Case Study:
Pemphigus Foliaceus with bacteremia requiring 14 days of IV rituximab.

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Financial Disclosures

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- Consultant and or Speaker: BD, Teleflex, 3M, SecureAcath
Objectives

• Define Pemphigus Foliaceus
• Describe Challenges for Vascular Access
• Discuss possible solutions
• Present action plan
• Visually describe procedure
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Who is your clinician?

The Patient Needlestick Safety and Prevention Act

With over 3-4 billion peripheral IV catheters placed around the world annually and over 300 million peripheral IV’s sold in the US, peripheral intravenous vascular access is the most performed procedure.

On November 6, 2001, the Needlestick Prevention Act was signed into law. This act demanded hospitals and healthcare systems provide and maintain needleless systems and improve access to any healthcare professional’s needs. The act provided “exposure control programs” for health care workers. The act is named “The Needlestick Prevention Act” as it was designed to provide the safety of all health care workers and now lead all workers to the best care.

Janine Jagger of the Needlestick Safety and Prevention Act designed the bill for any healthcare professional to step up their own safety. The bill was signed into law and followed by the Needlestick Safety and Prevention Act for all healthcare professionals.

Dr. Robert Helm discussed the variety of complications that result from invasive hospital procedures and an unacceptable rate of peripheral IV catheter failure. Catheter failure is costly to all involved and may lead to an increased amount of health issues. Advances have been made, analysis of the rate of failure reveals an opportunity for improvement. It will require a change in the way technology and the environment are approached. The concept of the needleless system is to connect foreign body that directly connects to the patient avoiding any complications. Catheter insertion is an invasive procedure that introduces multiple risks and potential morbidities, and even mortality, and should be avoided wherever possible.

Failure to obtain peripheral IV access leads to the escalation of vascular access device placement from Midlines to PICC lines, Central lines and even surgically placed devices. This escalation in device placement brings with it increased costs to hospitals, increased qualified personnel to place the device, and the increased rate of complications such as central line infections, thrombosis, carotid hematoma, pneumothorax and even a sentinel event such as an air embolism and death.
Pemphigus Foliaceus

An autoimmune skin disorder characterized by the loss of intercellular adhesion of keratinocytes in the upper parts of the epidermis (acantholysis), resulting in the formation of superficial blisters.

Pemphigus foliaceus is characterized by a chronic course, with little or no involvement of the mucous membranes.
Order: PICC for 14 days of rituximab

Assessment:

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Proposed Duration of Infusion</th>
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<tbody>
<tr>
<td></td>
<td>≤5 d</td>
</tr>
<tr>
<td>Peripheral IV catheter</td>
<td>No preference between peripheral IV and US-guided peripheral IV catheters for use ≤5 d</td>
</tr>
<tr>
<td>US-guided peripheral IV catheter</td>
<td>US-guided peripheral IV catheters preferred to peripheral IV catheters if proposed duration is 6–14 d</td>
</tr>
<tr>
<td>Midline catheter</td>
<td>Midline catheters preferred to PICC if proposed duration is ≤14 d</td>
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</table>

Central venous catheter preferred to PICC for use ≤14 d in critically ill patients.

22. VASCULAR VISUALIZATION

Standard

22.1 To ensure patient safety, the clinician is competent in the use of vascular visualization technology for vascular access device (VAD) insertion. This knowledge includes, but is not limited to, appropriate vessels, size, depth, location, and potential complications.

22.2 Vascular visualization technology is used in patients with difficult venous access and/or after failed venipuncture attempts.

22.3 Vascular visualization technology is employed to increase the success with peripheral cannulation and decrease the need for central vascular access device (CVAD) insertion, when other factors do not require a CVAD.

Notes:
- PICC = peripherally inserted central catheter; US = ultrasonography.
Prove your device choice based on available vasculature

<table>
<thead>
<tr>
<th>2016 US PIV</th>
<th>Forearm</th>
<th>AC</th>
<th>Brachial</th>
<th>Basilic</th>
<th>Cephalic</th>
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</thead>
<tbody>
<tr>
<td>PIV 20g</td>
<td>551</td>
<td>153</td>
<td>89</td>
<td>15</td>
<td>46</td>
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<tr>
<td>PIV 22g</td>
<td>439</td>
<td>72</td>
<td>15</td>
<td>5</td>
<td>25</td>
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</tbody>
</table>

70.21% Forearm

15.95% Antecubital

1.4% Basilic

5.0% Cephalic

7.37% Brachial
Impact of De-escalation Implementation and the future of vascular access teams

<table>
<thead>
<tr>
<th>Vascular Access Data</th>
<th>2014</th>
<th>2015</th>
<th>2016 (6 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICC Usage</td>
<td>621</td>
<td>780</td>
<td>355</td>
</tr>
<tr>
<td>Midline Usage</td>
<td>211</td>
<td>69</td>
<td>15 (6 months)</td>
</tr>
<tr>
<td>Peripheral Usage</td>
<td>343</td>
<td>1183</td>
<td>1410 (6 months)</td>
</tr>
<tr>
<td>20 g</td>
<td>257</td>
<td>751</td>
<td>854</td>
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<tr>
<td>22 g</td>
<td>86</td>
<td>432</td>
<td>556</td>
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**Pie Charts:**
- **2014:**
  - PICC: 39%
  - MIDLINE: 37%
  - PIV: 24%

- **2015:**
  - PICC: 38%
  - MIDLINE: 58%
  - PIV: 4%

- **2016:**
  - PICC: 20%
  - MIDLINE: 79%
  - PIV: 1%
How do I get my administration to buy in to ultrasound guided PIV’s?

Impact of an IV

Hospital misses out on a $45K dollar surgical reimbursement from Medicare.

All over a peripheral IV.
The relative risk of catheter-associated BSI also has been assessed in a meta-analysis of 223 prospective studies of adult patients. Relative risk of infection was best determined by analyzing rates of infection both by BSI per 100 catheter days and BSI per 1,000 catheter days. These rates, and the NNIS-derived data, can be used as benchmarks by individual hospitals to estimate how their rates compare with other institutions. Rates are influenced by factors such as the condition under which the catheter is inserted and the type of catheter material.

New Caution Added for Adhesive Devices in Standards

Another important addition to the 2016 Standards is a caution to be aware of the risk of medical adhesive-related skin injury (MARSIs) associated with the use of adhesive-based ESDs. Cautions include:

A. Consider use of an engineered stabilization device (ESD) to stabilize and secure VADs as inadequate
B. Use double-stick technologies and ensure occlusiveity
C. Examine skin barrier
D. Use non-adhesive devices
E. Use non-adhesive devices
F. Subcutaneous ESDs have been successful in stabilizing PICCs and CVADs inserted through the internal jugular vein of adults. Patient outcomes and patient and inserter satisfaction have been favorable; however, additional studies with other CVADs are needed.
BUY IN

Care Team
- Attending Infectious Disease

Products
- Present plan to:
  - Chairman of Surgery
  - VP of Nursing
- Acquiring Product Training Observation

Industry Assistance
- Explain plan to patient
- Acquiring Product Training Observation
Ultrasound Assessment of upper arm
Report of Modification for Peripherally Inserted Central Catheter Placement

Subcutaneous Needle Tunnel for High Upper Arm Placement

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Nancy L. Moureau, BSN, RN, CRNI®, CPUI, VA-BC

ABSTRACT
The majority of peripherally inserted central catheters (PICCs) are currently inserted with the aid of ultrasound guidance in the middle third of the upper arm. A growing patient population is presenting with challenging vessel access requiring placement of the PICC in the high upper third of the arm. To avoid this suboptimal exit site, a subcutaneous tunneling of the PICC is established away from the axilla to a more appropriate skin exit site. A prospective evaluation was performed in a single facility for all PICC placements from September 2014 to June 2015. Of the results of 683 PICC requests received during the study, 50 (7.2%) were placed with the modified Seldinger tunneling technique with 96% success. There were no reports of increased pain, insertion complications, or therapy failures. Subcutaneous tunneling, when applied to bedside PICC insertions, provides a safe, effective, and cost-efficient option for a select, more challenging patient population.

Key words: central catheter, complications, difficult access, infection, infection prevention, insertion, obesity, peripherally inserted central catheter, PICC, Seldinger, tunneling, ultrasound, vascular access, vascular access specialist
Calibrating Tip Navigation Technology: 
Patient is in NSR
First of 3 scrubs with CHG
Patient draped, drawing up Lidocaine for topical application prior to 2\textsuperscript{nd} scrub
Applying lidocaine to the “track” for the subcutaneous 5cm tunnel
Tracking needle up the arm 5cm to the vein on transverse view to avoid structures
Placing 0.018 floppy tip guide wire
Pre-dilating Track
Using a 10cm 5 fr Dilator/Sheath with no Dermatotomy
Trimming and Anti-microbial PICC Catheter to 45cm measurement taking into account 3cm for securement device.
Catheter location assessment
Placed 80cm floppy tip hydrophilic guide wire to maneuver around jugular vein.

Infusion Therapy Guidelines

2. For PICCs with jugular vein location, noninvasive techniques are preferred. Reported effective methods include elevating the patient's head, flushing the catheter, walking, or a combination of these techniques. Invasive techniques include partial PICC retraction with guidewire techniques, catheter flushing while advancing, and retraction and advancement under fluoroscopy.

Use of retraction with guide wire prevents multiple threading resulting in DVT, an exchange in IR, and a delay in patient receiving prescribed treatment.

Resulted in sending 31 patients out of 1604 to IR over 3 years (1.9%).
Where are wires used today?
After one thread rechecked tip location
Now the challenge of securement

Due to lack of epidermal adherent a subdermal securement device.
Device was placed and catheter secured. CHG impregnated patch placed over insertion site.

Decrease catheter movement, migration and stability.
4, 4x4’s over insertion site with cling wrap to be changed q 24-48 hours
Tunneled, Antimicrobial PICC navigated to CAJ, Subdermal securement device, chg impregnated patch, with gauze dressing and alcohol port protector.
Removal of US PIV
(saline to loosen dressing)
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14 Days of panic

- **Day 1**: Stress relief activities
- **Day 5**: Mindset shift for success
- **Day 14**: Celebration of success
IMAGINE an arsenal instead of a single weapon
People see this.

What really happens:

Success.

Hard work.
Risk.
Late nights.
Struggles.
Failures.
Persistence.
Action.
Discipline.
Courage.
Doubts.
Changes.
Criticism.
Disappointments.
Adversity.
Rejections.
Sacrifices.
1. Central Lines
2. Shiley Catheters
3. Port-a-cath
4. Arterial Lines
5. Training MD’s

1. Peripheral
2. Midline
3. PICC
4. Care/Maint

1. Center of Excellence
2. Site License for Education
3. National/International Speaking
4. Publications
5. Conferences
“You treat a disease: You win, you lose.

You treat a person, I guarantee you win no matter the outcome.”

-Patch Adams
Thank you for your attention...