Improving Safety in Securement of NICU Umbilical Catheters

The Problem
Umbilical venous and arterial catheters are frequently used for access in preterm and critically ill newborns. The standard for securement was suturing then application of a stand-up tape bridge. We knew from monitoring our NICLIP (NICU Central Line Infection Prevention) data that we had an accidental dislodgement rate of 17-20%, many occurring with holding of the infant by parents. With our NICU’s renewed emphasis on early Skin to Skin holding, we wanted to find a safer way to secure our umbilical lines.

- Trials of 3 different commercially available products were all unsatisfactory
- No evidence based methods were found in the literature
- Observation and experience from other NICUs of a flush to skin level system of Duoderm/Tegaderm showed promise

Aim/Goal

Pictorial guide and education for staff, identified “Superusers”
- On-going performance measurement and monitoring.

The Results/Progress to Date

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Accidental Dislodgements</td>
<td>0</td>
</tr>
<tr>
<td>Pulled due to Peri-umbilical Erythema (negative blood Cx)</td>
<td>4</td>
</tr>
<tr>
<td>Removed due to lower position on X-ray</td>
<td>5</td>
</tr>
<tr>
<td>CLABSIs</td>
<td>0</td>
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</tbody>
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The uptick in peri-umbilical erythema was an unexplained cluster. The rate mirrors that seen in the old securement method.

Lessons Learned
We were successful in preventing accidental dislodgements. We encountered a new problem limited to UVCs with our preterm infants managed on CPAP where with evolving abdominal distension over the days after birth the UVC position changed by 0.5 to 1 cm below the diaphragm on x-ray. The clinical significance of this is unknown. The staff embraced the new system and deemed it vastly improved to our old system.

Next Steps/What Should Happen Next
The new Duoderm/Tegaderm system has been universally adopted
- Continue to track data on dislodgements, change in position, infections
- Consultation with Neonatology Faculty Group for consensus regarding need for removal for small change in UVC position

The Team
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