

## **CUTTING SURGICAL INFECTIONS**

*Hospitals Making Progress, but too many patients fail to get the right care*

<http://www.stophospitalinfections.org>

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According to the Centers for Disease Control and Prevention (CDC) more than 290,000 surgical site infections (SSI) occur in U.S. hospitals each year,<sup>1</sup> in 2 out of every 100 surgeries, accounting for 20 percent of all hospital-acquired infections. A CDC review of data from 2002 found that 8,205 deaths were associated with surgical site infections.<sup>2</sup> An estimated 77 percent of deaths in patients with SSI are directly attributable to the infection.<sup>3</sup>

Patients who acquire infections from surgery spend, on average, an additional 6.5 days in the hospital, are five times more likely to be readmitted after discharge, and twice as likely to die.<sup>4</sup> Moreover, surgical patients who develop infections are 60 percent more likely to require admission to a hospital's intensive care unit.<sup>5</sup> Surgical infections are believed to account for up to ten billion dollars annually in health care expenditures.<sup>6</sup>

Surgery patients are at risk for infection because surgical incisions create a pathway for germs to enter the body. Maintaining a sterile environment in the operating room is therefore critical to protect patients from being contaminated with bacteria, which can lead to infection.

In addition, research shows that the risk of surgical site infections can be reduced if patients are given the appropriate antibiotic within one hour before the first surgical incision is made, depending on the type of surgery and patient characteristics. Giving a patient antibiotics right before surgery helps to boost the patient's ability to fight off contamination during surgery that could lead to infection. Studies show that patients given antibiotics either more than one hour before or after the first surgical incision is made experience higher rates of infection compared to those who are given antibiotics within one hour before surgery begins.<sup>7</sup>

Choosing the appropriate antibiotic is critical because it must be effective in preventing infections caused by bacteria likely to be present around the surgical site. Antibiotic selection therefore varies depending on the type of surgery.<sup>8</sup> [Guidelines for appropriate antibiotic selection](#) have been developed by the CDC. Of all three measures reported to CMS, hospitals did best when it came to providing the appropriate antibiotic to those surgical patients who received an antibiotic within one hour prior to surgery.

Another practice, discontinuing antibiotics within 24 hours after the surgery, is critical to reducing overuse of antibiotics and antibiotic resistance, a major problem in treating infections.

Continuing antibiotics beyond 24 hours after the end of surgery does not offer any additional protection when it comes to preventing surgical infections.<sup>9</sup> But the prolonged use of antibiotics can be associated with other complications and can contribute to antibiotic resistance.<sup>10</sup> Patients who receive antibiotics beyond 24 hours after surgery are at higher risk of developing serious infections caused by *C. difficile*, an antibiotic-resistant organism.<sup>11</sup> Of all three surgical infection prevention measures, hospitals had the lowest compliance scores when it came to discontinuing antibiotics within 24 hours after surgery ended.

These practices have been identified by the Centers for Medicare and Medicaid Services (CMS) as key to decreasing the incidence of surgical infections. CMS reports hospitals' compliance levels with these practices on its [Hospital Compare website](#).

An estimated 40 to 60 percent of all surgical site infections could be prevented by following these and other infection prevention measures.<sup>12</sup> Other measures found to reduce the incidence of surgical infections include appropriate hair removal for surgical patients (using clippers instead of razors to avoid creating cuts in the skin, which can allow bacteria to enter the body); keeping patients warm during surgery; and maintaining proper serum glucose levels after surgery.<sup>13</sup> These last two measures have recently been added to the Hospital Compare site but are not included in this report.

Since the 1960s surgeons have known that using “prophylactic” antibiotics – giving the patient antibiotics prior to surgery – can prevent infections.<sup>14</sup> But later studies found that the specific timing of giving the antibiotics (within one hour before the incision) provided significantly better results and eventually became the standard for these infection prevention methods.

A national strategy to get surgeons to use these proven techniques was launched after a group of 56 hospitals systematically implemented them under the Surgical Infection Prevention (SIP) Project with an overall reduction of infection rates by 27 percent - some of the participating hospitals had more dramatic reductions.<sup>15</sup> The SIP Project was a collaborative project of CMS, CDC and others<sup>16</sup>, launched in 2002. Further, research published in early 2005 (based on 2001 data) established a national baseline for these measures.<sup>17</sup> Although the study stated, “Antimicrobial prophylaxis to prevent SSI is one of the most widely accepted practices in surgery,” it found only 56% of Medicare patients were getting antibiotics within one hour of surgery. Ninety-three percent of the patients received the type of antibiotics in line with published guidelines and 41% had their antibiotics stopped within 24 hours of the end of their surgery.

CMS added these measures to its Hospital Compare website, where various other “process measures”<sup>18</sup> relating to optimal care were being reported. Initially this reporting was voluntary, and technically still is, but in July 2006 when the Medicare annual payment increase only went to hospitals that submitted this data, most hospitals began reporting.

The SIP Project evolved into the current Surgical Care Infection Prevention Project (SCIP), under which CMS and a host of partners operate an organized campaign to get hospitals to use these practices to prevent infections in surgical patients. See [About This Report](#) for more information.

This campaign has significantly increased compliance with these life-saving practices, but many hospitals still fall short of acceptable compliance, leaving tens of thousands of patients at a higher risk of developing a surgical site infection. The purpose of this Report is to more clearly identify for the public where these gaps in effective surgical care exist.

## **HOW OFTEN HOSPITALS FOLLOW SURGICAL INFECTION PREVENTION MEASURES**

To determine how well hospitals are following the three recommended surgical infection prevention measures, Consumers Union posted data available from the U.S. Department of Health & Human Services' [Hospital Compare web site](#).

Hospital Compare posts data on how often hospitals follow the recommended surgical infection prevention measures as well as other measures related to heart attacks, heart failure, and pneumonia. The information displayed on this web site is based on data from medical records voluntarily submitted by hospitals for a sample of adult surgical inpatients. See “sampling” in [About this Report](#) for more details.

In this Report, Consumers Union includes historical data on how hospitals' compliance has changed over time and allows comparison of all hospitals in the state as well as state-to-state comparisons. Although CMS collects and makes available compliance levels by patient volume (i.e. number of surgical patients for whom data is submitted), this information is not available in the Hospital Compare comparison charts. Our report allows the viewer to see the percentage of surgical patients within each hospital who received this life-saving care. See “patient volume” in [About this Report](#) for more information.

For the purposes of this analysis, hospitals that followed the recommended infection prevention measures with 95 percent or more of the patients were considered to be in high compliance. Hospitals that followed these measures for 79 percent or fewer of sampled patients were considered to be in low compliance. Detailed information about the hospitals in each state can be found by clicking on the appropriate state on the map that appears on the report web site's [home page](#).

## **CONCLUSIONS**

Our website, allowing a review of performance over time, clearly demonstrates improvement among U.S. hospitals in implementing proven prevention techniques since the beginning of the CMS public reporting program. Much work has been done over the past decade to encourage these safe practices. Yet still, too many hospitals are not offering all of their surgical patients the care they need to stay safe. And wide variations among hospitals mean that patient experiences could be radically different within a particular state.

Clearly, CMS has demonstrated that connecting payment to reporting is a powerful tool for changing behavior. And providing this data to the public enhances the pressure on hospitals to

improve their infection control practices. But the payments are not connected to performance, they are merely connected to reporting. Thus, a hospital in low compliance that reports its data gets the same payments as a high complying hospital that reports its data. It is time for CMS to begin connecting the results with the money.

The Hospital Compare site is difficult to navigate and leaves out critical information – such as the total number of patients receiving care - and comparison tools are too limited, only allowing comparison of three hospitals at a time. It fails to reveal the complete picture of surgical safety. Without requiring hospitals to also report the number and rate of surgical-acquired infections, it is impossible to measure whether these practices actually translate into reducing infections.

Every year millions of Americans get infections while hospitalized and progress towards eliminating these infections is too slow. Voluntary programs have not served these patients. Consumers Union supports state and national laws to require all hospitals to make their infection rates public to inform consumers and to encourage hospitals to do a better job preventing infections. Disclosing infection rates will improve patient care, save lives and ultimately save money. Twenty-five states now require public reporting of hospital infection rates. So far, only a handful of states have issued reports. More information on hospital infection reporting efforts can be found on the [Stop Hospital Infections website](#).

## RECOMMENDATIONS

### **Require hospitals to report surgical infections and publish infection rates along with SCIP measures.**

The Medicare data presented in this report tells how well hospitals try to prevent infection through these best practices. But hospitals' practices need to be paired with outcome measures that tell consumers whether these practices actually translate into reduced infections. The national goal of the SCIP project is to reduce preventable surgical injuries and deaths by 25 percent by 2010.<sup>19</sup> This deadline is close, yet there is no national documentation of surgical injuries and deaths, therefore, there will be no evidence available to determine whether or not the goal has been met. All hospitals should be required to report surgical infections to the Centers for Disease Control and Prevention's National Healthcare Safety Network. That information should be validated and used to calculate each hospital's surgical infection rate to be posted by CMS on the Hospital Compare website.

### **Tie Medicare payments to performance on SCIP within this year.**

All hospitals should work to achieve 95 percent or above compliance with the three recommended surgical infection prevention measures. Voluntary compliance has not led to all patients getting appropriate preventive care and Medicare should require these practices to become more widespread. The Medicare annual payment increases should be tied to more than simply reporting the data. Such payment policies worked well to get hospitals to submit data but it is now time to attach these payment adjustments to actual results.

**Require Hospital Compare to provide the total number of surgery patients for these measures.** In addition to providing the number of sampled patients, CMS should also provide the total number of surgery patients for whom these measures are appropriate. This would allow

more accurate calculations and disclosure of the number of patients who did not receive the right preventive care.

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<sup>1</sup> Scott, R. Douglas II, "The Direct Medical Cost of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention," Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases Centers for Disease Control and Prevention, March 2009.

<sup>2</sup> Estimating Health Care Associated Infections and deaths in U.S. Hospitals," Public Health Reports, March-April 2007, p. 163-164. ([www.cdc.gov/ncidod/dhqp/pdf/hicpac/infections\\_deaths.pdf](http://www.cdc.gov/ncidod/dhqp/pdf/hicpac/infections_deaths.pdf))

<sup>3</sup> "Strategies to Prevent Surgical Site Infections in Acute Care Hospitals, SHEA/IDSA Practice Recommendation," Infect Control & Hospital Epidemiology, October 2008;29:S51-S61; DOI: 10.1086/591064, citing Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for prevention of surgical site infection, 1999. Hospital Infection Control Practices Advisory Committee. *Infect Control Hosp Epidemiol.* 1999;20(4):250-78; quiz 279-80 .

<sup>4</sup> Kirkland, K.B. et al "The Impact of Surgical-Site Infections in the 1990s: Attributable Mortality, Excess Length of Hospitalization, and Extra Costs," *Infection Control and Hospital Epidemiology*, 20 (11): 725-30.

<sup>5</sup> Griffin, Frances A., "Best Practice Protocols: Preventing Surgical Site Infection," *Nursing Management*, November 2005, p. 22.

<sup>6</sup> Scott, R. Douglas II, "The Direct Medical Cost of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention," Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases Centers for Disease Control and Prevention, March 2009.

<sup>7</sup> *Clinical Infectious Diseases* 2007; 44: 921-7

<sup>8</sup> Griffin, p. 22.

<sup>9</sup> Bratzler, Dale W, et al, "Use of Antimicrobial Prophylaxis for Major Surgery," *Arch Sug/Vol*, 140, Feb 2005, p. 178.

<sup>10</sup> Jobe BA, et al. *American Journal of Surgery.* 1995; 169: 480-483; Privitera G, et al. *Antimicrobial Agents and Chemotherapy.* 1991; 35: 208-210.

<sup>11</sup> Bratzler, Dale, DO, MPH, "The Surgical Care Improvement Project, Where we started and where we're going," Slide 27.

<sup>12</sup> OSF Surgical Safety Success Story; *This story originally appeared in IHI's e-newsletter, Continuous Improvement*, <http://www.ihl.org/IHI/Topics/PatientSafety/SurgicalSiteInfections/ImprovementStories/OSFSurgicalSafetySuccessStory.htm> (3/31/09); Odom-Forren, Jan, "Preventing Surgical Infections," *Nursing*, June 2006, p. 60.

<sup>13</sup> Griffin, p. 24-26.

<sup>14</sup> Bratzler, Dale W, et al, "Use of Antimicrobial Prophylaxis for Major Surgery," *Arch Sug/Vol*, 140, Feb 2005, p. 174.

<sup>15</sup> Cook, Rebecca, "Hospitals learn simple steps can help prevent infections," Associated Press, April 22, 2004.

<sup>16</sup> The SIP Project lead partners served on the steering committee: Agency for Healthcare Research and Quality, American College of Surgeons, American Hospital Association, American Society of Anesthesiologists, Association of periOperative Registered Nurses, Centers for Disease Control and Prevention, Centers for Medicare & Medicaid Services, Institute for Healthcare Improvement, The Joint Commission, Veterans Health Administration; <http://www.jointcommission.org/PerformanceMeasurement/PerformanceMeasurement/SCIP+Core+Measure+Set.htm>, accessed 1-20-09.

<sup>17</sup> Bratzler, Dale W, et al, "Use of Antimicrobial Prophylaxis for Major Surgery," *Arch Sug/Vol*, 140, Feb 2005, pp. 174-182.

<sup>18</sup> The activity being measured in this report is a "process measure." That is, rather than giving the outcomes of care (death, infection or a rate of these outcomes), process measures give the rate at which a health care provider gives recommended evidence-based care. Typically these process measures have been studied for years and are well-documented as a standard of care to improve health care outcomes.

<sup>19</sup> Bratzler, Dale, DO, MPH, "From SIPP to SCIP Presentation," <http://www.qualitynet.org/dcs/ContentServer?cid=1136495755695&pagename=Medqic%2FOtherResource%2FOtherResourcesTemplate&c=OtherResource>; accessed 1-20-09.