POLICY BRIEF

KEY FINDINGS

Monitoring SSIs is necessary to reduce occurrence.[1,2]

Poor surveillance produces inaccurate incidence data and no assurance that reduction measures are properly implemented.

It is estimated that traditional surveillance methods do not detect 25% to 41% of actual SSIs and that 50% to 60% of SSIs occur after discharge.[3,4]

Optimal post-discharge, SSI surveillance requires direct, professional examination.[2]

Rural hospitals experience a disproportionate burden of cost in treating preventable SSIs.

Using an infection control specialist to integrate surveillance feedback with care-delivery is shown to reduce SSI incidence by 36%.[5] This recommended option provides the best scenario to both detect infections and improve surgical procedures.

Detecting Post-discharge Surgical Site Infections (SSIs)

Improving Detection to Reduce Infection

Introduction

Many state and federal funding agencies mandate SSI Surveillance.[6,7,8] The Centers for Medicare and Medicaid Services (CMS) inpatient reporting program, for example, requires 30 day, post-discharge surveillance.[9] For many hospitals, surveillance is an unavoidable cost. If done well, however, the cost of treating an SSI is an avoidable cost.

The cost of surveillance needs to be assessed as an opportunity cost—the cost of preventing infections displaces the higher cost of treating them. This is true where hospitals are usually not compensated for treating infections. The increasing success of SSI-based litigation against hospitals and third-party payers ability to use a hospital's SSI record to negotiate payment rates makes SSIs unnecessarily expensive.[10]

When implemented, efforts to detect infections are associated with lower infection rates. Though experts find that optimal surveillance entails continuous monitoring and direct examination of the surgical wound by trained professionals, this method is rarely practiced. Direct examination is perceived as being too burdensome and costly.[2]

The Issue

On average, each SSI episode is estimated to extend a patient's length of hospitalization by 7 to10 hospital days, costing the hospital an additional $3,000 to $29,000.[11]

Underreported SSI rates give hospitals false assumptions about the quality and cost of their services. The staff becomes lax in complying with standard infection control procedures and problematic practices are difficult to identify, including how to improve them.[10]

Since 1999, when the CDC released its best-practice recommendations,[12] it has become widely recognized that, if practiced, the majority of surgical site infections and costs would be vastly reduced, in most cases by more than half.[13] Reducing SSIs is fundamentally an issue of implementation and monitoring.

Although SSI rates in rural hospitals are only slightly higher than in larger, urban hospitals,[14] limitations in access make it more likely that rural patients with post-operative infections will use their local hospital and surgeon for treatment. This, coupled with the fact that rural hospitals are already required by the CMS to spend money on SSI surveillance, makes uncompensated SSI treatment an avoidable financial strain. Unlike larger institutions, rural hospitals provide fewer services and depend more on federal reimbursement. They are simply less able to recuperate SSI costs by shifting them to other services or privately insured patients. It is important that rural hospitals prevent all possible SSIs, detect them early and treat them efficiently.

3 Policy Options	Impact on SSI Detection and Reduction
1 Hospital administrators planning SSI interventions can use national or case-study estimates to decide how best to manage their institution's SSI burden.	In the United States, the CDC estimates that 3% to 5% of surgeries result in infection. It is recognized, however, that these numbers are incomplete; they miss post-discharge infections.[3] Studies that include post-discharge SSI incidence generally report higher rates: 4.1%,[15] 5.2%,[16] and 6.34%.[17]
2 Administrators may adopt low cost surveillance methods to improve detection. Studies suggest that in the absence of personnel to perform direct examinations, several low-cost and time efficient options exist. These options may be used singularly or in any combination with each other.	1. Require surgeons to make a pre-discharge inspection of the surgical site wound. This simple, single step is found to capture 31% of SSI cases.[2] 2. Surgeons may complete end of the month surveys to report whether any of their post-discharged patients returned for infection-related treatment. Except for procedures involving implementations, a 30-day window is sufficient. This step involves about 4 hours of work per month and results in a four-fold increase in detection.[10] 3. Automated surveillance using procedure-specific algorithms may be used to sort patient records for antibiotic dispensing and diagnosis codes. These techniques are shown to be sensitive to 99% of post-discharge infections.[1]
3 Employ an infection control (IC) practitioner or a registered nurse trained in IC. Working within the surgical unit, IC staff are able to integrate surveillance data with feedback to surgical teams. This integration is shown to produce a 30% reduction in SSI incidence.[18] Even more, when CDC guidelines are practiced,[12] SSI rates fall to .5% to 2%, depending upon the surgery and type of wound contamination. Costs from treating SSIs can be reduced by 50% to 80%.[13]	When examining surgical wounds directly, IC professionals are shown to identify twice as many SSIs as surgeons.[2] An IC professional may also help a surgical unit to integrate multiple elements of care that, when practiced together, meet additional best-practice recommendations. They include: 1. Ensure adherence to the WHO's Surgical Safety Checklist. The checklist is shown to reduce surgery related mortality by 47%.[19] 2. Yield accurate SSI detection records. 3. Create a discharge plan and bundle care. Shown to reduce SSIs by 36%.[5] 4. Identify infections early. Teach patients how to self-assess signs of wound infection and what to do if signs appear, including seeing the infection specialist directly to verify wound status. 5. Function as a liaison, coordinating the surgical unit, customer service and quality improvement departments.

Recommendation

The third policy option provides the best opportunity to improve the quality of surgical care while lowering costs.

By combining surveillance with care-delivery, an IC professional can collect more accurate surveillance data while providing high quality care. An IC professional or IC team can use this data to guide an improvement evaluation, correct lapses in service delivery protocols, and fulfill necessary responsibilities within the surgical unit.

The costs of implementing a trained, IC professional must be considered in light of his/her potential to reduce otherwise deferred costs of treating preventable infections. Annual salaries for an IC nurses in the U.S. average $75k.[20] A study that tested using an IC trained nurse found that for every dollar spent on an IC professional who prevented an infection, $4.75 was saved from treatment.[5] This figure does not include the benefits an IC professional can provide in improving patients' quality of recovery or developing the hospital's reputation for quality.

References

[1] Platt R, Yokoe D, Sands K, CDC Eastern Massachusetts Prevention Epicenter Investigators. Automated methods for surveillance of surgical site infections. Emerg Infect Dis. 2001;7(2):212-216.
[2] Rosenthal R, Weber W, Marti W, Misteli H, Reck S, Dangel M, et al. Surveillance of surgical site infections by surgeons: biased underreporting or useful epidemiological data? J Hosp Infect. 2010;75:178-182.
[3] Grayson M, Ballard S, Gao W, Khumara S, Ward P, Johnson P, et al. Completeness of surveillance data reported by the National Healthcare Safety Network: an analysis of healthcare-associated infections ascertained in a tertiary care hospital, 2010. Infect Control Hosp Epidemiol. 2012;33(1):94-100.
[4] Tanner J, Khan D, Aplin C, Ball J, Thomas M, Bankart J. Post-discharge surveillance to identify colorectal surgical site infection rates and related costs. J Hosp Infect. 2009;72:243-250.
[5] Crolla R, Laan L, Veen E, Hendricks Y, Schendel C, Kluytmans J. Reduction of surgical site infections after implementation of a bundle of care. PLoS ONE. 2012;7(9):1-6.
[6] Petherick E, Dalton J, Moore P, Cullum N. Methods for identifying surgical wound infection after discharge from hospital: a systematic review. BMC Infect Dis. 2006;6(170):1-10.
[7] The Centers for Disease Control and Prevention. Operational guidance for reporting surgical site infection (SSI) data to CDC's NHSN for the purpose of fulfilling CMS's hospital inpatient quality reporting (IQR) program requirements. [Internet]. 2012 [cited 2013 Apr 6]; Available from: http://www.cdc.gov/nhsn/pdfs/final-ach-ssi-guidance.pdf
[8] California Department of Public Health. AFL revision notice: requirements for reporting surgical site infections. [Internet]. 2011 [cited 2013 Apr 6]; Available from: http://www.cdph.ca.gov/programs/hai/Documents/LNC-AFL-11-32.pdf
[9] The Centers for Disease Control and Prevention. Surgical site infection (SSI) event. [Internet]. 2013 [cited 2013 Apr 6]; Available from: http://www.cdc.gov/nhsn/pdfs/pscmanual/9pscssicurrent.pdf
[10] Fields C. Outcomes of a postdischarge surveillance system for surgical site infections at a Midwestern regional referral center hospital. Am J Infect Control. 1999;27:158-164.
[11] Anderson D, Kaye K, Classen D, Arias K, Podgorny K, Burstin H, et al. Strategies to prevent surgical site infections in acute care hospitals. Infect Control Hosp Epidemiol. 2008;29(1):s51-s61.
[12] Mangram AJ, Horan TC, Pearson ML, et al. The Hospital Infection Control Practices Advisory Committee. Guideline for prevention of surgical site infection, 1999. Am J Infect Control. 1999;27:97-134.
[13] Alexander J, Solomkin J, Edwards M. Updated recommendations for control of surgical site infections. Ann Surg. 2011;253(6):1082-1093.
[14] Chattopadhyay R, Zaroukian S, Potvin E. Surgical site infection rates at the Pontiac Health Care Centre, a rural community hospital. Can J Rural Med. 2006;11(1):41-48.
[15] Tanner J, Padley W, Kiernan M, Leaper D, Norrie P, Baggot R. A benchmark too far: findings from a national survey of surgical site infection surveillance. J Hosp Infect. 2013;83;87-91.
[16] Brown R, Bradley S, Opitz E, Cipriani D, Pieczarka R, Sands M. Surgical wound infections documented after hospital discharge. Am J Infect Control. 1987;5:54-58.
[17] Reilly J, Allardice G, Bruce J, Hill R, McCoubrey J. Procedure-specific surgical site infection rates and postdischarge surveillance in Scotland. Infect Control Hosp Epidemiol. 2006;27(12):1318-1323.
[18] Haley R,, Morgan W, Culver D, White J, Emori T, Mosser J, et al. Update from the SENIC project: hospital infection control: recent progress and opportunities under prospective payment. Am J Infect Control 1985;13(3):97–108.
[19] Haynes A, Weiser T, Berry W, Lipsitz S, Breizat A, Dellinger P, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. N Engl J Med. 2009;360(5):491-499.
[20] Salary.com [Internet] 2013 [cited 2013 May 7]; Available from: http://www1.salary.com/Staff-Nurse-RN-Infection-Control-Salary.html