Prevention of Central Venous Catheter-Associated Blood Stream Infections in Pediatric Patients: A Review of the Literature

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A Review of the Literature

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Conflicts of Interest

- None
- Products mentioned in this presentation were used in the studies cited.
Objectives

- To examine a problem encountered in the clinical setting.
- To explore the evidence through published literature.
- To develop a literature review of current peer reviewed manuscripts.
The purpose of this literature review was to determine if there was a relationship between the insertion site of a central venous catheter, the type of dressing used, and the rate of bloodstream infections among the pediatric population.
Background/significance

- Central venous catheter-related blood stream infections (CVC-BSI)
  - Increased hospital stay
  - Increased health care costs
  - Increased risks in pediatrics
Methods

- Database search: MEDLINE and CINAHL.
- Search terms: central venous catheter, intensive care, pediatric, bloodstream infection.
- Inclusion criteria
  - Nurse authored
  - Pediatric population
  - Published 2008-2014
Results

- Five research articles met the criteria
  - Insertion sites - 2 articles
  - Dressing types and cost effectiveness - 3 articles
Results

- Insertion sites
  - Statistically no difference between the subclavian, internal jugular, and femoral vein sites and infection rates.
  - Increased risk of BSI in femoral site versus non-femoral (greater and lesser saphenous veins, basilica veins, and cephalic veins)
Insertion Sites

Subclavian Vein

Internal Jugular Vein

Femoral Vein
Results

Dressing Types
- No statistical difference between dressing types and infection rate.
- Increased satisfaction among nurses with use of Tegaderm dressings.
Dressing Types

SorbaView  Biopatch  Tegaderm
Results

Cost Effective

<table>
<thead>
<tr>
<th>Compared</th>
<th>Money Saved Hospital-wide</th>
</tr>
</thead>
<tbody>
<tr>
<td>SorbaView in place of Tegaderm with gauze</td>
<td>$35,000 per year</td>
</tr>
<tr>
<td>Tegaderm with Chlorhexidine in place of Biopatch</td>
<td>$39,000 per year</td>
</tr>
</tbody>
</table>

- savings of $3.42 per dressing change when using the Tegaderm dressing with chlorhexidine gluconate gel versus the Biopatch
Limitations

Articles:
- Small sample sizes
- Two articles were adult ICU patients only
- Poor compliance with RN surveys regarding dressing types

Research:
- Lack of articles with pediatric sampling
- Limited access to full text articles
- Difficulty in locating nurse written articles
Conclusions

- The findings of these five articles suggest that there was no strong relationship between insertion sites, dressing types, and BSI rates.
- Three of the articles discovered that there was a $35,000 hospital wide savings with the use of a Tegaderm dressing versus a Biopatch dressing.
Future Directions

- More pediatric-focused research
- Type of Research
  - Qualitative studies to incorporate past experiences with CVC and BSI’s
  - Use of a valid patient acuity measurement
  - Gather a larger sample size
- Practice Implications:
  - Tegaderm suggested versus Biopatch for cost saving purposes
- At this time, no change in policy/procedure is needed
Research Lessons Learned

- How to critique and understand a research article
- The specific components of a research article
- Use of key words for searching
- Use Boolean search method (and, or, not)
- How to access nursing journals
Bibliography


Bibliography (cont’d)


