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Outline

• Impact of antimicrobial resistance
• Role of antimicrobial stewardship programs
• Media influence
  (consumer advocacy groups, newspapers)
• Examples of antimicrobial stewardship
• Centers for Medicare & Medicaid Services (CMS)
The Ohio State University Football Stadium

Capacity 105,000 people
Impact of Antibacterial Resistance

- Each year an estimated 1.7 million patients in U.S. hospitals acquire an infection resulting in around 100,000 deaths\(^1\)
- This results in an additional $6.5 billion in health care expenditures\(^2\)
- On October 1, 2008, CMS **limited reimbursement** for hospital-acquired conditions deemed preventable
  - catheter-associated urinary infections
  - vascular catheter-associated infections
  - surgical site infections following:
    - coronary artery bypass graft (CABG): mediastinitis
    - bariatric surgery
    - select orthopedic procedures (spinal, shoulder)

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# Health-care Associated Infections

## The Cost Impact

### Table 1.
**Hospital-Acquired Conditions Nonreimbursable Effective October 1, 2008**

<table>
<thead>
<tr>
<th>CMS Ruling Date and Condition</th>
<th>No. Cases</th>
<th>Average Charge ($)</th>
<th>HAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final FY 2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catheter-associated UTI</td>
<td>12,185</td>
<td>44,043</td>
<td>Yes</td>
</tr>
<tr>
<td>Vascular catheter-associated infection</td>
<td>29,536</td>
<td>103,027</td>
<td>Yes</td>
</tr>
<tr>
<td>Mediastinitis post CABG</td>
<td>69</td>
<td>299,237</td>
<td>Yes</td>
</tr>
<tr>
<td>Foreign object retained after surgery</td>
<td>750</td>
<td>63,631</td>
<td>No</td>
</tr>
<tr>
<td>Air embolism</td>
<td>57</td>
<td>71,636</td>
<td>No</td>
</tr>
<tr>
<td>Blood incompatibility</td>
<td>24</td>
<td>50,455</td>
<td>No</td>
</tr>
<tr>
<td>Stage III or IV pressure ulcers</td>
<td>257,412</td>
<td>43,180</td>
<td>No</td>
</tr>
<tr>
<td>Falls and trauma</td>
<td>193,566</td>
<td>33,894</td>
<td>No</td>
</tr>
<tr>
<td>Final FY 2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DVT/PE</td>
<td>149,010</td>
<td>50,937</td>
<td>Yes</td>
</tr>
<tr>
<td>SSIs following select procedures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthopedic</td>
<td>269</td>
<td>148,172</td>
<td>No</td>
</tr>
<tr>
<td>Cardiac surgery</td>
<td>37</td>
<td>233,614</td>
<td>No</td>
</tr>
<tr>
<td>Glycemic control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetic ketoacidosis</td>
<td>11,469</td>
<td>42,974</td>
<td></td>
</tr>
<tr>
<td>Nonketotic hyperosmolar coma</td>
<td>3,248</td>
<td>35,215</td>
<td></td>
</tr>
<tr>
<td>Hypoglycemic coma</td>
<td>212</td>
<td>36,518</td>
<td></td>
</tr>
</tbody>
</table>

### Table 2.
**Examples of the Impact of POA and MS-DRG Changes**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal diagnosis</td>
<td>Atrial fibrillation</td>
<td>Atrial fibrillation</td>
</tr>
<tr>
<td>Secondary diagnosis</td>
<td>None</td>
<td>Catheter-associated UTI</td>
</tr>
<tr>
<td>Procedure</td>
<td>Temporary pacemaker</td>
<td>Temporary pacemaker</td>
</tr>
<tr>
<td>Medicare DRG</td>
<td>Cardiac arrhythmia without CC</td>
<td>Cardiac arrhythmia without CC</td>
</tr>
<tr>
<td>Medicare weight</td>
<td>0.5227</td>
<td>0.8287</td>
</tr>
<tr>
<td>Average LOS (days)</td>
<td>2.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Reimbursement ($)</td>
<td>3039</td>
<td>6086</td>
</tr>
</tbody>
</table>

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Ref Kuper K. et al Am J Health-Sys Pharm 2009 66;488-94
6 Top Resistant Pathogens
Infectious Diseases Society of America “Hit List”

- **Gram-negative pathogens**
  - *Pseudomonas aeruginosa*
  - Extended spectrum β-lactamase (ESBL)-producing *Klebsiella pneumoniae*
  - *Acinetobacter* species

- **Gram-positive pathogens**
  - Community-associated methicillin-resistant *Staphylococcus aureus* (MRSA)
  - Penicillin-resistant *Streptococcus pneumoniae* (also resistant to macrolides)
  - Vancomycin-resistant enterococci (VRE)

Hospitals are turning to a new breed of antibiotic SWAT team to win the war against "superbugs" -- the bacteria that are outmaneuvering nearly every weapon in the arsenal of drugs long used to fight them.

The efforts, known as antimicrobial stewardship programs, team top pharmacists, infectious-disease specialists and microbiologists. The groups monitor the use of a hospital's antibiotics and restrict prescriptions of specific drugs when they become less effective at fighting infections. The heightened vigilance comes as the federal Medicare program plans to begin refusing to pay hospitals to treat preventable infections that patients contract while under the facilities' care.
Hospital Infections: Preventable and Unacceptable

$2.5 million awarded by a jury in a medical malpractice suit against a heart surgeon. The patient had a pacemaker surgically implanted and developed MRSA. It was so severe that he had 15 operations, spent 84 days in the hospital, and lost his right leg, part of his left foot, a kidney, and most of his hearing.

The medical community can’t afford to be complacent.

We have the knowledge to prevent infections.

What is lacking is the will.

New Drugs for Superbugs

Oprah "O" Magazine Oct 2008

Study Finds Spread of Resistant Staph

By The Associated Press

Dangerous drug-resistant staphylococcus infections are showing up at an alarming rate outside hospitals and nursing homes in the United States, researchers are reporting today.

Until recently, these hard-to-treat cases were seen only in hospitals and other health-care settings, where they can spread to patients with open wounds or tubes and cause serious complications. Now doctors are seeing resistant strains among inmates, children and athletes.

Methicillin-Resistant Staphylococcus aureus Disease in Three Communities

Resistant Staph Finds New Niches

Huge, painful boils and abscesses that must be cut open and drained before they can heal. These are the scary symptoms of a major outbreak of a drug-resistant microbe among hundreds of jail inmates and gay men in the United States. A recent surge in cases has epidemiologists scrambling to understand what's going on — and wondering whether the well-known pathogen is on the becoming a major bigger problem on the microbe, methicillin-staphylococcus aureus (MRSA), people never notice it. But sometimes MRSA can cause severe skin and soft tissue infections and, when they reach the lungs, pneumonia — with fatal consequences if treatment comes too late. Toxic shock syndrome is another potentially serious result. In contrast to hospital strains, community-acquired MRSA is usually resistant to a range of antibiotics, making treatment relatively easy once it's diagnosed. MRSA infection is a reportable disease in the United States, so firm numbers are hard to come by. But

Multidrug-resistant Acinetobacter baumannii

June 26, 2007, 12:34 pm

Hospitals Adopt Search and Destroy Tactics for Superbugs

In an effort to reverse the spread of drug-resistant bugs, hospitals are starting to aggressively seek out potentially dangerous infections. Theo Francis writes in today's WSJ.

Some hospitals are now testing many patients for methicillin-resistant Staphylococcus aureus, or MRSA, even if they show no sign of the infection — a strategy known as active surveillance. (Patients can harbor the bacteria on their skin or in their nose without knowing it.) New technology is helping hospitals test for the bacteria more quickly, and some early adopters say the added expense of the testing pays off by preventing complications from arising and reducing the spread of the disease.
Consumer Advocates

safecarecampaign.org

• In 1 year
  3 family members in
  3 different states in
  3 different hospitals
  had healthcare-acquired (HCA) infections
  • 1 is recovering
  • 1 is well
  • 1 is dead
What information is available on your hospital’s web site?
Why have Antimicrobial Stewardship?

Antibiotics are unlike any other drugs in that use of the agent in one patient can compromise its efficacy in another.

Anyone can prescribe antibiotics despite a lack of specialized training.

Unlike an antihypertensive agent, which benefits only the patient for whom it is prescribed, antimicrobials can impact countless others.

Resistant microorganisms can be spread to patients who have never received an antibiotic.

You can’t “catch cancer” from the patient next to you.

You CAN catch MRSA or many other drug-resistant microorganisms!
OSU Antimicrobial Stewardship Program
What if your “team” looks like this?

Infectious Disease Pharm.D.
Selling Your Program to Hospital Administration

- Delineate your BATNA*
- Use your own hospital data to build your case
- Prepare for negotiation
- Talk to the medical staff
- Remember they must know and trust the “steward”

*Best alternative to negotiating an agreement

NEW PROGRAM TO IMPROVE ANTIBIOTIC USE

Antimicrobial Stewardship Program (ASP)

Antibiotic resistance continues to rise.

We are faced with limited antibiotic choices for patients infected with multi-drug resistant organisms.

ASP will provide guidance to clinicians in selecting the most effective antibiotic for the patient’s condition.

Changes in the process of prescribing antibiotics and the availability of antibiotics when requested outside of evidence-based criteria are being implemented.

ASP consists of a multidisciplinary team of Infectious Disease physicians, pharmacists, microbiologists, infection control practitioners, and epidemiologist. The team is led by an Infection Disease Physician, Kurt Stevenson MD., MPH and Infectious Disease Pharmacists Debbie Goff PharmD, FCCP, Karri Bauer PharmD., and Jeremy Taylor PharmD., BCPS
## Impact of Antibiotic Stewardship Programs

<table>
<thead>
<tr>
<th>Hospital Size</th>
<th>Team Members</th>
<th>Antimicrobial Cost Outcomes</th>
<th>Drug Resistance &amp; Infectious Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 beds</td>
<td>MD, Pharm.D., microbiologist, data analyst</td>
<td>Cost-savings over 18 months <strong>$913,236</strong></td>
<td>Increased cefepime use &amp; decreased 3rd generation cephalosporin use correlated with decreased resistance</td>
</tr>
<tr>
<td>120 beds</td>
<td>MD, pharmacists, infection control specialist, microbiologist</td>
<td>Antibiotic cost/pt-day decreased $18.21 to $14.77. Saved <strong>$177,000</strong></td>
<td>Not reported</td>
</tr>
<tr>
<td>575 beds</td>
<td>MD, pharmacists</td>
<td>Cost/pt-day decreased $18.00 to $14.40</td>
<td>Reduced resistance for several bug-drug pairs</td>
</tr>
<tr>
<td>1200 beds</td>
<td>4 ID MDs</td>
<td><strong>Saved $322,000</strong></td>
<td>Decreased resistance rates</td>
</tr>
<tr>
<td>900 beds</td>
<td>MD, Pharm.D., microbiologist</td>
<td><strong>Saved $1,841,203</strong> over 3 years</td>
<td>Decreased resistance rates</td>
</tr>
</tbody>
</table>

Tools to Get Started

- **Practice Guidelines**
  IDSA & Society for Healthcare Epidemiology of America publication
  Pagani L. *Clin Infect Dis* 2009:48;626-32

- **Knowledge** of Medicare reimbursement as it relates to antimicrobial stewardship
  Centers for Medicare & Medicaid Services
  Surgical Care Improvement Project

- Meet the other “team members” in your hospital
  Learn what they do and how they do it

- **A compendium of strategies to prevent healthcare-associated infections in acute care hospitals**
  Yokoe D. et al. *Infect Control Hosp Epidemiol* 2008;29(suppl 1) S
What Can the Microbiologist Do?

• **Antibiograms**
  unit-specific for ICUs and house-wide
  
  **Combination antibiograms**
  Example: *P. aeruginosa* resistant to cefepime
  20% amikacin
  100% aztreonam
  83% ciprofloxacin
  39% tobramycin  so cefepime + amikacin best combination

• **Diagnostic tests** to help you make better antibiotic decisions
  
  vancomycin MIC for MRSA
  rapid (2 hours) Cepheid Xpert MRSA/SA blood testing
  Hodge test to detect carbapenemases

• Text message multi-drug resistant (MDR) organisms
• Clonal characterization of resistant strains can help focus appropriate intervention

ASP Team Approach to MRSA

New rapid test to detect S. aureus in blood culture

Old method

Micro performs gram stain
Preliminary results called to MD

Patients with gram positive cocci in clusters
Start vancomycin

Definitive cultures results 2 days later
Most just continue on vanco

New method

Micro performs new test 24/7
Results in 2 hours called to MD and PharmD

PharmD calls MD to discuss ATB

Effective therapy
Or
No therapy
What Do Epidemiology and Infection Control Practitioners Do?

- IC receive daily culture results and list of MDR organisms to identify which patients must be in isolation
- Both monitor post-op infection rates and benchmark them against national data
- Both monitor compliance with surgical prophylaxis guidelines
- Both track patients with *Clostridium difficile* infections (CDI) and identify rates of CDI/10,000 patient-days
Evidence-Based Strategies for CDI

- **Bundled approach** antimicrobial use, infection control, and proper environmental cleaning
- Curtail use of 3rd generation cephalosporins
- In an effort to ensure that antibiotics were given within 4 hours to meet CMS core measures, many patients received antimicrobials unnecessarily
- Consequently, 50% of patients who received antibiotics for community-acquired pneumonia (CAP) who developed CDI were later found not to have had CAP
- 1/3 died from their CDI

### Impact of Antibiotic Resistance

<table>
<thead>
<tr>
<th>Infection and Causative Organism</th>
<th>Increased Risk of Death (OR)</th>
<th>Attributable Length of Stay (days)</th>
<th>Attributable Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA bacteremia</td>
<td>1.9</td>
<td>2.2</td>
<td>6,916</td>
</tr>
<tr>
<td>MRSA surgical infection</td>
<td>3.4</td>
<td>2.6</td>
<td>13,901</td>
</tr>
<tr>
<td>VRE infection</td>
<td>2.1</td>
<td>6.2</td>
<td>12,766</td>
</tr>
<tr>
<td>Resistant <em>Pseudomonas</em> infection</td>
<td>3.0</td>
<td>5.7</td>
<td>11,981</td>
</tr>
<tr>
<td>Resistant <em>Enterobacter</em> infection</td>
<td>5.0</td>
<td>9</td>
<td>29,379</td>
</tr>
</tbody>
</table>

Total cost of antimicrobial resistance is estimated to $30 billion annually.  
Extreme Drug Resistance (XDR)

**Acinetobacter baumannii**

- “Extensive drug resistance” in *M. tuberculosis* was “CNN breaking news”

- XDR *Acinetobacter baumannii* is documented in several U.S. hospitals

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>XDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imipenem</td>
<td>✓</td>
</tr>
<tr>
<td>Ampicillin/sulbactam</td>
<td>✓</td>
</tr>
<tr>
<td>Piperacillin/tazobactam</td>
<td>✓</td>
</tr>
<tr>
<td>Cefepime</td>
<td>✓</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>✓</td>
</tr>
<tr>
<td>Amikacin</td>
<td>✓</td>
</tr>
<tr>
<td>Tigecycline</td>
<td>✓</td>
</tr>
<tr>
<td>Colistin</td>
<td>✓</td>
</tr>
</tbody>
</table>

Colistin Resistance

- 265 isolates of *Acinetobacter* from 2 Korean hospitals

- Forty-eight isolates (18.1%) and 74 isolates (27.9%) were resistant to polymyxin B and colistin, respectively.

Colistin is only prescribed for MDR organisms when there are no other options.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-2004</td>
<td>$2,375</td>
</tr>
<tr>
<td>2007-2008</td>
<td>$23,309</td>
</tr>
</tbody>
</table>
How does an antimicrobial stewardship team actually work together?
ASP Team Approach to Acinetobacter

1. SICU Pharm.D. calls to say he has an XDR Acinetobacter
2. I call the infection control practitioner
3. I ask microbiology to set up an Etest to tigecycline
4. ID is consulted, and we discuss options with the surgeon
5. Hospital epidemiology tracks the patient’s care in our hospital.

ASP Team Approach to cIAI Infections

1. Publishes the antibiogram
2. Presents surgical infection data by surgeon at infection control meeting
3. Presents declining E. coli susceptibilities to antibiotic subcommittee
4. Presents recommended change to empiric antibiotics for cIAI to surgical division
5. Monitors hand hygiene compliance in SICU

cIAI = complicated intra-abdominal infection
Complicated Intra-Abdominal Infections Common Pathogens

“Use local susceptibility data to guide therapy”

<table>
<thead>
<tr>
<th>Facultative &amp; Aerobic Gram-Negatives</th>
<th>Anaerobic Organisms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Escherichia coli</strong></td>
<td>Bacteroides fragilis</td>
</tr>
<tr>
<td>Klebsiella spp</td>
<td>Other Bacteroides</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>Clostridia spp</td>
</tr>
<tr>
<td>aeruginosa</td>
<td>Prevotella spp</td>
</tr>
<tr>
<td>Proteus spp</td>
<td>Peptostreptococcus spp</td>
</tr>
<tr>
<td>Enterobacter spp</td>
<td>Fusobacterium spp</td>
</tr>
<tr>
<td>Other gram-negatives</td>
<td>Eubacterium spp</td>
</tr>
<tr>
<td></td>
<td>Others</td>
</tr>
</tbody>
</table>

| Incidence of various bacteria in 702 patients with intra-abdominal infections |

Do MD’s Use Hospital Antibiograms?

Online survey of 545 residents at a University Teaching Hospital

- 64% always
- 32% frequently
- 3% occasionally
- 1% never

## OSUMC SICU and Hospital Antibiogram 2007

<table>
<thead>
<tr>
<th>Organism</th>
<th>Ampicillin/sulbactam</th>
<th>Ertapenem</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SICU</td>
<td>hospital</td>
<td>SICU</td>
</tr>
<tr>
<td><strong>E. coli</strong></td>
<td>42%</td>
<td>45%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>E. coli ESBL-producing</strong></td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>K. pneumoniae</strong></td>
<td>75%</td>
<td>78%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>K. pneumoniae ESBL-producing</strong></td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Anaerobes</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Enterococcus</strong></td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>
Plan of Action

- Ampicillin/sulbactam is not an effective empiric option at OSUMC for community-acquired cIAI
- Results presented to the surgical division
- In collaboration with our surgeons and others, we developed CPOE antibiotic ordering screens by disease state
- Each team member contributed different data

CPOE screen template

- C difficile
- Upper GI (esophagus, stomach, proximal small bowel)
- Abdomen Non-ICU
- Lower GI (distal small bowel, appendix, colon)
- Biliary, cholangitis,
ASP Team Approach to MRSA bacteremia

1. Does rapid blood test for S. aureus

2. Calls MD to discuss antibiotic options and recommends ID consult

3. Evaluates patient

Infectious Disease MD

Microbiologist

Infection Control

Epidemiologist

Information system specialist

Monitors hand hygiene compliance and places MRSA patients in isolation

Establishes policies for environmental services cleaning rooms
Vancomycin failure as a function of rising MIC’s

Moise-Broder P. CID 2004;38:1700-5
Does increasing the vanco dose to achieve troughs $\geq 15$ increase efficacy or nephrotoxicity?
Efficacy of Target-Based Vancomycin Therapy

*Initial response rate of 74% was achieved if the target trough was attained regardless of MIC

Arch Intern Med 2006; 166: 2138-2144
Safety of Higher Vancomycin Troughs

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>High Trough (15-20 µg/ml) (n=63)</th>
<th>Low Trough (&lt;15 µg/ml) (n=32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age, (y)</td>
<td>72.4</td>
<td>72.7</td>
</tr>
<tr>
<td>Male (%)</td>
<td>40</td>
<td>44</td>
</tr>
<tr>
<td>Nephrotoxicity (%)</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Duration of vancomycin (d)</td>
<td>15</td>
<td>15.3</td>
</tr>
<tr>
<td>Concomitant nephrotoxic agents (%)</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>Serum creatinine level, mean, mg/dl</td>
<td>1.2</td>
<td>0.9</td>
</tr>
<tr>
<td>baseline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>peak</td>
<td>1.4</td>
<td>1.0</td>
</tr>
<tr>
<td>discharge</td>
<td>1.1</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Arch Intern Med 2006; 166: 2138-2144
OSUMC MRSA blood isolates tested by Etest

- Total # patients: 60
- Total # MRSA isolates with MIC data: 82

53% isolates have High (≥1.5) MICs
91% isolates have MIC > 1.0
OSUMC Management of Patients with Persistent* MRSA Bacteremia on Vancomycin 4/08

MRSA Microbiology reports MIC

Has source of infection been removed? (i.e. catheter)

High Vanco MIC 1.5 or 2*

Switch to Daptomycin
Call micro for MIC

Is there an ID consult? If no, contact primary team.**

Low Vanco MIC 0.5-1.0

Consider other therapy

+ Rifampin
42 patients with MRSA endocarditis, the addition of rifampin prolonged bacteremia 9 vs 7 days

+ Gent
No clinical trials evaluating the combination vs vanco alone. Increased nephrotoxicity.
Ref Deresinski CID 2007;44

Linezolid is not approved for MRSA catheter related bloodstream infections
Mortality higher in recent study of catheter related blood stream infections

*Persistent MRSA bacteremia is defined as 2 positive blood cultures for ≥ 5 days
ID consult recommended
Based on evidence that *S. aureus* exposure to trough serum vanc conc. <10mg/L can produce VISA like characteristics, it's recommended that trough levels be >10mg/L.

In order to achieve rapid attainment of target conc. (15-20mg/L) for seriously ill patients, a LD of 25-30mg/kg (ABW) can be considered.

Trough levels of 15-20mg/L should achieve an AUC/MIC of >400 if the MIC is ≤1.

A targeted AUC/MIC > 400 is not achievable with conventional dosing if the MIC >2, therefore alternative therapies should be considered. Rybak et al AJHP 2009;66:82-98
Antimicrobial Stewardship and CMS
What’s our Role?

• Core measures are submitted and available for public viewing on JCAHO and CMS websites.
  JCAHO: www.qualitycheck.org
  CMS: www.hospitalcompare.hhs.gov

• Consumers should be given the opportunity to make informed decisions regarding their health care.

• Hospitals should improve the quality of care they provide.
### 2009 CMS “Never Events”

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Never Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catheter-associated urinary infections</td>
<td>Air embolism</td>
</tr>
<tr>
<td>Surgical site infections</td>
<td>Blood incompatibility</td>
</tr>
<tr>
<td>Mediaastinitis after CABG</td>
<td>Falls</td>
</tr>
<tr>
<td>Bariatric surgery</td>
<td></td>
</tr>
<tr>
<td>Select orthopedic surgery</td>
<td></td>
</tr>
<tr>
<td>Vascular catheter-associated infections</td>
<td>Object left in after surgery</td>
</tr>
<tr>
<td>Deep vein thrombosis or pulmonary embolism</td>
<td>Pressure ulcers</td>
</tr>
<tr>
<td>after knee or hip replacement</td>
<td></td>
</tr>
<tr>
<td>Complications from poor glucose control</td>
<td></td>
</tr>
</tbody>
</table>
Publicly Reported Core Measures

• Acute myocardial infarction
• Heart failure

• Community-acquired pneumonia
• Surgical Care Improvement Project (SCIP)
SCIP

- 30 million operations performed annually in the U.S.
- Surgical site infections (SSI) are among the most common complications: ~500,000 annually
- Each SSI increases length of stay by ~7 days
- Patients who develop SSI
  - are 60% more likely to spend time in the ICU
  - are 5 times more likely to be readmitted
  - have twice the mortality
- Other complications: cardiovascular, respiratory, & thromboembolic


SCIP Measures

CABG & other cardiac surgeries, hip/knee arthroplasties, hysterectomies, colorectal and vascular surgery

• Prophylactic antibiotics received within 1 hour prior to surgical incision

• Prophylactic antibiotic selection for surgical patients

• Prophylactic antibiotics discontinued within 24 hours after surgery end time (48 hours for CABG/cardiac surgery)
Stop Antibiotics Within 24 Hours

Percent of Surgery Patients Whose Preventative Antibiotic(s) are Stopped Within 24 hours After Surgery
The rates displayed in this graph are from data reported for discharges January 2006 through December 2006.

January 2007 through December 2007

Top Hospitals 97%

Average For All Reporting Hospitals In The United States

Average For All Reporting Hospitals In Ohio

Ohio State University Hospitals

Top Hospitals represents the top 10% of hospitals nationwide. Top hospitals achieved a 91% rate or better.
Figure 1. Health-care-associated reporting laws and regulations. Copyright 2008—Association for Professionals in Infection Control and Epidemiology, Inc. Last updated 06/30/2008.

Legend:
- Red: States with study laws
- Green: Mandates public reporting of infection rates
- Bright green: Mandates reporting only to state government
- Light green: Voluntary
- Gray: No active health-care-associated infection legislation

Map shows states with varying degrees of health-care-associated reporting laws and regulations as indicated by color coding.

[Map of the United States with states colored according to the legend provided]
Resources

- Compendium of Strategies to prevent Healthcare-Associated Infections in Acute Care Hospitals
  www.preventingHAIs.com
- www.cdc.gov
- www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/09
Managing Resistance with Antimicrobial Stewardship Programs

They must know and trust the steward!

Advertise & Promote your program

You’re part of a team

A successful program Means the patient wins