

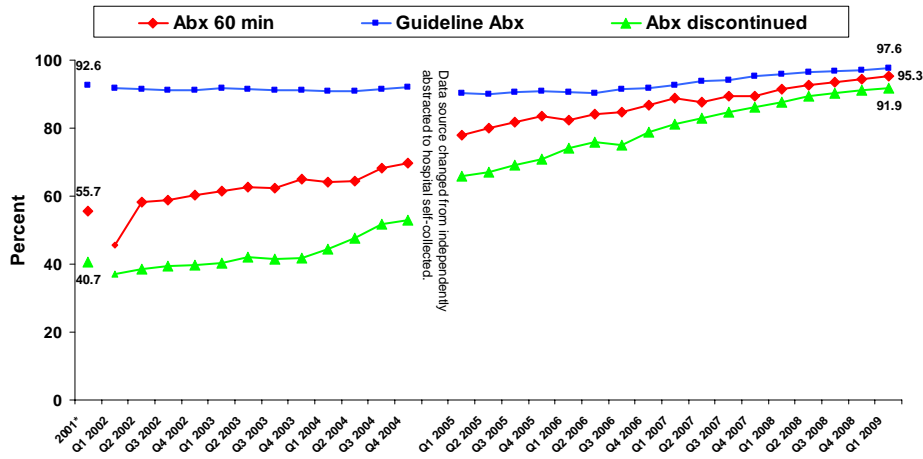
**CMS National Patient Safety Initiative  
for Surgical Care**  
*Ongoing Opportunities for Improvement*



Dale W. Bratzler, DO, MPH  
President and CEO  
Oklahoma Foundation for Medical Quality

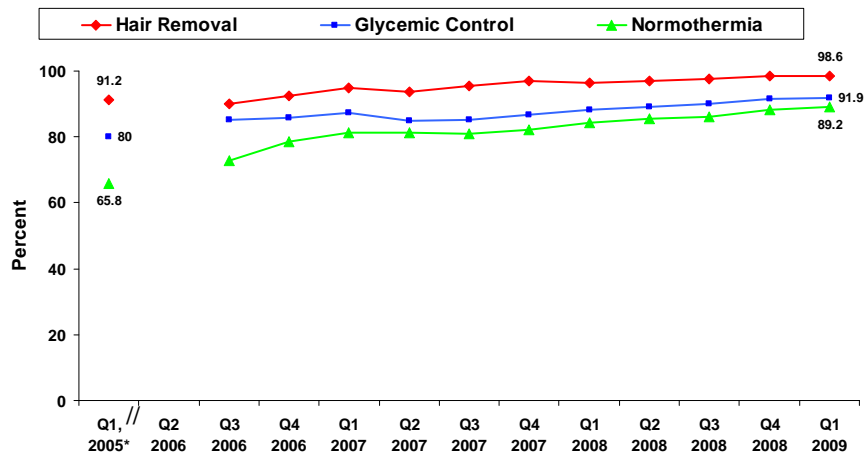
**An update – where are we at now?**

## Changes in National Performance Baseline to Q1, 2009



\*National sample of 39,000 Medicare patients undergoing surgery in US hospitals during 2001.  
Bratzler DW, Houck PM, et al. Arch Surg. 2005;140:174-182.

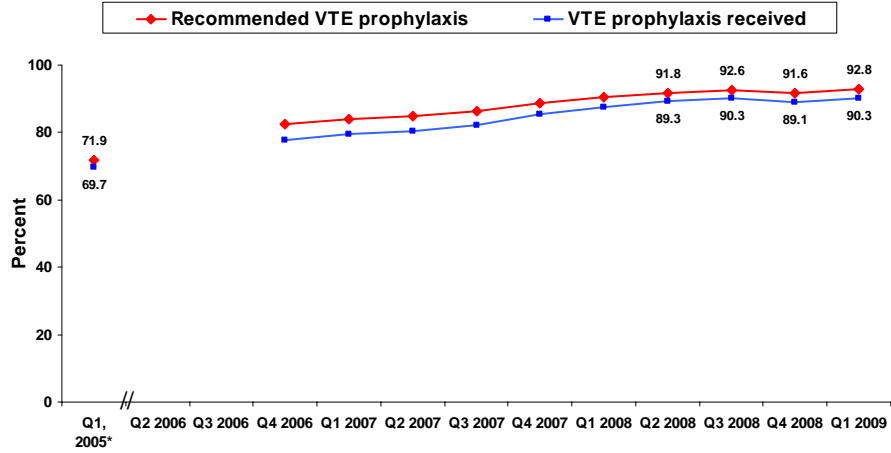
## Changes in National Performance Baseline to Q1, 2009



\*National sample of 19,497 Medicare patients undergoing surgery in US hospitals during the first quarter of 2005.

# Changes in National Performance

*Baseline to Q1, 2009*

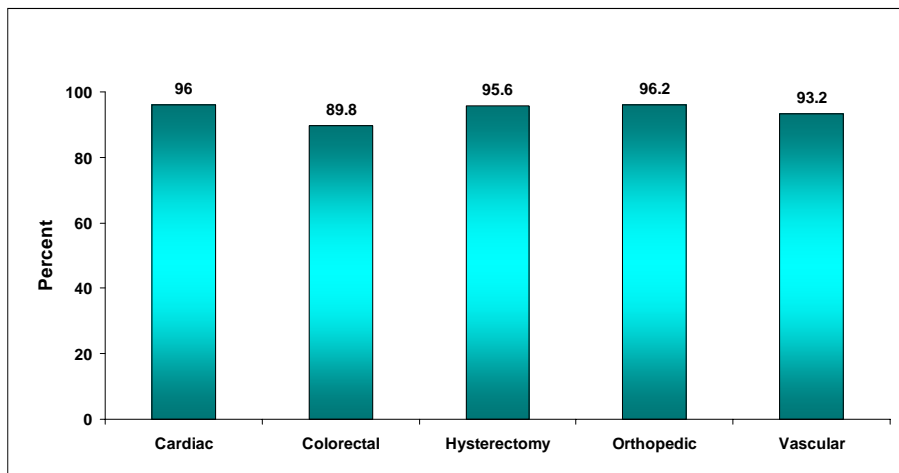


\*National sample of 19,497 Medicare patients undergoing surgery in US hospitals during the first quarter of 2005.

# Surgical Care Improvement Project

*Measure Rates Stratified by Surgery Type*

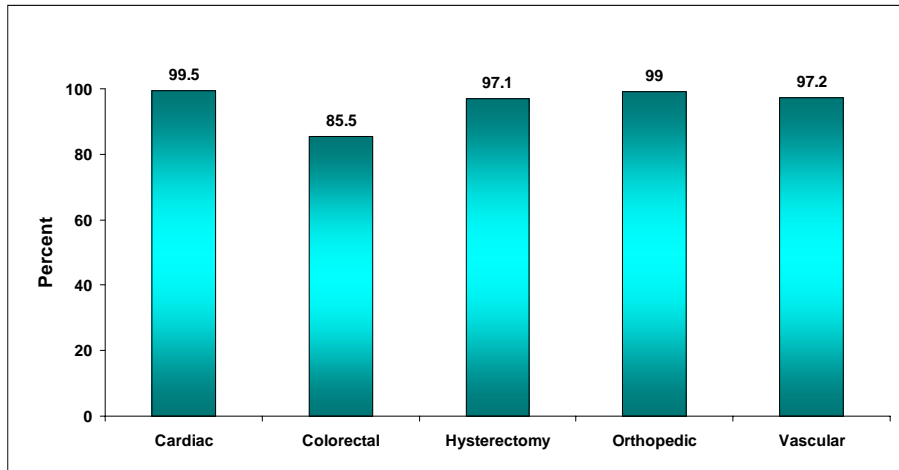
*SCIP Infection 1 – Antibiotic Timing*



Qtr. 1, 2009

# Surgical Care Improvement Project

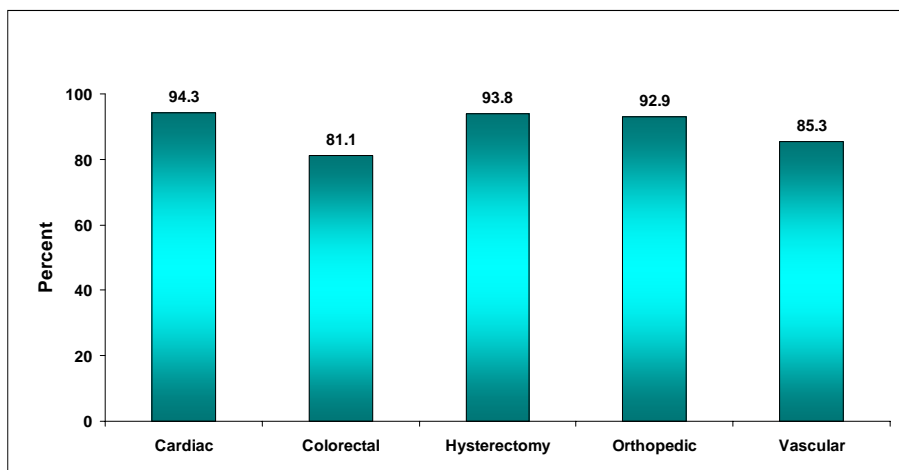
## Measure Rates Stratified by Surgery Type SCIP Infection 2 – Antibiotic Selection



Qtr. 1, 2009

# Surgical Care Improvement Project

## Measure Rates Stratified by Surgery Type SCIP Infection 3 – Antibiotic Discontinuation

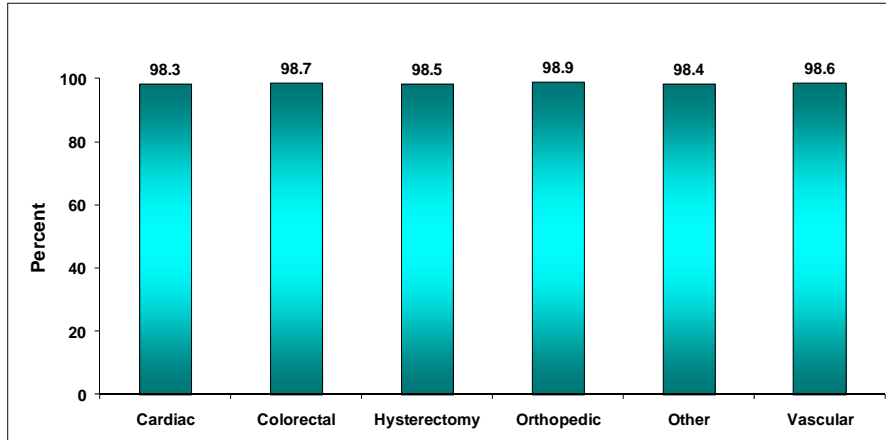


Qtr. 1, 2009

# Surgical Care Improvement Project

Measure Rates Stratified by Surgery Type

SCIP Infection 6 – Hair Removal

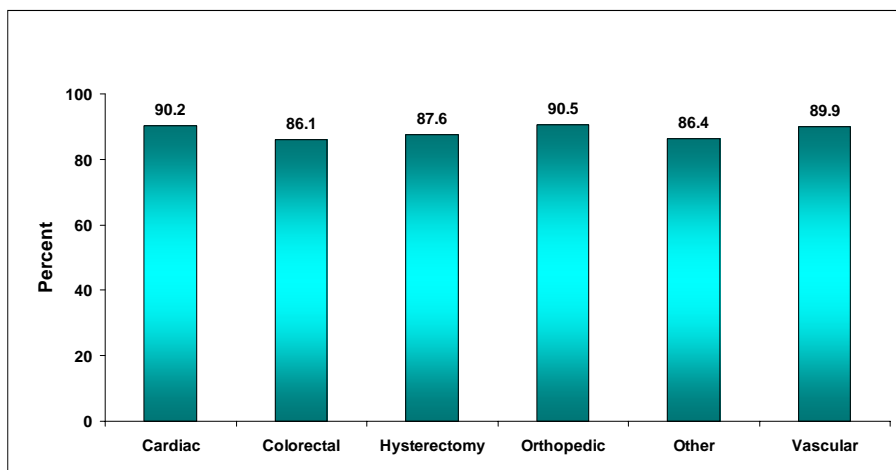


Qtr. 1, 2009

# Surgical Care Improvement Project

Measure Rates Stratified by Surgery Type

SCIP Cardiac 2 – Perioperative Beta-blocker

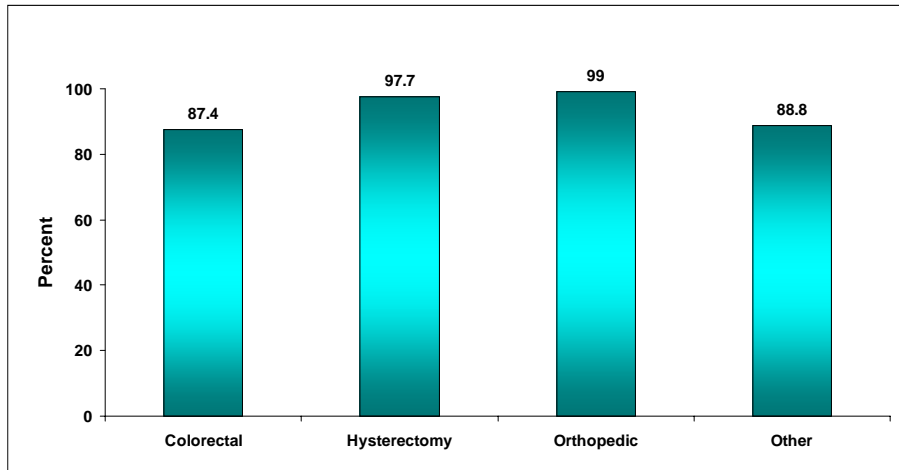


Qtr. 1, 2009

# Surgical Care Improvement Project

*Measure Rates Stratified by Surgery Type*

*SCIP VTE 1 – VTE Prophylaxis Ordered*

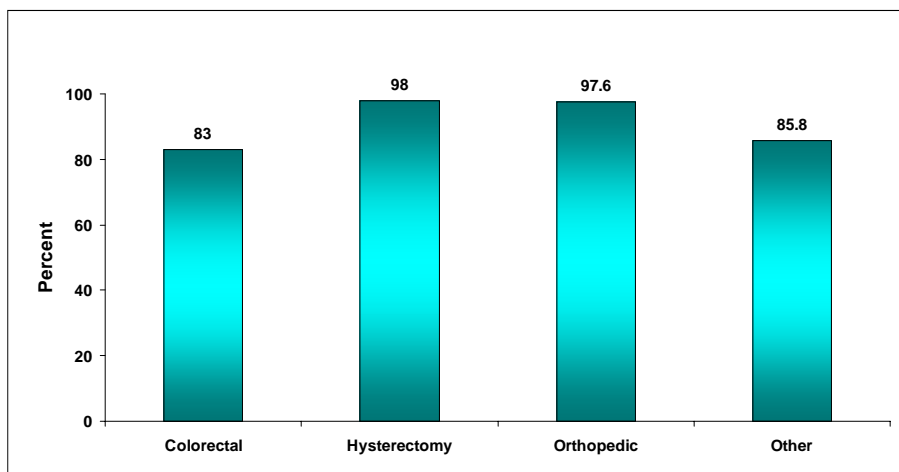


Qtr. 1, 2009

# Surgical Care Improvement Project

*Measure Rates Stratified by Surgery Type*

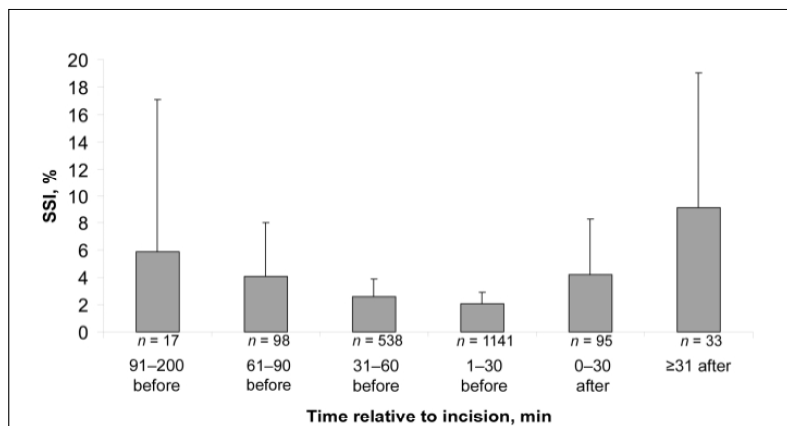
*SCIP VTE 2 – VTE Prophylaxis in 24 Hours*



Qtr. 1, 2009

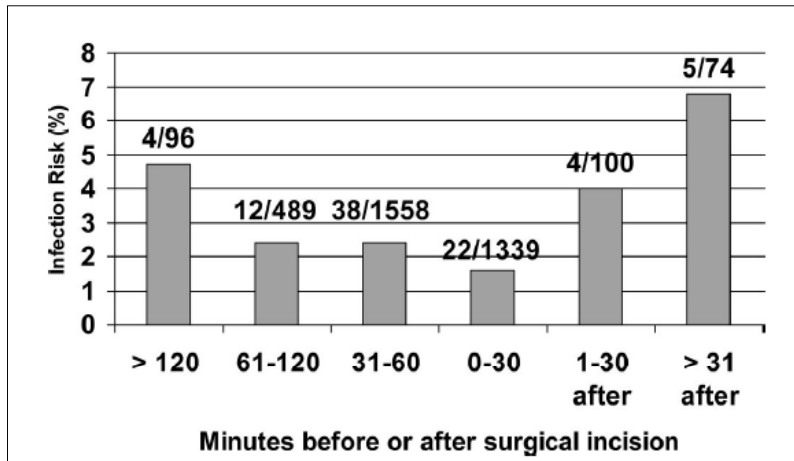
## Some Quick Thoughts about Where We are At.....

- SCIP Infection 6 (hair removal) has achieved our definition of “topped out” and may be retired
- There is variation in performance on measures depending on type of surgery
  - Why??
    - Colorectal surgeons tend to have lower rates of performance
      - General surgery is performed in more hospitals including small, rural facilities – possible explanation
      - However, difficult to explain reasons for lower rates on systems measures such as antibiotic timing



**Figure 1.** The association between the timing of administration of prophylaxis and the incidence of surgical site infection (SSI) following total hip arthroplasty.

*Clin Infect Dis.* 2007; 44:921-7.



Steinberg JP, et al. *Ann Surg* 2009;250: 10-16.

1236 F. SONG and A.-M. GLENNY

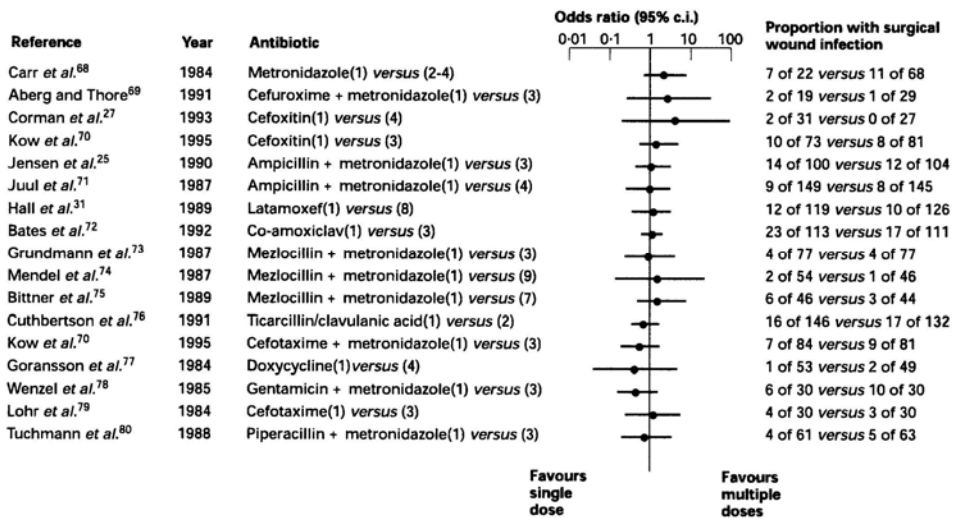
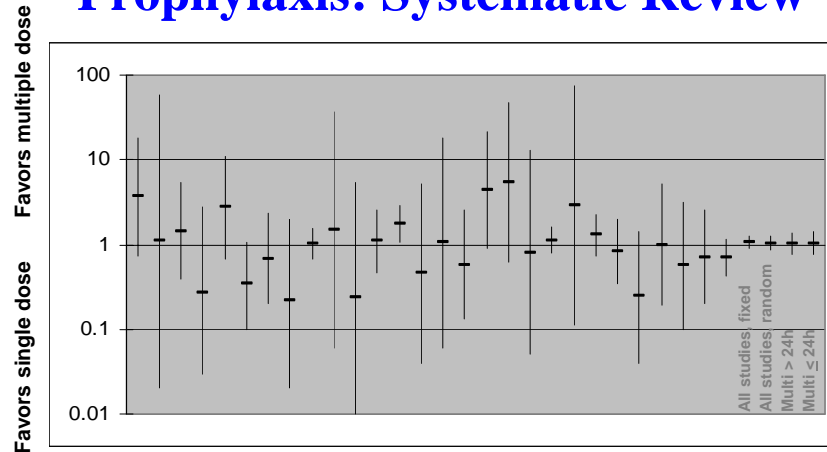


Fig. 5 Effect of single versus multiple doses of antibiotic in preventing surgical wound infection in colorectal surgery. Values in parentheses are number of doses. c.i., Confidence interval

Song F, et al. *Br J Surg.* 1998 Sep;85(9):1232-41

# Single vs Multiple Dose Surgical Prophylaxis: Systematic Review



McDonald. Aust NZ J Surg 1998;68:388

National  
**SURGICAL INFECTION PREVENTION**  
Medicare Quality Improvement Project

The NEW ENGLAND JOURNAL of MEDICINE

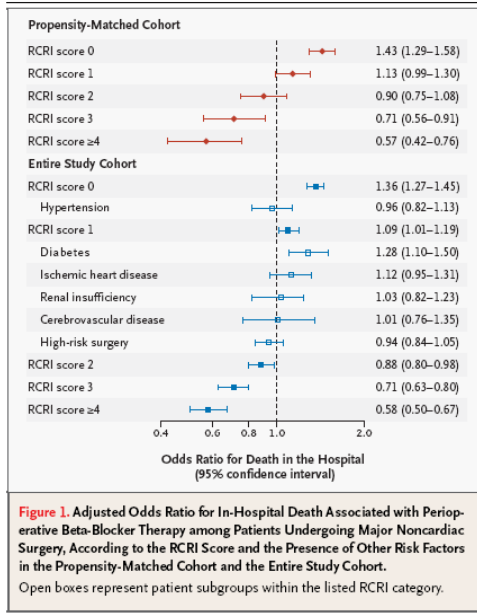
ORIGINAL ARTICLE

## Perioperative Beta-Blocker Therapy and Mortality after Major Noncardiac Surgery

Peter K. Lindenauer, M.D., Penelope Pekow, Ph.D., Kaijun Wang, M.S.,  
Dheeresh K. Mamidi, M.B., B.S., M.P.H., Benjamin Gutierrez, Ph.D.,  
and Evan M. Benjamin, M.D.

Lindenauer PK, et al. *N Engl J Med.* 2005; 353:349-361

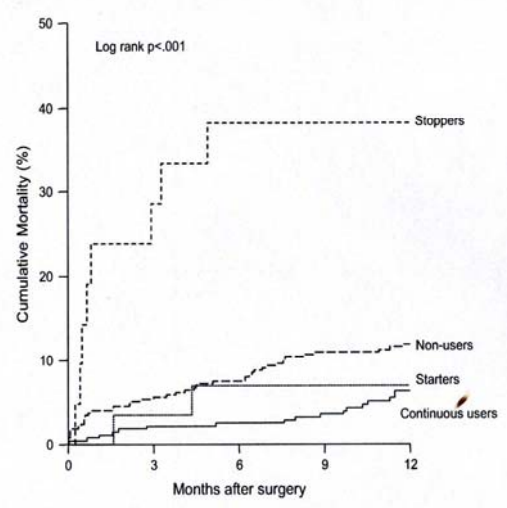
PATIENT SAFETY  
QUALITY IMPROVEMENT ORGANIZATION  
SUPPORT CENTER



- ### Revised Cardiac Index Score
- high-risk surgery
  - ischemic heart disease
  - cerebrovascular disease
  - renal insufficiency
  - diabetes

Lindenauer PK, et al. *N Engl J Med.* 2005; 353:349-361

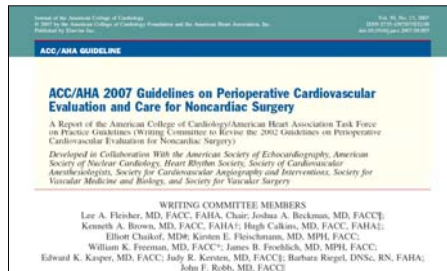
## Beta-Blocker Withdrawal



Hoeks et al. *Eur J Vasc Endovasc Surg* 2006

# Surgical Care Improvement Project

- Perioperative cardiac events
  - Perioperative beta blockers in patients who are on beta blockers prior to admission



**CLASS I**  
1. Beta blockers should be continued in patients undergoing surgery who are receiving beta blockers to treat angina, symptomatic arrhythmias, hypertension, or other ACC/AHA class I guideline indications. (Level of Evidence: C)



European Heart Journal  
doi:10.1093/eurheartj/ehp337

**ESC GUIDELINES**



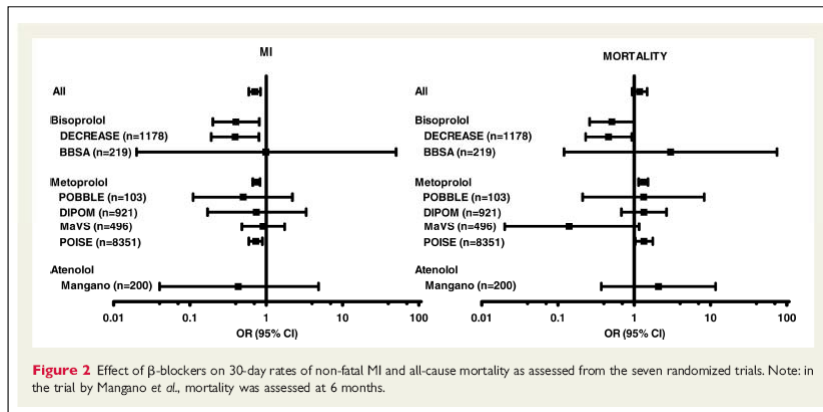
## Guidelines for pre-operative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery

The Task Force for Preoperative Cardiac Risk Assessment and Perioperative Cardiac Management in Non-cardiac Surgery of the European Society of Cardiology (ESC) and endorsed by the European Society of Anaesthesiology (ESA)

Authors/Task Force Members: Don Poldermans; (Chairperson) (The Netherlands)\*; Jeroen J. Bax (The Netherlands); Eric Boersma (The Netherlands); Stefan De Hert



Available at: <http://www.escardio.org/guidelines>.



*Treatment onset and the choice of the optimal dose of  $\beta$ -blockers are closely linked. Perioperative myocardial ischaemia and troponin release are reduced, and long-term outcome is improved, in patients who have a lower heart rate. On the other hand, bradycardia and hypotension should be avoided. This highlights the importance of preventing overtreatment with fixed high initial doses.*

**Recommendations on  $\beta$ -blockers<sup>a</sup>**

Recommendations	Class <sup>b</sup>	Level <sup>c</sup>
$\beta$ -Blockers are recommended in patients who have known IHD or myocardial ischaemia according to pre-operative stress testing <sup>a</sup>	I	B
$\beta$ -Blockers are recommended in patients scheduled for high-risk surgery <sup>a</sup>	I	B
Continuation of $\beta$ -blockers is recommended in patients previously treated with $\beta$ -blockers because of IHD, arrhythmias, or hypertension	I	C
$\beta$ -Blockers should be considered for patients scheduled for intermediate-risk surgery <sup>a</sup>	IIa	B
Continuation in patients previously treated with $\beta$ -blockers because of chronic heart failure with systolic dysfunction should be considered	IIa	C
$\beta$ -Blockers may be considered in patients scheduled for low-risk surgery with risk factor(s)	IIb	B
Perioperative high-dose $\beta$ -blockers without titration are not recommended	III	A
$\beta$ -Blockers are not recommended in patients scheduled for low-risk surgery without risk factors	III	B

<sup>a</sup>Treatment should be initiated optimally between 30 days and at least 1 week before surgery. Target: heart rate 60–70 beats/min, systolic blood pressure > 100 mmHg.  
<sup>b</sup>Class of recommendation.  
<sup>c</sup>Level of evidence.  
 IHD = ischaemic heart disease.

**PATIENT SAFETY**  
 QUALITY IMPROVEMENT ORGANIZATION  
 SUPPORT CENTRE

The Surgeon General's Call to Action  
to Prevent Deep Vein Thrombosis  
and Pulmonary Embolism

2008



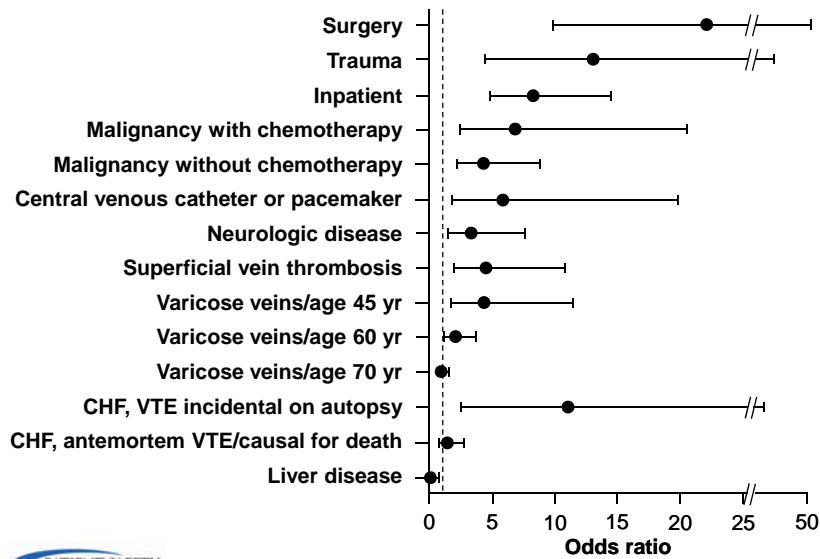
U.S. Department of Health and Human Services



“The best estimates indicate that 350,000 to 600,000 Americans each year suffer from DVT and PE, and that at least 100,000 deaths may be directly or indirectly related to these diseases. This is far too many, since many of these deaths can be avoided. Because the disease disproportionately affects older Americans, we can expect more suffering and more deaths in the future as our population ages—unless we do something about it.”

## Risk Factors for DVT or PE

Nested Case-Control Study (n=625 case-control pairs)



## Practice Parameters for the Prevention of Venous Thrombosis

Thomas J. Stahl, M.D., Sharon G. Gregorcyk, M.D., Neil H. Hyman, M.D.,  
W. Donald Buie, M.D., and the Standards Practice Task Force of The American  
Society of Colon and Rectal Surgeons

The American Society of Colon and Rectal Surgeons is dedicated to ensuring high quality patient care by advancing the science, prevention, specific procedure must be made by the physician in light of all of the circumstances presented by the individual patient. The evidence-based guidelines are

*Dis Colon Rectum* 2006; 49: 1477–1483.

<b>Surgery*</b>	<b>Recommended Prophylaxis</b>
<b>General surgery</b>	Any of the following: Low-dose unfractionated heparin (LDUH) 5000 units bid or tid Low molecular weight heparin (LMWH) Fondaparinux (effective 10/01/07) LDUH or LMWH combined with IPC or GCS
<b>General surgery with high risk for bleeding (based on physician-documentation of bleeding risk)</b>	Any of the following: Graduated Compression stockings (GCS) Intermittent pneumatic compression (IPC)
<b>Gynecologic surgery</b>	Any of the following: Low-dose unfractionated heparin (LDUH) 5000 units bid or tid Low molecular weight heparin (LMWH) Intermittent pneumatic compression devices (IPC) LDUH or LMWH combined with IPC or GCS

The AAOS guidelines advocate mechanical compression devices and early mobilization in all patients. AAOS also says aspirin would not be the lone thromboprophylaxis measure, Norman Johanson, MD, chairman of the group that developed the AAOS guidelines, told *OR Manager*.

“Aspirin alone is not really acceptable to anybody,” he says, noting that the issue really is not use of aspirin alone but its use with mechanical prophylaxis.



Interview with Dale Bratzler and Norman Johanson. OR Manager. August 2009

## New Measures for SCIP



ORIGINAL ARTICLE

## Indwelling Urinary Catheter Use in the Postoperative Period

Analysis of the National Surgical Infection Prevention Project Data

Heidi L. Wald, MD, MSPH; Allen Ma, PhD; Dale W. Bratzler, DO, MPH; Andrew M. Kramer, MD

**Based on Medicare inpatients (N=35904)  
undergoing major surgery in 2001:**

- *Eighty-six percent of patients undergoing major operations had perioperative indwelling urinary catheters. Of these, 50% had catheters for longer than 2 days postoperatively. These patients were twice as likely to develop urinary tract infections than patients with catheterization of 2 days or less.*



Wald HL, Ma A, Bratzler DW, Kramer AM. Indwelling urinary catheter use in the postoperative period. Analysis of the National Surgical Infection Prevention Project data. *Arch Surg.* 2008;143:551-557.

## Physician's Awareness of Urinary Catheters

Physician	Unaware of patient's catheter (%)
Student	21
Intern	22
Resident	27
Attending physician	38



Saint S, et al. *Am J Med.* 2000;109:476-480.

## SCIP Infection 9

- Urinary catheter removed on postoperative day 1 (POD 1) or postoperative day 2 (POD 2) with day of surgery being day zero.
  - Excluded: Patients who had a urological, gynecological or perineal operation performed (also ICU patients on diuretics)
  - Excluded: Explicit physician documentation of a reason to not remove

*Final IPPS rule requires hospitals to start publicly reporting this measure for January 2010 discharges to receive full Medicare Annual Payment Update*



## SCIP Infection 9

- Currently only applies to patients who have their catheter placed in the OR.
  - In a future manual update, the only patients who will be excluded are those who had a catheter prior to ARRIVAL
  - Many systems approaching this measure are addressing all med-surg patients (not just SCIP patients)

## Consequences of Hypothermia *Perioperative Patients*

- Adverse myocardial outcomes
  - 1.5° C core temperature decrease triples the risk of morbid myocardial events
- Coagulopathy
  - impairs platelet function and coagulation cascade
- Reduces drug metabolism
- Thermal discomfort (patient satisfaction)
- Surgical wound infection
  - thermoregulatory vasoconstriction



Sessler DI, Akca O. *Clin Infect Dis.* 2002;35:1397-1404.

## SCIP Infection 10 *Surgical Normothermia*

- Proportion of patients undergoing any operation (any age) who have anesthesia for more than one hour, who have active warming devices\* used or achieve normothermia within 30 minutes before or 15 minutes after the end of anesthesia
  - Measure aligned with physician (PQRI) measure
  - Excludes patients with intentional hypothermia and all patients on cardiopulmonary bypass
  - NQF endorsed as of July 2008

**Final IPPS rule requires hospitals to start publicly reporting this measure for January 2010 discharges to receive full Medicare Annual Payment Update**



\*Active warming defined as: forced warm air, warm water garments, or conductive over-patient resistive heating blankets.

## **Other Issues in Measurement and Reporting**

### **Other Measurement Issues**

- Expanded focus on patient outcomes, costs, and efficiency
  - Move away from processes of care
    - e.g., 30-day mortality and readmission rates for AMI, HF, and pneumonia
- Capture data on care management from electronic sources
  - Claims and EHRs
- Focus on care across settings

## Electronic Submission of Performance Measures

While the new measures are not currently required for reporting under the Reporting Hospital Quality Data for the Annual Payment Update (RHQDAPU) program, CMS anticipates having the technical ability to start accepting data on these performance measures directly from electronic medical records as early as July 1, 2010.

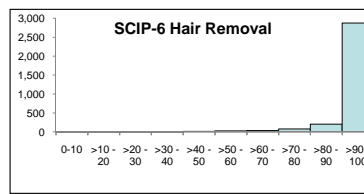
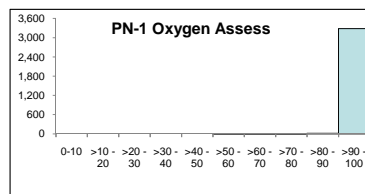
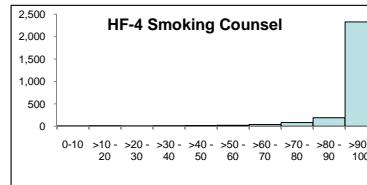
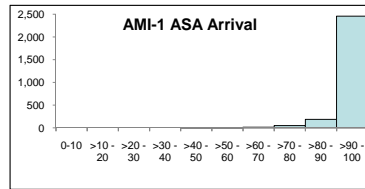
Centers for Medicare & Medicaid Services. Medicare Program; Changes to the Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and Fiscal Year 2010 Rates; and Changes to the Long-Term Care Hospital Prospective Payment System and Rate Years 2010 and 2009 Rates. Available at: [http://www.federalregister.gov/OFRUpload/OFRData/2009-18663\\_PI.pdf](http://www.federalregister.gov/OFRUpload/OFRData/2009-18663_PI.pdf). Accessed 10 August 2009.

## New “Core” Measures??

- New measures
  - Emergency department throughput
    - Arrival to departure
    - Decision to admit to departure
  - VTE prevention and treatment for all patients
  - Stroke management

CMS has contracted with the Health Information Technology Standards Panel (HITSP) to code all three measure sets for use in electronic health records.

## Examples of “Topped Out” Measures



A measure was identified as "topped off" if its 75th percentile was within two standard errors of the 95th percentile and the truncated coefficient of variation (TCV) was smaller than 10. This definition was developed by the team at Brandeis University who are under contract to CMS to inform decisions related to composite measures of care and value-based purchasing.

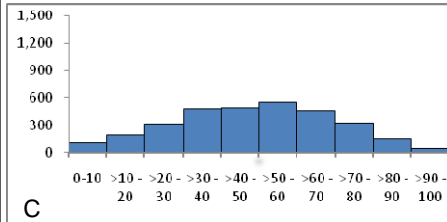
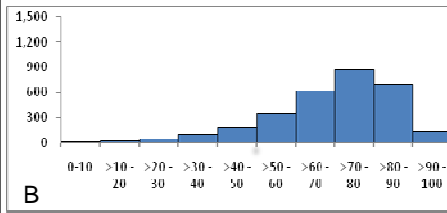
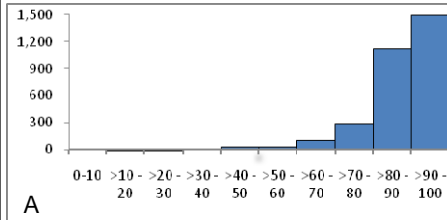
## Topped Off Measures

Measure	# of hosp	Stderr	TCV	75th	95th	Topped off
AMI-1	2,720	0.1	3.3	100.0	100.0	Topped off
AMI-2	2,518	0.1	5.0	99.5	100.0	NO
AMI-3	1,650	0.2	5.8	100.0	100.0	Topped off
AMI-4	1,668	0.1	2.6	100.0	100.0	Topped off
AMI-5	2,527	0.1	4.0	100.0	100.0	Topped off
AMI-6	2,657	0.2	5.6	98.5	100.0	NO
AMI-7a	79	2.6	36.1	73.3	90.5	NO
AMI-8a	1,331	0.5	17.9	88.2	96.7	NO
HF-1	3,270	0.4	18.7	91.8	99.6	NO
HF-2	3,284	0.2	6.6	99.0	100.0	NO
HF-3	3,004	0.2	7.3	97.1	100.0	NO
HF-4	2,679	0.2	5.4	100.0	100.0	Topped off
PN-1	3,308	0.0	0.7	100.0	100.0	Topped off
PN-2	3,282	0.3	13.0	94.3	98.9	NO
PN-3a	2,706	0.2	6.2	100.0	100.0	Topped off
PN-3b	3,203	0.1	5.3	96.1	98.9	NO
PN-4	3,125	0.2	8.3	100.0	100.0	Topped off
PN-5c	3,283	0.1	4.5	97.1	99.4	NO
PN-6	3,256	0.2	6.2	93.2	97.2	NO
PN-7	3,254	0.3	15.0	92.0	98.3	NO
SCIP-1	3,189	0.2	8.2	95.6	98.5	NO
SCIP-2	3,187	0.1	3.9	97.8	99.5	NO
SCIP-3	3,185	0.2	10.1	93.4	97.8	NO
SCIP-4	1,144	0.3	8.6	94.5	98.4	NO
SCIP-6	3,249	0.2	4.5	100.0	100.0	Topped off
SCIP-7	1,460	0.4	14.3	93.5	100.0	NO
CARD-2	1,691	0.3	7.7	96.9	100.0	NO
VTE-1	3,243	0.3	9.7	94.9	98.6	NO
VTE-2	3,244	0.3	11.1	92.5	97.5	NO

## Composite Measures Ranking Hospitals - SCIP

CMS and the Hospital Quality Alliance are likely to start reporting composite measures of quality

- Aggregate all performance measures by topic
- Assign “stars” (1 through 5 – e.g., <15<sup>th</sup> percentile = 1 star; 85<sup>th</sup> percentile or above = 5 stars)
- Three models
  - Opportunities Model - A
  - Appropriate Care Model - B
  - Relative Quality Index - C



**DRAFT – No decisions are final at this time.**

## Alignment (“harmonization”) of Inpatient Measures and PQRI Measures

	Percentage of patients aged 65 years and older treated for a hip, spine, or closed head fracture with documentation of communication with the physician managing the patient’s on-going care that a fracture occurred and that the patient was or should be tested or treated for osteoporosis	
28.	<b>Aspirin at Arrival for Acute Myocardial Infarction (AMI)</b> Percentage of patients, regardless of age, with an emergency department discharge diagnosis of AMI who had documentation of receiving aspirin within 24 hours before emergency department arrival or during emergency department stay	* AMA-PCPI/NCQA
30.	<b>Perioperative Care: Timing of Prophylactic Antibiotics – Administering Physician</b> Percentage of surgical patients aged 18 years and older who have an order for a parenteral 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) for whom administration of prophylactic antibiotic has been initiated within one hour (if fluoroquinolone or vancomycin, two hours) prior to the surgical incision (or start of procedure when no incision is required)	* AMA-PCPI/NCQA
31.	<b>Stroke and Stroke Rehabilitation: Deep Vein Thrombosis Prophylaxis (DVT) for Ischemic Stroke or Intracranial Hemorrhage</b> Percentage of patients aged 18 years and older with a diagnosis of ischemic stroke or intracranial hemorrhage who received DVT prophylaxis by end of hospital day two	* AMA-PCPI/NCQA



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