**Purpose**

- Determine characteristic of difficult IV access patients such as: age and BMI.
- Collect the success rate of IV catheter insertion with ultrasound assistance.
- Determine average number of IV attempts before successful insertion.
- Determine how long inserted IV catheters remain functional up to 96 hours.
- Determine the percentage of patients requiring central line after ultrasound guided IV attempt.
- Prevent central line insertion.
- Increase efficiency of peripheral IV insertion and increase patient comfort.

**Methods**

- IRB approved for a quantitative quasi-experimental study.
- Key personnel (4 RNs) were educated on the use of an ultrasound machine to assess peripheral vasculature and how to use it to visualize peripheral IV insertion.
- Hospital wide email was sent to all nursing staff making them aware of services.
- Study subjects were referred by direct care RN.
- Data collection tool was completed minimum of 4 days after IV insertion to determine catheter dwell time.
- Data was collected over 2 year period.

**Results**

**Success Rate**

<table>
<thead>
<tr>
<th>Success Rate</th>
<th>Overall Success Rate: 92.6% (n=116)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success on 1st attempt</td>
<td>76.7% (n=89)</td>
</tr>
<tr>
<td>Success on 2nd attempt</td>
<td>19.8% (n=23)</td>
</tr>
<tr>
<td>Success on 3rd attempt</td>
<td>0.03% (n=4)</td>
</tr>
<tr>
<td>No viable peripheral veins</td>
<td>0.02% (n=2)</td>
</tr>
<tr>
<td>Required Central line</td>
<td>16.6% (n=21)</td>
</tr>
</tbody>
</table>

**Sample**

- Sample size: 125
  - History of Difficult IV: 95%
  - History of Diabetes: 35%
  - History of Central Line: 22%
  - History of PVD: 15%
  - BMI > 30: 56%

**Catheter Dwell Times**

<table>
<thead>
<tr>
<th>Catheter Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>65 hours</td>
<td>38 hours</td>
</tr>
<tr>
<td>22Gx25mm</td>
<td>77 hours</td>
<td>34.9 hours</td>
</tr>
<tr>
<td>22Gx20mm</td>
<td>56.6 hours</td>
<td>40.6 hours</td>
</tr>
</tbody>
</table>

**Clinical Implications for Future**

- Ultrasound increasing applications at the bedside.
- Improvement in technology and cost reduction will increase access.
- Development of formal training to increase number of nurses trained to insert ultrasound guided IV.
- Needle guide for ultrasound to increase accuracy and facilitate technique.