Right Line, Right Patient, Right Time by the Right Clinician
Disclosures

• Speaker Bio
  • Amy Bardin-Spencer Director, Clinical Affairs – Vascular
  • No off label topics will be discussed
Objectives:

- Discuss device selection criteria from peripheral access to acute central venous access
- Review patient criteria and limitations for device insertion
- Discuss the time impact on device insertion and removal
- Review the criteria for the right clinician as it relates to vascular access
Right Line
Assessment Based Approach
Right Line

• Educate and train all staff involved in vascular access practices
• Selection of the device that is most appropriate for therapy and preserves vessel health
• Insert the smallest device with the least amount of lumens required for therapy
• Insert the appropriate device using evidence based guidelines
**Education and Training**

- Didactic and simulation training required with written competency for vascular access procedures\(^1\)
- Annual retraining for vascular access procedures\(^1,2\)
- Training and a trial of all new add on devices or when changes in practice or process occur\(^2\)
- Employ multiple methods for delivering education\(^2\)
- Identify procedures/skills/tasks for ongoing competency by using clinical outcome data\(^2\)
**Basic Device Selection**

**Decision Tree**
**Patient Requires IV Therapy**

- **Osmolarity of solution**
  - Less than 900 mOsm/L
  - Not listed as irritant or vesicant
  - **Peripheral Access** *(Three sites or more)*
    - **Duration** less than five days
      - Maintain by peripheral cannula
    - **Duration** greater than five days
      - Two - Four weeks midline

- **Osmolarity greater than 900 mOsm/L, irritant or vesicant**
  - Needs maximum hemodilution
  - **Central Access** *(Acute less than 29 days)*
    - **Duration** less than one year
      - Consider PICC, Tunneled CVC or Totally implanted vascular access device
    - **Duration** of greater than one year
      - Tunneled CVC or Totally implanted vascular access device
Appropriateness Guidelines

Peripherally Compatible

Peripherally Incompatible
Medication Considerations

- Healthcare organizations responsibility
- Preadmission assessment
- Identify risk factors
- Risk reduction for administration
- Administration through a VAD
- Stop when extravasation identified

<table>
<thead>
<tr>
<th>RED LIST</th>
<th>YELLOW LIST</th>
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<tbody>
<tr>
<td>Well-recognized vesicants with multiple citations and reports of tissue damage upon extravasation</td>
<td>Vesicants associated with fewer published reports of extravasation; published drug information and infusate characteristics indicate caution and potential for tissue damage</td>
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<tr>
<td>Calcium chloride</td>
<td>Acyclovir</td>
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<td>Calcium gluconate</td>
<td>Amiodarone</td>
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<tr>
<td>Contrast media - nonionic</td>
<td>Arginine</td>
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<tr>
<td>Dextrose concentration ≥ 12.5%</td>
<td>Dextrose concentration ≥ 10% to 12.5%</td>
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<td>Dobutamine</td>
<td>Mannitol ≥ 20%</td>
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<td>Dopamine</td>
<td>Nafcilin</td>
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<td>Epinephrine</td>
<td>Pentamidine</td>
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<tr>
<td>Norepinephrine</td>
<td>Pentobarbital sodium</td>
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<td>Parenteral nutrition solutions exceeding 900 mOsm/L</td>
<td>Phenobarbital sodium</td>
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<td>Phenylephrine</td>
<td>Potassium ≥ 60 mEq/L</td>
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<td>Phenytoin</td>
<td>Vancomycin hydrochloride</td>
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<td>Promethazine</td>
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<td>Sodium bicarbonate</td>
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<td>Sodium chloride ≥ 3%</td>
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<td>Vasopressin</td>
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**Insertion Bundle**

5 key components\textsuperscript{9,10}

1. Hand hygiene (waterless alcohol-based hand sanitizer or wash hands with soap and water)
2. Maximal barrier precautions
3. Chlorhexidine skin antisepsis (chlorhexidine >0.5% in alcohol solution)
4. Optimal catheter site selection
   - Femoral vein should be avoided for central venous access in adult patients (femoral lines may be used in pediatric patients)
   - Subclavian vein favored for non-tunneled catheters
5. Daily review of line necessity, with prompt removal of unnecessary lines
**Maintenance Bundle**

4 key components

1. Daily review and documentation of line necessity, with prompt removal and documentation of removal of unnecessary CVCs\(^7\)
   - Establishing a process (such as performing the review during daily rounds) or alert system (for example, a computerized alert) is important in establishing this maintenance process

2. Hand hygiene before intravenous set manipulation\(^7\)

3. Catheter injection port care (covering open lumens with injection ports, sterile end caps, or needleless connectors; scrubbing the hub for at least 5 seconds; sanitizing access ports before and after use; minimizing cap change frequency)\(^7,8\)

4. Catheter site dressing monitoring or changes (unless dressing is soiled, damp, or loose, usually changed every 2 days for gauze dressings or every 7 days for clear dressings)\(^7\)
Right Patient
Right Patient

- Evaluation of patient risk factors and need
  - Acute
  - Chronic
- Assessment of vascular anatomy
- Laboratory values
- Exit site considerations
- Risk / Benefit
- Unit outcomes$^2$
Patients with High Risk

- Neutropenia (S52, D3)
- Transplant (S52, D3)
- Burn (S52, D3)
- Critically ill (S52, D3)
- Chemotherapy (S52, A2)
- Pregnancy (S52, A6)
- Trauma (S52, D3)
- History of DVT (S52, A1)
- Catheter exchange (S49, J)
- Previous CLABSI (S49, J)
- Unit CLABSI rate high (S52, D2)
- Emergent insertions (S52, D4)
- Age extremes (S52, A7)
- Patients with multiple intravascular devices (S52, A8)
- Greater than 5 days dwell (S52, D1)
**Device History**$^{1,2,5}$

- Current device assessment
  - History of insertion
  - Review of insertion attempts
- Type and Location of last device
  - Chronic (tunneled, implanted)
  - Acute
  - Peripheral (IV, Arterial, Midline, PICC)
- History of implanted devices?
  - Pacemaker, port, filter etc.
Patient Assessment\textsuperscript{12}
Laboratory Values

Vascular access

- BUN/ Creatinine
- PT/PTT
- INR
- Platelets
- WBC
Exit Site Management

- Extremity right or left
- Neck or Chest
- Femoral
- Ante cubital region (area of flexion)
- Hand

“The goal of device insertion is to potentiate an exit site that is manageable and not a contributing factor to device complications”
Right Time
**Right Time**

- Insertion of device in a timely manner to avoid delay in treatment
- Daily assessment and goals for device necessity
- Prompt removal of the device when no longer used
Patient Satisfaction

• Limit 2 insertion attempts\(^1\)
• Use ultrasound technology\(^1,3\)
• Engage patient in plan, provide options\(^2\)
• Plan discharge on admission
• Patient, clinician and organization centered care
Vessel Satisfaction

- Site assessment\(^1\)
- Outcome tracking and reporting\(^1\)
- Collaborative approach\(^1\)
  - Pharmacy
  - Quality/ Risk
  - Purchasing
  - Leadership
- Catheter to vessel ratio\(^1\)
- Virchow’s triad
- Venous depletion
Organizational Responsibility

- Identify the gap
- Understand the risk
- Develop a comprehensive multidisciplinary team
- Provide dedicated resources
- Stop silo quick fix strategies
Right Clinician
Right Clinician

- Passionate about vascular access
- Dedicated to outcomes and collaboration
- Shares outcomes through data collection
- Agile
- Change agent
- Has broad shoulders
- Values certification
- Engages in professional organizations
- A patient advocate
- Has the right attitude
Right Approach\textsuperscript{11}

- Increased clinically indicated device insertions
- Decreased total device orders
- Decreased wait times from order to insertion
- Decreased infection rates
“Vascular access is not a product that your team decides to purchase, but a program requiring assessment, data collection, follow-up, collaboration, education, motivation and accountability to patients requiring timely device placement and removal” A. Bardin-Spencer 2017
Any Questions?
References


