Proposed Changes to Contact Isolation for MRSA and VRE
CEIP performed comprehensive review of contact precautions

- Data supporting contact precautions above hand hygiene & gloves *for MRSA and VRE* is not compelling.
- Data has demonstrated that contact precautions poses potential risk to patients.
  - Decrease HCW contact
  - Depression & feelings of isolation
- Horizontal infection prevention measures (hand hygiene, CHG, etc.) more effective than vertical (screening & isolation) for MRSA and VRE.
Hands transmit infections to patients—what about clothing?

Figure 1
Common modes of transmission from inanimate surfaces to susceptible patients.

Gloves & gowns contaminated after use

<table>
<thead>
<tr>
<th>Organism</th>
<th>Glove or gown contamination</th>
<th>Gown contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>VRE</td>
<td>11%</td>
<td>5%</td>
</tr>
<tr>
<td>MRSA</td>
<td>16%</td>
<td>5%</td>
</tr>
<tr>
<td>KPC</td>
<td>14%</td>
<td>3%</td>
</tr>
<tr>
<td>MDR Pseudomonas</td>
<td>14%</td>
<td>3%</td>
</tr>
<tr>
<td>MDR Acinetobacter</td>
<td>33%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Snyder et al ICHE 2008; Morgan et al. ICHE 2010; Rock ICHE 2014
What is the data supporting Contact Precautions for MRSA & VRE?

- Numerous retrospective studies show benefit of contact precautions.
  - Australian review screened 358 papers, included 6 for review (additional 4 added)
  - Multiple scientific weaknesses:
    - Study sample sizes are too small to assess the effect size.
    - Many performed in a high prevalence settings where multiple interventions were implemented simultaneously.
    - Most studies had a quasi-experimental design and thus, did not contain comparison groups.
    - CP compliance monitoring was not performed in many studies.
    - Additional factors, such as the decrease in patient-healthcare worker interaction may result in decreased infection rates rather than CP isolation.

“BUGG study”

- 20 ICUs randomized to 2 groups
  - 10 wearing gloves & gowns for all patient contact when entering
  - 10 usual (contact precautions for pts with known MRSA & VRE)
- Collected >72,000 swabs on patients in both groups to assess for acquisition of VRE or MRSA
- Results:
  - No difference in VRE + MRSA isolation
  - No difference in patient outcome
  - Significant difference in MRSA rate (10→6 in treatment vs. 7→6 in control)

Derde trial

• Randomized Controlled Trial (13 ICUs)
  • Phase 1 baseline
  • Phase 1 CHG + HH program
  • Phase 3: RCT: screening for MRSA carriage

• Results:
  • HH program increased HH rates from 55% to 77%, CHG was 100%
  • No difference in MRSA transmission w aggressive screening

Derde et al. Lancet 2013
Universal gloving vs. contact precautions

- RCT in 18 ICUs for 6 months
  - 10 Intervention ICUs: screening MRSA + contact precautions
  - 8 Control ICUs: routine contact precautions for known MRSA & VRE
- Results: no decrease in transmission of MRSA and VRE

Targeted vs. universal MRSA decolonization

• Randomized Controlled trial w 3 groups (74 ICUs):
  • Group 1: MRSA screening & isolation
  • Group 2: screening + isolation + targeted decolonization
  • Group 3: universal decolonization
• Results: Universal decolonization is more effective than screening & targeted decolonization

Huang et al. NEJM 2013;368:2255-65.
Hand hygiene compliance falls with greater proportion of Contact Precautions

Dhar et al. Contact Precautions: more is not necessarily better. ICHE. 2014;35:213-221.
How many HAIs are due to hospital acquisition?

- 5 ICUs at 2 institutions over 18 months
- PFGE all organisms.
- 278 infections, 41 associated with transmission
- 15% of infections due to transmission

Grundman et al. Crit Care Med 2005
How many *S. aureus* HAIs are due to hospital acquisition?

- One ICU
- 37 apparent *S. aureus* transmissions
- 19% matched on sequencing
- Other acquisitions?
  - Visitors
  - Healthcare workers
  - Fomites
  - Undetected carriage

What do the studies show?

- No study compares Contact vs. Standard.
- Multiple studies show no benefit of “super” Contact.
- Passive screening.
- Lack of data supporting transmission by HCW.
Risks of contact precautions

Figure. Average Time per Visit Spent by Interns to Isolation vs Nonisolation Rooms

Each data point represents 1 intern. Dashed line shows where values would be if time in isolation and nonisolation rooms were equal. Solid line shows the least-squares regression for the relationship between isolation room and nonisolation room time among interns (Pearson r = 0.65). There were 15 total observations.

Dashiell-Earp et al. JAMA Internal Medicine March, 2014.
Risk of Contact Precautions

- Fewer MD & RN visits (36% less) \(^1\)
- Shorter visits (17% less) \(^1\)
- Fewer visitors (23.6%) \(^1\)
- Social isolation \(^2\)
- Psychological effects of isolation (depression & anxiety) \(^2\)

\(^1\)Morgan et al. ICHE 2013;34:69-73.
Contact Precautions: Bottom line

- No single study answers the exact question.
- Multiple poor quality retrospective studies.
- Prospective controlled data demonstrates no difference with aggressive MRSA screening vs routine screening & isolation.
- Data shows potential risk to patients:
  - Less HCW contact
  - Psychological effect
- Horizontal interventions (CHG bathing, hand hygiene) likely more effective than isolation (vertical intervention)
CEIP Recommendations

• Contact Precautions will no longer be required for MRSA or VRE (except in outbreak setting).

• Visitors will no longer be required to adhere to Contact Precautions. Visitors will be expected, however, to practice diligent hand hygiene and utilize standard precautions.

• Emphasis will be placed on Standard Precautions
CEIP Recommendations

• Bath treatment with chlorhexidine gluconate (CHG) will be done for ALL inpatients (excluding Resnick Neuropsychiatric Hospital patients & NICU) every 24 hours unless contraindicated.

• CEIP may decide to institute Contact Precautions if the risk of transmission of MRSA and/or VRE increases such as in an outbreak setting.

• Roll-out education will stress importance of effective hand hygiene.
Standard Precautions—Hand Hygiene

• Hand hygiene should be performed include:
  • Before touching a patient, even if gloves will be worn
  • Before exiting the patient’s care area.
  • After contact with blood, body fluids or excretions, or wound dressings
  • Prior to performing an aseptic task (e.g., placing an IV, preparing an injection)
  • If hands will be moving from a contaminated-body site to a clean-body site during patient care
  • After glove removal

• Use soap and water when hands are visibly soiled (e.g., blood, body fluids), or w C. difficile.
Mathematical Model of Hand Hygiene & Glove Use

<table>
<thead>
<tr>
<th>Rate of adherence to hand hygiene, % of opportunities</th>
<th>Percentage chance of contamination per patient visit, by rate of adherence to use of gloves</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>36.2  20.4  17.2  14.0  10.9  7.6  4.5  2.3  1.8  0.9  0.5</td>
</tr>
<tr>
<td>50%</td>
<td>18.1  10.2  8.6  7.0  5.4  3.8  3.3  2.3  1.4  0.9  0.5</td>
</tr>
<tr>
<td>60%</td>
<td>14.5  8.1  6.9  5.6  4.3  3.1  2.3  1.4  0.9  0.5  0.5</td>
</tr>
<tr>
<td>70%</td>
<td>10.8  6.1  5.2  4.2  3.3  2.3  1.4  0.9  0.5  0.5  0.5</td>
</tr>
<tr>
<td>80%</td>
<td>7.2   4.1  3.4  2.8  2.2  1.5  0.9  0.5  0.5  0.5  0.5</td>
</tr>
<tr>
<td>90%</td>
<td>3.6   2.0  1.7  1.4  1.1  0.8  0.5  0.5  0.5  0.5  0.5</td>
</tr>
<tr>
<td>100%</td>
<td>0     0    0    0    0    0    0    0    0    0    0</td>
</tr>
</tbody>
</table>

Note: For example, an HCW who has a mean adherence to use of gloves as part of contact precautions of 80% and a mean adherence to hand hygiene of 70% has a mean chance of hand contamination of 3.3% per exit of a room occupied by a patient with MDR A. baumannii carriage.
Standard Precautions—Personal Protective Equipment (PPE)

- Remove and discard PPE before leaving the patient’s room.
- Wear **gloves** for potential contact with blood, body fluids, mucous membranes, non-intact skin or contaminated equipment
  - Perform hand hygiene immediately after removing gloves
- Wear a **gown** to protect skin/clothing during activities where contact with blood/body fluids is possible.
  - Do not reuse gowns.
- Wear **mouth, nose and eye protection** during procedures that are likely to generate splashes or sprays of body fluids.
- Wear a **surgical mask** when placing a catheter or injecting material into the spinal canal or subdural space
Infection Prevention Policy IC 002 & Hand Hygiene Group

- Marketing & communication
  - Hand hygiene
  - Communicating Standard Precautions
- Documentation group
  - Care Connect changes
- Surveillance group