

**Prophylactic Antibiotics Discontinued Within 24 Hours
After Surgery End Time for Surgical Infection
Prevention - Achieving the Standard of Care
Tools and Resources for Hospital Performance Measurement
Improvement Activities**

Seventeenth in a series of targeted quality improvement articles

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Illinois Hospital Association

**Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery
End Time (SIP-3) for Surgical Infection Prevention -
Achieving the Standard of Care
Tools and Resources for Hospital Performance Measurement Improvement
Activities**

Achieving the Highest Standard of Care

Prophylactic antibiotics discontinued within 24 hours after surgery end time (SIP-3) measure focuses on the timely discontinuation of prophylactic antibiotics for surgical patients. However, the medical community has been debating the evidence base regarding antibiotic duration for orthopedic and cardiac surgical patients. Subsequently, the measure has been changed to reflect current evidence based practice.

The lack of consensus regarding discontinuing antibiotics after surgery may explain the lower compliance rates for this surgical infection prevention (SIP) measure. Illinois Hospital Association (IHA) Comparative Performance Measurement Initiative shows Illinois hospitals in the 2nd quarter of 2005 achieved 66% compliance with the surgical infection prevention (SIP-3) antibiotic timing measure. This is similar to the national comparative data for the 1st quarter of 2005, the most currently available data at the Center for Medicare and Medicaid (CMS) Hospital Compare website, at 66% compliance for all reporting hospitals in the USA. The goal of all Illinois hospitals is **100% compliance** with all the Hospital Quality Alliance performance measures.

SIP-3 Measurement Description

The goal of prophylactic antibiotics with surgery is to establish bactericidal tissue and serum levels at the time of skin incision and during the surgery. According to *Specifications Manuals for National Hospital Quality Measures*, the continued administration of prophylactic antibiotics for more than a few hours after the surgical incision is closed offers no additional benefit to the surgical patient. Further, having no additional benefit, the discontinuation may reduce the risks associated with opportunistic infections such as C-difficile or the development of antimicrobial resistant pathogens.

An Important Change in the Measure

At the initial implementation of the SIP measures, the SIP-3 measure reflected the standards of care that recommended the discontinuation of antibiotics 24 hours after surgery end time for the seven surgical types in the measure set. Effective January 1, 2006 discharges and forward, the SIP-3 measure has been changed for patients undergoing cardiac surgery.

The Society of Thoracic Surgeons Practice Guidelines for Antibiotic Prophylaxis in Cardiac Surgery published 2005 concluded there is evidence indicating that antibiotic prophylaxis of 48 hours duration is effective. SIP-3 measure has been changed to reflect current changes in these clinical guidelines.

To access CMS/JCAHO joint statement, go to: <http://www.jcaho.org/>, located the top menu bar and select *Performance Measures*, locate the top menu bar and select *Core Measure Information*, then select *Latest Core Measure News*, then select *View the Joint Statement on the Change in the National Hospital Quality Measure SIP-3*.

Calculating the Measure's Performance. Prophylactic antibiotics discontinued within 24 hours after end surgery time is reported as a percent, based on:

- Numerator includes the number of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after surgery end time (48 hours if CABG or Other Cardiac Surgery).
- Denominator includes all *selected* surgical patients with no prior evidence of infection. The surgical types include:
 - Coronary Artery Bypass Graph (CABG)
 - Cardiac Surgery
 - Hip Arthroplasty
 - Knee Arthroplasty
 - Colon Surgery
 - Hysterectomy
 - Vascular Surgery

A Fuller Understanding of the Measure

Note; the SIP-3 changes for cardiac patients impact January 1, 2006 discharges which will be reported later this year. Be watchful that this may result in changes in the numerator and the performance rate reported that may impact the interpretation of the data.

To enhance the interpretive value of this measurement, it is best used in conjunction with the other Surgical Infection Prevention measures (SIP-1 and SIP-2) that address standards of care with antibiotic timing prior to incision and antibiotic selection.

As reported in the SIP-1 series article, prophylactic antibiotics discontinued within 24 hours after surgery end (SIP-3) is sensitive to medical record documentation practices as proper documentation is required with the patient's prior use of antibiotics, surgical end time, medication discontinuation time, contraindications to medications, and infection prior to anesthesia.

The current SIP 1, 2, and 3 measures will be incorporated into SCIP and SCIP becomes effective with January 1, 2006 discharges. SCIP measures will be addressed in a future series article.

Measures Specifications

The measure's *technical specifications* are part of the CART User's Guide. All hospitals using the CART Data Collection Tool should be using the most current version of the

tool. The CART tool also provides valuable information in the HELP menu including important and useful data definitions. Individuals must have CART installed to access the HELP however a sign-on ID is not required. CART is available on the QNetExchange website at: <http://qnetexchange.org>, see the left menu bar.

The Specifications Manuals for National Hospital Quality Measures are an additional resource. Five versions of the manual are provided for the different reporting periods starting with January 1, 2005 discharges. The manuals can be viewed or downloaded from: <http://qnetexchange.org>, locate left menu bar the title Hospital Data Collection (HDC) and select *Technical Specifications*.

Successful Quality Improvement and Compliance Experiences Shared by Illinois Hospitals

The experiences and successes for achieving compliance with prophylactic antibiotics discontinued within 24 hours of surgery end time is presented below from hospitals representing a variety of characteristics and locations throughout Illinois. The Illinois Hospital Association appreciates the efforts of these hospitals in sharing their experiences with others and also the sharing of contact names at each hospital for follow up questions or discussions.

Some common and unique success factors or strategies include:

- Knowledge of change in the evidence base
- Collaboration and communication
- Peer education
- Physician involvement
- Standing orders
- Culture of accountability

Advocate Good Samaritan Hospital

Collaboration and communication are key factors driving quality improvement and compliance with the surgical infection prevention measures at Advocate Good Samaritan Hospital, explains Kathy Bretz, Manager Quality Improvement. Ms. Bretz credits the actions of Clinical Outcomes Improvement Committee in these efforts. Part of the Advocate Health Care system, Advocate Good Samaritan is a 330 bed hospital located in the western collar county of Chicago.

“We created a committee that is multidisciplinary to look at the publicly reported data, identify barriers, and do a rapid turnaround on how to fix the issues,” states Michael McKenna, M.D., Vice President, Medical Management and committee chair. Committee participation includes senior hospital management, medical leadership, quality representatives, respiratory therapy, pharmacy, infectious diseases, nursing leadership and other staff as necessary.

“The committee has been helpful in providing direction for the barriers, and created a lot

of interest in publicly reported data and how we can make Advocate Good Samaritan Hospital a better institution. The hospital is also involved in the Institute of Healthcare Improvement 100K Lives Campaign...all these activities provide focus, help drive accountability and make sure things get done rapidly,” explains Dr. McKenna.

”Historically, the hospital has been active in these areas for the past eight years, pre-dating the core measures, and this has given the hospital a good running start,” recounts Dr. McKenna.

Bruce Dillon, M.D., Medical Director, Surgery notes, “The hospital has come a long way with antibiotic prophylaxis. The existence of good evidence based guidelines for antibiotic selection and antibiotic timing, education and reeducation have been instrumental in influencing these improvements.”

“The first biggest problem with prophylactic antibiotics is we gave the antibiotics too far in advance of the surgical procedures,” shares Dr. Dillon. The hospital made changes to the operative processes and implemented pre-surgical standing orders that improved the timing and increased compliance. “That change was relatively easy,” states Dr. Dillon, “our challenge remains stopping prophylactic antibiotics in a timely fashion.” Dr. Dillon acknowledges that well ingrained behaviors create resistance and will require continued effort to drive change and improvement.

Data presented along with evidence based literature is used to influence changes. Marty Dietrich, Surgery Quality Improvement specialist presents and reviews the data at the Orthopedic and Surgery Clinical Quality Council monthly meetings. Ms Dietrich acknowledges, “One significant barrier for improvement has been some surgeons’ reluctance to discontinue antibiotics for patients with urinary catheters.”

“Part of the problem is the evidence base for initial antibiotics and antibiotic selection is strong and well accepted,” relates Dr. McKenna, but the evidence for the discontinuation of antibiotics has been more debated for orthopedics and cardiac procedures. The recent change implemented by CMS and JCAHO in discontinuation of antibiotics from 24 to 48 hours for cardiac patients reflects that debate with the evidence based studies.

“Discontinuing antibiotics is essential for reducing risks and morbidity associated with antibiotic use for these patients,” relates Rene Karon, Manager, Epidemiology and Infection Control. Ms. Karon helps educate the council members providing clinical evidence based literature that supports the discontinuation of prophylactic antibiotics.

“Dissemination of the data and results is also key to sustaining the improvement gains. The hospital provides information to physicians on how they preformed with the surgical infection prevention measures,” states Sandy Churchill. LCSW, Vice President, Clinical Excellence. Dr. McKenna adds, “We have a results oriented culture...we drive down accountability to the front line, to physicians, nurses, hospital staff; at the unit level.”

Contact: Sandy Churchill. LCSW, Vice President, Clinical Excellence at Sandy.Churchill@advocatehealth.com

St. Anthony's Memorial Hospital

St. Anthony's Memorial Hospital recognizes their participation in the statewide Surgical Infection Prevention collaborative sponsored in 2003-04 by the Illinois Foundation for Quality Health Care, the Illinois Quality Improvement Organization (QIO), provided the hospital an early start and a framework for change and improvement. According to Mary Finley, Manager Quality Support, "the primary focus during the collaborative was on the three SIP antibiotic measures, as well as the use of clippers versus razors, normothermia and glucose control, and surgical site preparation."

Located in Effingham, Illinois, St. Anthony's Memorial Hospital is a 150 bed facility serving the south-central portion of Illinois.

Physician involvement helped drive the positive changes at St. Anthony's Memorial Hospital. Tammy Lett, Surgical Care Manager recounts taking the information and gains learned in the collaborative back to and informing the physicians, primarily the orthopedic surgeon and gynecologists. "We were really lucky with good physicians who wanted to do whatever to make things better," relates Ms. Lett.

St. Anthony's uses "personal order sets" that includes information on antibiotics and administration. "Surgeons write the orders and there is an automatic stop to the antibiotics. Changing the personal order sets," states Ms. Lett, "helped the staff meet the time frame associated with discontinuing antibiotics 24 hours after end of surgery."

Timing of post-procedure antibiotics was the most significant problem to overcome in achieving compliance with the measure. Problems would arise from the schedule or timing of antibiotic administration. "It was a logistical problem...identifying the appropriate end time....and getting the timing right" so all the scheduled antibiotics would be given in the timeframe, reports Mike Murbarger, Pharmacy Manager.

Educating the unit clerks and secretaries to check the patient's medical record assisted in getting the timing right. "We educated the unit clerks on the expectations and shared the results," reports Ms. Lett. Like many other hospitals, St. Anthony's Memorial Hospital uses a standardized schedule for the timing of medication administration. "This required the team to educate the unit clerks and nurses," adds Mr. Murbarger, "that the normally used schedules may not be appropriate in order for the last antibiotic to be infused within the 24 hour timeframe."

After much work to achieve positive changes in compliance with the measures, the next challenge is sustaining the gains. The team monitors their performance over time with all three SIP measures and has identified areas where they need to go back and look at the processes to prevent the loss in the gains; particularly antibiotic timing prior to incision. Ms. Lett explains, "The challenges of timing the antibiotic start time with the time to incision are complicated when a surgeon is assigned two operating suites. This has required the team to look again at their processes of moving the patient, starting the infusion and getting the timing exactly right to when the surgeon is ready to make the incision." Contact: Mary Finley, Manager Quality Support at MFINLEY@sae.hshs.org.

Surgical Infection Prevention Measures Web Based Resources

See Appendix I. for additional web based resources for Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time.

For additional information about Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time, the AMI, HF, PN or SIP Measure Sets, or to comment on this series, please contact Tim Philipp, Director, Quality Improvement at tphilipp@ihastaff.org.

APPENDIX I. Prophylactic Antibiotics Discontinued 24 Hours After Surgery End Time Measure for Surgical Infection Prevention Web Based Resources

This document outlines web resources addressing clinical guidelines, educational materials, evidenced-based materials, and intervention tools specific to prophylactic antibiotics discontinued within 24 hours after surgery end time. To access these resources, click on or enter the web address and follow the additional steps. Other relevant web based resources were identified in the SIP-1 article.

Medqic. The Centers for Medicare & Medicaid Services (CMS) provides a comprehensive online resource of quality improvement information that supports the Hospital Quality Alliance Initiatives. Access at: <http://www.medqic.org/>

SIP and SCIP. Please note, *Surgical Infection Prevention* (SIP) resources are located under *Surgical Care Improvement Project* (SCIP) on the Medqic website. Access SIP and SCIP at: <http://www.medqic.org/>, on right side click on *SCIP*.

Change Strategies. Resources for redesigning processes, transforming organizational culture, and measuring and reporting performance are listed at the above address.

Clinical Guidelines. The Society of Thoracic Surgeons Practice Guideline Series, Antibiotic Prophylaxis in Cardiac Surgery, Duration of Prophylaxis (2005) go to, <http://sts.org>, top menu bar select *About the Society*, left menu bar select *Practice Guidelines*, left menu bar select *Antibiotics Guidelines*.

The Evidence Base for the Duration of Antimicrobial Prophylaxis Fact Sheet at: <http://www.medqic.org/>, in middle select *Search for Tools*, in the left column titled Restrict your search to the following topics select *Infection* and then click *Search*, scroll to bottom of screen to article of interest.

Frequently Asked Questions – (FAQs)

FAQs often reflect the insights and concerns of hospital staff involved in clinical care and data collection. Aside from answering your specific questions, reviewing *FAQs* is an important educational tool for novice & expert.

Periodically, CMS updates the Medqic web site design and layout. Topic choices have now been expanded to include – interventions or measures. Therefore, search using both options.

Access: <http://www.medqic.org/>, on bottom right side menu bar click on *FAQs*, select topic, either *Hospital-SCIP Measures* or *Hospital-SCIP Interventions*, enter your *keyword*. Use of different “key words” (duration, antibiotic timing, prophylaxis, documentation, infection) will increase your returns (with some duplication).