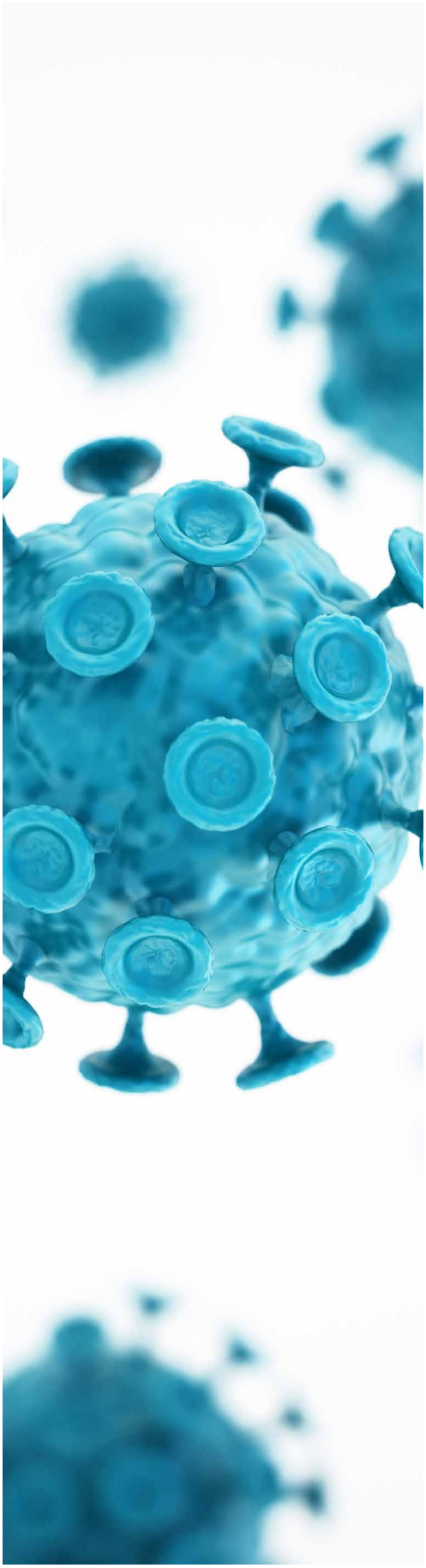
Your Dollars Matter:
Inpatient Quality Reporting and Healthcare-Acquired Infections



Introduction: Linking Value-Based Purchasing to Inpatient Quality Reporting and Healthcare-Acquired Infections

It came as no surprise when the U.S. Department of Health and Human Services (HHS) Office of Inspector General (OIG) included Hospital Quality Reporting as a target for review in its 2017 Work Plan. The OIG's intent was to determine to what degree the Centers for Medicare & Medicaid Services (CMS) validated Hospital Inpatient Quality Reporting (IQR) data used for the Hospital Value-Based Purchasing (VBP) and Hospital-Acquired Condition Reduction Programs (HACRP). The review indicated the need for CMS to use analytics to ensure the integrity of hospital-reported quality data and resulting payment adjustments for healthcare-acquired infection (HAI) and process-of-care measures.

Previously, hospitals were overloaded with validating all of their publicly reported quality data; however, the results of the 2017 OIG review provided hospitals with a focus area for their quality reporting compliance efforts. **More than ever, organizations should plan for focused claims-based reviews, as it is necessary for them to understand how IQR data links payment to quality and enables consumers to make informed decisions about their healthcare needs.** Auditors and compliance practitioners must become familiar with the current IQR measures established by CMS, as well as the Centers for Disease Control and Prevention (CDC) definition for reportable HAIs. This white paper, published by PYA and the Association of Healthcare Internal Auditors (AHIA), will provide auditors and compliance practitioners leading practice guidance for performing focused claims-based reviews to evaluate the link between IQR payment and quality.

OIG Work Plan Findings and Recommendations

The OIG 2017 Work Plan requires testing the reliability of hospital-reported quality measure data. During the early part of 2017, the OIG conducted the Hospital IQR audit for payment year 2016 to evaluate the process by which CMS validated the accuracy and completeness of self-reported hospital IQR data (detailed in *CMS Validated Hospital Inpatient Quality Reporting Program Data, But Should Use Additional Tools to Identify Gaming*).[1]

The results of the validation, issued in April 2017, demonstrated that 99% of the hospitals reviewed by CMS passed validation; for those that failed, CMS implemented corrective action plans, including VBP payment reduction and additional training. However, the audit also concluded that CMS did not utilize data analytics to detect inaccurate or incomplete reporting of quality data. As an outcome of these results, it is anticipated that an approach that includes data analysis will likely be expected for future CMS validation of reported quality metrics. The audit further identified the need for future targeted analysis of HAI, and the need to conduct additional reviews for hospitals with aberrant data reporting patterns.

CMS has already taken the necessary steps to obtain patient-level data for HAI information submitted to the CDC by the National Healthcare Safety Network (NHSN) for analytical purposes. The OIG concluded the use of analytics will help identify inaccurate or inadequate reporting and protect the integrity of programs that administer quality-based payment adjustments.

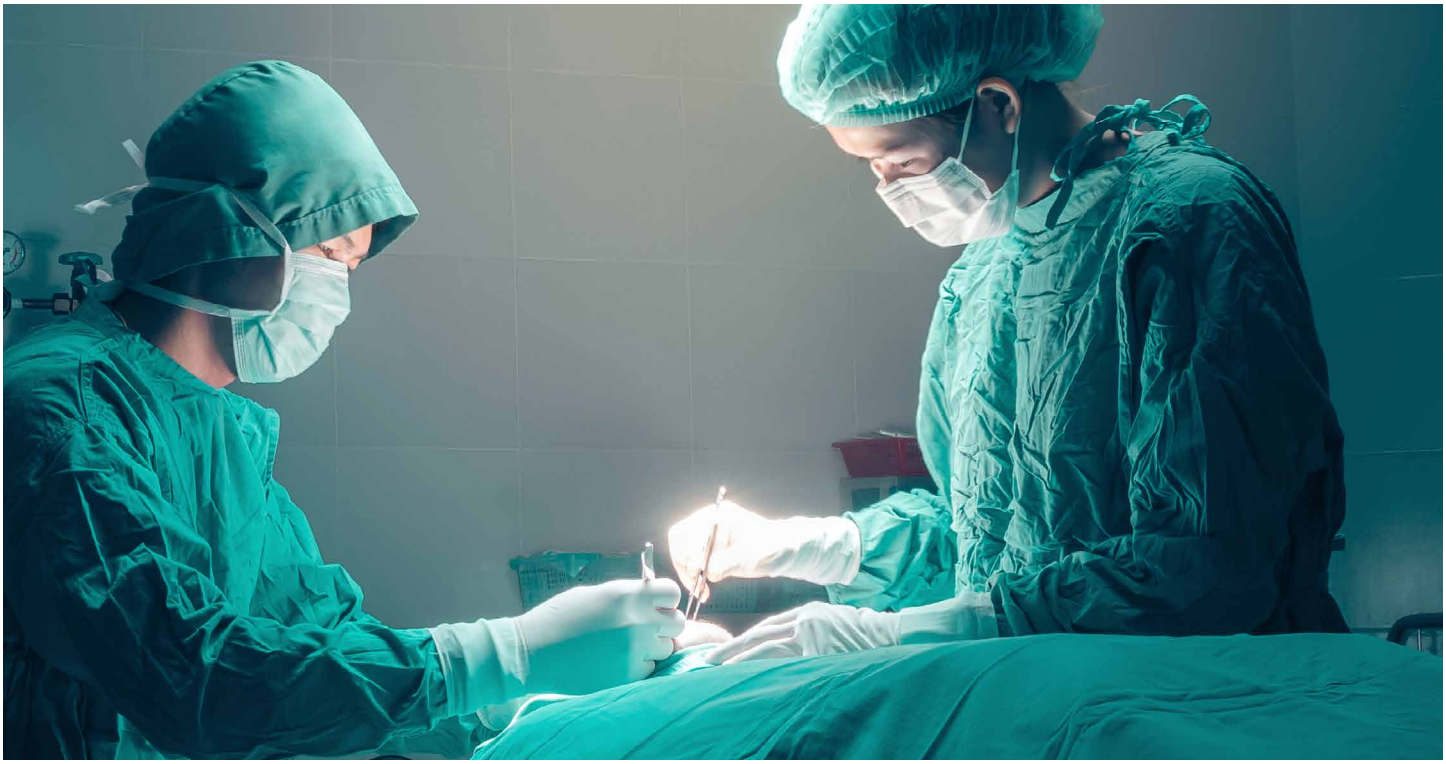
1 https://oig.hhs.gov/oei/reports/oei-01-15-00320.pdf.

Healthcare-Acquired Infections

The CMS quality-based payment programs rely on, and validate, information for acute-care hospital IQR HAI data and process-of-care measures. For HAIs, hospitals provide facility data and report infection cases to the NHSN. The CDC then provides the number of reported and predicted infections to CMS. Many organizations utilize data management consulting companies to capture claims data and send that information quarterly to the NHSN, CDC, and CMS on their behalf.

The CDC's NHSN is the United States' most widely used HAI tracking system, housing data for more than 17,000 hospitals and healthcare facilities. CMS uses the HAI data as part of the HACRP, which began in federal fiscal year (FY) 2015. HACRP reduces payment by 1% to hospitals with the highest rate decile of hospital-acquired conditions as determined by baseline and performance periods. The baseline period is the time frame used to establish the thresholds and benchmarks for a given FY. The performance period is the time frame used to identify an organization's performance rate for a given FY. The performance period for FY 2019 safety measures ended 6/30/17. Current performance will affect outcomes and payments for 2020 and beyond:

Fiscal Year	Measure Description	Baseline Period	Performance Period
2020	Safety	1/1/16 – 12/31/16	1/1/18 – 12/31/18
2021	Safety	1/1/17 – 12/31/17	1/1/19 – 12/31/19



The 2019 safety measures include HAIs for:

Catheter-Associated Urinary Tract Infection (CAUTI)	Central-Line-Associated Blood Stream Infection (CLABSI)	Surgical Site Infection (SSI) for Colon Surgery and Abdominal Hysterectomy	*Clostridium Difficile* Infection (CDI)	Methicillin-Resistant *Staphylococcus Aureus* (MRSA) Bacteremia
Infections that involve any part of the urinary system, including urethra, bladder, ureters, and kidneys. When a urinary catheter is not inserted correctly, is not kept clean, or is left in a patient too long, germs can travel through the catheter and infect the bladder and kidneys.	Infections that happen when a central line (a tube that a doctor usually places in a large vein of a patient's neck or chest to give important medical treatment) is not inserted correctly or not kept clean. This allows the central line to become a means of germs entering the body and causing potentially deadly infections in the blood.	Infections that occur after surgery in the part of the body where the surgery took place. Sometimes these infections involve only the skin; other SSIs can involve tissues under the skin, organs, or implanted material.	Infection that can cause life-threatening diarrhea. When a person takes antibiotics, good bacteria that protect against infection are destroyed for several months. During this time, patients can get sick from *C. difficile*.	Bloodstream infections caused by a type of staph bacteria that is resistant to many antibiotics.

Source: https://www.cdc.gov/nhsn/index.html

To validate the HAI measure, CMS requests lab cultures from selected facilities be examined quarterly. The lab results are used to identify cases likely to have involved infections that are reportable to the NHSN.

The NHSN and CDC define a reportable HAI as an infection in which the date the first element of the NHSN site-specific infection criterion occurs. The infection must be on, or after, the third calendar day from admission to the facility and during the seven-day infection window. The window includes the day the first positive diagnostic test was obtained, as well as the three calendar days before and after. In contrast, an infection is considered Present on Admission (POA) if the event date occurs on the day of admission, the two days before admission, and/or the day after admission, assuming the event is documented by the provider. Any infection identified as POA should not be reported as an HAI. Additional information regarding identifying HAI for NHSN surveillance can be found on the CDC website.[2]

2 https://www.cdc.gov/nhsn/index.html.

Risk-Adjustment Matters

Risk adjustment makes it possible to fairly compare hospital performance. The standardized infection ratio (SIR), a summary statistic that can be used to track HAI prevention progress over time, is calculated by dividing the number of observed events by the number of predicted events. Lower SIRs are ideal.

>1	1	<1
If the SIR is more than 1: There was an increase in the number of infections reported nationally compared to the national baseline.	**If the SIR is 1:** There were about the same number of infections reported nationally compared to the national baseline.	**If the SIR is less than 1:** There was a decrease in the number of infections reported nationally compared to the national baseline.

The SIRs are adjusted for risk factors that may impact the number of infections reported by a hospital, such as type of patient care location, hospital bed size, patient age, and other factors. Also, they are adjusted differently depending on the type of infection measured.

The SIRs for CLABSIs and CAUTIs are adjusted for:

- Type of patient care location.
- Hospital affiliation with a medical school.
- Patient care location bed size.

The SIRs for hospital-onset CDI and MRSA bloodstream infections are adjusted for:

- Facility bed size.
- The number of hospital-admitted patients who already have CDI or a MRSA bloodstream infection ("community-onset" cases).
- Hospital affiliation with a medical school.
- The type of test the hospital laboratory uses to identify *C. difficile* in patient specimens.

The SIRs for SSIs take into account patient differences and procedure-related risk factors for each type of surgery. These risk factors include, but are not limited to:

- Duration of surgery.
- Surgical wound class.
- Use of endoscopes.
- Re-operation status.
- Patient age.
- Patient assessment at the time of anesthesiology.

2016 HAI Progress Report

The HAI data is summarized at the national level within the HAI Progress Report. The 2016 HAI Progress Report, based on 2014 data, described significant reductions at the national level for nearly all infection types when compared to the baseline data; CLABSI and abdominal hysterectomy showed the greatest reduction.

Among national acute-care hospitals, the report found:

CLABSI (2008 - 2014) — DECREASED 50%

Colon Surgery SSI (2008 - 2014) — DECREASED 2%

CAUTI (2009 - 2014) — DID NOT CHANGE

CDI (2011 - 2014) — DECREASED 8%

Abdominal Hysterectomy SSI (2008 - 2014) — DECREASED 17%

MRSA Bacteremia (2008 - 2014) — DECREASED 13%

On the state level:

While 25 states performed better than the national SIR on at least two infection types, 20 states performed worse than the national SIR. The following table shows how each state fared on HAI progress:

State HAI Progress - Acute Care Hospitals

● Lower than 2018 baseline ○ No statistically significant change ● Higher than 2018 baseline

State	CLABSI	CAUTI	SSI-Abdominal Surgery	SSI-Colon Surgery	MRSA	CDIFF
Alabama	●	●	●	●	●	●
Alaska	●	○	○	○	●	○
Arizona	●	○	○	○	○	●
Arkansas	●	●	○	○	○	●
California	●	●	●	○	●	●
Colorado	●	●	○	●	●	●
Connecticut	●	●	○	●	●	●
Delaware	●	●	○	●	○	○
Florida	●	●	●	●	○	●
Georgia	●	●	○	●	○	●
Hawaii	●	●	○	○	○	●
Idaho	●	●	○	○	●	●
Illinois	●	●	●	●	●	○
Indiana	●	○	●	○	●	●
Iowa	●	●	○	○	●	○
Kansas	●	○	○	●	●	●
Kentucky	●	○	○	○	●	●
Louisiana	●	●	○	○	○	●
Maine	○	●	○	○	●	●
Maryland	●	●	○	○	●	●
Massachusetts	●	●	○	●	●	●
Michigan	●	●	○	●	○	●
Minnesota	●	●	○	○	●	●
Mississippi	●	○	●	●	●	●
Missouri	●	●	●	●	●	●
Montana	●	○	○	○	○	●
Nebraska	●	○	○	○	●	●
Nevada	●	○	○	●	○	●
New Hampshire	●	○	●	○	●	○
New Jersey	●	●	○	●	○	○
New Mexico	●	●	○	●	●	●
New York	●	●	○	●	●	●
North Carolina	●	●	○	●	●	●
North Dakota	●	●	○	○	○	○
Ohio	●	●	●	●	●	●
Oklahoma	●	●	●	○	○	●
Oregon	●	○	○	○	●	●
Pennsylvania	●	○	○	○	●	●
Rhode Island	●	●	○	○	●	●
South Carolina	●	○	○	○	○	●
South Dakota	●	○	○	●	●	○
Tennessee	●	○	○	○	○	●
Texas	●	○	●	●	●	●
Utah	●	●	●	●	●	●
Vermont	●	●	○	●	●	●
Virginia	●	○	○	○	●	○
Washington	●	●	○	○	○	○
West Virginia	●	●	○	●	○	○
Wisconsin	●	●	○	○	●	●
Wyoming	●	●	○	○	○	●

Access the CDC's progress report to check your state ranking.[3]

3 https://www.cdc.gov/hai/surveillance/progress-report/index.html.

Risk-Adjustment Internal Validation

The CDC "NHSN Patient Safety Data Quality Internal Guidance and Toolkit" provides recommendations for facilities that report data to the NHSN. Reporting facilities are required to follow NHSN methods and use NHSN definitions and criteria. The following information (not all-inclusive) describes site-specific infection activities to assist with internal validation. A comprehensive list is found on the CDC website.[4]

CLABSI and CAUTI Event

The CDC defines the "central line" as an intravascular catheter that terminates at, or close to, the heart or in one of the great vessels which is used for infusion, withdrawal of blood, or hemodynamic monitoring. Neither the insertion site, nor the type of device, may be used to determine if a line qualifies as a central line. The device must terminate in one of the great vessels or in, or near, the heart, and be used for one of the purposes outlined previously, to qualify as a central line.

The following are considered "great vessels" for the purposes of reporting central-line BSI and counting central-line days in the NHSN system:

- Aorta
- Pulmonary artery
- Superior vena cava
- Inferior vena cava
- Brachiocephalic veins
- Internal jugular veins
- Subclavian veins
- External iliac veins
- Common iliac veins
- Femoral veins
- In neonates, the umbilical artery/vein

The following devices are not considered central lines:

- Arterial catheters
- Arteriovenous fistula
- Arteriovenous graft
- Extracorporeal membrane oxygenation (ECMO)
- Hemodialysis reliable outflow (HeRO) dialysis catheters
- Intra-aortic balloon pump (IABP) devices

4 https://www.cdc.gov/nhsn/validation/index.html.

Data quality validation components vary for each measure. Your SIR will rely on proper collection of specific numerator and denominator indicators as described in the following tables.

CLABSI and CAUTI Event

DENOMINATORS:	NUMERATORS:
Ability to generate correct denominator data for entry into NHSN, utilizing NHSN protocols.	Ability to correctly and completely identify CLABSI or CAUTI events in real time.
For CLABSI, the data includes central line days and patient days.	Investigate all positive blood and urine cultures among patients with central lines and indwelling urinary catheters.
For CAUTI, the data includes indwelling urinary catheter days and patient days.	Maintain a log of positive cultures for tracking purposes.
Confirm the methods and definitions utilized by NHSN to count the denominator.	

SSI for Abdominal Hysterectomy and Colon Surgery

DENOMINATORS:	NUMERATORS:
Ability to generate and report monthly procedure denominators completely and correctly for procedures under surveillance.	Evaluate the sources of information for surgical infection events and surgical readmissions.
Determine which surgical procedures will be reported to NHSN, whether inpatient, outpatient, or both, and note the assigned surveillance period of 30 or 90 days for each procedure.	Identify all potential admission and readmission infections in real time during the prescribed surveillance period.
	Consider post-discharge surveillance with other facilities for tracking of outpatient SSI event re-admissions during the SSI surveillance period of 30 days for colon surgery and abdominal hysterectomy.
	Be able to correctly classify SSI cases using NHSN definitions as either Superficial Incisional, Deep Incisional, or Organ/ Space infections.

CDI and MRSA Event	
DENOMINATORS:	NUMERATORS:
Ability to generate correct monthly summary denominator data, such as facility-wide inpatient days, number of admissions to inpatient locations, encounters from the emergency department, 24-hour observation units, and other affiliated outpatient locations.	Ability to comprehensively identify and correctly assign positive laboratory tests as reportable vs. duplicate.
	Understand, and have the ability to correctly apply, the CDI/MRSA event following NHSN protocols.
	Be aware of MRSA-positive blood cultures and toxin-positive CDI test results among inpatient, emergency department, and 24-hour observation patients, as well as those obtained in facility-affiliated outpatient clinics on the day of admission.
	Maintain a log of positive cultures for tracking purposes.

How Can Audit and Compliance Help with Quality Reporting Compliance?

Intentionally not reporting data violates statutes and regulations. Failing to do it correctly, even accidentally, may also result in a violation. Whether you are using manual or electronic means to capture your NHSN data, annual internal validation efforts should include activities to ensure HAIs are correctly classified, risk-adjusted variables and denominator data are accurately collected, and data quality is checked. As healthcare continues to move in the direction of a VBP payment system, incorporating hospital quality reporting into your compliance plan is important.

A best practice measure for any organization should include validation, which is double-checking, or confirming, HAI data reported to the NHSN. This generally involves validating to ensure that all relevant infections were captured in the system by testing the denominator and numerator indicators as outlined in the preceding tables. It may also involve checking the accuracy, or quality, of the submitted data by performing coding validation. The CDC encourages healthcare facilities and states to validate the infection data they submit to NHSN. Currently, state health departments use different methods to validate HAI data that hospitals submit to NHSN. For example, some states only validate data from one facility, while other states validate more widely. The CDC is working with states to determine best practices and develop effective validation standards.[5]

As CMS takes steps to aggressively evaluate the validity of the value-based payment system, monitoring and testing HAI data should become a routine focus in your internal compliance efforts. Facilities should use the CDC toolkit to ensure staff readiness with NHSN definitions and methodology and annually assess current HAI data collection knowledge and practices, train the appropriate staff on these specifications, and keep up-to-date with changes.

Internal validation procedures and practices should also consider activities to assess overall risk-adjustment variables. These variables include appropriate collection of risk-adjustment elements for facility-level information, such as facility

5 https://www.cdc.gov/nhsn/validation/index.html.

bed size (intensive care unit [ICU] and non-ICU beds), location mapping, teaching hospital affiliation, and whether these have been correctly entered in the NHSN database.

The infection prevention program should also monitor validation activities. As the measure specifications have changed, it is of utmost importance to update your organization's compliance plan approach for monitoring these activities.

Therefore, infection prevention program management should work closely with the compliance department to design infection prevention program data validation and reporting controls at each stage of the data and metric reporting lifecycle, including:

- Governance
  - Framework and Methodologies
  - Roles and Responsibilities
  - Training
- Metric Inventory, Risk Assessment, Management
  - Inventory of Registries, Measures, and Owners
  - Maintenance and Change Management
  - Reporting and Communication Requirements
- Data Integrity
  - Data Sources
  - Data Quality for Metrics
  - Data Integrity (Data Collection/Maintenance)
- System Interfaces
  - Identification of Quality Reporting Systems
  - Systems/Tools Interfacing with Clinical Data
  - Interface Controls
  - System Report Writing/Programming Controls
- Collection, Reporting, Monitoring, and Process Improvement
  - Data Collection, Reporting, and Monitoring
  - Continuous Performance/Process Improvement

Internal audit can help by performing assessments of the design and implementation (i.e., operating effectiveness) of controls in the infection prevention program governance, policies and procedures, roles and responsibilities, and data validation procedures and practices. Documentary evidence should be assessed to confirm that appropriate documentation exists regarding review of controls and processes.

This multi-team collaboration between management, compliance, and internal audit can greatly help drive and measure quality reporting consistency and compliance. Consistent internal HAI data validation efforts will impact performance in 2020 and beyond.

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