyperosmolar coma, and other complications of diabetes related to insulin management** | Diabetic ketoacidosis due to insufficient administration of insulin resulting in hospitalization |
| | Failure to provide adequate insulin care led to diabetic ketoacidosis resulting in hospitalization |
| | Cascade event in which hyperosmolar diabetic coma characterized by somnolence and vomiting led to aspiration resulting in hospitalization and finally contributing to the resident's death |
| **Medication-induced delirium or other change in mental status** | Confusion and anxiety secondary to opioid pain medication (oxycodone) |
| | Confusion secondary to pain medication (opioids) |
| | Delirium and hallucinations due to pain medication (opioid) |
| | Delirium and hallucinations secondary to polypharmacy |
| | Delirium secondary to pain medication (hydrocodone) |
| | Delirium secondary to pain medication (opioid) caused resident to pull IV tube |
| | Episode of diaphoresis and dizziness due to pain medication (oxycodone and paracetamol) |
| | Light-headedness and vertigo due to pain medication (opioids) |
| | Acute change in mental status secondary to medication |
| | Acute mental status due to inadequate hydration therapy that was exacerbated by multiple medications |
| | Cascade event in which confusion and somnolence secondary to medications led to dehydration because of decreased fluid intake |
| | Cascade in which disorientation and hallucinations due to multiple medications (acetaminophen and hydrocodone, cyclobenzaprine, and lorazepam) led to a fall with resultant skin tear and rib fracture, which led to pneumonia requiring a hospitalization |
| | Confusion secondary to beta blocker (metoprolol) characterized by sinus bradycardia |

**Table A2. Adverse Events Related to Medication (continued)**

| Event Type | Description |
|---|---|
| **Medication-induced delirium or other change in mental status (continued)** | Confusion, delusions, and continuing episodes of disorientation secondary to pain medication (opioids and benzodiazepines) resulting in hospitalization |
| | Delirium and agitation secondary to psychotropic and pain medications resulting in hospitalization |
| | Delirium secondary to multiple pain medications (opioids) resulting in hospitalization |
| | Delirium secondary to psychiatric medications (hydrocodone/APAP) |
| | Delirium, disorientation, and hallucinations secondary to inappropriately prescribed anti-anxiety medication (lorazepam) and other medications (acetaminophen and hydrocodone, cyclobenzaprine) |
| | Delirium, hallucinations, and respiratory failure secondary to pain and anti-anxiety medications (opioids and benzodiazepines) resulting in hospitalization |
| | Episode of unresponsiveness secondary to psychiatric medication (lithium) |
| | Lethargy and altered mental status secondary to medication |
| **Medication-induced allergic reaction** | Cascade event in which antibiotics (levofloxacin) given for an infected incision site caused an unanticipated allergic reaction characterized by pruritic rash over most of resident's body |
| | Rash secondary to antibiotic |
| | Rash secondary to anticoagulant |
| **Nausea and vomiting secondary to medication** | Digoxin toxicity led to nausea |
| | Nausea and vomiting secondary to antibiotic |
| **Thrush and other nonsurgical infections related to medication** | Candida vaginitis and oral thrush secondary to antibiotics |
| | Candida vaginitis secondary to antibiotics |
| | Oral and pharyngeal thrush secondary to antibiotic |
| | Oral thrush secondary to antibiotics |
| | Pharyngeal thrush secondary to antibiotic |

**Table A2. Adverse Events Related to Medication (continued)**

| Event Type | Description |
|---|---|
| **Other medication events** | Seizure in resident with history of seizures during period of inadequate levels of anti-epileptic (phenytoin) |
| | Significant and unanticipated diarrhea secondary to laxative |
| | Seizure secondary to inadequate monitoring of antiepileptic medication resulting in hospitalization |
| | Stroke because of a failure to provide anticoagulants which required hospitalization |
| | Life-threatening acute kidney injury due to inadequate diuretic therapy characterized by hyperkalemia resulting in hospitalization |
| | Life-threatening hyperkalemia and severe dehydration due to ACE inhibitor (lisinopril) resulting in hospitalization |

**Table A3. Adverse Events Related to SNF-Associated Infections**

| Event Type | Description |
|---|---|
| **Aspiration pneumonia and other respiratory infections** | Aspiration pneumonia due to failure to monitor resulting in hospitalization |
| | Aspiration pneumonia due to inadequate aspiration precautions and monitoring of resident with history of dysphagia |
| | Aspiration pneumonia resulting in hospitalization |
| | Cascade event in which dysphagia and vomiting led to aspiration pneumonia, associated with hyperglycemia (with diabetic ketoacidosis or hyperosmolar coma) and hyponatremia, resulting in hospitalization |
| | Emesis associated with lung infiltrate resulting in hospitalization |
| | Recurrence of pneumonia due to incomplete treatment of prior pneumonia resulting in hospitalization |
| | Several episodes of emesis, which led to aspiration pneumonia resulting in hospitalization |
| | Cascade event in which aspiration pneumonitis led to life-threatening respiratory failure resulting in hospitalization |

**Table A3. Adverse Events Related to SNF-Associated Infections (continued)**

| Event Type | Description |
|---|---|
| **Aspiration pneumonia and other respiratory infections (continued)** | Cascade event in which aspiration pneumonitis led to life-threatening respiratory failure, which exacerbated residents COPD resulting in hospitalization for needed BIPAP treatment |
| | Aspiration pneumonia characterized by tachypnea, dyspnea, and chest congestion resulting in hospitalization and finally contributing to the resident's death |
| **Catheter-associated urinary tract infection** | Multiple catheter-associated urinary tract infections secondary to multiple catheterizations |
| | Recurrent urinary tract infections associated with urinary catheter |
| | Urinary tract infection associated with urinary catheter |
| | Cascade event in which urosepsis led to dehydration, hypotension, and paroxysmal supraventricular tachycardia (PSVT) |
| | Cascade in which a partial obstruction due to Foley catheter placement led to a urinary tract infection |
| | Urinary tract infection associated with urinary catheter |
| | Urinary tract infection associated with urinary catheter characterized by acute change in mental status resulting in hospitalization |
| | Urinary tract infection associated with urinary catheter resulting in hospitalization |
| | *Clostridium difficile* infection following treatment with broad spectrum antibiotic |
| | *Clostridium difficile* infection |
| | *Clostridium difficile* infection associated with significant weight loss resulting in hospitalization |
| | *Clostridium difficile* infection resulting in hospitalization |
| **Sepsis** | Failure to provide adequate care for urinary tract infection, which led to sepsis resulting in hospitalization |
| | Urinary tract infection associated with urinary catheter characterized by acute change in mental status and somnolence resulting in hospitalization |
| | Life-threatening sepsis due to progression of inadequately treated pneumonia resulting in hospitalization |

**Table A3. Adverse Events Related to SNF-Associated Infections (continued)**

| Event Type | Description |
|---|---|
| **Soft tissue or other nonsurgical infection** | Bacterial conjunctivitis |
| | Blepharitis (swelling of the eyelids) |
| | Conjunctivitis on eye |
| | Fungal skin infection on abdomen |
| | Cellulitis on legs resulting in hospitalization |
| | Progressive infection characterized by rash, sloughing, and necrosis resulting in hospitalization |
| **Surgical site infection attributable to wound care** | Cellulitis at surgical site |
| | Superficial infection at surgical incision site |
| | Superficial infection at surgical incision site for a lower leg fracture |
| | Superficial infection at surgical incision site for recent knee replacement |
| | Cellulitis at PEG tube placement site resulting in hospitalization |
| | Cellulitis at site of skin graft resulting in hospitalization |
| | Cellulitis at surgical site resulting in hospitalization |
| | Superficial infection around surgical incision site for recent knee arthroplasty |
| | Superficial infection around surgical incision site for recent toe resection resulting in hospitalization |
| | Superficial infection around surgical incision site on hip |
| | Superficial infection around surgical incision site on leg resulting in hospitalization |
| | Superficial infection around surgical incision site on lower back |

**Table A3. Adverse Events Related to SNF-Associated Infections (continued)**

| Event Type | Description |
|---|---|
| **Vascular-catheter associated infection (e.g., PICC line, central line)** | Cascade event involving DVT and catheter-associated central line infection |
| | Infection (MRSA) around dialysis insertion site resulting in hospitalization |
| | Port site infection resulting in hospitalization |
| **Other infections** | Aspiration pneumonia |
| | Sepsis resulting from urinary tract infection |

# Appendix B: Comparison of Adverse Event Review Methodologies

The table below provides descriptions of the differences between IHI's methodology for conducting reviews in acute care hospitals using the IHI Global Trigger Tool (GTT) methodology; the OIG's methodology described in the report, *Adverse Events in Skilled Nursing Facilities: National Incidence among Medicare Beneficiaries* (OEI-06-11-00370); and the IHI Skilled Nursing Facility (SNF) Trigger Tool methodology.

| | IHI Global Trigger Tool for Acute Care Hospitals | OIG Study of Adverse Event Incidence in SNFs | IHI Skilled Nursing Facility Trigger Tool |
|---|---|---|---|
| **Primary objectives** | For a single hospital, determine the:<br>1) incidence per 100 admissions<br>2) incidence per 1,000 patient care days<br>3) percent of patients with 1 or more harms and 40 scope of harm | For a sample of Medicare beneficiaries who stayed in SNFs, determine the:<br>1) incidence rate of adverse events<br>2) preventability of observed events<br>3) costs of adverse events to Medicare | For a single SNF, determine the incidence of events per 100 admissions or per 1000 resident care days reviewed. |
| **Setting** | Acute care hospitals | SNFs | SNFs |
| **Include POA events?** | Yes – record as POA event | No | Yes – record as POA event in any database, but don't include them in SNF-based incidence rate |
| **Systematically include omission of care events?** | No | Yes | No – Facilities may refer omission events to others or mark them as such in any database, but do not include them in SNF-based incidence rate |
| **Distinguish between adverse events and temporary harm events?** | No | Yes | No |
| **Random sample?** | Yes | Yes | Yes |
| **Limit sample to closed records?** | Yes | Yes – Stays less than 35 days | No – Include all stays in sample that began (i.e., had a date of admission) during the defined observation period |
| **Sample records based on length of stay?** | No | Yes | No |
| **Sample frequency** | Every two weeks until 24 data points, then 1x per month | One-time sample | Every two weeks until 24 data points, then 1x per month |
| **Random sample size** | 20 | 650 | 20 |
| **Observation period** | One month or every two weeks | One month | One month or every two weeks |

# Appendix C: IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events Worksheet

| | Care Module Triggers | Event Description and Harm Level (E-I) | | Medication Module Triggers | Event Description and Harm Level (E-I) |
|---|---|---|---|---|---|
| C1 | Acute mental status change | | M1 | Abnormal electrolytes | |
| C2 | Aspiration | | M2 | Abrupt medication stop | |
| C3 | Call to physician or family members | | M3 | Anti-emetic use | |
| C4 | Code or Emergency Medical Services (EMS) | | M4 | Diphenhydramine use | |
| C5 | Death | | M5 | Elevated INR | |
| C6 | Drop in hemoglobin/hematocrit | | M6 | Epinephrine use | |
| C7 | Studies for emboli, PE or DVT | | M7 | Glucose <50mg/dL, glucagon or dextrose supplement given | |
| C8 | Fall | | M8 | Abrupt onset hypotension | |
| C9 | Family complaint | | M9 | Naloxone use | |
| C10 | Any infection | | M10 | Sodium polystyrene administration | |
| C11 | New or increased diuretics | | M11 | Abnormal drug levels | |
| C12 | High or low body temperature | | M12 | Thrombocytopenia | |
| C13 | In (SNF) stroke or TIA | | M13 | Total WBC < 3,000 | |
| C14 | New onset of incontinence | | M14 | Vitamin K administration | |
| C15 | Insertion or use of urinary catheter | | M15 | Antibiotics started in SNF | |
| C16 | Significant Change in Status Assessment | | M16 | Increasing pain medication needs | |
| C17 | Resident incident or accident | | M17 | Administration of parenteral fluid | |
| C18 | Pressure ulcer | | M18 | Rising ALT/AST liver function test | |
| C19 | ED visit | | M19 | Medication-Other | |
| C20 | Transfer to acute care hospital or observation (OBS) unit | | | **Procedure Module Triggers** | **Event Description and Harm Level (E-I)** |
| C21 | Restraint use | | P1 | Postoperative/post-procedure complication | |
| C22 | Rising serum creatinine | | P2 | Procedure reintubation/BiPAP/new CPAP | |
| C23 | Urinary retention | | P3 | Procedure-Other | |
| C24 | New onset diarrhea | | **Notes** | | |
| C25 | Prolonged constipation | | | | |
| C26 | Diagnostic radiology or imaging studies | | | | |
| C27 | Care-Other | | | | |

Patient Identifier _____ Total Events _____ Total LOS _____ Complete data fields on reverse for each identified event

## Appendix C: IHI Skilled Nursing Facility Trigger Tool for Measuring Adverse Events Worksheet (continued)

| Data Collection Instrument | Event 1 (if applicable) | Event 2 (if applicable) | Event 3 (if applicable) |
|---|---|---|---|
| **Description:** (Brief description of the event) | | | |
| **Background:** (Short summary of the clinical history of the resident) | | | |
| **Evidence:** (Lab values, staff actions, or other documented evidence for the event) | | | |
| **Intervention:** (Brief description of the care intervention needed to ameliorate the harm caused by the event) | | | |
| **Harm Level:** (Level E-I) | | | |
| **Date of Harm:** | | | |
| **Other Notes:** | | | |

# References

[1] Office of Inspector General. *Hospital Incident Reporting Systems Do Not Capture Most Patient Harm*. OEI-06-0900091. January 2012.

[2] Griffin FA, Resar RK. *IHI Global Trigger Tool for Measuring Adverse Events (Second Edition)*. IHI Innovation Series white paper. Cambridge, MA: Institute for Healthcare Improvement; 2009.

[3] Office of Inspector General. *Adverse Events in Skilled Nursing Facilities: National Incidence Among Medicare Beneficiaries*. OEI-06-11-00370. February 2014. http://oig.hhs.gov/oei/reports/oei-06-11-00370.pdf

[4] Centers for Medicare & Medicaid Services. "Quality Assurance and Performance Improvement (QAPI) Resources." https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/QAPI/qapiresources.html

[5] Handler SM, Hanlon JT, Perera S, et al. Consensus list of signals to detect potential adverse drug reactions in nursing homes. *Journal of the American Geriatric Society*. 2008 May;56(5):808-815.

[6] National Coordinating Council for Medication Error Reporting and Prevention. "Types of Medication Errors" (February 2001). http://www.nccmerp.org/types-medication-errors

[7] Institute for Healthcare Improvement. "Sampling Tool." http://www.ihi.org/resources/Pages/Tools/Sampling.aspx

[8] This is a departure from the methodology the OIG used in their review. The OIG tested the SNF Trigger Tool on a population limited to SNF residents with a length of stay of less than 35 days. For Version 1 of the SNF Trigger Tool, we recommend this alternate methodology to reduce the complexity of the sample selection methodology and to include all SNF residents.

[9] Limiting to the first 30 days of records will capture the majority of SNF stays but will necessarily limit all findings to the first 30 days of all stays. Any analysis of the data should note this as well as any other limitations of the data. SNFs interested in identifying events that occur during longer stays may wish to start a second Trigger Tool review that focuses on SNF stays longer than 30 days.

[10] Institute for Healthcare Improvement. "Run Chart Tool." http://www.ihi.org/resources/Pages/Tools/RunChart.aspx

[11] National Pressure Ulcer Advisory Panel. "Pressure Ulcer Category/Staging Illustrations." http://www.npuap.org/pr2.htm

[12] National Institute of Diabetes and Digestive and Kidney Diseases. "Glomerular Filtration Rate (GFR) Calculators: Modification of Diet in Renal Disease (MDRD) Calculators." http://www.niddk.nih.gov/health-information/health-communication-programs/nkdep/lab-evaluation/gfr-calculators/Pages/gfr-calculators.aspx

[13] Office of Inspector General. *Adverse Events in Skilled Nursing Facilities: National Incidence Among Medicare Beneficiaries*. OEI-06-11-00370. February 2014:48-58. [Note: Some redundant events were deleted.]