Purpose

- Discuss the expanding horizon of infection prevention and control—Zero Tolerance.
- Provide an overview of selected healthcare-associated infections (HAIs), most of which are associated with medical devices.
- Illustrate how these HAIs cause morbidity and mortality.
- Illustrate how applying current infection prevention and control measures together with proper use of medical technology in bundles can markedly reduce these adverse patient events.

Urinary Tract Infections (UTIs)

Background

- Urinary tract infections (UTIs) often are the most common site of HAI.
- Most UTIs (80%) are associated with urinary catheterization.
- Approximately 25% of inpatients are catheterized.
- Each UTI:
  - Adds ~1 day of extra hospitalization
  - Costs ~$680.00
- Overall, UTIs cause or contribute to ~7,450 deaths in U.S. hospitals each year.

UTI Prevention Rule: Make Sure the Patient Really Needs the Catheter

Appropriate indications

- Bladder outlet obstruction
- Incontinence and sacral wound
- Urine output monitored
- Patient’s request (end-of-life)
- During or just after surgery

(Wong and Hooton - CDC 1983)

(Jain, Arch Int Med 1995)
Why are Catheters Used Inappropriately?

- Perhaps physicians “forget” that their patient has a urinary catheter.
- Study to determine the extent to which physicians are aware which of their inpatients have urinary catheters.
- Surveyed 56 medical teams at 4 sites; 256 providers completed the survey (response rate = 89%)


Urethral Catheters: Lost in Place?


National Survey of UTI Prevention Practices

- Study design: Survey of non-federal hospitals with ICUs and >50 beds (N=600) and VA hospitals (N=119).
- Results: Response rate = 72%.


Prevention of CA-UTI using Silver Alloy Catheters

- Study design: Meta-analysis of published literature.
- Results: Of 117 reports retrieved, 8 trials with a total of 2,355 patients satisfied inclusion criteria. The summary OR for UTI was 0.59 (95% CI, 0.42 to 0.84) indicating a significant benefit in the patients receiving silver-coated catheters. A test of heterogeneity indicated that the ORs varied significantly among studies. Silver alloy catheters (OR = 0.24; 95% CI, 0.11 to 0.52) were significantly more protective against bacteriuria than silver oxide.
- Conclusion: This meta-analysis found that silver alloy catheters are significantly more effective in preventing UTIs than are silver oxide catheters. Though silver alloy urinary catheters cost about $6 more than standard urinary catheters, they may be worth the extra cost.


The potential clinical and economic benefits of silver alloy urinary catheters in preventing UTIs

Study design: Decision model, performed from the healthcare payer’s perspective, evaluated a simulated cohort of 1000 hospitalized patients on general medical, surgical, urologic, and ICU services requiring short-term urethral catheterization (2-10 days). Compared 2 catheterization strategies: silver alloy vs. standard (non-coated) urinary catheters. Outcomes included the incidence of symptomatic UTI, bacteremia and direct medical costs.

Conclusion: Using silver alloy catheters in hospitalized patients requiring short-term urinary catheterization reduces symptomatic UTI and bacteremia incidences, and likely produces cost savings compared with standard catheters.

Silver Catheters: What Is The Evidence Base?

- To date, 11 comparative studies of and two meta-analyses of silver (the majority being the silver alloy urinary catheter) vs. non-coated Foley catheters have been conducted.
- In every comparative trial, the number of CA-UTIs has been decreased in the impregnated silver-coated catheter group compared to the non-coated catheter group.
- In some of these studies, the number of patients included has been small and thus a statistical significant decrease in CA-UTIs has not been documented (insufficient power). Nevertheless, in every study, a decrease in the rate of CA-UTI or CA-bacteruria has been documented.
- In both meta-analyses, combining a variety of studies to increase the power to detect a difference in efficacy of silver-coated catheters, the authors have concluded that the silver-alloy coated catheter is associated with a significant reduction in CA-UTI and CA-bacteruria.
- These data strongly support that silver alloy hydrogel impregnated urinary catheters can decrease the risk of CA-UTI or CA-bacteruria compared to non-coated catheters in patients who are to be catheterized for 3-7 days.

CA-UTI Prevention Bundle

- Use urethral catheters only when necessary.
- Catheter inserters should be educated and competent.
- Use aseptic technique for catheter insertion and manipulation.
- Use a closed drainage system.
- Require a urinary catheter insertion indication/order and consider using an administrative urinary catheter "stop order" to limit inappropriate catheterization.
- Consider silver catheters in high-risk patients who require catheterization for 2-10 days.

PREVENTION POSSIBILITY: 20%-70%

Impact of primary BSI

Crude mortality
10% to 40%

Attributable mortality
2% to 15%

Prolongation of hospitalization
5 to 20 days

Attributable cost
$34,000 to $56,000

Healthcare-Associated Infection Prevention Bundles – Preventing the Preventable
Dr. William Jarvis, Jason and Jarvis Inc.
A Webber Training Teleclass

Hosted by Martin Kiernan
martin@webbertraining.com
www.webbertraining.com
Strategies to Prevent Central Line-Associated Bloodstream Infections (CLA-BSIs) in Acute Care Hospitals.

SHEA Recommended Basic and Special Approaches for the Prevention of CLA-BSIs

**Basic Practices**
- Catheter Checklist: B-II
- Hand Hygiene: B-II
- Insertion site: Femoral: A-I
- Cart Kit: B-II
- Maximal Barrier Precautions: A-I
- Chlorhexidine (CHG) Skin Prep: A-I

**Special Approaches**
- CHG Baths (ICU patients): B-II
- Impregnated Catheters: A-I
- BioPatch Disk: B-I
- Antimicrobial Locks: A-I

CDC HICPAC 2009 Draft IV Guideline


Major areas of emphasis include:
1. Educating and training healthcare personnel who insert and maintain catheters;
2. Using maximal sterile barrier precautions during CVC;
3. Using a ≥0.5% chlorhexidine (CHG)-based preparation for skin antisepsis;
4. Avoiding routine replacement of central venous catheters;
5. Using antiseptic/antibiotic impregnated short-term central venous catheters;
6. Using CHG-impregnated sponge dressings; and
6. Emphasizing performance improvement by implementing bundled strategies, documenting and reporting rates of compliance rates with all components of the bundle as benchmarks for quality assurance and performance improvement.

http://www.cdc.gov/nip/drafter/Draft_BSI_guideline_v15_2FR.pdf

Microbial Source of CLA-BSI

**EXTRALUMINAL COLONIZATION**
- Extraluminal biofilm is the major source of CLA-BSI within the first week of catheterization in short-term catheters. Extraluminal biofilm is the major source of tunnel infections in long-term catheters.

**INTRALUMINAL COLONIZATION**
- Intraluminal biofilm is the major source of CLA-BSI after 1 week in both short- and long-term catheters.

Evidence-Based Measures to Decrease the Risk of Infection During Insertion of the Intravascular Catheter: INSERTION BUNDLE

- Insert a catheter only when clinically essential.
- Use a catheter insertion check-list.
- Use a catheter insertion cart or kit.
- Hand hygiene.
- Chlorhexidine-alcohol skin antisepsis.
- Maximum barrier precautions.
- Select the correct catheter and insert in the correct location (Vessel Preservation; avoid femoral).

Basic Practices: Use a Checklist


Basic Practices: Use Catheter Cart or Kit


Basic Practices: Use CHG Skin Prep

- Apply 30 seconds with friction
- Allow 30 seconds to dry


Chlorhexidine Compared with Povidone-Iodine Solution for Vascular Catheter–Site Care: A Meta-Analysis

<table>
<thead>
<tr>
<th>Study Reference</th>
<th>Risk Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mcfarland et al. (1), 1991</td>
<td>0.18 (0.03-1.48)</td>
<td>0.84</td>
</tr>
<tr>
<td>Shalaby et al. (9), 1993</td>
<td>1.00 (0.47-2.24)</td>
<td>1.0</td>
</tr>
<tr>
<td>Mcfarland et al. (18), 1995</td>
<td>0.27 (0.16-0.45)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Afifi et al. (11), 1996</td>
<td>0.64 (0.30-1.39)</td>
<td>0.25</td>
</tr>
<tr>
<td>Logan et al. (12), 1997</td>
<td>0.13 (0.01-1.46)</td>
<td>0.20</td>
</tr>
<tr>
<td>Homer et al. (4), 1998</td>
<td>0.75 (0.36-1.62)</td>
<td>0.51</td>
</tr>
<tr>
<td>McFarland and Holt, 2008*</td>
<td>0.35 (0.14-0.86)</td>
<td>0.02</td>
</tr>
</tbody>
</table>


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www.webbertraining.com
Evidence-Based Measures to Decrease the Risk of Infection During Maintenance of the Intravascular Catheter

- Minimize catheter site skin bioburden.
- Device selection
- Aseptic manipulation of catheter connectors—Scrub the hub!
- Antibiotic/antiseptic lock
- Antimicrobial/antiseptic-impregnated-catheters

Microbiology of the Skin

- 80% of the resident bacteria exist within the first 5 layers of the stratum corneum
- 20% are found in biofilms within hair follicles and sebaceous glands
- Complete recolonization of the epidermis can occur within 18 hours of antiseptic application


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Skin Microbial Density Catheter Entry Site Matters

- Skin surface microbial density varies at different body sites and between genders
- Normal microbial colony counts at the antecubital space are 10^-20 CFU per cm^2

1. Ryder M. Evidence-based practice in the management of vascular access devices for home parenteral nutrition therapy. JPEN. 2006;30(1):S82-93. Photo contributed by Marcia Ryder, PhD, MS, RN

Skin Microbial Density Catheter Entry Site Matters

- Skin surface microbial density is highest on the skin at the femoral, jugular, and subclavian sites
- Normal microbial colony counts at the subclavicular space are 10^5-10^6 CFU per cm^2

1. Ryder M. Evidence-based practice in the management of vascular access devices for home parenteral nutrition therapy. JPEN. 2006;30(1):S82-93. Photo contributed by Marcia Ryder, PhD, MS, RN
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Timsit’s Randomized Controlled Trial:

Comparison of Antimicrobial vs. Standard CVC Colonization Rates

Comparison of Antimicrobial vs. Standard CVC CR-BSI Rates

Increased Bloodstream Infection (BSI) Rates Associated with Needleless Connectors

Current SHEA or CDC Recommendations Regarding Needleless Connectors

SHEA: Do not routinely use positive-pressure needleless connectors with mechanical valves before a thorough assessment of risks, benefits, and education regarding proper use (B-II).


CDC: When needleless systems are used, a split septum valve may be preferred over a mechanical valve due to increased risk of infection with some mechanical valves. Category II

References:


Results

Table 1. Hazard Ratios in the Intention-To-Trial and Pre-Protocol Analyses

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A</th>
<th>Group B</th>
<th>Comparison</th>
<th>Crude Hazard Ratio</th>
<th>Crude 95% CI</th>
<th>P Value</th>
<th>Pre-Protocol Hazard Ratio</th>
<th>Pre-Protocol 95% CI</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVC colonization</td>
<td>19.5</td>
<td>7.9</td>
<td>&lt;0.001</td>
<td>2.5 (1.9-3.1)</td>
<td>0.001</td>
<td></td>
<td>2.5 (1.9-3.1)</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>CVC-related bloodstream</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0 (0.6-1.6)</td>
<td>0.97</td>
<td></td>
<td>1.0 (0.6-1.6)</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>Major catheter-related</td>
<td>1.4</td>
<td>0.9</td>
<td>0.05</td>
<td>1.5 (0.9-2.5)</td>
<td>0.02</td>
<td></td>
<td>1.5 (0.9-2.5)</td>
<td>0.02</td>
<td></td>
</tr>
</tbody>
</table>

Abnormalities: CR = Catheter-related; CR-BSI: Catheter-related bloodstream infection; ATR: attributable to infection. Analysis adjusted in intension-to-trial by time-strata (B-III) for comparison of control and CVC/EP groups.
Keystone Project

- **Study design:** Intervention cohort study in 108 Michigan intensive care units (ICUs) over 18 months. Comparison of CVC-BSI rates before, during, and after intervention.
- **Results:** 103 ICUs. 1,981 months of ICU data and 375,757 catheter-days.

<table>
<thead>
<tr>
<th>CVC-BSI Rates per 1,000 CVC-days</th>
<th>Median CVC-BSI Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.7</td>
<td>0.6</td>
</tr>
<tr>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>0.7</td>
<td>2.3</td>
</tr>
</tbody>
</table>

**Conclusion:** An evidence-based intervention resulted in a large and sustainable decrease (up to 66%) in CVC-BSI rates that was maintained for 18 months.

Pronovost P. et al. NEJM 2006;355:2725-32

**TABLE 2.** Estimated annual number of central line-associated bloodstream infections (CLABIs), by health-care setting and year — United States, 2001, 2008, and 2009

<table>
<thead>
<tr>
<th>Health-care setting</th>
<th>Year</th>
<th>No. of infections (upper and lower bound of sensitivity analysis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive-care units</td>
<td>2001</td>
<td>45,000 (27,000-67,000)</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>16,000 (12,000-20,000)</td>
</tr>
<tr>
<td>Inpatient wards</td>
<td>2009</td>
<td>23,000 (15,000-37,000)</td>
</tr>
<tr>
<td>Outpatient hemodialysis*</td>
<td>2008</td>
<td>37,000 (23,000-57,000)</td>
</tr>
</tbody>
</table>

*Case definitions approximate current definition of CLABSI according to the National Healthcare Safety Network.

CDC MMWR 2011;60:1-6.


- In 2009, an estimated 25,000 fewer CLA-BSIs.
- 58% reduction from 2001 to 2009.
- 6,000 lives saved.
- $414 million in potential excess healthcare costs in 2009.
- An estimated $1.8 billion cumulative excess healthcare costs since 2001.

CLA-BSI Prevention Insertion and Maintenance Bundles

**Insertion Bundle**
- Catheter checklist
- Hand hygiene
- Insertion site-Femoral
- Cart kit
- Maximal barrier precautions
- Chlorhexidine (CHG) skin prep

**Maintenance Bundle**
- Select the safest needleless connector
- Scrub the hub (>15 secs with CHG-alcohol or alcohol)
- Antiseptic or antimicrobial-impregnated catheters
- CHG-impregnated sponge (BioPatch)
- Antimicrobial or antiseptic locks
- CHG Baths (ICU patients)

Prevention Possibility: 70%-100%

The Majority of CR-BSIs Occur Outside of the ICU

A significant opportunity exists to reduce CR-BSI incidence in non-ICU settings.


Ventilator-associated Pneumonia

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www.webbertraining.com
Ventilator-associated Pneumonia (VAP)  
**Background**

- VAP is the most common healthcare-associated infection in critical care patients.
- Risk factors for VAP include age, chronic obstructive lung disease, trauma, gastric aspiration, duration ventilation, elevated gastric pH, etc.
- 10-20% of patients ventilated for >48 hrs will develop VAP.

Impact of VAP

- Attributable extra ICU stay of 22 days.
- ICU patients developing VAP are twice as likely to die.
- Crude mortality rate 60%.
- Attributable mortality 27%-43%.
- Attributable cost $15,986

**Oral Decontamination with CHG**

- **Koeman M et al.** (AJRCCM 2006;173:1348-55): Randomized double blind placebo controlled trial (RCT): placebo vs. 2% CHG vs. 2% CHG/2% Colistin (CHG/COL) in patients ventilated for >48 hours. Results: The risk of VAP was decreased 65% with CHG (p=0.012) and decreased 55% for CHG/COL (p=0.003).
- **Tantipong H et al.** (ICHE 2008;29:131-6): RCT (2%CHG vs. Saline, 4 times per day). Results: VAP rate: CHG: 7 vs. Saline 21; p=0.04.
- **Sona CS et al.** (JICM 2009;24:54-62): Pre- vs. Post-intervention observational study. Intervention: cleansing teeth with sodium monofluorophosphate paste and brush, rinse with water, then application of 0.12% CHG solution twice daily. Results: Pre-intervention: VAP rate per 1,000 vent-days: 5.2 vs. 2.4 in intervention period; p=0.04.
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martin@webbertraining.com

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### Decreasing Ventilator-Associated Pneumonia in a Trauma Intensive Care Unit

**Study design:** Prospective intervention. Pre-intervention VAP rates at the CDC’s NNIS 90th percentile (22.3–32.7 VAP per 1000 ventilator-days). VAP bundle implemented with audits and weekly feedback to clinicians.

**Results:** From November 2002 to June 2003, VAP stayed between 0 and 12.8 VAP per ventilator-days. The average cost of VAP was $50,000 per episode.

![Study design](Image)

*Cocanour CS et al. J Trauma 2006;61:132-R.*

---

### The Importance of Nursing Education

**Study design:** European intensive care unit (ICU) nurses were tested on knowledge of evidence-based guidelines for preventing VAP. A validated multiple-choice questionnaire was distributed in 22 European countries from October 2006–March 2007.

**Results:** There were 3329 questionnaires (response rate 69.1%). The average score was 45.1%.

- 55% knew that the oral route is recommended for intubation;
- 35% knew that ventilator circuits should be changed for each new patient;
- 38% knew that heat and moisture exchangers were the recommended humidifier type, but only 21% knew that these should be changed once weekly;
- 46% recommended closed suctioning systems; 18% knew that these must be changed for each new patient;
- 51% recognized that subglottic secretion drainage reduced VAP;
- 57% recognized that kinetic beds reduce VAP incidence; and
- 85% knew that semi-recumbent positioning prevents VAP.

![Study design](Image)


---

### Prevention of VAP

- Standard infection control practices (e.g., hand hygiene).
- Minimizing duration/intensity of sedation and device exposure.
- Positioning patient in semi-recumbent position (45 degree).
- Appropriate use of enteral feeding, antibiotics and selected medical devices.
- Use of sterile water for irrigation.
- Closed suction system.
- Mouth care—chlorhexidine mouth/teeth cleaning.

![Study design](Image)


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### Surgical Site Infections

**SIPP Quality Indicators**

- **Antimicrobial Prophylaxis (AP)**
  - Correct AP
  - AP given at the correct time (within 1 hour)*
  - AP stopped correctly

*Because of the longer required infusion times, vancomycin or fluoroquinolones, when indicated for beta-lactam allergy, may be started within 2 hours before the incision.

---

### Major Surgery Antimicrobial Prophylaxis: Baseline Results from the National Surgical Infection Prevention Project (SIPP)

**Design:** National retrospective cohort study (medical record review).

**Study population:**
- 2,965 hospitals
- systematic random sample
- 34,133 Medicare inpatients undergoing cardiac, vascular, colorectal, hip/knee and hysterectomy procedures from January 1-November 30, 2001.

![Study design](Image)


---

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martin@webbertraining.com

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Preventing Surgical Site Infections in Nasal Carriers of
Staphylococcus aureus

- **Background:** Nasal carriers of *Staphylococcus aureus* are at increased risk for healthcare-associated infections with this organism. Decolonization of nasal and extra-nasal sites on hospital admission may reduce this risk.

- **Methods:** A randomized, double-blind, placebo-controlled, multi-center trial at 3 university and 2 general hospitals in Holland from October 2005 through June 2007 assessing whether rapid identification of *S. aureus* nasal carriers by real-time polymerase-chain-reaction (PCR) assay, followed by treatment with mupirocin nasal ointment and chlorhexidine soap, reduces the risk of hospital-associated *S. aureus* infection.


Preventing Surgical Site Infections in Nasal Carriers of
Staphylococcus aureus

- **Results:** Of 6771 patients screened on admission, 1270 nasal swabs from 1251 (18.5%) patients were *S. aureus*-positive.
  - 917 patients enrolled in the intention-to-treat analysis, of whom 808 (88.1%) underwent a surgical procedure.
  - All the *S. aureus* strains identified on PCR assay were susceptible to mexitilin and mupirocin.
  - The rate of *S. aureus* infection was 3.4% (17/504 patients) in the mupirocin–chlorhexidine group vs. 7.7% (32/413 patients) in the placebo group (RR, 0.42; 95% CI, 0.23 to 0.75).
  - The effect of mupirocin–chlorhexidine treatment was most pronounced for deep surgical-site infections (RR, 0.21; 95% CI, 0.07 to 0.62).
  - The time to the onset of nosocomial infection was shorter in the placebo group than in the mupirocin–chlorhexidine group (P = 0.005).


Preventing Surgical Site Infections in Nasal Carriers of
Staphylococcus aureus

**Table 1. Relative Risk of hospital-acquired *Staphylococcus aureus* infection and characteristics of infection (Intention-to-Treat Analysis)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intention-to-Treat</th>
<th>placebo</th>
<th>Relative risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>S. aureus</em> infection</td>
<td>27 (3.4)</td>
<td>32 (7.7)</td>
<td>0.42 (0.23 to 0.75)</td>
</tr>
<tr>
<td>Source of infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endocarditis</td>
<td>12 (2.4)</td>
<td>14 (3.4)</td>
<td>0.68 (0.39 to 1.18)</td>
</tr>
<tr>
<td>Infections</td>
<td>30 (6.0)</td>
<td>33 (7.9)</td>
<td>0.63 (0.34 to 1.16)</td>
</tr>
<tr>
<td>Unknown</td>
<td>2 (0.4)</td>
<td>2 (0.5)</td>
<td>0.80 (0.32 to 2.33)</td>
</tr>
<tr>
<td>Identification of infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep surgical site</td>
<td>4 (0.8)</td>
<td>8 (1.9)</td>
<td>0.55 (0.25 to 1.15)</td>
</tr>
<tr>
<td>Superficial surgical site</td>
<td>7 (1.4)</td>
<td>8 (1.9)</td>
<td>0.65 (0.38 to 1.11)</td>
</tr>
<tr>
<td>Lower respiratory tract</td>
<td>2 (0.4)</td>
<td>2 (0.5)</td>
<td>1.00 (0.32 to 3.35)</td>
</tr>
<tr>
<td>Reconversion</td>
<td>1 (0.2)</td>
<td>1 (0.2)</td>
<td>1.00 (0.32 to 3.35)</td>
</tr>
<tr>
<td>Staff episode</td>
<td>2 (0.4)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Redshading, but for *S. aureus* infection in the intention-to-treat population, the letter did not represent an *S. aureus* infection of hospital-acquired origin. Infections were also classified by source or by infection site. The time to the onset of nosocomial infection was shorter in the placebo group than in the mupirocin–chlorhexidine group (P = 0.005).


SSI Prevention Bundle

- Correct antimicrobial prophylaxis (current drug, given at correct time and discontinued at the correct time).
- No hair shaving
- Glucose control (peri-operative)
- Normothermia (except cardiac surgery)
- Pre-op screening for *S. aureus* (or MRSA) and if positive, decolonize (mupirocin/CHG baths/vanco prophylaxis)

Prevention Possibility: 40-60%

Methicillin-resistant *Staphylococcus aureus* (MRSA) Infection Prevention

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True Universal MRSA Screening Dramatically Reduces MRSA Infection Rates
Study Design: Observational, prospective interventional study with universal screening using MRSA-PCR on all admissions to three hospitals (total: 850 beds and 40,000 admissions per year) in Evanston, Ill.
- Compared: Passive surveillance (clinical detection-12m); targeted surveillance cultures (clinical culture + high risk = ICU-12m); or Universal patient screening--21m.
- August 2005 to September 1, 2006.
- Intervention: Nasal screening. MRSA+ contact isolation, topical decolonization (mupricin).
- Poisson and segmented regression models used to compare prevalence density.

~ 70% reduction in MRSA-HAIs
Robicsek et al., Annals Intern Med 2008

MRSA-HAIs: 67% reduction
PARADA et al., SHEA 2009, abstract 205

The Veteran’s Hospital Administration (VHA) MRSA Control Program
- The national initiative focuses on implementing the VHA MRSA Bundle which consists of four essential elements (ADI):
  - Active Surveillance Testing [AST](Admission/Transfer/Discharge Swabbing)
  - Hand Hygiene
  - Contact Precautions
  - Cultural Transformation (Leadership and Staff Engagement)
- Consistent use of the VHA MRSA Bundle had been shown to markedly reduce MRSA-related infections in the pilot facilities.
- Phase I: The VHA system began doing universal patient testing in 2006 at its approximately 150 hospitals in ICU patients.
- Phase II of the initiative began in March 2007 and was a national roll-out including all VHA medical facilities with all patients (ICU and non-ICU).
- MRSA prevalence on admission ranged from 5% to 22% (clinical culture 1-1.5%; AST 9%-12%).

MRSA Healthcare-Associated Infections in the ICU

MRSA Healthcare-Associated Infections in the Non-ICU

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Healthcare-Associated Infection Prevention Bundles

MRSA Prevention Bundle

- Screen high risk or all patients.
- Pre-operative screening of surgical implant patients; if MRSA-positive decolonize with intranasal mupiricin, CHG baths, and use vancomycin prophylaxis.
- Barrier precautions for MRSA positive patients.
- Hand hygiene
- Environmental cleaning

Conclusions

- Zero tolerance—trying to prevent all preventable healthcare-associated infections (HAIs)—is the new horizon for infection control.
- Benchmarking should be avoided with others or national databases. Compare your rate to your own rate (or zero) over time.
- Most HAI prevention interventions are low technology and not expensive.
- Implementation of evidence-based prevention interventions, including bundles with the latest technology, should be a high priority for all infection control personnel.
- We should all be striving to achieve a Zero Rate of preventable HAIs.

Thank you!

COMING SOON...

28 Apr. 11 (Free British Teleclass – A. Denver Russell Memorial Teleclass)
The Spaulding Classification for Disinfection and Sterilization
Is it Time to Reconsider?
Speaker: Dr. Gerry McDonnell, Steris Inc.
05 May 11 (Free WHO Teleclass) The Importance of Worldwide Hand Hygiene
Events and Activities
Speaker: Prof. Didier Pittet, University of Geneva Hospitals
Sponsored by: WHO Patient Safety Challenge (www.who.int/gpsc/en)
09 May 11 (Free South Pacific Teleclass) Voices of the Australian Infection Control Association
Speaker: AICA Board
12 May 11 The Faecal Quandary – Bedpan Management in a Modern Age
Speaker: Gertie van Knippenberg-Gordebeke, The Netherlands
Sponsored by: MEIKO Maschinenbau GmbH & CO.KG
19 May 11 Human Factors Engineering Applications for Infection Prevention and Control
Speaker: Dr. Hugo Sax, University of Geneva Hospitals
Sponsored by GOJO (www.gojo.com)
26 May 11 Safe Injection Devices: 10 Years Out … Where are the Gaps?
Speaker: Ed Krisiunas, WNWN International Inc.

www.webbertraining.com/schedulep1.php

Hosted by Martin Kiernan  martin@webbertraining.com
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