CMS National Patient Safety Initiative for Surgical Care

Ongoing Opportunities for Improvement

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President and CEO
Oklahoma Foundation for Medical Quality

An update – where are we at now?
Changes in National Performance
Baseline to Q1, 2009


Changes in National Performance
Baseline to Q1, 2009

Changes in National Performance
Baseline to Q1, 2009

Recommended VTE prophylaxis
VTE prophylaxis received

Surgical Care Improvement Project
Measure Rates Stratified by Surgery Type
SCIP Infection 1 – Antibiotic Timing

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

<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>Qtr. 1, 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal</td>
<td>87.4%</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>97.7%</td>
</tr>
<tr>
<td>Orthopedic</td>
<td>99%</td>
</tr>
<tr>
<td>Other</td>
<td>88.8%</td>
</tr>
</tbody>
</table>

Surgical Care Improvement Project

Measure Rates Stratified by Surgery Type

SCIP VTE 2 – VTE Prophylaxis in 24 Hours

<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>Qtr. 1, 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal</td>
<td>83.1%</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>98%</td>
</tr>
<tr>
<td>Orthopedic</td>
<td>97.6%</td>
</tr>
<tr>
<td>Other</td>
<td>85.8%</td>
</tr>
</tbody>
</table>
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.


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.

Single vs Multiple Dose Surgical Prophylaxis: Systematic Review


The NEW ENGLAND JOURNAL OF MEDICINE

Perioperative Beta-Blocker Therapy and Mortality after Major Noncardiac Surgery

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

Revised Cardiac Index Score

- high-risk surgery
- ischemic heart disease
- cerebrovascular disease
- renal insufficiency
- diabetes


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)

[Available at: http://www.escardio.org/guidelines]
Treatment onset and the choice of the optimal dose of β-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 β-blockers

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>β-Blockers are recommended in patients who have known IHD or myocardial ischaemia according to pre-operative stress testing⁶</td>
<td>I</td>
<td>B</td>
</tr>
<tr>
<td>β-Blockers are recommended in patients scheduled for high-risk surgery⁴</td>
<td>I</td>
<td>B</td>
</tr>
<tr>
<td>Continuation of β-blockers is recommended in patients previously treated with β-blockers because of IHD, arrhythmias, or hypertension</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>β-Blockers should be considered for patients scheduled for intermediate-risk surgery⁹</td>
<td>IIA</td>
<td>B</td>
</tr>
<tr>
<td>Continuation in patients previously treated with β-blockers because of chronic heart failure with systolic dysfunction should be considered</td>
<td>IIA</td>
<td>C</td>
</tr>
<tr>
<td>β-Blockers may be considered in patients scheduled for low-risk surgery with risk factor(s)</td>
<td>IIIB</td>
<td>B</td>
</tr>
<tr>
<td>Perioperative high-dose β-blockers without initiation are not recommended</td>
<td>III</td>
<td>A</td>
</tr>
<tr>
<td>β-Blockers are not recommended in patients scheduled for low-risk surgery without risk factors</td>
<td>III</td>
<td>B</td>
</tr>
</tbody>
</table>

⁶Treatment 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.

⁷Class of recommendation.

⁸Level of evidence.

IHD = ischemic heart disease.
“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)

- Surgery
- Trauma
- Inpatient
- Malignancy with chemotherapy
- Malignancy without chemotherapy
- Central venous catheter or pacemaker
- Neurologic disease
- Superficial vein thrombosis
- Varicose veins/age 45 yr
- Varicose veins/age 60 yr
- Varicose veins/age 70 yr
- CHF, VTE incidental on autopsy
- CHF, antemortem VTE/causal for death
- Liver disease

![Odds ratio graph]
### Practice Parameters for the Prevention of Venous Thrombosis


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


<table>
<thead>
<tr>
<th>Surgery*</th>
<th>Recommended Prophylaxis</th>
</tr>
</thead>
</table>
| **General surgery** | 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 |
| **General surgery with high risk for bleeding (based on physician-documentation of bleeding risk)** | Any of the following:  
Graduated Compression stockings (GCS)  
Intermittent pneumatic compression (IPC) |
| **Gynecologic surgery** | 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.

New Measures for SCIP
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.

Physician’s Awareness of Urinary Catheters

<table>
<thead>
<tr>
<th>Physician</th>
<th>Unaware of patient’s catheter (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>21</td>
</tr>
<tr>
<td>Intern</td>
<td>22</td>
</tr>
<tr>
<td>Resident</td>
<td>27</td>
</tr>
<tr>
<td>Attending physician</td>
<td>38</td>
</tr>
</tbody>
</table>


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

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

*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.


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

<table>
<thead>
<tr>
<th>Measure</th>
<th># of Hosp</th>
<th>Sderr</th>
<th>TCV</th>
<th>75th</th>
<th>95th</th>
<th>Topped off</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMI-1</td>
<td>2,720</td>
<td>0.1</td>
<td>3.3</td>
<td>100.0</td>
<td>100.0</td>
<td>Topped off</td>
</tr>
<tr>
<td>AMI-2</td>
<td>2,518</td>
<td>0.1</td>
<td>5.0</td>
<td>99.5</td>
<td>100.0</td>
<td>NO</td>
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<tr>
<td>AMI-3</td>
<td>1,890</td>
<td>0.2</td>
<td>9.8</td>
<td>100.0</td>
<td>100.0</td>
<td>Topped off</td>
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<tr>
<td>AMI-4</td>
<td>1,668</td>
<td>0.1</td>
<td>2.6</td>
<td>100.0</td>
<td>100.0</td>
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<tr>
<td>AMI-5</td>
<td>2,527</td>
<td>0.1</td>
<td>4.0</td>
<td>100.0</td>
<td>100.0</td>
<td>Topped off</td>
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<tr>
<td>AMI-6</td>
<td>2,657</td>
<td>0.2</td>
<td>5.6</td>
<td>98.5</td>
<td>100.0</td>
<td>NO</td>
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<tr>
<td>AMI-7a</td>
<td>79</td>
<td>0.6</td>
<td>18.1</td>
<td>73.3</td>
<td>90.5</td>
<td>NO</td>
</tr>
<tr>
<td>AMI-8a</td>
<td>1,331</td>
<td>0.5</td>
<td>20.5</td>
<td>78.2</td>
<td>96.7</td>
<td>NO</td>
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<tr>
<td>HF-1</td>
<td>3,270</td>
<td>0.4</td>
<td>18.7</td>
<td>91.8</td>
<td>99.6</td>
<td>NO</td>
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<tr>
<td>HF-2</td>
<td>3,184</td>
<td>0.4</td>
<td>8.6</td>
<td>99.0</td>
<td>100.0</td>
<td>NO</td>
</tr>
<tr>
<td>HF-3</td>
<td>3,004</td>
<td>0.2</td>
<td>7.3</td>
<td>97.1</td>
<td>100.0</td>
<td>NO</td>
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<tr>
<td>HF-4</td>
<td>2,679</td>
<td>0.2</td>
<td>6.4</td>
<td>100.0</td>
<td>100.0</td>
<td>Topped off</td>
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<tr>
<td>PN-1</td>
<td>3,369</td>
<td>0.0</td>
<td>0.7</td>
<td>100.0</td>
<td>100.0</td>
<td>Topped off</td>
</tr>
<tr>
<td>PN-2a</td>
<td>2,276</td>
<td>0.3</td>
<td>13.0</td>
<td>94.3</td>
<td>98.9</td>
<td>NO</td>
</tr>
<tr>
<td>PN-3b</td>
<td>2,193</td>
<td>0.1</td>
<td>5.3</td>
<td>98.1</td>
<td>98.9</td>
<td>NO</td>
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<tr>
<td>PN-4</td>
<td>3,125</td>
<td>0.2</td>
<td>8.3</td>
<td>100.0</td>
<td>100.0</td>
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<tr>
<td>PN-5c</td>
<td>3,263</td>
<td>0.1</td>
<td>4.5</td>
<td>97.1</td>
<td>99.4</td>
<td>NO</td>
</tr>
<tr>
<td>PN-6</td>
<td>3,256</td>
<td>0.4</td>
<td>6.8</td>
<td>93.2</td>
<td>97.2</td>
<td>NO</td>
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<tr>
<td>PN-7</td>
<td>3,254</td>
<td>0.3</td>
<td>19.0</td>
<td>62.0</td>
<td>98.3</td>
<td>NO</td>
</tr>
<tr>
<td>SCP-1</td>
<td>3,189</td>
<td>0.2</td>
<td>8.2</td>
<td>95.6</td>
<td>98.5</td>
<td>NO</td>
</tr>
<tr>
<td>SCP-2</td>
<td>3,187</td>
<td>0.1</td>
<td>3.9</td>
<td>97.8</td>
<td>99.5</td>
<td>NO</td>
</tr>
<tr>
<td>SCP-3</td>
<td>3,185</td>
<td>0.2</td>
<td>10.1</td>
<td>93.4</td>
<td>97.8</td>
<td>NO</td>
</tr>
<tr>
<td>SCP-4</td>
<td>1,144</td>
<td>0.3</td>
<td>8.6</td>
<td>94.5</td>
<td>98.4</td>
<td>NO</td>
</tr>
<tr>
<td>SCP-5a</td>
<td>1,259</td>
<td>0.4</td>
<td>4.5</td>
<td>100.0</td>
<td>100.0</td>
<td>Topped off</td>
</tr>
<tr>
<td>SCP-7</td>
<td>1,440</td>
<td>0.4</td>
<td>14.3</td>
<td>93.5</td>
<td>100.0</td>
<td>NO</td>
</tr>
<tr>
<td>CARD-2</td>
<td>1,691</td>
<td>0.3</td>
<td>7.7</td>
<td>96.9</td>
<td>100.0</td>
<td>NO</td>
</tr>
<tr>
<td>VTE-1</td>
<td>1,243</td>
<td>0.3</td>
<td>9.7</td>
<td>94.9</td>
<td>98.8</td>
<td>NO</td>
</tr>
<tr>
<td>VTE-2</td>
<td>2,244</td>
<td>0.3</td>
<td>11.1</td>
<td>92.5</td>
<td>97.5</td>
<td>NO</td>
</tr>
</tbody>
</table>
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., <15th percentile = 1 star; 85th percentile or above = 5 stars)
- Three models
  - Opportunities Model - A
  - Appropriate Care Model - B
  - Relative Quality Index - C

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

<table>
<thead>
<tr>
<th>Measure Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>28. Aspirin at Arrival for Acute Myocardial Infarction (AMI)</td>
<td>*AMA-PCPINCQA</td>
</tr>
<tr>
<td>Percentage of patients, regardless of age, with an emergency department discharge</td>
<td></td>
</tr>
<tr>
<td>diagnosis of AMI who had documentation of receiving aspirin within 24 hours before emergency department arrival or during emergency department stay</td>
<td></td>
</tr>
<tr>
<td>30. Perioperative Care: Timing of Prophylactic Antibiotics - Administering Physician</td>
<td>*AMA-PCPINCQA</td>
</tr>
<tr>
<td>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)</td>
<td></td>
</tr>
<tr>
<td>31. Stroke and Stroke Rehabilitation: Deep Vein Thrombosis Prophylaxis (DVT) for Ischemic Stroke or Intracranial Hemorrhage</td>
<td>*AMA-PCPINCQA</td>
</tr>
<tr>
<td>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 stay</td>
<td></td>
</tr>
</tbody>
</table>

DRAFT – No decisions are final at this time.