Mark is a graduate of the University of Arkansas for Medical Sciences (UAMS) with both his Bachelors and Masters in Nursing Science. His initial 8 years in the art of nursing was in the specialty of burns/trauma but for the past 26 years has focused on Vascular Access as a clinical/education specialty. Mark, as Senior Vascular Access Specialist, along with a great team; assist with the education of vascular access by hosting Vascular Access Residency program.

Mark was honored to serve as the 2014-2015 Board President of the Association for Vascular Access (AVA) after serving as Director at Large for 4yrs and past Scientific Meeting Chairperson. Mark has presented local, national, and international presentations related to all aspects of vascular access.

Mark is married and they are the proud adopted parents of the best dogs in the world! (seen is upcoming slide!)
Financial Disclosure

- Mark Rowe
- Past-President, Association for Vascular Access (AVA)
- Employer: University of Arkansas for Medical Sciences (UAMS)
- Independent Consult/Speaker:
  - Interrad Medical, Inc.
  - Ethicon, Inc.
  - Becton Dickinson and Company, Inc.
  - 3M, Inc.

- *I will not discuss off label use and/or investigational use in my presentation*
Impact Assessment of Securement Devices on CLABSI

Mark Rowe MNSc, RNP, VA-BC®
Sr. Vascular Access Specialist
University of Arkansas for Medical Sciences
Objectives

• Learner will:
  – Understand the difference between subcutaneous engineered securement device (SESD) and adhesive engineered securement device (AESD)
  – Understand retrospective methodology used to accumulate data
  – Understand the risk reduction comparison, as related to securement device selection, as it related to CLABSI
Our Story at University Arkansas Medical Sciences

- 500+ all Private beds
- Only level 1 Trauma center in state
- Only high risk birth center in state
- 7 Institutes on campus
# Do We Look Alike?

## Patient Visit 2017

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED Visits</td>
<td>60,861</td>
</tr>
<tr>
<td>Surgery Cases</td>
<td>19,262</td>
</tr>
<tr>
<td>Outpatient Visits</td>
<td>485,121</td>
</tr>
<tr>
<td>Infusion Visits</td>
<td>44,655 (122.3/day)</td>
</tr>
</tbody>
</table>

## Vascular Access 2017

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vascular Access Procedures</td>
<td>2,603</td>
</tr>
<tr>
<td>PICCs</td>
<td>1,748</td>
</tr>
<tr>
<td>Ultrasound PIVs</td>
<td>668</td>
</tr>
<tr>
<td>Chest Procedures</td>
<td>187</td>
</tr>
</tbody>
</table>
Anyone Remember This?
What is your experience with Suture?
Suture

- Multiple punctures to tissue creating infection risk
- Variation in technique as broad as inserter base
- Does not prevent movement long term
- Associated with safety issues, skin tears
- Hinders care and maintenance
- May require replacement, and additional punctures
What is your experience with Adhesive Engineered Securement Devices?
Adhesive Engineered Securement Devices

• Evidence suggests frequent migration & dislodgement up to 20%
• May damage skin, Medical Adhesive Related Skin Injury
• Care and maintenance
  – Vulnerable to movement & catheter loss
  – Must replace with each dressing change
  – Inconsistency of care with patient transitions
    • Are they being replaced?
    • Are they available in community care?
  – Material costs over time are burdensome
    • Are the costs covered for the patient after insertion?
What is your experience with Subcutaneous Engineered Securement Devices?
What is your experience with Subcutaneous Engineered Securement Devices?

• Learning curve
• Change is not easy (Never Is!)
• Perceived claims vs substantiated truths
  – Pain
  – Bleeding
  – Looks barbaric
  – Causes INFECTIONS!?! (BUT DOES IT?)
Our Team & Impact Assessment

- UAMS Vascular Access Team – 4 practitioners 101 years Nursing Experience; 71 years VA Experience combined
- Routinely track CLABSI per NHSN requirements
  - Overall institutional CLABSI is very low 0.61 per 1000 catheter days in 2017
  - Data assessment initially determined that 0 CLABSI were insertion related
  - No other care and maintenance intervention occurred between 2015-2017
- Practice between UAMS VAT and IR groups differ by stabilization device
- UAMS VAT hypothesized that the SESD reduces risk of CLABSI compared to AESD due to:
  - Increased stability,
  - Reduction of migration
  - Reduction of dislodgement requiring replacement
  - Overall ability to disinfect the site 360 degrees
Methods

• Retrospective data analysis of 3 years of hospital PICC data
• Analysis of CLABSI was segmented by:
  – Patient demographics: age, gender, diagnosis
  – Placement Arm
  – Device Type
  – Dwell Time
  – Inserter Type
  – CLABSI Organisms
  – Securement Type
Sources of CLABSI

Contaminated Infusate
Fluid or Medication
Extrinsic Sources

Contamination of Catheter Hub
Extrinsic Sources
Endogenous Flora

Hematogenous Seeding
From distant infection

Skin Organisms
Endogenous Flora
Extrinsic Sources – Pistoning/Migration
Invading wound

Contamination of Device Prior to Insertion
Rare post- bundle
# Departmental PICC Data

<table>
<thead>
<tr>
<th></th>
<th>Bedside Vascular Access</th>
<th>Interventional Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using SESD</td>
<td>Using AESD</td>
</tr>
<tr>
<td>2015</td>
<td>1827</td>
<td>272</td>
</tr>
<tr>
<td>2016</td>
<td>1795</td>
<td>215</td>
</tr>
<tr>
<td>2017</td>
<td>1688</td>
<td>203</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5310</td>
<td>690</td>
</tr>
</tbody>
</table>

TOTAL: 5310

TOTAL: 690
Total CLABSI by Gender

- **Mean Age 51 y**
  - **2015**
  - **2016**
  - **2017**

**Legend:**
- Male
- Female
PICC PATIENT DIAGNOSIS DISTRIBUTION

- Oncology: 44%
- Medicine: 24%
- Gastronterology: 16%
- Surgery: 11%
- Orthopedic: 5%
CLABSI by Insertions Side Arm

<table>
<thead>
<tr>
<th>Year</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: Right, Left
CLABSI Occurrence by Lumens

- Single Lumen
- Double Lumen
- Triple Lumen (OSH)
Mean Dwell Days for PICC CLABSI by Securement Type

- 2015: SESD (orange), AESD (blue)
- 2016: SESD (orange), AESD (blue)
- 2017: SESD (orange), AESD (blue)
2015 CLABSI ORGANISMS

- Candida: 59%
- Kleb: 9%
- Entracoc: 8%
- Ecoli: 8%
- VRE: 8%
- Staph Epi: 8%
- Kleb: 9%
- Candida: 59%
2016 CLABSI ORGANISMS

- VRE: 34%
- Candida: 22%
- Enterab: 11%
- Entracoc: 11%
- Ecoli: 22%
2017 CLABSI ORGANISMS

- Candida: 6%
- Kleb: 18%
- Entracoc: 23%
- Ecoli: 23%
- MRSA: 6%
- Pseudo: 6%
- Strep: 6%
- Acinetobacter: 6%
- VRE: 6%
- KLEB: 18%
- ENTRACOC: 23%
- ECOLI: 23%
- MRSA: 6%
- PSEUDO: 6%
- STREP: 6%
- ACINETOBACTER: 6%
- VRE: 6%

#AVASM18
In 2015, there were infections with SESD at 0.44% and infections with AESD at 1.47%.
Infections with SESD: 0.33%
Infections with AESD: 1.40%

2016
Infections with SESD: 0.77%
Infections with AESD: 1.97%

2017

Legend:
- SESD
- Infections with SESD
- AESD
- Infections with AESD
3 Year Total

- SESD: 0.51%
- AESD: 1.59%

#AVASM18
CLABSI per 100 Securement Devices

Relative Risk Reduction

- 2015: SESD rate/100 devices -0.44
- 2016: AESD rate/100 devices -0.50
- 2017: AESD rate/100 devices -0.49
- 3 Year Mean: AESD rate/100 devices -0.48

#AVASM18
In Conclusion

• SESD does not increase chance of CLABSI...all indications (Relative Risk) is that it decreases!

• SESD has become international recognized as a patient centered securement

• Securement device will continue to evolve... but so must we!

• The risk of having a CLABSI with an SESD is consistently about half as much for a Subcutaneous device as it is with an Adhesive securement device.