

Healthcare-Associated Infections Rates in Ambulatory Surgical Centers

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Background

In 2009, the AHRQ contracted with IMPAQ International and the RAND Corporation to conduct a Phase I longitudinal program evaluation of the "National Action Plan (NAP) to Prevent Healthcare-Associated Infections" (HAI)(1), a broad multi-agency effort to improve health system safety and quality by reducing HAIs and associated morbidity, mortality, and costs. Phase 1 focuses on preventing and reducing infection rates in the acute care hospital setting.

In follow-up, in 2013, AHRQ expanded the evaluation team (ET) to include Insight Policy Research, IMPAQ International, and the RAND Corporation (Insight-IMPAQ-RAND) to further the longitudinal program evaluation of the Action Plan into Phase II (involving Ambulatory Surgical Centers [ASCs] and End-Stage Renal Disease Centers [ESRDCs]) and Phase III (Long-term Care Facilities [LTCFs]) settings.

The theoretical framework for the evaluation is the Context, Input, Process, and Product (CIPP) evaluation model (2). As part of the product evaluation, the evaluation team created an inventory of HHS data systems capable of HAI surveillance in these settings along with strengths and weaknesses of the systems and recommended measures that could be used to generate longitudinal data on HAI trends. Then, building on the inventories, the evaluation team worked with federal data stewards to obtain HAI rate information in ASCs. We present here available data systems and information on HAI surveillance in ASCs.

References

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3. Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP) <http://www.hcup-us.ahrq.gov/>
4. Owens, P.L., Barrett, M.L., Raetzman, S., Maggard-Gibbons, M., & Steiner, C.A. (2014). Surgical site infections following ambulatory surgery procedures. *JAMA*, 311, 709-716.

Methods

The ET identified desirable characteristics of a surveillance system for HAIs associated with ASCs as:

- (a) nationally representative,
- (b) widely available over geography and time
- (c) supporting linkages of data across ASC and settings in which post-procedure HAIs might be diagnosed or treated (e.g., emergency departments and acute care hospitals), and
- (d) including clinical detail.

The ET then:

- (a) identified HHS data systems that could potentially be useful for surveillance of HAIs associated with ASCs;
- (b) conducted discussions about the data systems with experts at AHRQ, CMS, CDC, and ASPe;
- (c) reviewed system-specific literature and documentation; and
- (d) requested HAI rates from federal data stewards whose provision of HAI rates was voluntary and dependent on availability of resources.

Findings

Key characteristics of the data systems that have been considered potentially capable of HAI surveillance in ASCs are presented here.

The **National Healthcare Safety Network (NHSN)**, administered by the Centers for Disease Control and Prevention (CDC), uses primary clinical data collected by health care facilities to monitor adverse events. A key strength is that the data requires direct observation by trained infection control professionals and thus, improves surveillance. While NHSN reporting in ASCs currently exists, data are not currently publically available.

Medicare Fee-For-Service (FFS) claims capture all billing data for beneficiaries in the traditional Medicare FFS program. Because these data can be linked across settings and over time using unique beneficiary identifiers, Medicare claims have the potential to provide a comprehensive estimate of SSI incidence following ambulatory surgery for the Medicare FFS population. Claims data are attractive for SSI post-surgery surveillance because of the widespread use of the codes and coding systems.

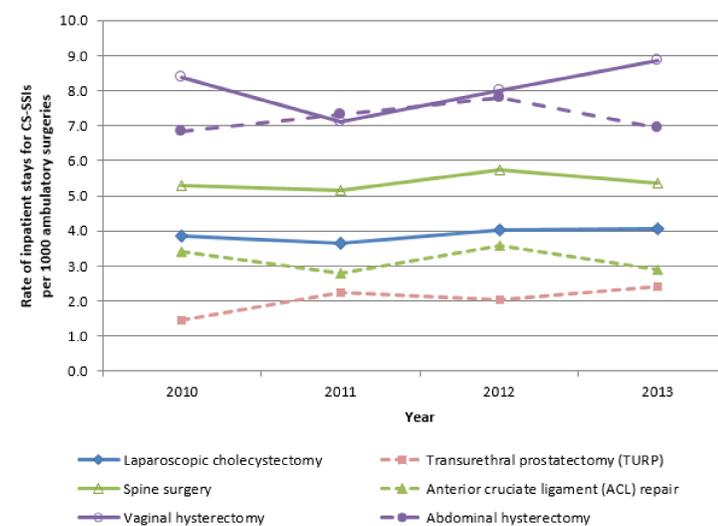
Conditions for Coverage Survey: To assure compliance with the Conditions for Coverage (CfCs) at ASCs, CMS has granted oversight authority to State Survey Agencies (SSAs) and four accrediting organizations (AO)*. Although ASCs accredited by an AO are exempt from routine surveys conducted by SSAs, the SSA may conduct a survey in response to a complaint. Additionally, non-accredited ASCs are surveyed regularly. Although surveillance on HAIs is not specifically assessed, infection control practices are measured with surveys to non-accredited ASCs.

Healthcare Cost and Utilization Project (HCUP) State Ambulatory Surgery Databases (SASD) include all-payer, encounter-level information on surgical procedures in hospital-owned ASCs. The **State Inpatient Databases (SID)** contain all-payer, discharge-level data on inpatient discharges. These databases include the censuses of ASC and inpatient claims for participating states. However, only a subset of HCUP-participating states have person-level identifiers that can be used to link records across care settings and over time.

Thus far, AHRQ's retrospective analyses of clinically-significant surgical site infection (CS-SSI) rates from 2010-2013 HCUP SASD and SID HCUP data from 7 states** using methods they previously developed are the only longitudinal data available(3, 4). The number of ambulatory surgeries showed year over year increase for all the surgical procedures reviewed (292,922 in 2010 vs 354,076 in 2013).

This is consistent with reported increased growth in utilization of ASCs. The mean rate for the 4-year period was 4.3 inpatient stays (for CS-SSIs) per 1000 surgeries. Figure 1 below shows the trends of CS-SSI rates over time for the ambulatory surgeries that were studied. The rates of CS-SSIs vary across each surgery; while the rates appear to vary over the 4 year timeframe, none of the year to year changes are statistically significant.

Figure 1. Rate of Inpatient Stays for CS-SSIs Following Ambulatory Surgeries. These include for: laparoscopic cholecystectomy, spine surgery, vaginal hysterectomy, transurethral prostatectomy (TURP), anterior cruciate ligament (ACL) repair, and abdominal hysterectomy



*Four AOs Include: Accreditation Association for Ambulatory Health Care, the American Association for Accreditation of Ambulatory Surgery Facilities, the American Osteopathic Association, and The Joint Commission

**Seven States Include: California, Florida, Georgia, Missouri, Nebraska, New York, and Tennessee

Conclusion

An important contribution of the NAP to date has been its recognition of HAIs across the spectrum of health care. HAIs that occur in association with ASCs are often not recognized during the brief stay at the ASC. Instead they are recognized during the days and weeks that follow the procedure through ambulatory, emergency department, or hospital visits.

To date, no single data source has been identified to provide a comprehensive assessment of HAIs associated with procedures in ASCs. Nevertheless, with the increasing use of these centers for delivering care, such systems are needed.

Next year, the evaluation team will access Medicare FFS claims data calculating SSI rates associated with ASC use and will be able to compare these rates with those already developed by AHRQ. This will enable comparison of trends and levels of HAI rates across the two data systems.

While the nation continues to develop systems for systematically monitoring HAIs across venues and time, ongoing assessment of potential data sources, their strengths and limitations can provide insights into how data system development should proceed. These systems are critical to monitor changes in HAI rates and the effectiveness of interventions for improving patient safety and eliminating HAIs.



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