



# PSIs of Lesser Frequency: Retained Foreign Items (AHRQ Patient Safety Indicator 5), In-Hospital Falls with Hip Fracture (AHRQ Patient Safety Indicator 8), and Postoperative Kidney Injury Requiring Dialysis (AHRQ Patient Safety Indicator 10)

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While the Agency for Healthcare Research and Quality (AHRQ) patient safety indicators (PSIs) 5, 8, and 10 occur at a relatively low frequency in most acute-care hospitals, they are components of several publicly reported ratings and safety risk scores. For example, while PSI-5 is not a formal component of many scoring methodologies, retained foreign object occurrences enter the Leapfrog Hospital Safety Grade calculations because they also represent a Center for Medicare and Medicaid Services (CMS) hospital-acquired condition (HAC). PSI-8 (hip fracture from a hospital fall) is a component of the CareChex scoring methodology. Moreover,

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occurrences feeding into PSI-8 reporting are included in the Leapfrog Hospital Safety Grade calculations via the CMS HAC Falls and Trauma category. PSI-8 and PSI-10 are also components of the AHRQ composite PSI-90 measure, although their weights within PSI-90 are low (1% and 6%, respectively).

The validity of these PSIs has been investigated. In a study using the newer ICD-10 diagnostic classification, the positive predictive value for PSI-5 was found to be 62.5% [1]. In a Veterans Administration population, investigators found that retained foreign items can occur in both medical and surgical procedures [2]. The incidence of PSI-5 is reported to be between 0.14 and 0.31 per 1000 records [2, 3].

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### 13.1 AHRQ PSI-5: Retained Surgical Item or Unretrieved Device Fragment Count

PSI-5 is intended to be a measure of items unintentionally left behind during invasive procedures. It refers to the number of patients whose coding profile identifies a retained surgical item or unretrieved device fragment as a secondary diagnosis (defined by AHRQ list FOREIID; Methodology | Agency for Healthcare Research and Quality (ahrq.gov)). It applies to surgical, medical, or obstetric DRGs in patients of ages 18 years and older. Excluded are cases with a principal diagnosis of retained surgical item or unretrieved device fragment and cases where this condition is present on admission (POA) as a secondary diagnosis.

Reviewers should assure that the condition was accurately documented and coded. In some situations, a device or fragment is intentionally left behind because the risk of extraction outweighs the risk of retention. In such cases, detailed surgical/procedural documentation should be present to accurately identify if the retained item is inherent in the procedure. One example from our practice is the coding of a retained item when in fact the incident represented a device failure (see Case Illustration).

#### **Case Illustration: Retained Item That Was Found to Represent Device Failure**

*Reason for concurrent chart review:* This patient's chart was reviewed for PSI-5 and HAC 01. The triggers for PSI-5 were the proposed code of T81508A (Unspecified complication of foreign body accidentally left in body following other procedure, initial encounter).

*Review summary:* This patient underwent a peripheral insertion of a central catheter. The catheter broke off. This was immediately recognized; a tourniquet was applied to prevent proximal movement, and then the fragment was removed by vascular surgery in a continuous procedural process.

*Proposed coding (pre-billing):* T81508A (Unspecified complication of foreign body accidentally left in body following other procedure, initial encounter).

*Quality review reasoning and request:* The catheter fragment was not "left accidentally" behind. Rather, immediate steps were taken to retrieve the

fragment. The removal procedure occurred on the same day as the procedure, substantiating the contiguity of the removal process with the original insertion procedure. A request was made to change the T code to reflect the failure of the catheter device. A referral was made for senior physician review.

*Referral for senior physician review:* Senior physician review showed that the catheter broke off despite the inserting team following proper procedure and the standard of practice. While a complication of the procedure, this event neither represented a retained item nor an unretrieved device fragment since the catheter fragment was removed concurrently.

*Coding outcome:* After senior coding review, it was determined that the complication code should be changed to T82.514A (Breakdown (mechanical) of infusion catheter). An unwarranted report of PSI-5 and HAC 01 was avoided.

Another example is damage control surgery, where return to the operating room and ultimate retrieval of the item are planned in advance. Damage control surgery is used as a life-saving intervention to reduce the risk of death in severely injured critically ill patients and is planned with several sequential stages [4]. This may happen in an exploratory laparotomy performed for blunt abdominal trauma where laparotomy sponges are left packed in the abdomen to attain hemostasis so that the patient may be further resuscitated prior to return to the operating room for re-exploration. Damage control surgery has also been employed for uncontrolled bleeding during elective surgery from severe gastroduodenal ulcer disease, as well as for peritonitis, acute mesenteric ischemia, or other causes of abdominal sepsis. In such cases, the number of retained items and their purpose should be clearly documented. Surgeons should document their intent to return to the operating room with the index and subsequent operations.

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## 13.2 AHRQ PSI-8: In-Hospital Falls with Hip Fracture

PSI-8 intends to measure in-hospital falls resulting in hip fracture. The population is defined as hospital inpatients of ages 18 years and older who have hip fracture as a secondary diagnosis. The incidence of postoperative hip fracture is low (0.08 per 1000 records) but is associated with increased duration of hospitalization and mortality [5]. Patients with epilepsy are at increased risk for incurring a PSI-8 event [6].

Per AHRQ methodology (Methodology | Agency for Healthcare Research and Quality (ahrq.gov)), exclusionary conditions are (1) a principal diagnosis or secondary POA diagnosis of conditions predisposing to falls and trauma such as seizures, syncope, stroke, occlusion of cerebral arteries, coma, cardiac arrest, poisoning, trauma, delirium or other psychoses, anoxic brain injury (see AHRQ lists SEIZUID, STROKID, DELIRID, TRAUMID, SYNCOID, COMAID, CARDIID, POISOID, ANOXIID); (2) metastatic cancer, lymphoid malignancy, bone malignancy (see

AHRQ lists METACID, LYMPHID, BONEMID); (3) MDC14 (pregnancy, childbirth, and puerperium); and (4) admission for hip fracture or hip fracture diagnoses that are POA.

#### **Low-Hanging Fruit Alert**

Because this list of exclusionary diagnoses is so extensive, the opportunity to avoid PSI-8 is substantial.

Reviewers should carefully ascertain the completeness of the coding profile. Common diagnoses on the above AHRQ lists should specifically be screened for and clinical indicators sought for potential use in generation of medical record queries. Recently, joint prostheses-associated fracture codes have been added as exclusionary conditions. These are designated as periprosthetic fractures or femur fractures following insertion of an orthopedic implant, joint prosthesis, or bone plate. A special case arises when a fracture is first encountered during surgery, often a result of the quality of the bone or a combination of surgical intervention and bone quality. A new code added as an AHRQ exclusion for PSI-8 was intraoperative fracture associated with prosthesis. If a PSI-8 triggers because of a fracture related to surgical fixation, it will be important to assure that this code is used appropriately.

#### **Case Illustration: POA Status Changed – Avoiding PSI-8 and HAC 5**

*Reason for concurrent chart review:* This patient's chart was reviewed for PSI-8 and HAC 5. The triggers for PSI-8 were the proposed procedure codes of M9702XA (Periprosthetic fracture around internal prosthetic left hip joint, initial encounter) and S72122A (Displaced fracture of left femur). This case also triggered HAC 5 (falls and trauma).

*Review summary:* This patient was admitted to observation status and underwent elective left hip arthroplasty. On the following day the nurse responded to a bed alarm and found the patient lying on the floor. She was stabilized and evaluated with an X-ray of the hip and CT of the head. The hip X-ray showed a new left periprosthetic fracture on the left, as well as a displaced femur fracture on the same side. The patient was then admitted to inpatient status on 11/15 in order to perform an operative revision of the hip arthroplasty.

*Proposed coding (pre-billing):* The codes M9702XA (Periprosthetic fracture around internal prosthetic left hip joint, initial encounter) and S72122A (Displaced fracture of left femur), POA = no.

*Quality review reasoning and request:* Per the timing of this patient's inpatient admission order, the fall and fracture would have a POA of yes, which would exclude the PSI-8. This is based on a review of the AHRQ definition of PSI-8 (Exclude cases with a principal ICD-10-CM diagnosis code or secondary diagnosis present on admission, for hip fracture; list of diagnoses identified in HIPFXID file). A request was made to change the POA status of the hip fracture diagnoses from no to yes. A referral was made for senior physician review.

*Referral for senior physician review:* Senior physician review showed that the second fracture was present on inpatient admission, based on the date and time of the inpatient admission order.

*Coding outcome:* The reason for inpatient admission was the periprosthetic fracture. The diagnosis (S72122A) was advanced to the principal diagnosis position on conversion from outpatient to inpatient status [citing Coding Clinic guidance from 4th quarter 2016: If the reason for admission/encounter is the fracture, the specific type of fracture (traumatic or pathological) should be sequenced first and the periprosthetic fracture code should be sequenced as a secondary diagnosis code]. The codes S72122A (Displaced fracture of left femur) and M9702XA (Periprosthetic fracture around prosthetic hip joint) were changed to POA = yes. Also, on review, the codes N179 (Acute kidney injury) and G9349 (Other encephalopathy) were added with POA = yes, based on medical record documentation.

### 13.3 AHRQ PSI-10: Postoperative Acute Kidney Injury Requiring Dialysis

PSI-10 is reported when postoperative acute kidney injury requires dialysis in elective surgical patients of ages 18 years and older. To qualify for this PSI, patients must have a secondary (POA = no) diagnosis code for acute kidney failure (identified by AHRQ list PHYSIDB\*) and a procedure code for dialysis (identified by AHRQ list DIALYIP).

The validity of this PSI improved to 74% with the wide adoption of POA coding [7]. PSI-10 is particularly frequent (at a rate of 1.4%) in patients having undergone open abdominal aneurysm repair [8].

Excluded are patients with a principal diagnosis (or secondary POA diagnosis) of acute kidney failure (AHRQ list PHYSIDB), cardiac arrest (AHRQ list CARDIID), cardiac dysrhythmia (AHRQ list CARDRID), shock (AHRQ list SHOCKID), chronic kidney failure (AHRQ list CRENLFD), solitary kidney disease (AHRQ list SOLKIDD), or urinary tract obstruction (AHRQ list URINARYOBSID). Also excluded are cases where a dialysis procedure or dialysis access procedure occurred before or on the same day as the first operating room procedure (AHRQ lists DIALYIP and DIALY2P), patients with a procedure code for partial nephrectomy (AHRQ list PNEPHREP), and obstetric cases (MDC14).

#### Low-Hanging Fruit Alert

Because this list of exclusionary diagnoses is so extensive, accurate documentation on inpatient admission offers substantial opportunities to avoid unwarranted PSI-10.

As with PSI-8, reviewers should carefully ascertain the completeness of the coding profile. Common diagnoses on the above AHRQ lists should specifically be screened for and clinical indicators sought for generation of medical record queries or substantiation of diagnosis coding. More prevalent conditions such as chronic renal failure and dysrhythmia diagnoses should be checked for and documentation sought appropriately.

#### **Case Illustration: PSI-10 Excluded with MDC14**

*Reason for concurrent chart review:* This patient's chart was reviewed for PSI-10 (Postoperative acute kidney injury requiring dialysis). The trigger for PSI-10 was the code of N17.0 (Acute kidney failure with tubular necrosis) and the procedure code 5A1D90Z (Performance of urinary filtration, continuous, greater than 18 h per day).

*Review summary:* This patient presented to the hospital with severe pre-eclampsia. The decision was made to deliver twin babies by C-section. Two days later, the patient began to have respiratory distress. She was started on oxygen with adequate response. She also developed worsening renal function; as urine output continued to decline, the patient became anuric. Nephrology was consulted and initiated continuous renal replacement therapy (CRRT) over the next 3 days. She continued to improve and was taken off CRRT 6 days after delivery.

*Proposed coding (pre-billing):* The codes N17.0 and 5A1D90Z were proposed to be coded.

*Quality review reasoning and request:* Chart reviewed for PSI-10 (Postoperative acute kidney injury requiring dialysis). This case was identified by 3M. Review of the PSI-10 definition showed that cases with MDC14 (pregnancy, childbirth, and the puerperium) are excluded.

*Referral for senior physician review:* Case was not referred for senior physician review due to exclusion criteria (MDC14).

*Coding outcome:* N17.0 and 5A1D90Z were correctly coded; PSI-10 was avoided due to the exclusion criteria of MDC14. The 3M software version in use was unable to screen this case out as its PSI-10 logic was not able to recognize the MDC exclusion.

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