Assessment of Peripheral IV Catheter Placement Technique, a Quality Improvement Project in Patan Hospital Emergency Room, Nepal

William Shi1 · Andrew Stein1 · Ujjawal Paudel, MBBS2 · Prashant Raj Bhatt, MBBS2
Theodore MacKinney, MD, MPH, FACP1 · Darlene House, MD2 · Gyan Kayastha, MD, MPH2
Medical College of Wisconsin1, Patan Hospital2

Introduction

- The incidence of systemic infection following placement of peripheral intravenous catheters (PIVCs) by nursing staff is low in high resource countries.1,3
- Based on preliminary data, in low resource countries such as Nepal, complications such as septic phlebitis may be higher.2
- The origin of septic phlebitis following PIVC placement is multifactorial, and may include deviations in technique from best practice guidelines.1
- Many of these causes are modifiable behaviors, such as frequency of hand washing, cleaning of the IV site, and maintaining site sterility throughout the procedure.1

Study Aims

- Identify contributing factors to high rates of septic phlebitis at Patan Hospital.
- Identify potential educational interventions to durably reduce the risk of septic phlebitis to near or near western values.

Methods

- Observed nursing staff PIVC insertion technique on all patients over 18 years old in the Patan Hospital Emergency Room (ER) for two weeks.
- Utilized a checklist of skills including: hands washed, gloves worn, tape technique optimized, site initially cleaned, site thoroughly cleaned, site kept sterile, catheter kept sterile, and line kept sterile.

Results

<table>
<thead>
<tr>
<th>ER PIVC Placement Checklist of Skills</th>
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<tr>
<td>Total observations: 323</td>
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<tr>
<td>Hands washed: 0.3%</td>
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<td>Gloves worn: 10.2%</td>
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<td>Tape technique optimized: 21.7%</td>
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<tr>
<td>Site kept sterile: 77.4%</td>
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<tr>
<td>Site thoroughly cleaned: 86.7%</td>
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<tr>
<td>Site initially cleaned: 98.8%</td>
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<tr>
<td>Catheter kept sterile: 98.8%</td>
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<td>Line kept sterile: 98.8%</td>
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Discussion

- The observed very low incidence of hand washing prior to IV insertion (0.3%) may be the single greatest contributor to the increased rate of infection, in accordance with previous studies.4 However, this incidence may be artificially low due to observational error and study limitations.
- Almost all sites were initially cleaned with alcohol or spirits, defined by at least one swipe of the cleaning agent (98.8%).
- Sites were cleaned thoroughly, defined as greater than one swipe or scrubbed, in 86.7% of instances.
- In 22.6% of cases, the site was re-palpated or otherwise rendered unsterile before the catheter was inserted.
- Optimal tape technique was defined as minimizing non-patient surface contact with the tape used to secure the IV.

Conclusions

Educational interventions targeting hand washing and maintenance of site sterility may be the most cost effective, efficient, and viable methods of durably reducing incidence of septic phlebitis in Nepal.

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References