1. BACKGROUND:

Hospital-acquired infections (HAIs), like surgical site and line infections, are a source of severe morbidity costing an estimated 3.5 billion dollars in Pennsylvania alone. (PHC4 2006)

2. OBJECTIVE:

- To inform medical center purchasing decisions relevant to the reduction of HAIs, we compared the efficacy and cost of chlorhexidine versus povidone-iodine in skin antisepsis.

3. METHODS:

SYSTEMATIC REVIEW

Study Design: Prospective, randomized controlled clinical trials

Inclusion and Exclusion Criteria—P.I.C.O.:

• PARTICIPANTS: Adult receiving topical antiseptic prior to surgery, blood cultures, and vascular or epidural catheter insertion

• INTERVENTIONS: Chlorhexidine gluconate (with or without alcohol)

• COMPARISONS: Povidone-iodine (with or without alcohol)

• OUTCOMES: Positive surface cultures after skin preparation, surgical site infections (SSI), catheter site / tip colonization, catheter-related sepsis and blood culture contamination

• OTHER: English Language, Studies evaluating impregnated catheters and dressings were excluded

Data Collection:

• DATABASES: PubMed—901 studies initially identified, 9 studies ultimately used for the review.

• STUDY QUALITY AND DATA EXTRACTION: Two investigators independently identified relevant articles, assessed study quality using a modified Jadad for RCTs (9 point scale), performed data extraction and resolved any discrepancies by consensus.

META-ANALYSES

• Random-effects meta-analyses were performed and heterogeneity was assessed using the Q and I² statistics. We also stratified meta-analyses by clinical context.

• All statistical analyses were performed using Review Manager (RevMan) [Computer program]. Version 4.2 for Windows. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2003.

4. RESULTS:

META-ANALYSES — Efficacy of Chlorhexidine vs. Betadine in Lowering Infection or Contamination Rate

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>Chlorhexidine</th>
<th>Betaadine</th>
<th>Weight</th>
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<tr>
<td>Study 2</td>
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<td>Study 3</td>
<td>RCTs</td>
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<td>Study 4</td>
<td>RCTs</td>
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<td>0.06</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Meta-analyses by clinical context:

- **Surgical Site Infections (SSI):**
  - Total SSIs: 0.08 (0.06, 0.10)
  - Meta-analyses: 0.09 (0.07, 0.12)

- **Blood Culture Contamination:**
  - Blood cultures: 0.09 (0.07, 0.12)

META-ANALYSES — Efficacy of Chlorhexidine vs. Betadine in Preventing Catheter-related Sepsis

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>Chlorhexidine</th>
<th>Betaadine</th>
<th>Weight</th>
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</thead>
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</table>

Meta-analyses by clinical context:

- **Catheter-related Sepsis (CRS):**
  - Total CRS: 0.06 (0.04, 0.08)
  - Meta-analyses: 0.07 (0.05, 0.09)

5. CONCLUSIONS:

- Chlorhexidine is the more cost-effective option for reductions in risk of 12% and higher.

6. ACKNOWLEDGEMENTS:

- We would like to thank Jeff Rohrbach, Clinical Effectiveness and Quality Improvement (CEQI), University of Pennsylvania Health System, for his assistance in obtaining the administrative data used in our cost-effectiveness models.