

SCIP Quality Measures Evidence Review

SCIP Quality Measures Evidence Review

Hospital Workgroup Meeting
April 12, 2007

Howard Pitluk, MD, MPH, FACS
Medical Director
Health Services Advisory Group

Information for Health Care Improvement

NSAG



"Well, this explains your excessive thirst.
Dr. Lorpner left a sponge in you
during your operation."

Information for Health Care Improvement

NSAG

National Expert Panel

- American College of Surgeons
- American Hospital Assn.
- APIC
- IDSA
- JCAHO
- Society for Healthcare Epidemiology of America
- Association of periOperative Registered Nurses (AORN)
- Surgical Infection Society
- VHA, Inc.
- American Academy of Orthopedic Surgeons
- American Society of Anesthesiologists
- American Society of Health System Pharmacists
- American Geriatrics Society
- Society of Thoracic Surgeons

Information for Health Care Improvement

NSAG

SCIP Quality Measures

1. Prophylactic antibiotic received within 1 hour prior to surgical incision
2. Prophylactic antibiotic selection for surgical patients
3. Prophylactic antibiotics discontinued within 24 hours after surgery end time (48 hours for cardiac patients)
4. Cardiac surgery patients with controlled 6 a.m. postoperative serum glucose

Information for Health Care Improvement

NSAG

SCIP Quality Measures

5. Surgery patients with appropriate surgical site hair removal
6. Colorectal surgery patients with immediate postoperative normothermia
7. Surgery patients with VTE prophylaxis ordered
8. Surgery patients with VTE prophylaxis given

Information for Health Care Improvement

NSAG

Systemic Preventive Antibiotics Appropriate Utilization

- The Antibiotic must be present in the Wound at the Time of Bacterial Contamination.
- The Antibiotic must have Activity Against the Likely Pathogens to be Encountered.
- Prolonged Antibiotic Administration beyond the time of Wound Closure is not of Value.

Information for Health Care Improvement

NSAG

SCIP Quality Measures Evidence Review

Systemic Preventive Antibiotics Common Problems

- The antibiotic is given too soon before the incision is made.
- The antibiotic is not initiated until after the incision is made, or not until after the operation is complete.
- The antibiotic is not discontinued after the procedure is over (Including Orthopedic & Colon and Rectal Operations)
- The preventive antibiotic is given to prevent non-surgical site infections.
- The antibiotic is given because a drain is in place.

Information for Health Care Improvement

NSAG

Systemic Preventive Antibiotics Why Postoperative Administration Fails

- Systemically Administered Antibiotic does not penetrate the Established Fibrin Matrix in the Wound.
- The Closed Surgical Wound has continued Inflammation and Edema, which creates a “Halo” of Ischemia.

Information for Health Care Improvement

NSAG

Selected Surgical Procedures

- Cardiac
- Coronary Artery Bypass Graft (CABG)
- Colon
- Hip & Knee Arthroplasty
- Abdominal & Vaginal Hysterectomy
- Vascular Surgery:
 - Aneurysm repair
 - Thromboendarterectomy
 - Vein Bypass

These procedures are being evaluated in the Medicare project because there is no controversy over the use of antibiotics for these operations. This does not imply that antibiotic prophylaxis should not be used for other procedures.

Information for Health Care Improvement

NSAG

...There Is Nothing New Under The Sun

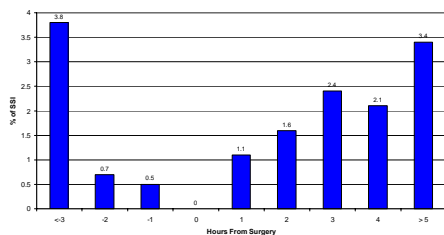
Ecclesiastes 1:9

Label1

Information for Health Care Improvement

NSAG

Timing of Abx. Prophylaxis



Classen, et al. *N Engl J Med.* 1992;328:281.

Information adapted from the Institute for Healthcare Improvement (www.ihc.org).

Information for Health Care Improvement

NSAG

Duration of Prophylaxis— Vascular

Author	Drug	Duration	Infection
Hasselgren 1984 (187 operations)	cefuroxime	placebo	17.0%
		1 day	3.8%
		3 days	4.3%

Information for Health Care Improvement

NSAG

SCIP Quality Measures Evidence Review

Duration of Prophylaxis— Infection Risk in Cardiac Surgery

Prospective randomized trial, 1009 pts

	<u>Any Inf</u>	<u>SSI</u>
Cefurox, (1 dose) 3 g (584 pts)	28 (4.8%)	7 (1.2%)

Risk factors:
age, preop LVEF, bypass time, duration of ventilation, ICU LOS

Kriaras. *J Cardiovasc Surg (Torino)*1997;38:605

Information for Health Care Improvement

NSAG

Duration of Prophylaxis— Gastrointestinal

<u>Author</u>	<u>Drug</u>	<u>Duration</u>	<u>Infection</u>
Strachan 1977 (biliary, 201 pts)	cefazolin	1 dose	3.0%
		5 days	17.0%
Stone 1979 (mixed)	cefamandole cephaloridine	3 doses	0
		5 days	3.0%
		5 days	4.0%
Hall 1989 (mixed, 1027 pts)	moxalactam	1 dose	5.0%
		2 days	6.0%
Scher 1997 (mixed, 768 pts)	cefazolin	1 dose	3.9%
		1 day	3.6%

Information for Health Care Improvement

NSAG

Duration of Prophylaxis— Vaginal Hysterectomy

<u>Author</u>	<u>Drug</u>	<u>Duration</u>	<u>Infection</u>
Ledger 1975	cephaloridine	12 hours	15%
		4-5 days	19%
Mendelson 1979	cephradine	1 dose	9%
		24 hours	21%
		placebo	82%
Benson 1985	ampicillin	12 hours	3%
		5 days	6%

Information for Health Care Improvement

NSAG

Duration of Prophylaxis for Joint Replacement—3013 cases

Cefuroxime	<u>1 dose</u>	<u>3 doses</u>
Joint infection	0.9%	0.8%
Wound infection	1.9%	2.6%

Wymenga. *Clin Pharmacol Ther* 1991;50:215

Information for Health Care Improvement

NSAG

Orthopedic Surgery

Chapter 58 of the AAOS Instructional Course Lectures, Volume 51, 2002, titled "Prophylactic Antibiotics in Clean Surgery"

"..... most authorities recommend either a single preoperative dose of antibiotic or one preoperative dose followed by two or three postoperative doses. Such a protocol will reduce the possibility of antimicrobial toxicity, prevent the development of resistant organisms, and minimize the expenses associated with antimicrobial prophylaxis."

Information for Health Care Improvement

NSAG

Preventive Antibiotics Colorectal Surgery

- The antibiotic(s) must be given immediately before the skin incision (60 min.).
- The antibiotic(s) should cover *E. coli* and *B. fragilis*.
- The antibiotic(s) must be stopped within 24 hours after the operation.

Information for Health Care Improvement

NSAG

SCIP Quality Measures Evidence Review

Systemic Preventive Antibiotics Consequences of Prolonged Postoperative Use

- Excessive Antibiotic and Drug Administration Costs.
- Increased Antibiotic-Associated Complications.
- Increased Patterns of Antibiotic Resistance (MRSA).

Information for Health Care Improvement

NSAG

Preventive Systemic Antibiotics Antibiotic-Associated Complications

- Nephrotoxicity
- Hepatic Toxicity
- Coagulation/Platelet Aggregation Complications
- Fungal Super-infections
- *Clostridium difficile* Enterocolitis

Information for Health Care Improvement

NSAG

“New World” of *C. difficile*

- New strains of *C. difficile* are now causing fulminate and epidemic Enterocolitis.
- Increased Toxin production per organism.
- Rapid evolution of the disease to a surgical endpoint.
- Antibiotics remain a risk factor, but not a requirement!
- Community-Acquired *C. difficile* infection is now a reality.

Information for Health Care Improvement

NSAG

What worked to improve antibiotic delivery?

- Assigned responsibility for administration and documentation of antibiotic prophylaxis
 - Often involved transfer of ownership of the process to anesthesia
 - Ensuring the delivery of the antibiotic near or in the OR
 - Use of preprinted protocols for antibiotic selection and duration (forcing function to DC)
 - Antibiotics available in the OR
 - Revision of forms to require documentation of antibiotic dose and time

Information for Health Care Improvement

NSAG

Preoperative shaving

- Shaving the surgical site with a razor induces small skin lacerations
 - Potential sites for infection
 - Disturbs hair follicles, which are often colonized with *S. aureus*
 - Risk greatest when done the night before
 - Patient education
 - Be sure patients know that they should not do you a favor and shave before they come to the hospital!

Information for Health Care Improvement

NSAG

Hair Removal

- Appropriate:
 - No hair removal at all
 - Clipping
 - Depilatory use
- Inappropriate:
 - Razors

Information adapted from the Institute for Healthcare Improvement (www.ihc.org).

Information for Health Care Improvement

NSAG

SCIP Quality Measures Evidence Review

Shaving Influence

Group	No Hair Removal	Depilatory	Shaved
Number	155	153	246
Infection rate	0.6%	0.6%	5.6%

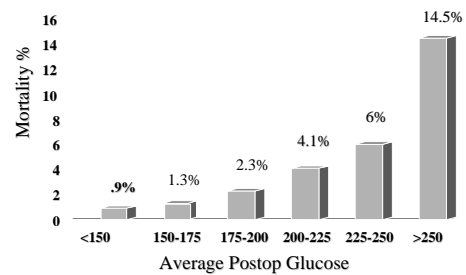
Seropian. *Am J Surg.* 1971; 121: 251.

Information adapted from the Institute for Healthcare Improvement (www.ihl.org).

Information for Health Care Improvement

NSAG

CABG Mortality in Diabetics



J Thorac Cardiovasc Surg 125:1007, 2003

Information for Health Care Improvement

NSAG

Diabetes and CABG

After adjustment for confounding variables, the risk of complications increased by 17% for every 18 mg% greater than 110 mg%.

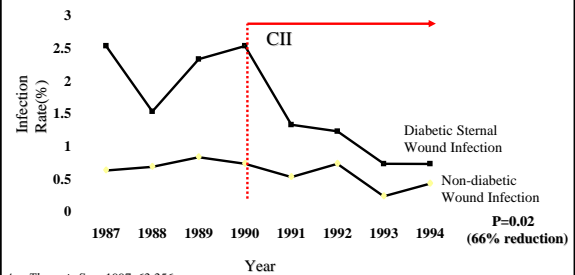
(Did not address effect of Rx)

Diabetes Care 26:1518, 2003

Information for Health Care Improvement

NSAG

Effect of Glycemic Control on Post-CABG Sternal Infection



Ann Thoracic Surg 1997, 63:356

Information for Health Care Improvement

NSAG

“Indeed, inpatient diabetes management has developed into an area of medicine that is less evidenced-based and more of an ignorance-based culture with a core component of sliding-scale insulin, a relic from generations past with no proven efficacy”*

Irl B. Hirsch

JCEM 2002, 87:975 *Arch Int Med* 1997, 157:545*

Information for Health Care Improvement

NSAG

Normothermia in Colon Resections

6 surgical wound infections out of 104 patients in normothermia group, compared with 18 out of 96 in hypothermia group (p = 0.009)

Hypothermia leads to vasoconstriction and decreased oxygen tension at the wound site → impaired neutrophil function → decreased wound strength.

N Engl J Med 334:1209-15 *N Engl J Med* 336:1730-7

Information for Health Care Improvement

NSAG

SCIP Quality Measures Evidence Review



Major Articles for SCIP Antibiotic Measures

Use of Antimicrobial Prophylaxis in Major Surgery
Arch Surg, 2005;140:174–182

Antimicrobial Prophylaxis for Surgery: Advisory Statement
from the National Surgical Infection Prevention Project
Clinical Infectious Diseases, 2004;38:1706–15

Antimicrobial Prophylaxis for Surgery
The Medical Letter Dec, 2006;Vol 4 (Issue 52)

Information for Health Care Improvement NSAG

Venous Thromboembolism

Among the most common complications

- Surgical site infections (SSIs)
- Cardiovascular complications
- Respiratory complications
- **Thromboembolic complications**

SCIP Hospital Care Improvement Program
Information for Health Care Improvement NSAG

Cost of Complications

Attributable costs

- Infectious complications— \$1,398
- Respiratory complications— \$5,246
- Cardiovascular complications— \$7,789
- **Thromboembolic complications— \$18,310**

Dimick JB, et al. *J Am Coll Surg*, 2004, Oct;199(4):531-7

SCIP Hospital Care Improvement Program
Information for Health Care Improvement NSAG

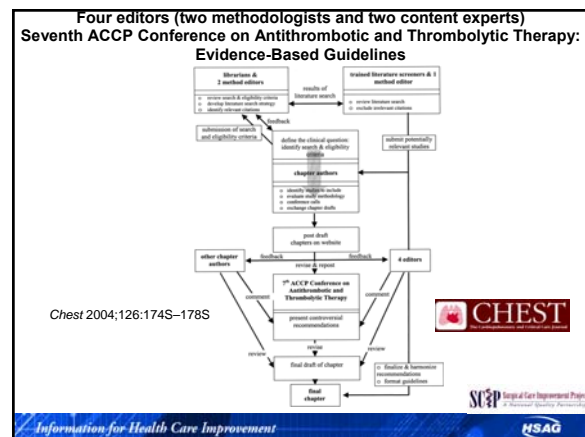
Venous Thromboembolism Prevention

VTE Remains a Major Health Problem

- 200,000 new cases annually in United States
- In addition to the risk of sudden death,
 - 30% of survivors develop recurrent VTE w/in 10 yrs.
 - 28% of survivors develop venous stasis syndrome w/in 20 yrs.
- The incidence of VTE is more than 100 times greater for patients who have been hospitalized than the general population.
- Incidence increases with age.

Heit JA. *Clin Geriatr Med*. 2001;17:71–92.
Heit JA, et al. *Mayo Clin Proc*. 2001;76:1102–1110.
Geerts WH, et al. *Chest*. 2001;119:132S–175S

SCIP Hospital Care Improvement Program
Information for Health Care Improvement NSAG



SCIP Quality Measures Evidence Review

Set Measure: SCIP-VTE-1

Performance Measure: Surgery patients with recommended venous thromboembolism (VTE) prophylaxis ordered during the admission.



Information for Health Care Improvement



Set Measure: SCIP-VTE-2

Performance Measure: Surgery patients who received appropriate venous thromboembolism (VTE) prophylaxis within 24 hours prior to *Surgical Incision Time* to 24 hours after *Surgery End Time*.



Information for Health Care Improvement



VTE Prophylaxis

The optimal start of pharmacologic VTE prophylaxis in surgical patients varies and must be balanced with the efficacy-versus-bleeding potential. Due to the inherent variability related to the initiation of prophylaxis for surgical procedures, 24 hours prior to surgery to 24 hours post surgery was recommended by consensus of the SCIP Technical Expert Panel in order to establish a timeframe that would encompass most procedures.



Information for Health Care Improvement



VTE Prophylaxis Selection for Surgery	
Surgery, Level of Risk	Recommended Prophylaxis
<input type="checkbox"/> Intracranial Neurosurgery Appendix A, Table 5.17	Any of the following: Intermittent pneumatic compression devices (IPC) with or without graduated compression stockings (GCS) Low-dose unfractionated heparin (LDUH) Low molecular weight heparin (LMWH)* LDUH or LMWH* combined with IPC or GCS * Current guidelines recommend postoperative low molecular weight heparin for Intracranial Neurosurgery.
<input type="checkbox"/> Elective Spinal Surgery Appendix A, Table 5.18	Any of the following: Low-dose unfractionated heparin (LDUH) Low molecular weight heparin (LMWH) Intermittent pneumatic compression devices (IPC) Graduated compression stockings (GCS) IPC combined with GCS LDUH or LMWH combined with IPC or GCS
<input type="checkbox"/> General Surgery with moderate to high risk for bleeding * Appendix A, Table 5.19	Any of the following: Low-dose unfractionated heparin (LDUH) Low molecular weight heparin (LMWH) LDUH or LMWH combined with IPC or GCS
<input type="checkbox"/> General Surgery with high risk for bleeding Appendix A, Table 5.19	Any of the following: Graduated Compression stockings (GCS) Intermittent pneumatic compression (IPC)

Information for Health Care Improvement



VTE Prophylaxis Selection for Surgery	
Surgery, Level of Risk	Recommended Prophylaxis
<input type="checkbox"/> Gynecologic Surgery Appendix A, Table 5.20	Any of the following: Low-dose unfractionated heparin (LDUH) Low molecular weight heparin (LMWH) Intermittent pneumatic compression devices (IPC) LDUH or LMWH combined with IPC or GCS
<input type="checkbox"/> Urologic Surgery Appendix A, Table 5.21	Any of the following: Low-dose unfractionated heparin (LDUH) Low molecular weight heparin (LMWH) Intermittent pneumatic compression devices (IPC) Graduated compression stockings (GCS) LDUH or LMWH combined with IPC or GCS
<input type="checkbox"/> Elective Total Hip Replacement * Appendix A, Table 5.22	Any of the following started within 24 hours of surgery: Low molecular weight heparin (LMWH) Factor Xa Inhibitor (Fondaparinux) Warfarin



Information for Health Care Improvement



VTE Prophylaxis Selection for Surgery (Cont.)	
Surgery, Level of Risk	Recommended Prophylaxis
<input type="checkbox"/> Elective Total Knee Replacement Appendix A, Table 5.23	Any of the following: Low molecular weight heparin (LMWH) Factor Xa Inhibitor (Fondaparinux) Warfarin Intermittent pneumatic compression devices (IPC)
<input type="checkbox"/> Hip Fracture Surgery* Appendix A, Table 5.24	Any of the following: Low-dose unfractionated heparin (LDUH) Low molecular weight heparin (LMWH) Factor Xa Inhibitor (Fondaparinux) Warfarin
<input type="checkbox"/> Elective Total Hip Replacement with high risk for bleeding Appendix A, Table 5.22	Any of the following: Graduated Compression stockings (GCS) Intermittent pneumatic compression (IPC)
<input type="checkbox"/> Hip Fracture Surgery with high risk for bleeding Appendix A, Table 5.24	

Information for Health Care Improvement



SCIP Quality Measures Evidence Review

Web Sites for Major SCIP References

<http://acute.hsag.com>
www.cms.hhs.gov/pvrp
www.qualitynet.org
www.medqic.org
www.hospitalcompare.hhs.gov
www.qualityforum.org
www.medpac.gov

Information for Health Care Improvement

HSAG

Quality vs. Caution

McHUMOR by T. McCracken



"Off hand, I'd say you're suffering from an arrow through your head, but just to play it safe, I'm ordering a bunch of tests."

Information for Health Care Improvement

HSAG

Physician Quality Reporting Initiative (PQRI)

Information for Health Care Improvement

HSAG

Why Pay for Performance?

Serious and widespread problems of quality exist in the United States, with evidence of underuse of beneficial services, overuse of other procedures that are not medically necessary, and mistakes leading to patient injury. The Institute of Medicine of the National Academy of Sciences has stated, "The quality of health care received by the people of the United States falls short of what it should be."

—Commonwealth Fund

Information for Health Care Improvement

HSAG

Physician Voluntary Reporting Program

The Physician Voluntary Reporting Program (PVRP) is a program that represents the first step toward gathering information on the implementation and use of physician quality measures at the federal level.

Information for Health Care Improvement

HSAG

Physician Quality Reporting Initiative (PQRI) Replaces PVRP

- On December 20, 2006, the President signed the Tax Relief and Health Care Act of 2006 (TRHCA).
- Section 101 under Title I authorizes the establishment of a physician quality reporting system by CMS (PQRI).
- Report a designated set of quality measures on claims for dates of service from July 1 to December 31, 2007.
- Bonus payment of 1.5% of total allowed charges for covered Medicare physician fee schedule services.

Information for Health Care Improvement

HSAG

SCIP Quality Measures Evidence Review

Physician Quality Reporting Initiative (PQRI)

- On January 22, 2007, 74 quality measures were adopted based on the PVRP program, plus 8 others (all specialties included).
- No more than 3 quality measures are applicable, and each measure must be reported in at least 80% of the cases.
- There shall be available to the Fund for expenditures \$1.35 billion.
- \$10,000 cap for individual practitioners, \$50,000 for groups > five.

Information for Health Care Improvement

HSAG

2007 PQRI Physician Quality Surgical Measures

(A complete list of the 74 PQRI Physician Quality Measures is available at www.cms.hhs.gov/PQRI/Downloads/PQRI MeasuresList.pdf.)

20. Perioperative Care: Timing of Antibiotic Prophylaxis—Ordering Physician

Percentage of surgical patients aged 18 years and older undergoing procedures with the indications for prophylactic parenteral antibiotics, who have an order for prophylactic antibiotic to be given within one hour (if fluoroquinolone or vancomycin, two hours) prior to the surgical incision (or start of procedure when no incision is required)

21. Perioperative Care: Selection of Prophylactic Antibiotic—First OR Second Generation Cephalosporin

Percentage of surgical patients aged 18 years and older undergoing procedures with the indications for a first OR second generation cephalosporin prophylactic antibiotic, who had an order for cefazolin OR cefuroxime for antimicrobial prophylaxis

Information for Health Care Improvement

HSAG

2007 PQRI Physician Quality Surgical Measures (continued)

22. Perioperative Care: Discontinuation of Prophylactic Antibiotics (Non-Cardiac Procedures)

Percentage of non-cardiac surgical patients aged 18 years and older undergoing procedures with the indications for prophylactic antibiotics AND who received a prophylactic antibiotic, who have an order for discontinuation of prophylactic antibiotics within 24 hours of surgical end time

23. Perioperative Care: Venous Thromboembolism (VTE) Prophylaxis (When Indicated in ALL Patients)

Percentage of patients aged 18 years and older undergoing procedures for which VTE prophylaxis is indicated in all patients, who had an order for Low Molecular Weight Heparin (LMWH), Low-Dose Unfractionated Heparin (LDUH), adjusted-dose warfarin, fondaparinux or mechanical prophylaxis to be given within 24 hours prior to incision time or within 24 hours after surgery end time

Information for Health Care Improvement

HSAG



Information for Health Care Improvement

HSAG

Contact Information

Howard Pitluk, MD, MPH, FACS
Medical Director
Health Services Advisory Group
1600 E. Northern Avenue, Suite 100
Phoenix, AZ 85020
602.665.6143
hpitluk@hsag.com

Information for Health Care Improvement

HSAG

*All Medicare beneficiaries
have the right to appeal their discharge from
a hospital, skilled nursing facility, home
health agency, or comprehensive outpatient
rehabilitation facility.*

*For more information, go to
<http://www.hsag.com/azmedicare>
or call 1.800.359.9909.*

Information for Health Care Improvement

HSAG

SCIP Quality Measures Evidence Review



HSAG HEALTH SERVICES
ADVISORY GROUP

www.hsag.com

This material was prepared by Health Services Advisory Group, the Medicare Quality Improvement Organization for Arizona, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. Publication No. AZ-8SOW-1C-041107-03

Information for Health Care Improvement 