2005 Infection Control Update:
Practical Approaches to Community-Associated Methicillin-resistant
Staphylococcus aureus (CA-MRSA)
Satellite Conference
Wednesday, August 3, 2005
2:00-4:00 p.m. (Central Time)
Produced by the Alabama Department of Public Health
Video Communications Division

Objectives
• Compare the differences between community-associated (CA-MRSA) and healthcare-associated methicillin-resistant Staphylococcus aureus (MRSA).
• Define the terms "colonization" and "infection" as they apply to MRSA.

Objectives
• List the five “C” factors which have been identified as common to outbreaks of CA-MRSA.
• Identify strategies to be taken to decrease transmission of CA-MRSA.

Staphylococcus aureus
• One of the most common causes of skin infections in the U.S.
• One of the major causes of hospital-acquired infections in the U.S.
• 40% of adults are colonized with it.
• 50-90% of health care workers are colonized with it.

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Quality Assurance Division
Bureau of Clinical Laboratories
Colonization vs. Infection

- Colonization:
  The organism is present in or on the body BUT.... it usually requires no treatment and does not spread to others.
- Infection:
  The organism is present in or on the body AND... it is causing illness- there will be signs and symptoms and requires treatment.

Staph Infections

What is the most common mechanism of transmission for Staphylococcus aureus infections?

Antimicrobial Resistance

- Drug resistance occurs when microbes develop ways to survive the use of medicines meant to kill or weaken them.
- If a microbe is resistant to many drugs, treating the infection it causes can become difficult or even impossible.

Methicillin

- An antibiotic commonly used to treat staph infections.
- Although very effective in treating most staph infections, some staph bacteria develop resistance to the drug and can no longer be killed by the antibiotic.
MRSA

These resistant bacteria are called Methicillin-resistant *Staphylococcus aureus* or MRSA.

MRSA Transmission

- Contact spread (via hands) is the primary means of transmission.
- Environmental contamination may lead to the spread of MRSA.

Conditions Which Increase the Risk of Acquiring MRSA

- Severity of illness.
- Previous exposure to antimicrobial agents.
- Repeated contact with the healthcare system.
- Advanced age.
- Previous colonization by a multi-drug resistant organism.

Conditions Which Increase the Risk of Acquiring MRSA

- Underlying diseases or conditions:
  - Insulin-dependent diabetes mellitus
  - Peripheral vascular disease
  - Chronic renal disease
  - Dermatitis or skin lesions
- Invasive procedures, such as:
  - Dialysis
  - Presence of invasive devices
  - Urinary catheterization

MRSA Facts

- The exact percent of colonization of the general population is unknown.
- There is a 60% prevalence among patients in U.S. intensive care units.

Community-Associated MRSA (CA-MRSA) Infections
Community-Associated MRSA (CA-MRSA) Infections

- Athletic teams
- Correctional facilities
- Men who have sex with men (MSM)
- Injecting drug users
- Day care facilities
- College campuses
- Military recruits
- Pacific Islanders, Alaskan Natives, and Native Americans

CA-MRSA

- In the U.S. a little more than 10% of all MRSA infections are CA-MRSA.
- Hospitalization is required in approximately 1 out of every 5 cases.
- Causes illness in persons outside of hospitals and healthcare facilities.
- Usually in persons with no medical history of MRSA infection or colonization.

CA-MRSA

- Diagnosis made in outpatient setting or by positive culture for MRSA within 48 hours after hospital admission.
- Usually in persons who have no permanent indwelling catheters or invasive medical devices.

CA-MRSA

- Persons with no medical history in the past year of:
  - Hospitalization
  - Admission to a nursing home, skilled nursing facility, or hospice
  - Dialysis
  - Surgery

Five Common “C” Factors of CA-MRSA

1. Compromised skin – abrasions from scrapes or existing skin disease.
### Five Common “C” Factors of CA-MRSA

<table>
<thead>
<tr>
<th>2. Contact</th>
<th>3. Contaminated surfaces and shared items:</th>
</tr>
</thead>
<tbody>
<tr>
<td>frequent and very often vigorous skin-to-skin contact.</td>
<td>- sports and weight-lifting equipment</td>
</tr>
<tr>
<td></td>
<td>- shared towels and uniforms</td>
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<td>- changing tables and toys</td>
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<table>
<thead>
<tr>
<th>4. Crowding</th>
<th>5. Cleanliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>When people are very close to one another, it increases the likelihood of skin-to-skin contact and contamination of the environment.</td>
<td>Often less than optimal showering conditions, lack of soap usage, and cleaning of equipment.</td>
</tr>
</tbody>
</table>

### MRSA
- Hospital acquired:
  - multi-drug resistance
  - infection sites: multiple
  - does not have the USA 300 clone
- Community-associated:
  - reduced drug resistance
  - infection sites: skin and soft tissues
  - has a unique clone (USA 300) commonly seen in skin & soft tissue infections

### CA-MRSA
- Recent CA-MRSA outbreak findings suggest there are some biologic properties (such as virulence factors) which may allow the CA-MRSA strains to spread more or cause more disease.
- Further studies are being done to confirm this hypothesis.
CA-MRSA

- Is there an increase in MRSA disease in the community?
  OR
- Is there an increased awareness and recognition of MRSA disease?

CA-MRSA Diagnosis

- Confirm presumptive diagnosis by sending a specimen of the infected wound (either a small biopsy of skin or a swab for culture of the drainage/pus) to a microbiology lab for culture and sensitivity.

CA-MRSA Treatment

- Treatment will depend on the individual patient’s condition.
  - Often times, an I&D (incision and drainage) is all that is needed with appropriate follow-up wound care and good hygiene.

CA-MRSA Treatment

- If antibiotics are prescribed it is most important to:
  - Take the antibiotics as prescribed.
  - Complete the entire prescription amount – do not stop taking because the wound looks/feels better.
  - Do not share antibiotics with others.
  - Some antibiotic treatments will need to be given I.V.

Transmission Prevention

- Follow HC provider’s instructions.
- Keep draining lesions covered with clean, dry dressings or bandages.
- Proper disposal of bandages.
Transmission Prevention

• Prudent hygiene measures -
  Hand washing,
  Hand washing,
  Hand washing!!

Transmission Prevention

• Hand hygiene:
  • An alcohol-based hand rub can be used if the hands are not obviously contaminated and at times when soap and water are not available.
  • Liquid soap, preferably an antibacterial, should be used if there is a known case of CA-MRSA in a household or among individuals who are in close contact (i.e., athletic teams, military recruits, correctional facilities, etc.)

Transmission Prevention

• Avoid sharing personal items that may have had contact with the infected wound and potentially infectious material.
• To kill the bacteria, wash soiled linens & clothes separately in hot water with a laundry detergent.
• Dry clothes in a hot dryer.

Transmission Prevention

• Clean the inanimate environment with a commercial disinfectant or a fresh (mixed daily) 1:100 solution of bleach and water (1 tablespoon bleach in 1 quart of water).
• Infected persons should inform all of their health care providers that they have an antibiotic-resistant Staphylococcus aureus skin infection.

Transmission Prevention

• Education is most important!
• Education of:
  – healthcare professionals.
  – the lay public (including children)
  – those at high risk of acquiring infection:
    • participants of contact sports
    • correctional facility inmates
    • day care workers
    • military recruits

Education Points:

• Importance of hand hygiene.
• Technique of good hand hygiene.
• Importance of good body hygiene.
• The 5 Common C Factors of CA-MRSA.
• The importance of taking antibiotics as prescribed.
• The importance of proper wound care.
### Five Common “C” Factors:

1. Compromised skin
2. Contact (frequent)
3. Contaminated surfaces and shared items
4. Crowding
5. Cleanliness

### CENTRIFUGE

- Has a new form been started for this calendar year?  
  
<table>
<thead>
<tr>
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<th>yes</th>
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- Is a cover available for the centrifuge?  
  
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<th>yes</th>
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- Have the RPM’s been checked this year? (Done by TCs)  
  
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<tr>
<th></th>
<th>yes</th>
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### REFRIGERATORS

- Is there food in the laboratory refrigerator?  
  
<table>
<thead>
<tr>
<th></th>
<th>yes</th>
<th>no</th>
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<td>________</td>
<td>_______</td>
<td>_______</td>
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- Is it clean inside?  
  
<table>
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<tr>
<th></th>
<th>yes</th>
<th>no</th>
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<td>________</td>
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</table>

- Has the temperature been documented every day the clinic is open?  
  
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<thead>
<tr>
<th></th>
<th>yes</th>
<th>no</th>
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<td>________</td>
<td>_______</td>
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### INCUBATORS

(If available in clinic)

- Is the incubator clean inside?  
  
<table>
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<tr>
<th></th>
<th>yes</th>
<th>no</th>
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<td>________</td>
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- Are the climate controlled bags sealed properly?  
  
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<th></th>
<th>yes</th>
<th>no</th>
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<td>________</td>
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</table>
INCUBATORS
(If available in clinic)

• Is the temperature documented every
day the clinic is open?
    ________yes ________no

• Are the temperatures within
acceptable range?
    ________yes ________no

EXPIRATION DATES

• Are the following within acceptable
dates?
  • Blood collection tubes ___yes ___no
  • Urine pregnancy tests ___yes ___no
  • CO2 ampules ___yes ___no
  • HemoCue cuvettes ___yes ___no
  • GC media ___yes ___no
  • Urine dipsticks ___yes ___no
  • Chlamydia swabs ___yes ___no
  • Gonostat swabs ___yes ___no

HEMOCUE

• Is it documented that the HemoCue
has been cleaned every day of use?
    _____yes _____no

• Is there visible blood or serous fluid
on the outside of the HemoCue?
    _____yes _____no
    – If so question the maintenance log.
      This blood should be removed
during daily cleaning.

HEMOCUE

• Is the monthly maintenance
documented?
    _____yes _____no

• Is there corrective action
documented for any problems that
caused a delay in patient testing?
    _____yes _____no
    – Any problems you have with your
      HemoCue should be documented
      on the HemoCue chart.

• Are temperatures recorded in each
room that contains a HemoCue?
    _____yes _____no

MICROSCOPE

• Is there documentation that the
optics have been cleaned daily?
    _____yes _____no

• Is there documentation that the
microscope was covered at the end
of each day?
    _____yes _____no

• Is there documentation that KOH has
been checked for contamination?
    _____yes _____no

MICROSCOPE

• Is there documentation that saline
has been checked for
contamination?
    _____yes _____no

• Is there a spare bulb available for
your microscope?
    _____yes _____no

• Do you have lens paper? Anything
else will damage the lens.
    _____yes _____no
<table>
<thead>
<tr>
<th>MICROSCOPE</th>
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<tbody>
<tr>
<td>• Do you have lens cleaner?</td>
</tr>
<tr>
<td>Microscope does not get clean without it.</td>
</tr>
<tr>
<td>_____yes_____no</td>
</tr>
<tr>
<td>• Is the annual professional microscope cleaning documented on the</td>
</tr>
<tr>
<td>microscope maintenance chart?</td>
</tr>
<tr>
<td>_____yes_____no</td>
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<tr>
<th>RPR ROTATOR</th>
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<tr>
<td>• Is there documentation that the rotator was cleaned monthly?</td>
</tr>
<tr>
<td>_____yes_____no</td>
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<tr>
<td>• Is there documentation that the rotation circumference was checked</td>
</tr>
<tr>
<td>quarterly?</td>
</tr>
<tr>
<td>_____yes_____no</td>
</tr>
<tr>
<td>• Is there documentation that the timer was calibrated quarterly?</td>
</tr>
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<td>_____yes_____no</td>
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<tr>
<td>• Are STD logs up to date with all required information?</td>
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<tr>
<td>_____yes_____no</td>
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<tr>
<td>• Is control information complete on the STD patient log?</td>
</tr>
<tr>
<td>_____yes_____no</td>
</tr>
<tr>
<td>• Are all STD laboratory records easily retrievable?</td>
</tr>
<tr>
<td>_____yes_____no</td>
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<td>• Do you have lens paper? Anything else will damage the lens.</td>
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<td>_____yes_____no</td>
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<td>_____yes_____no</td>
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<td>_____yes_____no</td>
</tr>
<tr>
<td>• Is immersion oil available?</td>
</tr>
<tr>
<td>_____yes_____no</td>
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County Clinic Personnel

• Please list all personnel performing laboratory testing, including CRNP’s, RN’s, Clinic Aides, and Laboratory Technicians if available.

________________________________
________________________________
________________________________
________________________________
________________________________

• Please update and send to the Quality Management Office whenever you have personnel changes.

Upcoming Programs

Exam Documentation: Adopting A Risk Management Mindset
Thursday, August 4th
2:00 - 4:00 p.m.

Avian Influenza: Implications for Agriculture and Public Health
Tuesday, August 9th
12:00 - 1:30 p.m.

For a complete listing of upcoming programs visit:
www.adph.org/alphtn