Hospital Value-Based Purchasing (VBP) Program

Support Contractor

Updates on Patient Safety Indicators (PSIs) for Use in CMS Programs

Questions & Answers

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Question 1: Can you describe the PSI software error?

AHRQ identified an error in their all-payer v6.0 PSI software. Two cardiac-related, Medicare severity diagnosis-related groups (MS-DRGs) were not included in the software when they should have been included. Since the two MS-DRGs were not included, it led to an inaccurate representation of numerators and denominators. Under the fixed software, the numerators and denominators will increase to account for the two cardiac MS-DRGs. Under the software that contained the error, the numerators and denominators are smaller (thus inaccurate) than they would be without the error. This impacted most of the indicators in the PSI 90 and PSI 04 (Death Rate among Surgical Inpatients with Serious Treatable Complications). About eight percent of hospitals are impacted by the error (meaning that they experienced a change in their numerator).

Question 2: What was the impact of the PSI software error?

The fiscal year (FY) 2018 Hospital Inpatient Quality Reporting (IQR) Program AHRQ PSI results will not be included in the hospital-specific reports (HSRs) or the preview report for the July 2017 *Hospital Compare* release, due to a PSI software issue. CMS anticipates that updated FY 2018 PSI results will be available for the October 2017 *Hospital Compare* preview report; at that time, a new FY 2018 Hospital IQR Program AHRQ PSI HSR will be provided.

In addition, the *Hospital Compare* Overall Hospital Quality Star Rating will be updated in July 2017, using FY 2017 PSI results and an HSR provided. The star rating is generally updated biannually in July and December; however, due to the delay in the PSI update, an additional star rating and HSR will be provided in October 2017, using the FY 2018 PSI results. The star rating will return to the biannual release schedule and be provided in December 2017, as well. The HAC Reduction Program HSRs that will be issued in July will not be impacted by the error, and the Hospital VBP Program will also not be impacted.

Question 3: What were the two Medicare severity diagnosis-related group (MS-DRG) codes inadvertently omitted?

MS-DRGs that were inadvertently omitted were MS-DRG 236 and 237.

Question 4: What barriers did CMS have to consider with the ICD–10–CM/PCS implementation?

The PSI 90 measure is a claims-based measure that has been calculated using 24 months of data. For the FY 2018 and FY 2019 payment determinations, measure rates would be calculated using reporting periods of July 1, 2014 through June 30, 2016, and July 1, 2015 through June 30, 2017, respectively. However, because hospitals began ICD–10–CM/PCS implementation on October 1, 2015, these reporting periods for the FY 2018 and FY 2019 payment determinations would require using both ICD–9 and ICD–10 claims data to calculate measure performance.

Since the ICD–10 transition was implemented on October 1, 2015, CMS has been monitoring CMS systems, and claims continue to be processed normally. The measure steward, AHRQ, has been reviewing the measure for any potential issues related to the conversion of approximately 70,000 ICD–10-coded operating room procedures (https://www.cms.gov/icd10manual/fullcode_cms/P1616.html), which could directly affect the modified PSI 90 component indicators.

In addition, to meet program requirements and implementation schedules, the CMS system would require an ICD–10 risk-adjusted version of the AHRQ Quality Indicators (QIs) PSI software by December 2016 for the FY 2018 payment determination year. At this time, a risk-adjusted ICD–10 version of the modified PSI 90 Patient Safety and Adverse Events Composite software is not expected to be available until late CY 2017.

To address the above issues, CMS finalized their proposal to modify the reporting periods for the FYs 2018 and 2019 payment determinations. For the FY 2018 payment determination, CMS proposed to use a 15-month reporting period, spanning July 1, 2014 through September 30, 2015. The 15-month reporting period would only apply to the FY 2018 payment determination and would only use ICD–9 data.

For the FY 2019 payment determination, CMS proposed to use a 21-month reporting period spanning October 1, 2015 through June 30, 2017. The 21-month reporting period would only apply to the FY 2019 payment determination and would only use ICD–10 data. For all subsequent payment determinations after FY 2019, CMS proposed to use the standard 24-month reporting period, which would only use ICD–10 data.

In order to align the modified PSI 90 measure and the use of ICD–9 and ICD–10 data across CMS hospital quality programs, CMS proposed similar modifications for the FYs 2018 and 2019 payment determinations in the HAC Reduction Program, and similar modifications to the performance period for the Hospital VBP Program FY 2018 program year.

Prior to deciding to propose abbreviated reporting periods for the FY 2018 and FY 2019 payment determinations, CMS took several factors into consideration, including the recommendations of the measure steward; the feasibility of using a combination of ICD–9 and ICD–10 data without the availability of the appropriate measure software, minimizing provider burden; program implementation timelines; and the reliability of using shortened reporting periods, as well as, the importance of continuing to publicly report this measure. CMS believes that using a 15-month reporting period for the FY 2018 payment determination and a 21-month reporting period for the FY 2019 payment determination best serves the need to provide important information on hospital patient safety and adverse events by allowing sufficient time to process the claims data and calculate the measures, while minimizing reporting burden and program disruption.

CMS will continue to test ICD–10 data that are submitted in order to ensure the accuracy of measure calculations, to monitor and assess the translation of measure specifications to ICD–10, as well as, potential coding variation, and to assess any impacts on measure performance. CMS notes that a prior reliability analysis of the PSI 90 measure (not the modified PSI 90 measure) showed that the majority of hospitals attain a moderate or high level of reliability after a 12-month reporting period. Although the modified PSI 90 measure has undergone substantial changes since this analysis, CMS believes that measure scores would continue to be reliable for the above proposed reporting periods, because the National Quality Forum (NQF), which reendorsed the modified version, found it to be reliable using 12 months of data.

In establishing the revised reporting periods for the modified PSI 90 measure, CMS also relied upon an analysis by Mathematica Policy Research (MPR), a CMS contractor, which found that the measure was **most reliable** with a 24-month reporting period, and **unreliable** with a reporting period of **less** than 12 months. While not discussed in the FY 2017 IPPS proposed rule, CMS would like to elaborate on the reliability of the shortened reporting period.

CMS took into account that the findings in the MPR analysis are based on older data (seven months of data from March 2010–September 2010), which do not reflect changes to current inter-hospital variation over time due to quality improvements. The findings also simulate results over a two-year period, based on seven months of data; and use an older version of the PSIs (analysis uses v4.2; NQF-endorsed uses v6.0) that does not include improvements in Present on Admission Indicator (POA) coding, a composite with ten component indicators with a revised weighting scheme or refinements to the component indicators. Therefore, CMS believes that the proposed abbreviated reporting periods for the modified PSI 90 measure would produce reliable data because the reporting periods are still greater than 12 months.

Question 5: What is the measurement period of the PSI 90 composite for the FY 2018 Hospital IQR Program?

For the FY 2018 payment determination, CMS will use a 15-month reporting period spanning July 1, 2014 through September 30, 2015. The 15-month reporting period would only apply to the FY 2018 payment determination and would only use ICD–9 data. For more information on the FY 2018 reporting period, we refer readers to question 4.

Question 6: What is the measurement period of the PSI 90 composite for the FY 2019 Hospital IQR Program?

For the FY 2019 payment determination, CMS will use a 21-month reporting period spanning October 1, 2015 through June 30, 2017. The 21-month reporting period would only apply to the FY 2019 payment determination and would only use ICD–10 data. For all subsequent payment determinations after FY 2019, CMS proposed to use the standard 24-month reporting period, which would only use ICD–10 data. For more information on the FY 2019 reporting period, we refer readers to question 4.

Question 7: What version of the PSI 90 composite will CMS use in FY 2018 for the Hospital IQR Program?

In the FY 2017 inpatient prospective payment system (IPPS) final rule (81 FR 57128–57133), CMS finalized the proposal to adopt refinements to the AHRQ Patient Safety and Adverse Events Composite (NQF #0531) for the Hospital IQR Program, beginning with the FY 2018 payment determination and subsequent years. Please refer to questions 35–43 for a summary of the changes made to the measure.

Question 8: What version of the PSI 90 composite will CMS use in FY 2018 for the HAC Reduction Program?

In the FY 2017 IPPS final rule (81 FR 57013-57020), CMS finalized the proposal to adopt refinements to the AHRQ Patient Safety and Adverse Events Composite (NQF #0531) for the HAC Reduction Program beginning with the FY 2018 payment determination and subsequent years. Please refer to questions 35–43 for a summary of the changes made to the measure.

Question 9: What software version will be used to calculate the PSI 90 composite for the FY 2018 Hospital IQR Program?

A recalibrated version of the PSI software v6.0 will be used to calculate the FY 2018 Hospital IQR Program results.

Question 10: What is the measurement period of the PSI 90 composite for the FY 2018 HAC Reduction Program?

For the FY 2018 payment determination, CMS will use a 15-month reporting period spanning July 1, 2014 through September 30, 2015. The 15-month reporting period would only apply to the FY 2018 payment determination and would only use ICD–9 data. For more information on the FY 2018 reporting period, we refer readers to question 4.

Question 11: What is the measurement period of the PSI 90 composite for the FY 2019 HAC Reduction Program?

For the FY 2019 payment determination, CMS will use a 21-month reporting period spanning October 1, 2015 through June 30, 2017. The 21-month reporting period would only apply to the FY 2019 payment determination and would only use ICD–10 data. For all subsequent payment determinations after FY 2019, CMS proposed to use the standard 24-month reporting period, which would only use ICD–10 data. For more information on the FY 2019 reporting period, we refer readers to question 4.

Question 12: What software version will be used to calculate the PSI 90 composite for the FY 2018 HAC Reduction Program?

A recalibrated version of the PSI software v6.0 will be used to calculate the FY 2018 Hospital IQR Program results.

Question 13: What version of the PSI 90 composite will CMS use in FY 2018 for the Hospital VBP Program?

CMS will use the current (old) version of the PSI 90 composite in the FY 2018 Hospital VBP Program.

Question 14: Why is CMS moving forward with the new version of the PSI 90 composite for the HAC Reduction Program and Hospital IQR Program in FY 2018, but not the Hospital VBP Program?

CMS is unable to adopt the modified PSI 90 measure in the Hospital VBP Program beginning with the FY 2018 program year due to certain statutory requirements in the Hospital VBP Program, which are not required in the Hospital IQR Program or the HAC Reduction Program.

As CMS noted in the FY 2017 IPPS proposed rule, section 1886(o)(2)(A) of the Social Security Act (SSA or the Act) requires the Hospital VBP Program to select measures that have been specified for the Hospital IQR Program. The Hospital IQR Program finalized the modified PSI 90 measure in this FY 2017 IPPS final rule (81 FR 57128-57133).

In addition, section 1886(o)(2)(C)(i) of the Act requires the Hospital VBP Program to refrain from beginning the performance period for a new measure until data on the measure have been posted on *Hospital Compare* for at least one year. The Hospital IQR Program is finalizing the modified PSI 90 measure in this final rule but measure data have not yet been posted on *Hospital Compare*; and CMS is required to wait one full year after data have been posted before that measure's performance period may begin in the Hospital VBP Program.

Finally, section 1886(o)(3)(C) of the Act requires that the Hospital VBP Program establish performance standards for each measure not later than 60 days prior to the beginning of the performance period. CMS anticipates adopting the modified PSI 90 measure in future rulemaking as soon as the statutory requirements laid out in the Act have been met.

In the FY 2018 IPPS proposed rule, CMS is proposing to remove the current PSI 90 measure from the Hospital VBP Program beginning with the FY 2019 program year due to the operational constraints associated with calculating measure scores for the current measure for FY 2019 and subsequent years. Because of the priority of improving patient safety and reducing adverse events during inpatient stays, and with substantive refinements made to the measure in response to feedback as further described below, CMS is now proposing to adopt a modified version of the current PSI 90 measure, entitled Patient Safety and Adverse Events Composite (NQF #0531), for the Hospital VBP Program for the FY 2023 program year and subsequent years. For more information on this proposal, please reference the FY 2018 IPPS proposed rule.

Question 15: What is the measurement period of the PSI 90 composite for the FY 2018 Hospital VBP Program?

For the FY 2018 payment determination, CMS will use a 15-month performance period spanning July 1, 2014 through September 30, 2015. The 15-month performance period would only apply to the FY 2018 payment determination and would only use ICD–9 data. For more information on the FY 2018 reporting period, we refer readers to question 4. The baseline period was not modified, and spans from July 1, 2010 through June 30, 2012.

Question 16: What is the measurement period of the PSI 90 composite for the FY 2019 Hospital VBP Program?

The previously finalized performance period for the FY 2019 Hospital VBP Program was July 1, 2015 through June 30, 2017. The previously finalized baseline period for the FY 2019 Hospital VBP Program was July 1, 2011 through June 30, 2013.

CMS stated in the FY 2018 IPPS final rule:

> In the FY 2017 IPPS/LTCH PPS final rule (81 FR 56979 through 56981), we finalized our proposal to shorten the performance period for the current PSI 90 measure for the FY 2018 program year due to concerns associated with combining measure performance data that use both ICD–9 and ICD–10 data in calculating performance scores under the measure. In that final rule, we explained our system requires an ICD–10 risk-adjusted version of the AHRQ PSI software in order to calculate scores using ICD–10 codes, and AHRQ needs a full year of nationally representative ICD–10 coded data before it can complete development of risk-adjusted models based on a national reference population for this software. This means the AHRQ PSI software will not be available for us to calculate scores until late CY 2017.
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> More importantly, we noted an ICD–10 version of the current PSI 90 measure is not being developed (81 FR 56980), nor will ICD–10 AHRQ QI software be available to calculate performance scores for the FY 2019 program year (81 FR 56981). As a result, we will not be able to calculate performance scores for the current PSI 90 measure for the FY 2019 program year because these scores would include ICD–10 data. Based on these concerns, in the FY 2017 IPPS/ LTCH PPS final rule (81 FR 56981), we signaled our intent to propose to remove the current PSI 90 measure from the Hospital VBP Program beginning with the FY 2019 program year. We are now proposing in this FY 2018 IPPS/LTCH PPS proposed rule to remove the current PSI 90 measure from the Hospital VBP Program beginning with the FY 2019 program year.

For more information on the proposal, please reference the FY 2018 IPPS final rule.

Question 17: What software version will be used to calculate the PSI 90 composite for the FY 2018 Hospital VBP Program?

Recalibrated PSI software version v5.0.1 will be used to calculate the FY 2018 Hospital VBP Program results for the PSI 90 composite. The announcement of the software version and the updated performance standards following CMS's technical correction was made on March 2, 2016, through this *QualityNet* news article: https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetBasic&cid=1228775567103.

Question 18: What software version will be used to calculate the PSI 90 composite for the FY 2019 Hospital VBP Program?

Recalibrated PSI software version v5.0.1 will be used to calculate the FY 2019 Hospital VBP Program results for the PSI 90 composite. The announcement of the software version and the updated performance standards following CMS's technical correction was made on February 24, 2017, through this *QualityNet* news article: https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetBasic&cid=1228776023840.

Although a technical update was announced, we refer readers to question 16 and the FY 2018 IPPS proposed rule for proposals made to remove the current version of the PSI 90 composite from the FY 2019 Hospital VBP Program.

Question 19: Is there one reference point that summarizes the changes made to the PSI 90 composite in the Hospital IQR Program, HAC Reduction Program, and Hospital VBP Program?

A summary of the PSI calculations for the Hospital IQR Program, HAC Reduction Program, and Hospital VBP Program is available on *QualityNet*: https://www.qualitynet.org/dcs/ContentServer?cid=1228695355425&pagename=QnetPublic%2FPage%2FQnetTier4&c=Page.

NOTE: The HAC Reduction Program and Hospital IQR Program portion of the table will be updated when the HSRs are released.

Question 20: Are the HSRs that contain information for the HAC Reduction Program and Hospital VBP Program released quarterly or annually?

The reports for the HAC Reduction Program and Hospital VBP Program are released on an annual basis. The HAC Reduction Program reports have historically been released in July, and the Hospital VBP Program reports are released on or around August 1. The Hospital VBP Program has an additional HSR containing the claims and results from the PSI 90 composite that is typically released annually in April.

Question 21: Are the results to the PSIs available now? How do we receive our results?

The FY 2018 PSI 90 results are available for hospital download now. The HSRs containing the claims and results for the PSI 90 composite were sent via the Auto Route Inbox through the *QualityNet Secure Portal* Secure File Transfer application.

The announcement regarding the distribution of the report is available through this *QualityNet* news article: https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetBasic&cid=1228776062445.

Question 22: I have seen the PSIs on HSRs, but is there any other report that is updated periodically?

The PSIs are included in the HSRs for the Hospital IQR Program, HAC Reduction Program, and Hospital VBP Program. The PSIs are also displayed in the Hospital IQR Program preview reports and on the CMS *Hospital Compare* website. The PSIs are included in the Hospital VBP Program Percentage Payment Summary Report, Baseline Measures Report, and on the CMS *Hospital Compare* website on the Hospital VBP Program tables and pages. The HAC Reduction Program also displays results on *Hospital Compare*. In addition, the PSIs are included in the *Hospital Compare* Overall Hospital Quality Star Rating.

Question 23: When should we expect to see the component weights for the recalibrated software (Medicare Fee-for-Service [FFS] population)?

Documentation will be available on *QualityNet* when HSRs are released in July 2017.

Question 24: Any hip fracture not present on admission is also a HAC injury. Aren't hospitals being penalized twice?

If the commenter is referring to the Falls and Trauma HAC, which includes fractures and injuries, the Deficit Reduction Act (DRA) Hospital-Acquired Conditions and Present on Admission Indicator Reporting (HAC-POA) provision is applicable for secondary diagnosis code reporting only–as the selected conditions are designated as a complication or comorbidity (CC), or a major complication or comorbidity (MCC), when reported as a secondary diagnosis. For the DRA HAC payment provision, a payment adjustment is only applicable if there are no other CC/MCC conditions reported on the claim. The incidence of a claim not having another CC/MCC diagnosis along with a hip fracture would seem unlikely in the Medicare population.

CMS previously addressed the concern of measure overlap in programs and the potential of hospital's being penalized twice in the FY 2015 IPPS final rule. For example, PSIs are included in both the HAC Reduction Program and the Hospital VBP Program. As stated in the final rule, CMS notes that these measures cover topics of critical importance to quality improvement in the inpatient hospital setting, and to patient safety. We selected these quality measures because we believe that HAC measures comprise some of the most critical patient safety areas, therefore justifying the use of measures in more than one program.

We further stress that the HAC Reduction Program and the Hospital VBP Program are separate programs with different purposes and policy goals. For example, the HAC Reduction Program is a program that reduces payments to hospitals for excess HACs to increase patient safety in hospitals. On the other hand, the Hospital VBP Program is an incentive program that redistributes a portion of the Medicare payments made to hospitals, based on their performance on various measures. Therefore, although the measures exist in more than one program, the measures are used and calculated for very distinct purposes. Accordingly, as stated above, we believe that the critical importance of these measures to patient safety warrants their inclusion in both programs. We will, in the future, monitor the HAC Reduction and Hospital VBP Programs, and analyze the impact of our measures selection, including any unintended consequences with having a measure in more than one program; and will revise the measure set in one or both programs if needed.

Question 25: Because of recalibration to [the] Medicare sample, can PSI 90 still be utilized with all-payer data?

In order to use all-payer data, you may use the all-payer software available on the AHRQ QI website: http://www.qualityindicators.ahrq.gov.

Question 26: Is the recalibration only in the SAS version of the software or also in the WIN version?

The recalibration is only done on the SAS version of the software. In order to receive the SAS version of the recalibrated software, you would need to request the software from the *QualityNet* Help Desk. You may contact the *QualityNet* Help Desk by calling (866) 288-8912, Monday through Friday, 7 a.m. to 7 p.m. CT, or by emailing qnetsupport@hcqis.org. The all-payer version of the software (not recalibrated) is available on the AHRQ QI website: www.qualityindicators.ahrq.gov/.

Question 27: Where can I find the all-payer version of the PSI software?

The all-payer version of the PSI software was removed from the AHRQ QI website a few weeks ago because of the error discussed in questions 1–3. We anticipate adding the updated software to the AHRQ QI website in May. Please check back to the AHRQ QI website in the future.

Question 28: Is it just the CMS-recalibrated version of PSI 90 that has an average of 1.0 (observed/expected) and the all-payer version will still calculate a PSI 90 score that may or may not have an average of 1.0?

The all-payer and recalibrated CMS versions of PSI 90 are calculated relative to the average rate in the respective reference populations. This results in an observed-to-expected ratio of "1" in both versions.

Question 29: Do you have an estimated time that the ICD–10 software will be available?

For the all-payer (not recalibrated) software, AHRQ expects to have ICD–10 software available later in 2018; this version will actually come after the Medicare FFS version. AHRQ currently has ICD–10 on its website, but the current software only calculates numerators and denominators. In order to get risk-adjusted software, you need a full year of complete ICD–10 coded data. AHRQ uses calendar years.

AHRQ is still getting in 2016 calendar year data. So, once AHRQ has a full year of data and has looked at the data quality for ICD–10, AHRQ will create a risk-adjusted version. The recalibrated software will be available for the FY 2019 Hospital IQR Program and HAC Reduction Program HSRs. CMS anticipates releasing the FY 2019 Hospital IQR Program HSRs in April 2018.

Question 30: Where can I find the risk adjustment for each PSI?

Recalibrated software versions 5.0.1 and 6.0, which include risk-adjustment coefficients, are available upon request from the *QualityNet* Help Desk. You may contact the *QualityNet* Help Desk by calling (866) 288-8912, Monday through Friday, 7 a.m. to 7 p.m. CT, or by emailing qnetsupport@hcqis.org.

Question 31: Where will resources and information be posted regarding the recalibrated version of the PSI software?

Resources for the recalibrated software will be available on *QualityNet*: Hospitals-Inpatient > Claims-Based Measures > Agency for Healthcare Research and Quality (AHRQ) Indicators: https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1228695321101.

Question 32: Are the composite weights published online?

A summary of component weights in PSI 90, v5.0 and v6.0, is available in the AHRQ QIs PSI 90 Fact Sheet: https://www.qualityindicators.ahrq.gov/News/PSI90_Factsheet_FAQ.pdf. The recalibrated component weights in PSI 90 v6.0 will be made available when the HSRs are released for the FY 2018 Hospital IQR Program and HAC Reduction Program.

Question 33: Can PSIs be associated to a hospice-status patient?

AHRQ does not recommend loading discharges for hospice or palliative care into the AHRQ QI software, as rescue measures are not expected to be taken. There is no specific exclusion for hospice or palliative care in the software code itself, or in the technical specifications. The inclusion of discharges receiving hospice or palliative care can be expected to impact observed rates for all AHRQ PSI measures.

Question 34: What is the PSI 90 composite?

The Patient Safety and Adverse Events Composite, known as PSI 90 (v6.0), is an updated and modified version of the Patient Safety for Selected Indicators Composite Measure (v5.0 and prior). Both versions of PSI 90 combine the smoothed (empirical Bayes shrinkage) indirectly standardized morbidity ratios (observed/expected ratios) from selected AHRQ PSIs to provide a composite using clinical judgment. The composite provides an overview of hospital-level quality as it relates to a set of potentially preventable hospital-related events associated with harmful outcomes for patients.

Question 35: What were the updates to the new version of PSI 90?

There were a number of changes to PSI 90 for ICD–9–CM diagnosis and procedure codes in v6.0. The following lists a high-level summary of the changes: a name change; the number of component indicators increased from eight to ten; PSI 08, PSI 12, and PSI 15 changes; the reference population updated and only includes data with complete POA data; component weighting now incorporates harm; and component weights have changed and are more equally distributed among the component indicators. For more information on these changes, please refer to questions 36–43.

Question 36: Was there a name change between the current and new version of the PSI 90 composite?

The name was changed from "Patient Safety of Selected Indicators Composite" to "Patient Safety and Adverse Events Composite" to capture the concept of patient harm resulting from a patient safety event.

Question 37: Were underlying PSIs removed or added to the new version of the PSI 90 composite?

The number of component indicators increased from eight to ten. PSIs 09, 10, and 11 were added to better capture the range of PSI events. PSI 07 (Central Line Related Bloodstream Infection Rate) was removed as the alternative National Healthcare Safety Network measure titled, "Central Line-Associated Bloodstream Infection," is used in several federal programs. This modified version of PSI 90 component indicators includes the following:

PSI 03 Pressure Ulcer Rate

PSI 06 Iatrogenic Pneumothorax Rate

PSI 08 In-Hospital Fall with Hip Fracture Rate

PSI 09 Perioperative Hemorrhage or Hematoma Rate

PSI 10 Postoperative Acute Kidney Injury Requiring Dialysis Rate

PSI 11 Postoperative Respiratory Failure Rate

PSI 12 Perioperative Pulmonary Embolism (PE) or Deep Vein Thrombosis (DVT) Rate

PSI 13 Postoperative Sepsis Rate

PSI 14 Postoperative Wound Dehiscence Rate

PSI 15 Unrecognized Abdominopelvic Accidental Puncture/Laceration Rate

Question 38: Can you summarize the changes made to PSI 08 In-Hospital Fall with Hip Fracture Rate?

PSI 08 (In-Hospital Fall with Hip Fracture Rate) now targets all hip fractures from inpatient falls, not just those that occur postoperatively. Based on the updated specification, the name of the indicator was changed from "Postoperative Hip Fracture Rate" to "In-Hospital Fall with Hip Fracture Rate."

Question 39: Can you summarize the changes made to PSI 12 Perioperative Pulmonary Embolism (PE) or Deep Vein Thrombosis (DVT) Rate?

Two changes were made to PSI 12 Perioperative Pulmonary Embolism (PE) or Deep Vein Thrombosis (DVT) Rate. Isolated calf vein DVT was removed from the numerator specification and is no longer considered a PSI 12 event. Isolated calf vein DVT events are more likely to be detected during screening and are often clinically insignificant events.

In addition, patients with any diagnosis of acute brain and/or spinal injury were removed from the denominator specification (target population) as PSI 12 events in this population may be less preventable due to safety concerns with pharmacological prophylaxis in the hyper-acute period.

Question 40: Can you summarize the changes made to PSI 15 Unrecognized Abdominopelvic Accidental Puncture/Laceration Rate?

The specifications for PSI 15 Unrecognized Abdominopelvic Accidental Puncture/Laceration Rate were refined so that the indicator focuses on the most serious intraoperative injuries due to an accidental puncture or laceration. The denominator is now limited to abdominal and pelvic surgery. The numerator is limited to accidental punctures or lacerations that require a return to the operating room at least one day after the index procedure. Based on these new specifications, the indicator name has been changed from "Accidental Puncture or Laceration Rate" to "Unrecognized Abdominopelvic Accidental Puncture/Laceration Rate."

Question 41: Was the reference population updated to only include complete Present on Admission (POA) data?

The reference population was updated and only includes data with complete POA data. The previous version of the software used 2010 data from the Healthcare Cost and Utilization Project (HCUP) from 42 states as the reference population. All data were used regardless of POA reporting. Missing POA information was inputted using the prediction module.

The modified version of PSI 90 (v6.0) uses 2013 HCUP data from 36 states and only includes states that provide POA information. This change reflects the extended period for POA to be operationalized across all community-based hospitals, given mandated POA reporting on Medicare inpatient claims from October 1, 2008, onward.

Question 42: What was the change in component weighting?

Component weighting now incorporates harm. In previous versions of PSI 90 (v5.0 and prior), weighting of the individual component indicators was based on only volume weights (numerator weights), calculated on the number of safety-related events for the component indicators in the all-payer reference population.

In the modified version of PSI 90 (v6.0), weighting of the individual component indicators is based on two concepts: the volume of the adverse event and the harm associated with the adverse event. The volume weights were calculated based on the number of safety-related events for the component indicators in the all-payer reference population.

The harm weights were calculated by multiplying empirical estimates of the probability of excess harms associated with each patient safety event by the corresponding utility weights (1–disutility). Disutility is the measure of the severity of the adverse events associated with each of the harms, i.e., outcome severity, or least preferred states from the patient perspective. These excess harm probabilities were estimated by comparing patients with a safety-related event to very similar, otherwise eligible patients without that safety-related event over up to one year after the discharge during which the index event happened.

Linked-claims data for two years of Medicare FFS beneficiaries (2012–2013) were used for this analysis. To account for confounders in estimating the marginal impact of each PSI on the risk of excess harms, inverse probability propensity weighting with indicator- and harm-specific propensity models were calculated that included age, sex, racial/ethnic categories, Medicaid eligibility, point of origin, modified MS-DRG categories, Elixhauser comorbidities, and co-occurring PSIs.

Question 43: Are the component weights more equally distributed?

Components weights have changed and are more equally distributed among the component indicators. The new weighting scheme, along with the addition of indicators and the removal of PSI 07, more equally distributes the component weights compared to earlier versions (see Table 1) of the AHRQ QIs PSI 90 Fact Sheet available on the AHRQ website: qualityindicators.ahrq.gov.

For example, PSI 12 and PSI 15 accounted for 77.7% of the total weight in v5.0 compared with 19.3% in v6.0. Similarly, the weight of PSI 13 increased from 5.7% (v5.0) to 24.1% (v6.0) when the harm to the patient associated with postoperative sepsis is taken into account.

In summary, the new weighting approach improves the validity and reliability of the composite by accounting for both the frequency of harms associated with each patient safety event, as well as, the disutility (or severity) of those harms. The revised weighting approach offers a better measure of iatrogenic harms experienced by patients in U.S. hospitals, supporting performance comparisons based on a hospital's success at keeping patients safe from these harms.

Question 44: Do the PSI indicators apply to inpatients only?

The PSIs do apply to inpatient stays only. So the all-payer PSIs apply to all inpatients, 18 years and older, and the Medicare FFS, of course, applies to patients that have Medicare FFS.

Question 45: Is inpatient rehab or inpatient psychiatric included in PSI 90?

The AHRQ software was developed for acute medical and surgical discharges. It has not been tested for inpatient psychiatric care or rehabilitation stays; including those discharges in your input dataset can lead to unexpected results. Obstetric stays for delivery should be included (they are considered acute). All discharges following any length of stay should be included.

Question 46: How often will the harm weights be reassessed?

When we get a full year of ICD–10 data, we will be reassessing the ICD–10 harm rate weight. The harms actually are based on Medicare FFS data. We will be developing a harms rate weight that are only Medicare FFS, but also a different harm rate weight for all-payer.

You could envision harms for the younger population would be different than harms for the older population. For the purposes of CMS programs, the harms that are based on Medicare FFS data are perfect. But, we do need a full year of ICD–10 data because we do look longitudinally in order to calculate the harms, so our expectation is that we have one for when we release later in 2018, the harms would have been updated; if not, it would be in the subsequent version.

Question 47: What are the harm weights and how were they developed?

Harms weights were developed specifically for the AHRQ QIs. Based on literature review and expert opinion from 13 clinical specialists in surgery, internal medicine, nephrology, trauma and emergency care, critical care, nursing, and home healthcare, 37 downstream harms associated with PSIs were defined. Please see Appendix A of the AHRQ QIs PSI 90 Fact Sheet available on the AHRQ website: qualityindicators.ahrq.gov.

For some PSIs, harms were included for up to one year after the PSI event (such as mortality, skilled nursing facility days, and outpatient dialysis). An expert panel then ranked the harms. These rankings, along with information from relevant studies in the literature, were then used to assign disutility, or a measure of the severity of the adverse effects, associated with each of the harms.

Question 48: Do PSIs apply to observation patients?

No, they do not. Observation patients are considered outpatient according to payment system rules, so they would not be included in the calculation. The only exception is, if an observation stay becomes an inpatient stay. And, under certain billing rules, there could be certain scenarios where what happens under that observation stay is rolled up into the bill for inpatient stay. But, if someone just comes in for an observation stay, or if that observation stay is billed separately from an inpatient stay, then no, observation stays are excluded.

Question 49: Where can I go if I have a specifications question for an underlying PSI of the PSI 90 composite?

AHRQ technical specifications documents explain the inclusion/exclusion criteria for both the numerator and denominator for each measure. These criteria are also applicable to the recalibrated version. For this information, please refer to the Patient Safety Indicators Technical Specifications on *QualityNet*: Hospitals-Inpatient > Claims-Based Measures > Agency for Healthcare Research and Quality (AHRQ) Indicators > Resources.

NOTE: The Resources web page will be updated with FY 2018 Hospital IQR Program and HAC Reduction Program information when the HSRs are released in July. If you have specification or measure methodology questions regarding the PSI 90 composite that are not answered on *QualityNet*, please visit the AHRQ website at www.qualityindicators.ahrq.gov or email AHRQ at QIsupport@ahrq.hhs.gov.