

# Preventing CLABSI

The Relationship between Insertion,  
Products and Care and Maintenance:

The Jamboree

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Jack LeDonne MD, VA-BC, FACS



# Disclosures

Dr. LeDonne

Eloquest

Ethicon

BD

Covalon

Teleflex (video license)

PICC Excellence

Chellie Devries



Speaker's Bureau/Advisory Board: Baxter, B Braun, Becton Dickinson, Eloquest, Ethicon, ICU Medical, Kurin, Teleflex, 3M



Senior Adjunct Research Fellow: AVATAR, Griffith University



Administrator and Moderator: Vascular Access and Infusion Specialists Facebook Group



AVA: President/National, Co-president/HoosierVAN

So, you want **0** CLABSIs...

Fact: we are inserting  
Directly into the **blood stream**  
**Plastic Tubes** thru bacteria-  
laden skin  
Immunocompromised pts

Active **Infections**

Optimal Outcome  
Optimal Process

We can't "fix"  
in 50 min...

# What is the Goal?

Standardizing Practice at the  
Highest Level because we work on Human Beings

What's the big deal on  
Standardizing Practice?

Eliminates Unnecessary Variation

Sustainability



# Life Cycle of a CVC: Standardizing Practice...at



Chain of **CLABSI** Prevention

**Assessment**

**“Pre-Insertion”**

**Actual Insertion**

**Dressing  
C&M**

**Removal**

# Life Cycle of a CVC: Standardizing Practice...at

CDC, IHI, Keystone  
Insertion Bundle

Assessment

“Pre-Insertion”

Actual Insertion

Dressing  
C&M

Removal

Hand Hygiene → Drapes



# Insertion Bundle (rewrite)

Hand Hygiene	30 sec
Chlorhexidine	30 sec
Maximum Barrier	30 sec
• Daily Review of Necessity	30 sec
• Avoid the Groin Site	0 sec
	<hr/>
	90 sec



# Mid Thigh Femoral (Jack 28 sec)

14cm INFERIOR TO GROIN



What **else** can we do?  
(beside the **bundle**,  
**national standard**)

the **lament** of **IC** practitioner



We can **insert** the **catheters** properly



We can **dress** them **properly**



We can get out of our **silos**

We can **care** for them **properly**





At what point is a **CLABSI**  
no longer attributed to **Insertion** but  
instead to **C&M**?

2 Days?

4-5 Days?

7 Days?

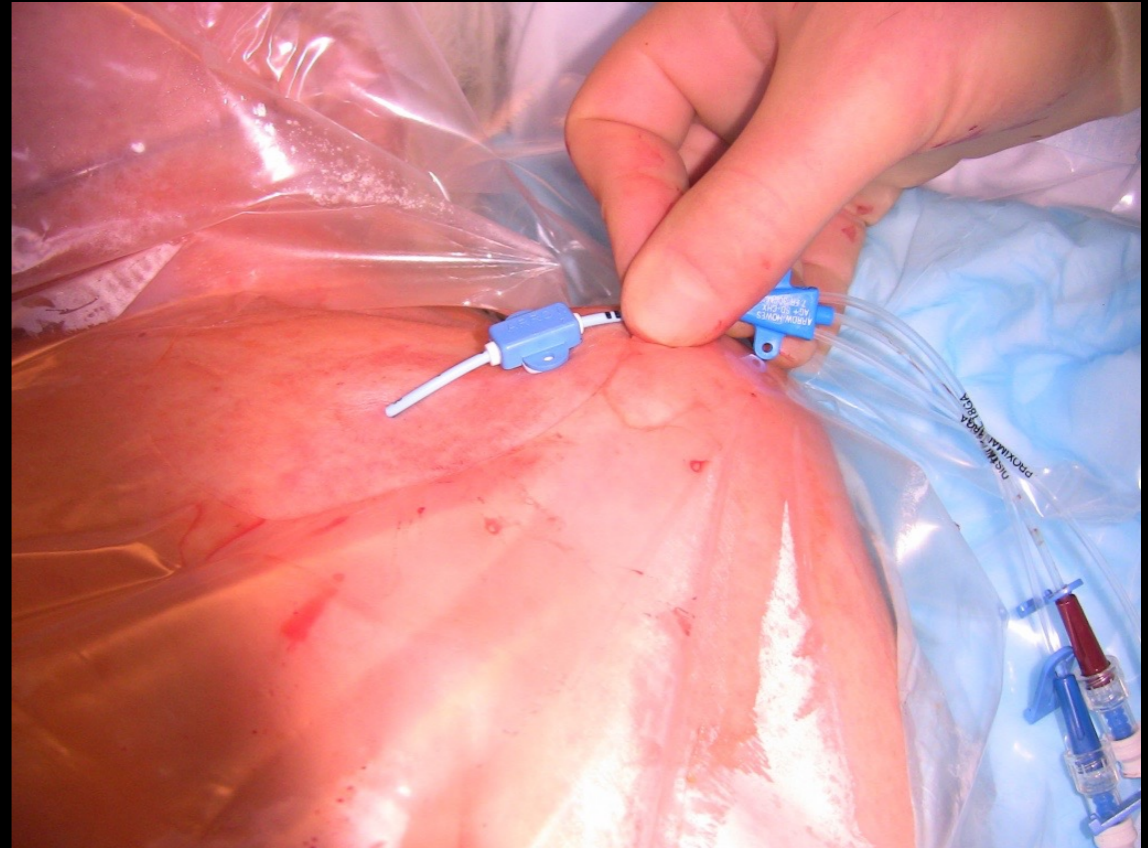
Only if the **dressing**  
has stayed **intact...**

Otherwise, the **Insertion** may be  
the cause **far longer** than 7 days





Suppose you performed  
**Insertion** perfectly



and **C&M** (99%) perfectly

...and a pt developed **CLABSI**

What is the **name** for that?

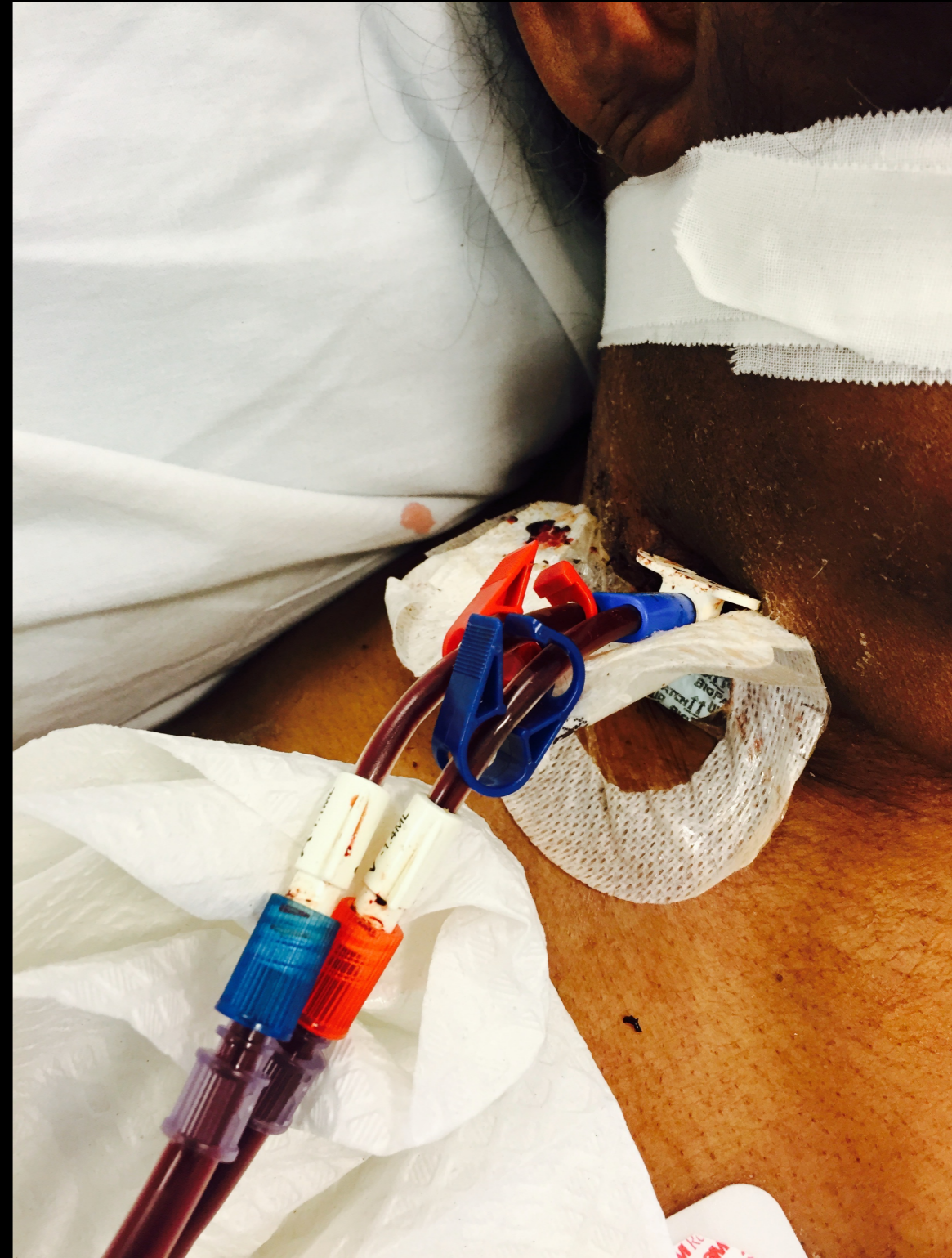




Suppose that you did not perform **Insertion** and **C&M** perfectly

...and the patient developed **CLABSI**

What is the **name** for that?





# Using a Comprehensive On-Site Assessment Process to Reduce Central Line-Associated Bloodstream Infection Rates

Rebecca Bartles, DrPH, MPH, CIC, FAPIC • Andria Moore, MN, RN, CPHQ, CCRN-K •  
Rosemary Martin, ASCP (M)CM, CLSSBB, CIC • Rebecca Clarkson, RN, MSN, CIC •  
Laura Ebinger, CIC

## ABSTRACT

Central line-associated bloodstream infection (CLABSI) rates increased substantially in the United States following the emergence of COVID-19 and subsequent surges. The pandemic resulted in hospital capacities being exceeded and crisis standards of care being implemented for sustained periods. As COVID-19 rates in the United States began to stabilize, some facilities did not return to previous CLABSI rates, indicating a change in practices that had a longer-term impact on CLABSI prevention. The authors' large health care system observed similar increases in CLABSI following the emergence of COVID-19, prompting investigation and intervention in the form of a quality improvement project. To identify changes related to ongoing increases in CLABSI, an assessment team conducted standardized on-site assessments at 11 facilities. Site assessments were considered an intervention, as they involved

DOI: 10.1097/NAN.0000000000000512



# Targeted Data Elements for Case Review

- **Demographics**

- Case reviewer name
- MRN
- Name
- Sex
- Age
- Deceased (yes or no)
- COVID-19 status
- Attributable unit
- Date of admission
- Date of event

- **Patient hygiene**

- Number of days bathing was not documented in the 7 days prior to the date of event
- Number of days CHG skin treatment was not documented in the 7 days prior to the date of event
- Did the patient have diarrhea in the 72 hours prior to the date of event?
- Was the patient prone in the 72 hours prior to the date of event?

- **Vascular access data** (complete for each line in place in the 72 hours prior to event)

- Days from insertion to event (insertion is day 1)
- Was line present on admission?
- Central line date of insertion
- Central line type
- Central line insertion site
- Was line insertion emergent?
- Where was the line inserted?
- Was the CLIP form used?
- Name and role of line inserter
- Line insertion indication
- Was indication valid at time of insertion?
- Was indication valid at time of infection?
- Number of PIVCs in place in the 48 hours prior to date of event?
- Was an art line in place in the 48 hours prior to date of event?
- Was trouble flushing documented in the 7 days prior to the date of event?
- Was inflammation or signs of infection at the insertion site documented in the 7 days prior to the date of event?

# All of these Factors are not Equal

Suppose you **fix** these things,  
but you didn't "**fix**" insertion

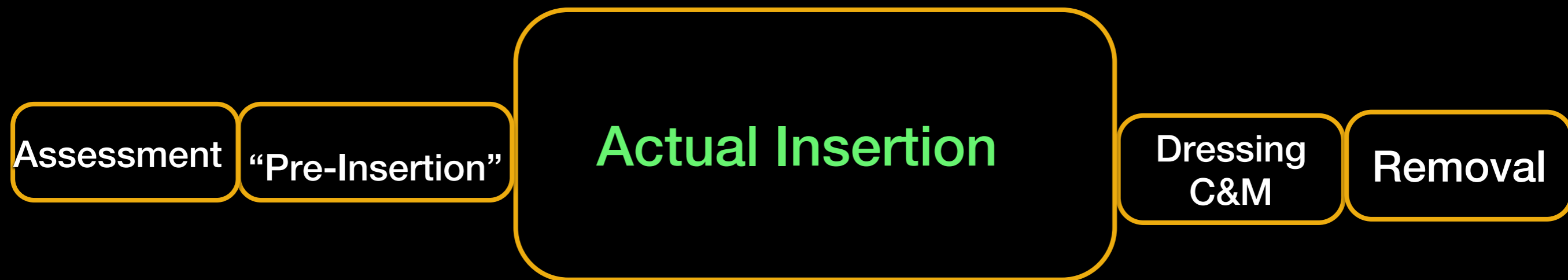
If you want to improve **CLABSI**  
(and **VA** in general)...

**Fix Insertion First**



# Life Cycle of a CVC: Standardizing Practice...at

“Insert Catheters Properly”  
16 Recs



Drapes → Dressing

Figure out what are the “best practices”, then do them



# 16 Recommendations

1. NMBS
2. Where to insert?
3. Flat Surface
4. Axillary Vein
5. Micropuncture
6. No Incision
7. No Hubbing
8. CHG Sponge
9. Sutureless Securement
10. Dressing Adhesive
11. Side of Bed
12. Low Cervical IJV
13. Rotate Down
14. Tip Location
15. Intraosseous
16. Femoral

## SHEA/IDSA/APIC Practice Recommendation

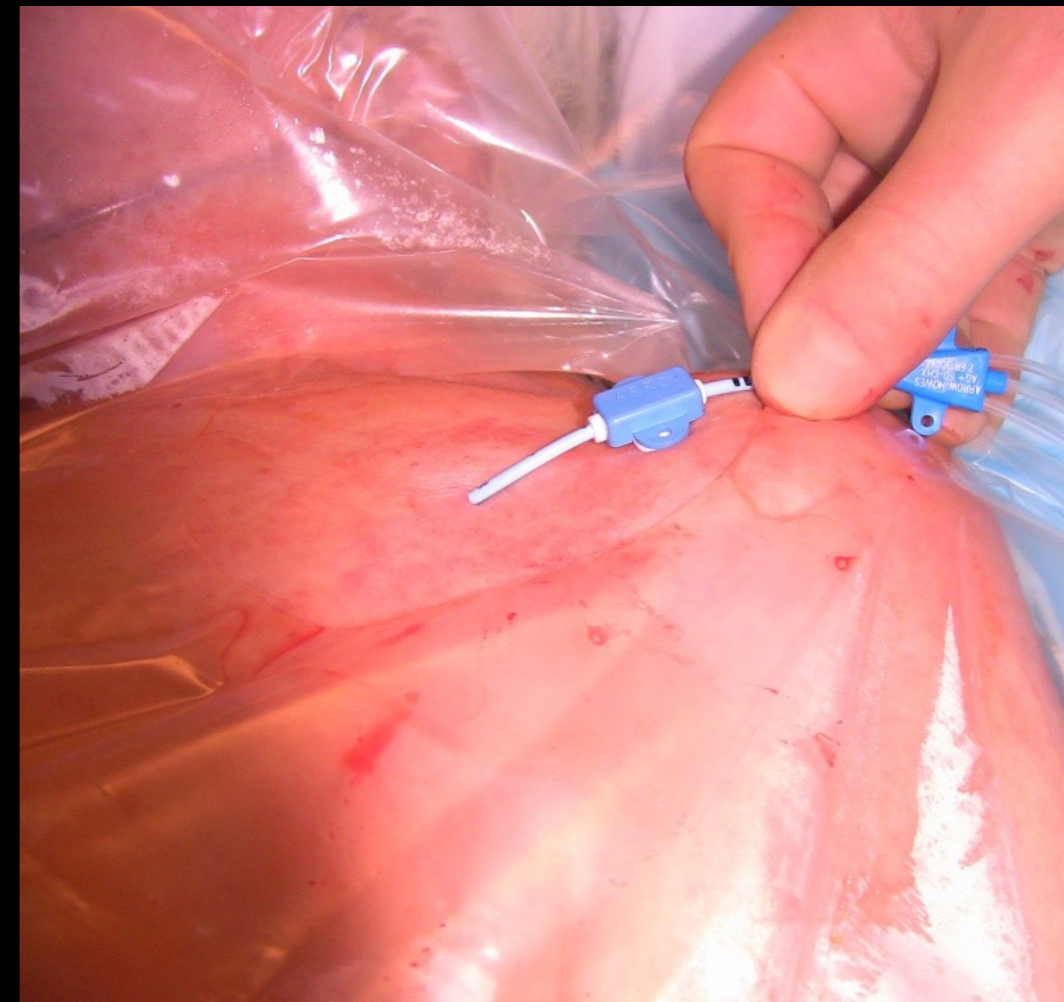
# Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update

Niccolò Buetti MD, MSc, PhD<sup>1,2,a</sup> , Jonas Marschall MD, MSc<sup>3,4,a</sup> , Marci Drees MD, MS<sup>5,6</sup> ,  
Mohamad G. Fakh MD, MPH<sup>7</sup> , Lynn Hadaway MEd, RN, NPD-BC, CRNI<sup>8</sup>, Lisa L. Maragakis MD, MPH<sup>9</sup>,  
Elizabeth Monsees PhD, MBA, RN, CIC<sup>10,11</sup> , Shannon Novosad MD MPH<sup>12</sup>, Naomi P. O'Grady MD<sup>13</sup>,  
Mark E. Rupp MD<sup>14</sup> , Joshua Wolf MBBS, PhD, FRACP<sup>15,16</sup> , Deborah Yokoe MD, MPH<sup>17</sup> and  
Leonard A. Mermel DO, ScM<sup>18,19</sup> 

**SCV** is the **Preferable Site** for CVC  
in ICU to **Reduce** Infections

Previously (2014), the primary rec  
was to **avoid femoral**

This rec has been replaced by a  
**positively formulated** rec regarding **SCV**





# Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011

Naomi P. O'Grady, M.D.<sup>1</sup>, Mary Alexander, R.N.<sup>2</sup>, Lillian A. Burns, M.T., M.P.H., C.I.C.<sup>3</sup>, E. Patchen Dellinger, M.D.<sup>4</sup>, Jeffery Garland, M.D., S.M.<sup>5</sup>, Stephen O. Heard, M.D.<sup>6</sup>, Pamela A. Lipsett, M.D.<sup>7</sup>, Henry Masur, M.D.<sup>1</sup>, Leonard A. Mermel, D.O., Sc.M.<sup>8</sup>, Michele L. Pearson, M.D.<sup>9</sup>, Issam I. Raad, M.D.<sup>10</sup>, Adrienne Randolph, M.D., M.Sc.<sup>11</sup>, Mark E. Rupp, M.D.<sup>12</sup>, Sanjay Saint, M.D., M.P.H.<sup>13</sup> and the Healthcare Infection Control Practices Advisory Committee (HICPAC)<sup>14</sup>.

□

□

# Insertion Site Procedure - Subclavian Access

3. Use a **subclavian site**, rather than a jugular or a femoral site, in adult patients to minimize infection risk for nontunneled CVC placement [50-52]. Category 1B

7. Use **ultrasound guidance** to place central venous catheters (if this technology is available) to reduce the number of cannulation attempts and mechanical complications. Ultrasound guidance should only be used by those fully trained in its techniques. [60-64]. Category 1B

3. Subclavian + 7. Ultrasound = **Axillary Vein**

## Guidelines for the Prevention of Intravascular Catheter-Related Infections

### Central Venous Catheters Recommendations

1. Weigh the risks and benefits of placing a central venous device at a recommended site to reduce infectious complications against the risk for mechanical complications (e.g., pneumothorax, subclavian artery puncture, subclavian vein laceration, subclavian vein stenosis, hemothorax, thrombosis, air embolism, and catheter misplacement) [37–53]. Category IA
2. Avoid using the femoral vein for central venous access in adult patients [38, 50, 51, 54]. Category 1A
3. Use a subclavian site, rather than a jugular or a femoral site, in adult patients to minimize infection risk for nontunneled CVC placement [50–52]. Category IB
4. No recommendation can be made for a preferred site of insertion to minimize infection risk for a tunneled CVC. Unresolved issue
5. Avoid the subclavian site in hemodialysis patients and patients with advanced kidney disease, to avoid subclavian vein stenosis [53, 55–58]. Category IA
6. Use a fistula or graft in patients with chronic renal failure instead of a CVC for permanent access for dialysis [59]. Category 1A
7. Use ultrasound guidance to place central venous catheters (if this technology is available) to reduce the number of cannulation attempts and mechanical complications. Ultrasound guidance should only be used by those fully trained in its technique. [60–64]. Category 1B
8. Use a CVC with the minimum number of ports or lumens essential for the management of the patient [65–68]. Category IB
9. No recommendation can be made regarding the use of a designated lumen for parenteral nutrition. Unresolved issue
10. Promptly remove any intravascular catheter that is no longer essential [69–72]. Category IA



# Flap/Satfische, eMifferehMedtion



What antimicrobial products...?

All of the products...  
Would u consider that to be Optimal VA?



# Agreement: Optimal Location for Dressing is the Chest

Editorial

**JVA** | The Journal of  
Vascular Access

## The SIC protocol: A seven-step strategy to minimize complications potentially related to the insertion of centrally inserted central catheters

The Journal of Vascular Access

1-6

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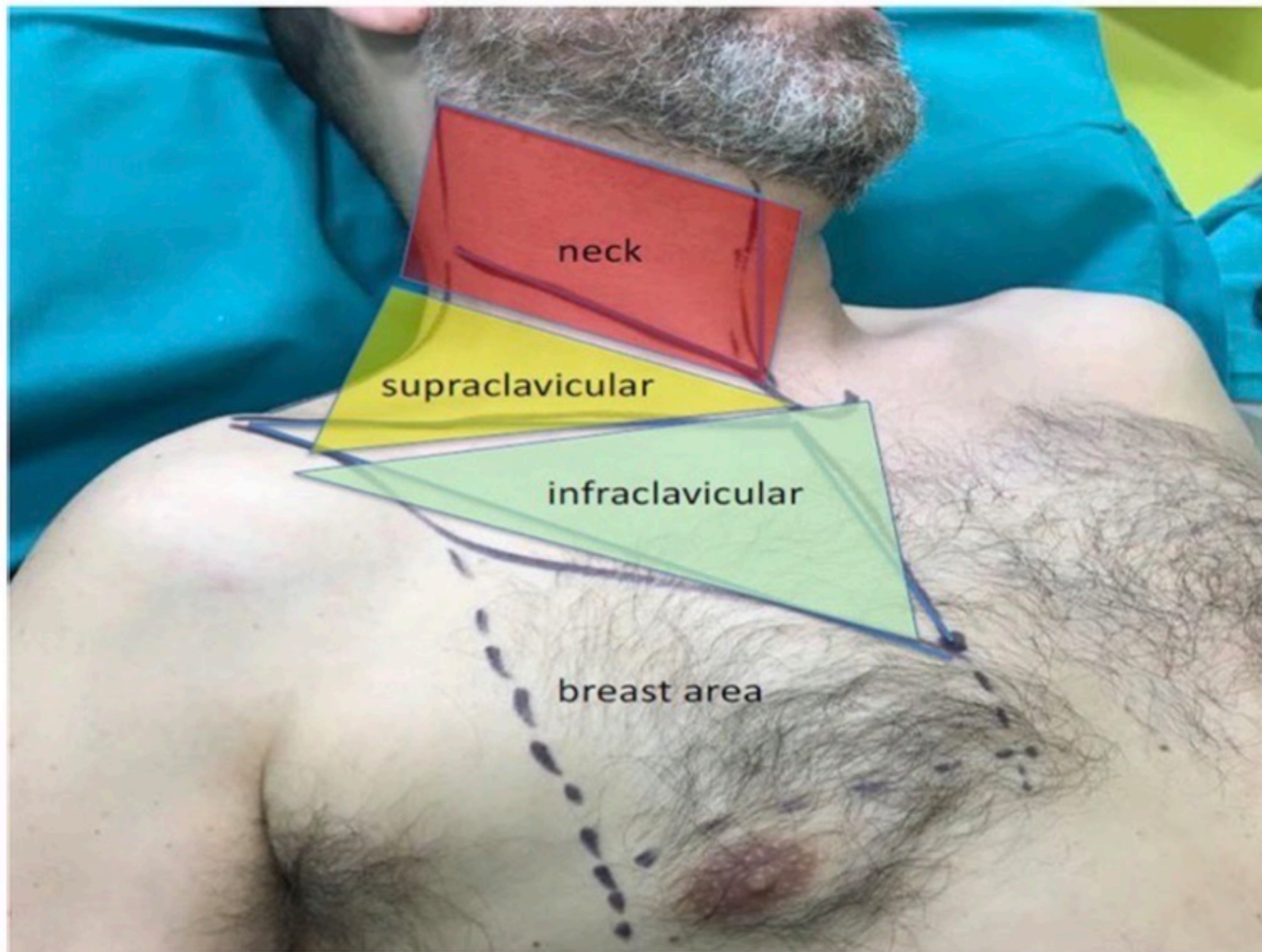
[journals.sagepub.com/home/jva](https://journals.sagepub.com/home/jva)

 SAGE

Fabrizio Brescia<sup>1</sup> , Mauro Pittiruti<sup>2</sup> , Matthew Ostroff<sup>3</sup> ,  
Timothy R Spencer<sup>4</sup>  and Robert B Dawson<sup>5</sup>

Exit Site and Dressing

# Optimal Location for Dressing is the **Chest**

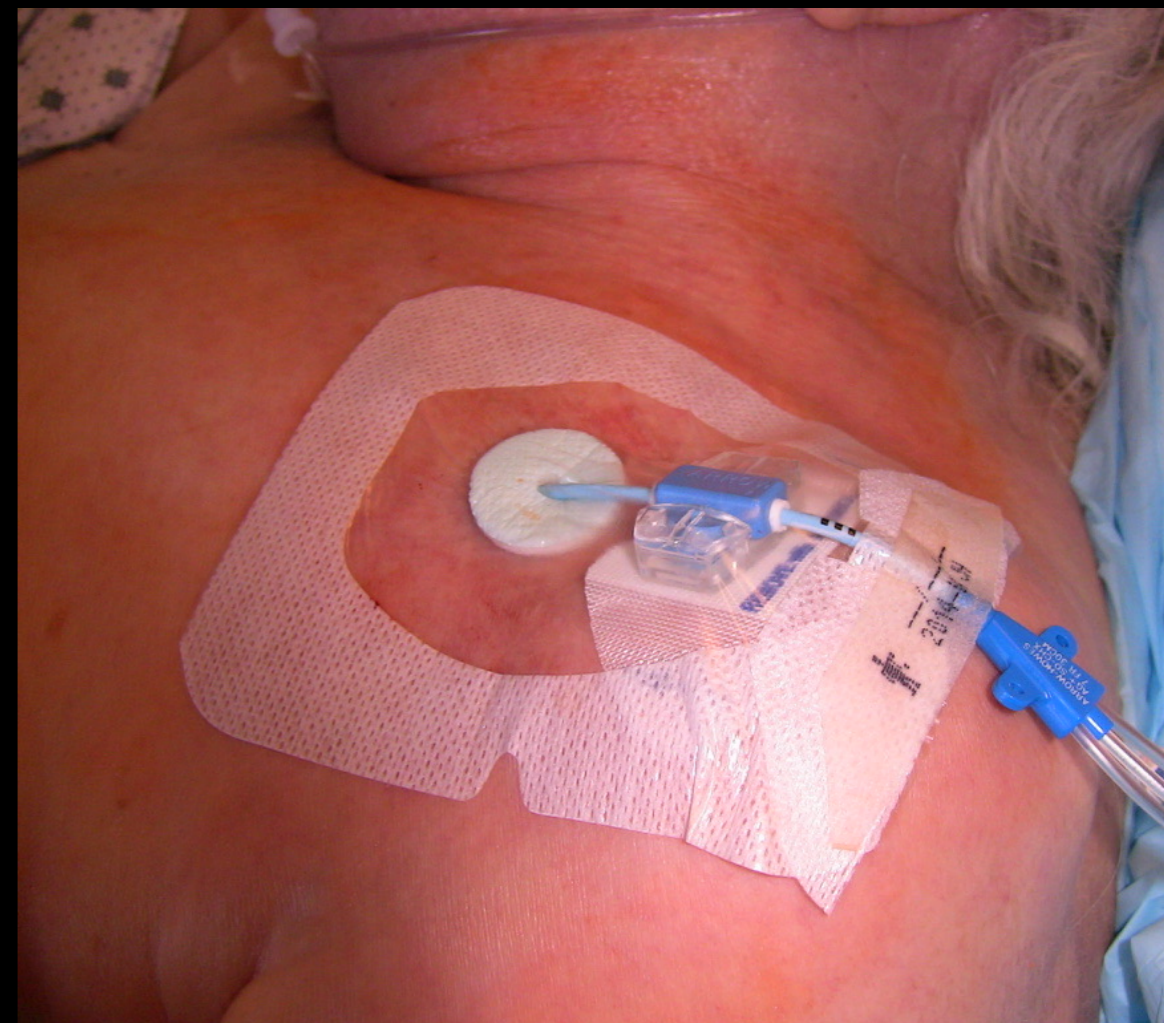


**Figure I.** Central Zone Insertion Method.



# Why?

What is the **Mechanism** that causes the **Chest** to be the **Preferred Site**





# 3 Ways to Achieve a Dressing on Chest

1. Direct Insertion  
**Axillary Vein**

2. **IJV** (low) and  
Rotate **Down**

3. **IJV Tunnel** to Chest





# 3 Ways to Achieve a Dressing on Chest

1. Direct Insertion  
**Axillary Vein**

2. Percutaneous **IJV**

3. **IJV Tunnel** to Chest

1&3 are **Standardized**





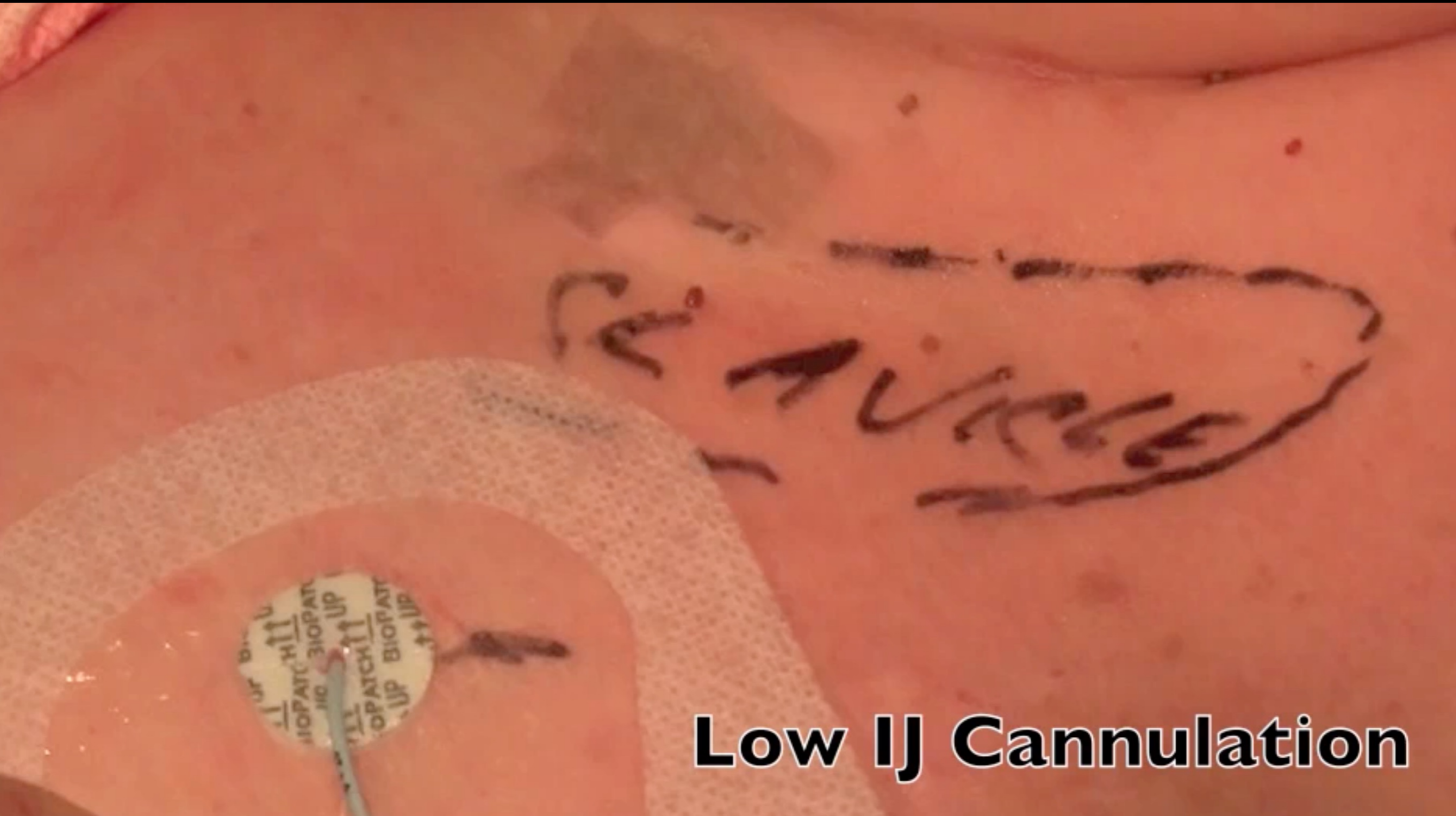
# Overhead View



**Right Axillary Vein**  
Delto-pectoral Groove



# Optimal Location for Dressing is the **Chest. #3**



**Low IJ Cannulation**

# Dressing on the Chest: 3 Ways

## 3. Bedside Tunneled RIJ Sutureless, Dressing Adhesive





# IJV Catheter & Dressing as a Unit

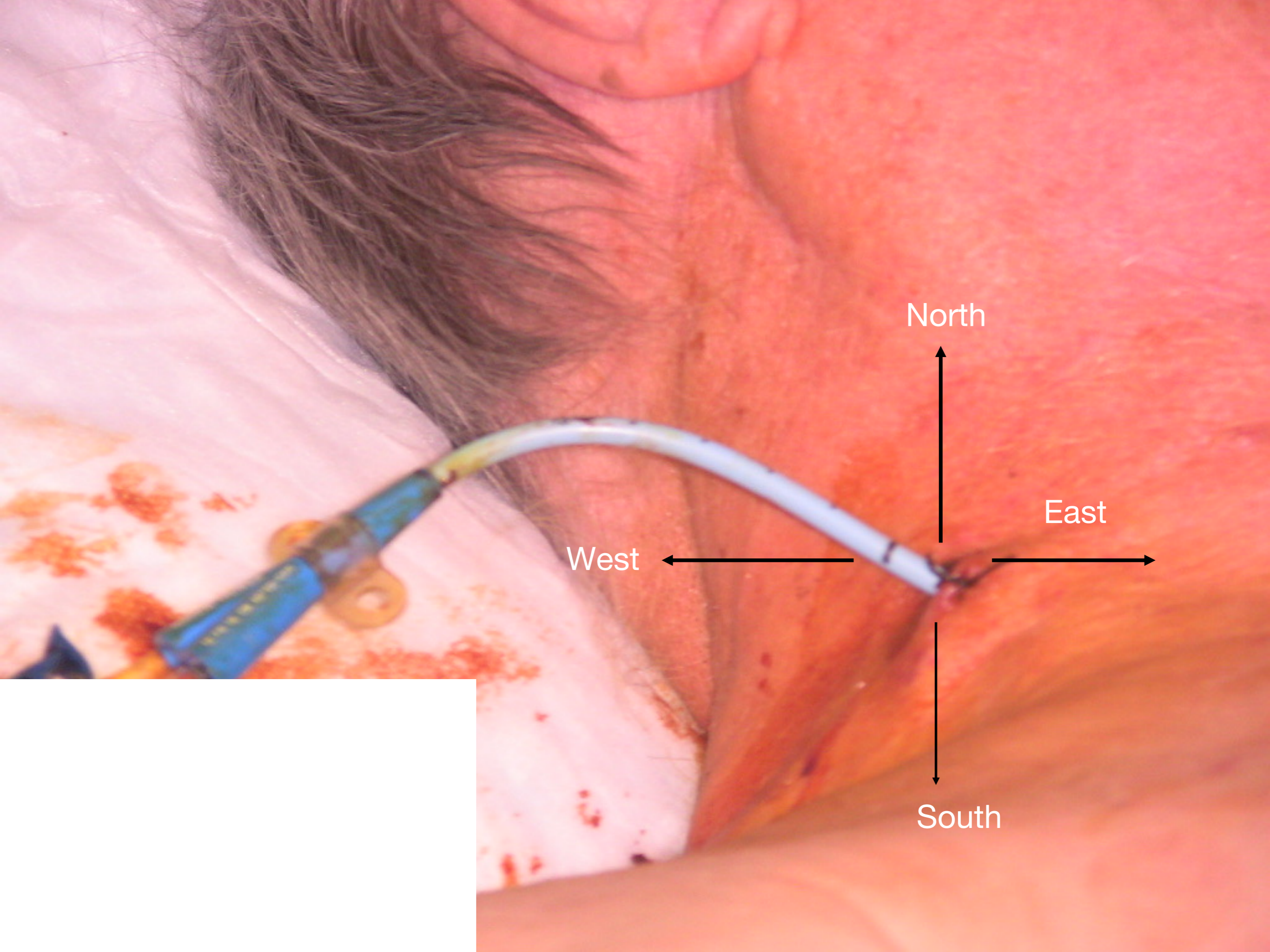


**Catheter Must Exit from Dressing**









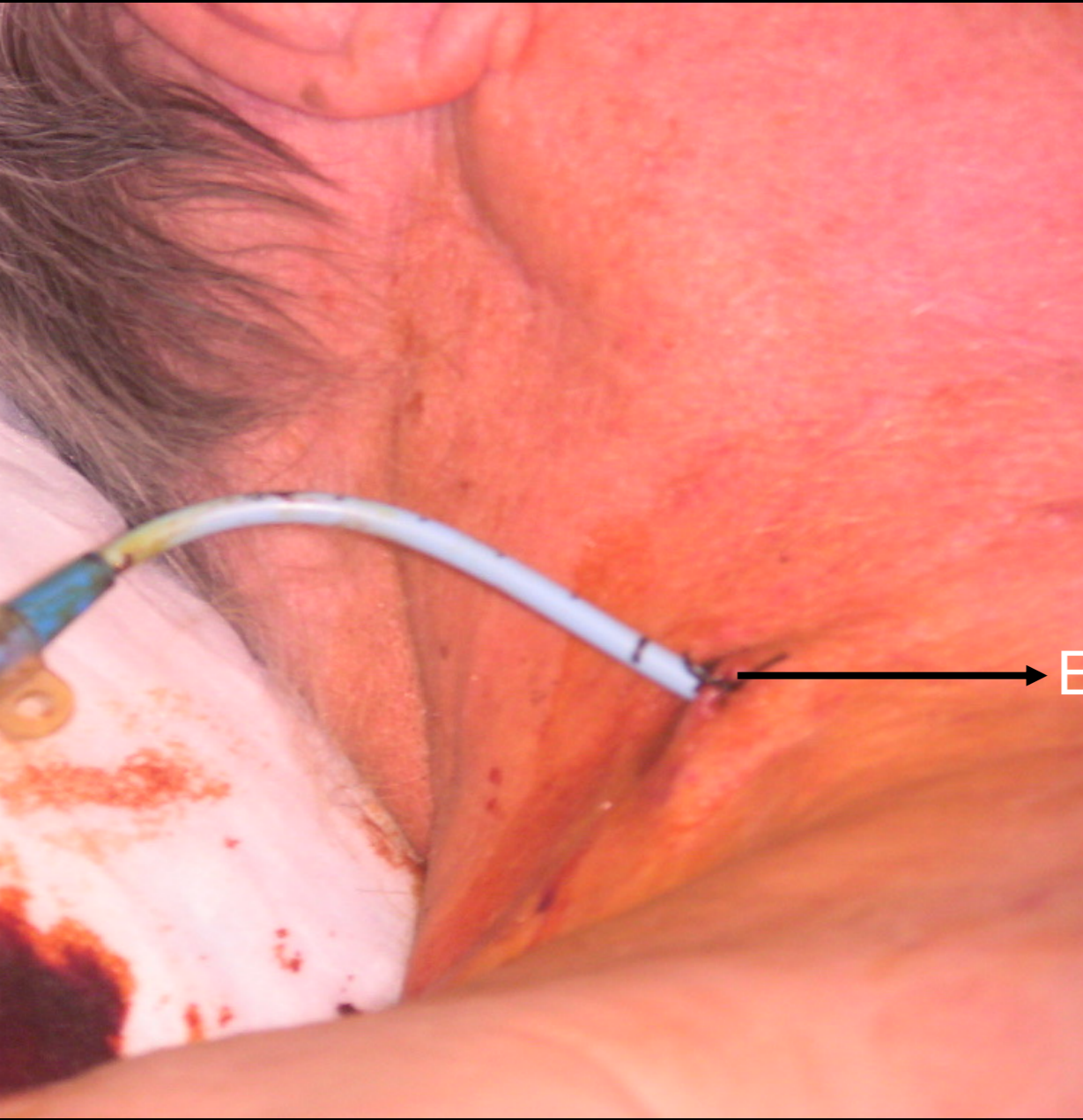
North

East

West

South

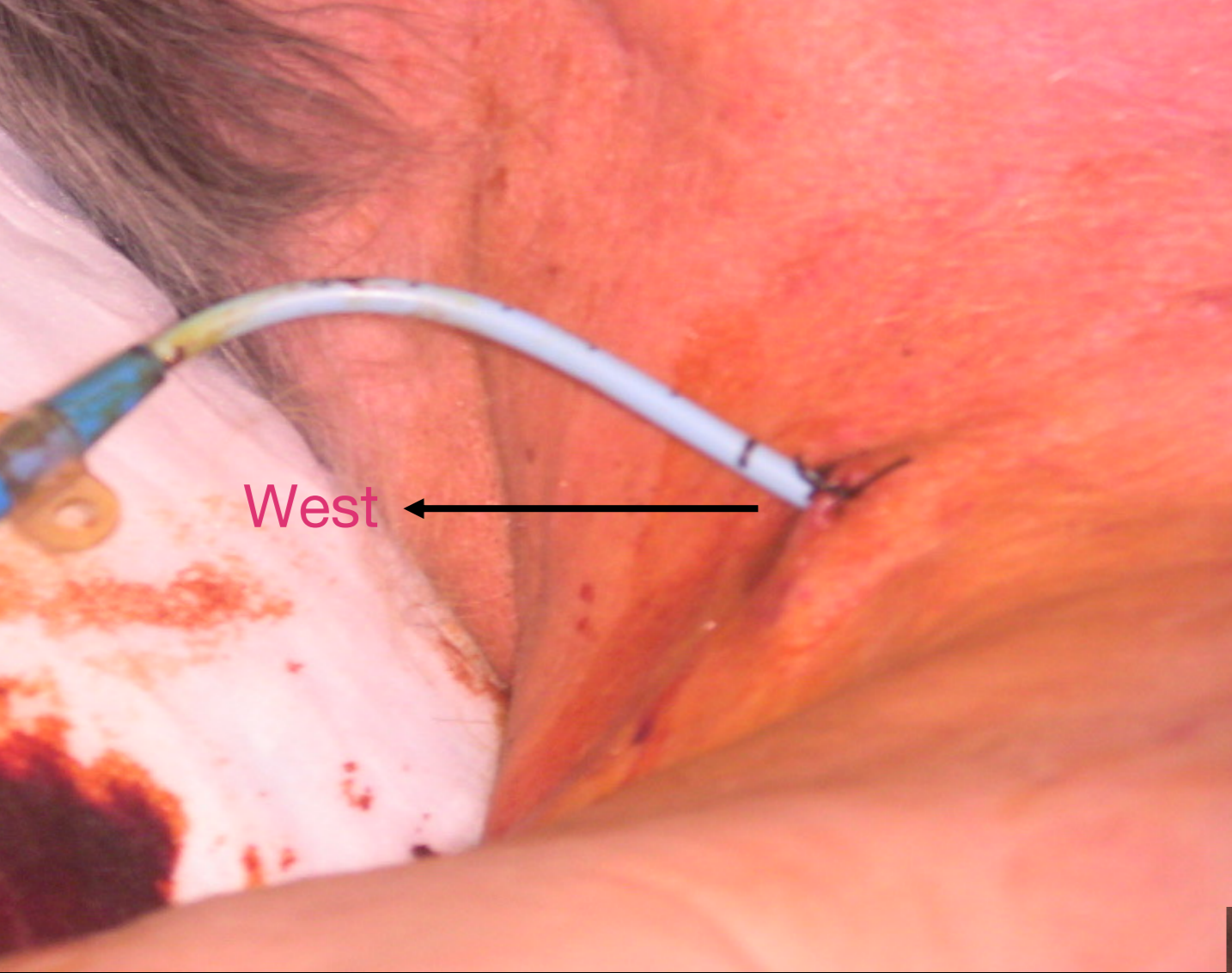




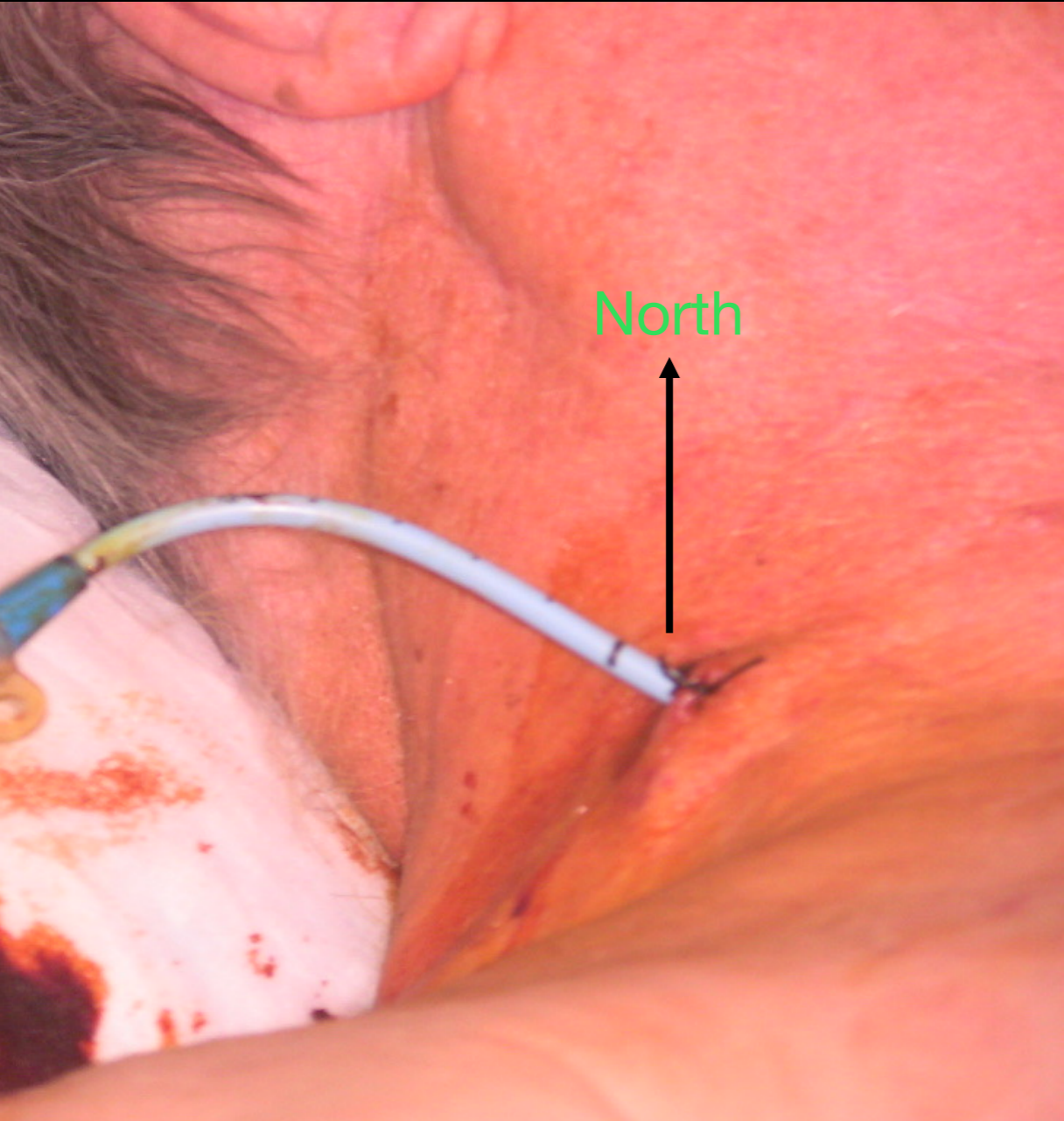
East



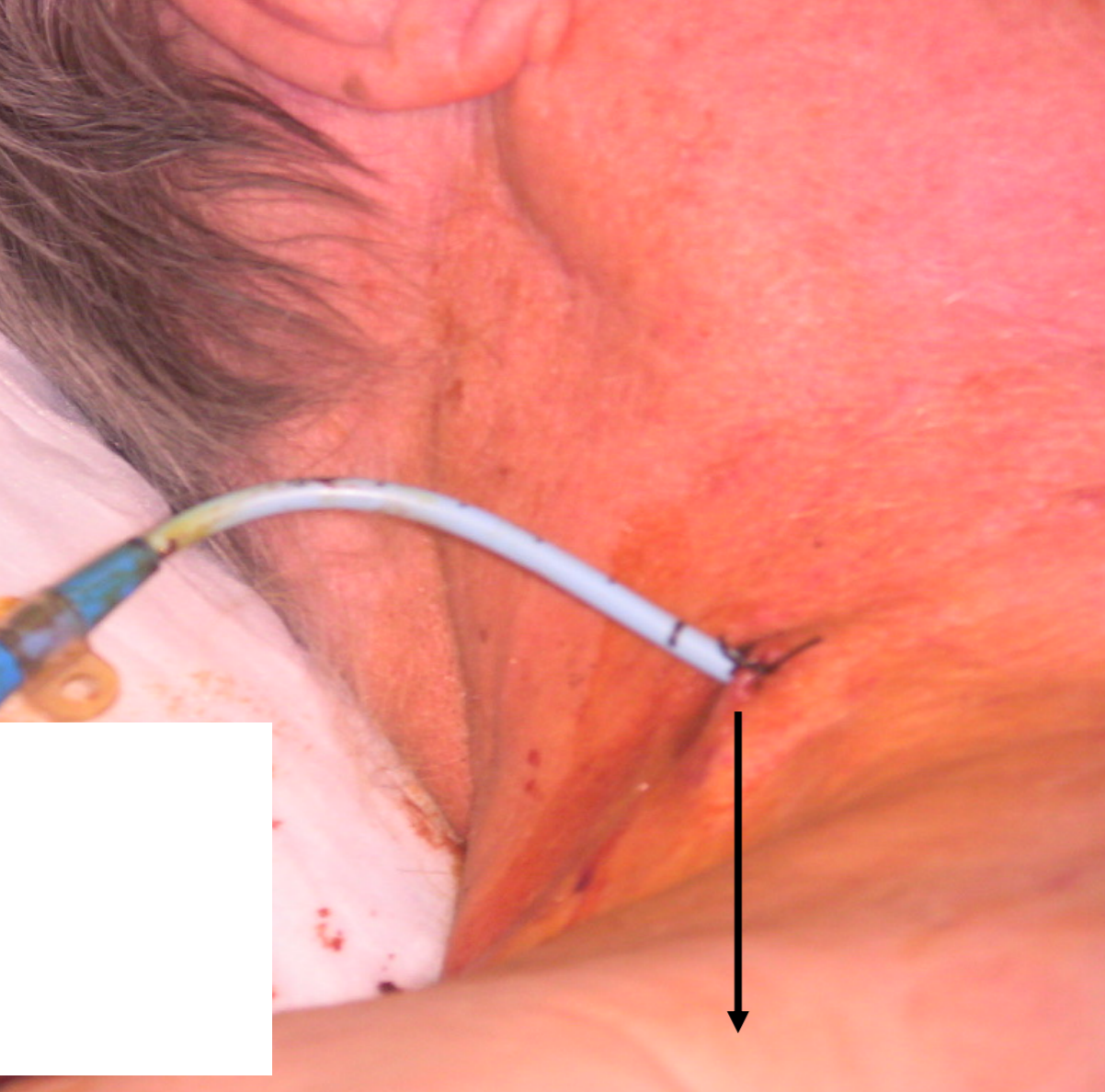




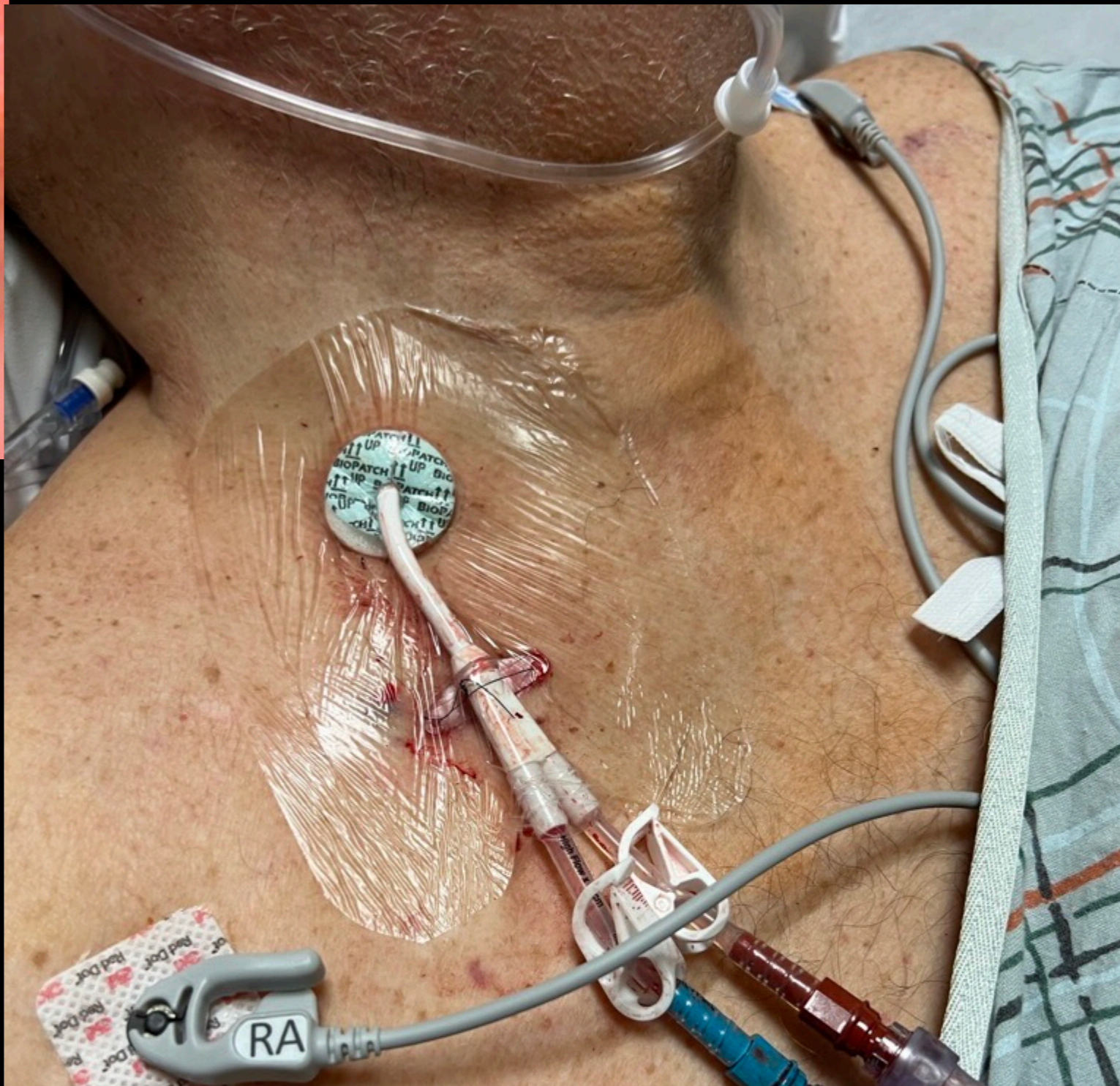








South





# What is the Goal?

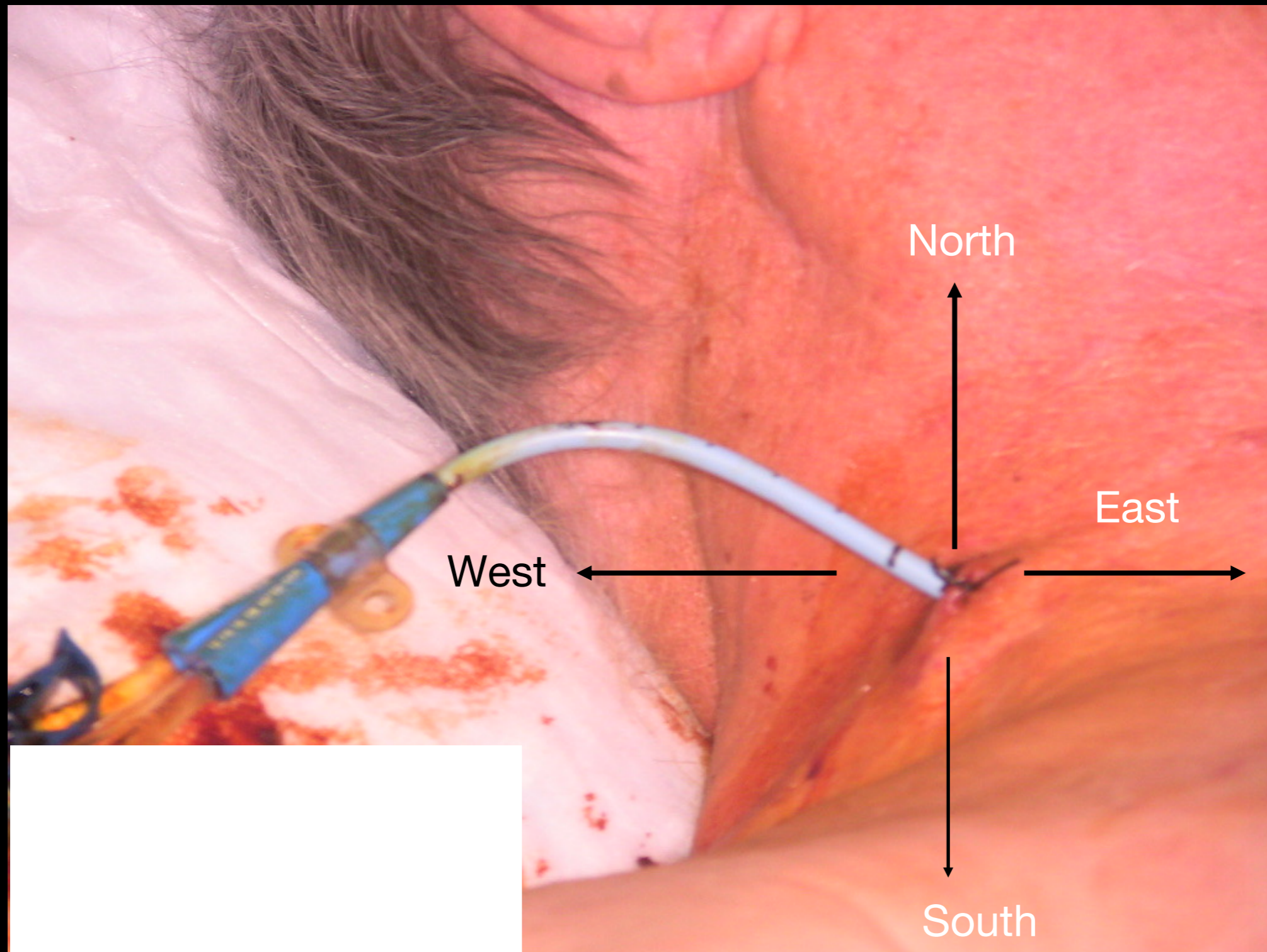
Standardizing Practice at the  
Highest Level because we work on Human Beings

Eliminates Unnecessary Variation

Sustainability

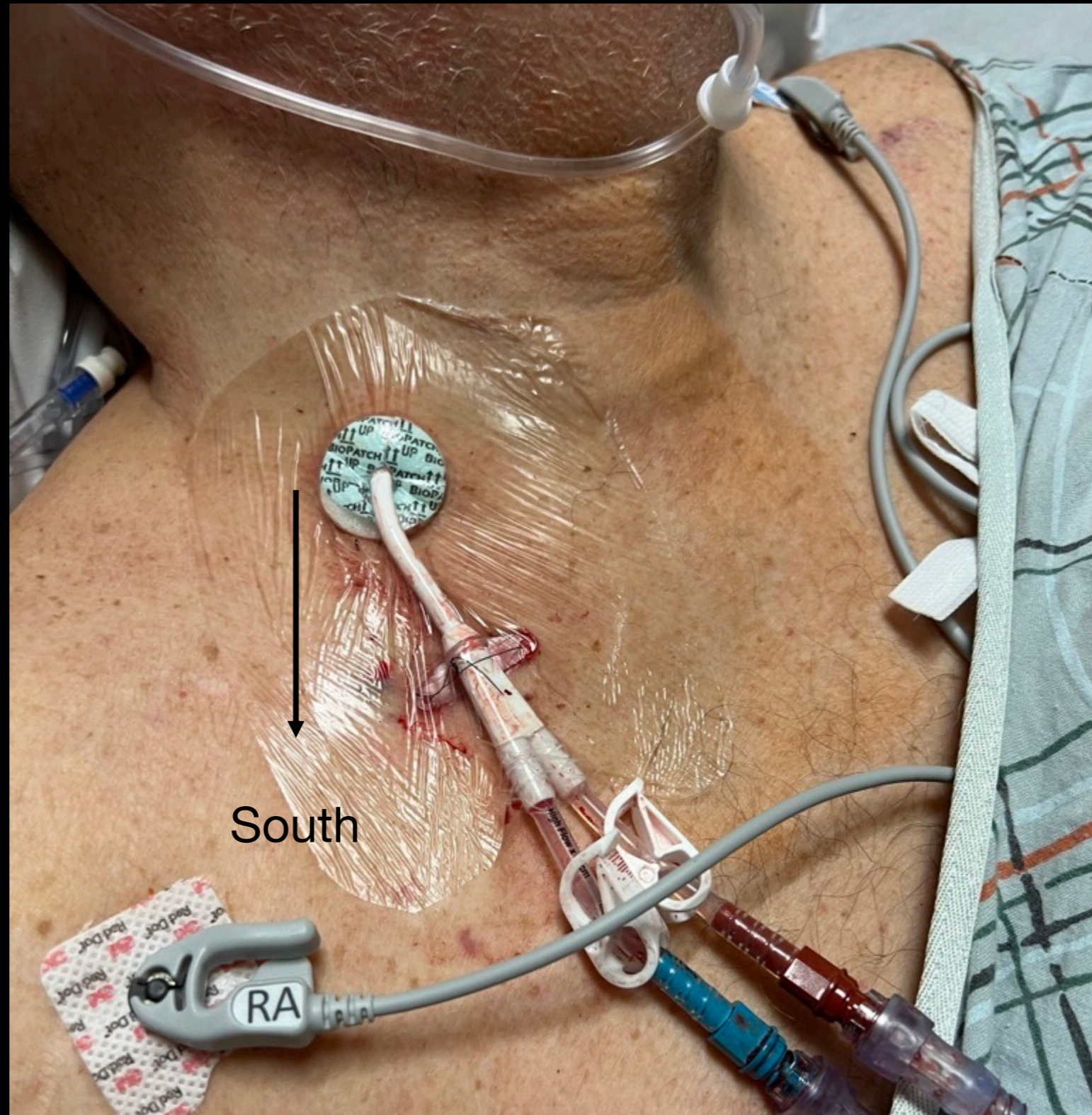


# Which Configuration Standardizes Practice at the Highest level?





# South





In **Contradistinction** to the **IJV**,  
the **AXV** is **Standardized**  
at the **Highest Level**













# Location of Choice Standard of Care?

Infection Control & Hospital Epidemiology (2022), 1–17  
doi:10.1017/ice.2022.87



## SHEA/IDSA/APIC Practice Recommendation

### Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update

Niccolò Buetti MD, MSc, PhD<sup>1,2,a</sup> , Jonas Marschall MD, MSc<sup>3,4,a</sup> , Marci Drees MD, MS<sup>5,6</sup> ,  
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Leonard A. Mermel DO, ScM<sup>18,19</sup> 

REVIEW

Open Access

Expert consensus-based clinical practice guidelines management of intravascular catheters in the intensive care unit



## Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011

Naomi P. O'Grady, M.D.<sup>1</sup>, Mary Alexander, R.N.<sup>2</sup>, Lillian A. Burns, M.T., M.P.H., C.I.C.<sup>3</sup>, E. Patchen Dellinger, M.D.<sup>4</sup>, Jeffery Garland, M.D., S.M.<sup>5</sup>, Stephen O. Heard, M.D.<sup>6</sup>, Pamela M.D.<sup>1</sup>, Leonard A. Mermel, D.O., Sc.M.<sup>8</sup>, Michele L. M.D.<sup>10</sup>, Adrienne Randolph, M.D., M.Sc.<sup>11</sup>, Mark E. Rupp, .H.<sup>13</sup> and the Healthcare Infection Control Practices

Annals of Intensive Care

Based on these **Guidelines**, and the underlying studies...

My considered opinion is..

**US-guided AXV** is the **location of choice** for **IP considerations** (-CKD)

Ask your **MDs**...



# 16 Recommendations

1. NMBS
2. Where to insert?
3. Flat Surface
4. Axillary Vein
5. Micropuncture
6. No Incision
7. No Hubbing
8. CHG Sponge
9. Sutureless Securement
10. Dressing Adhesive
11. Side of Bed
12. Low Cervical IJV
13. Rotate Down
14. Tip Location
15. Intraosseous
16. Femoral

# Rec 13. 2. IJV (low) and Rotate Down

**LIJ Dressing**  
Fold Catheter Down

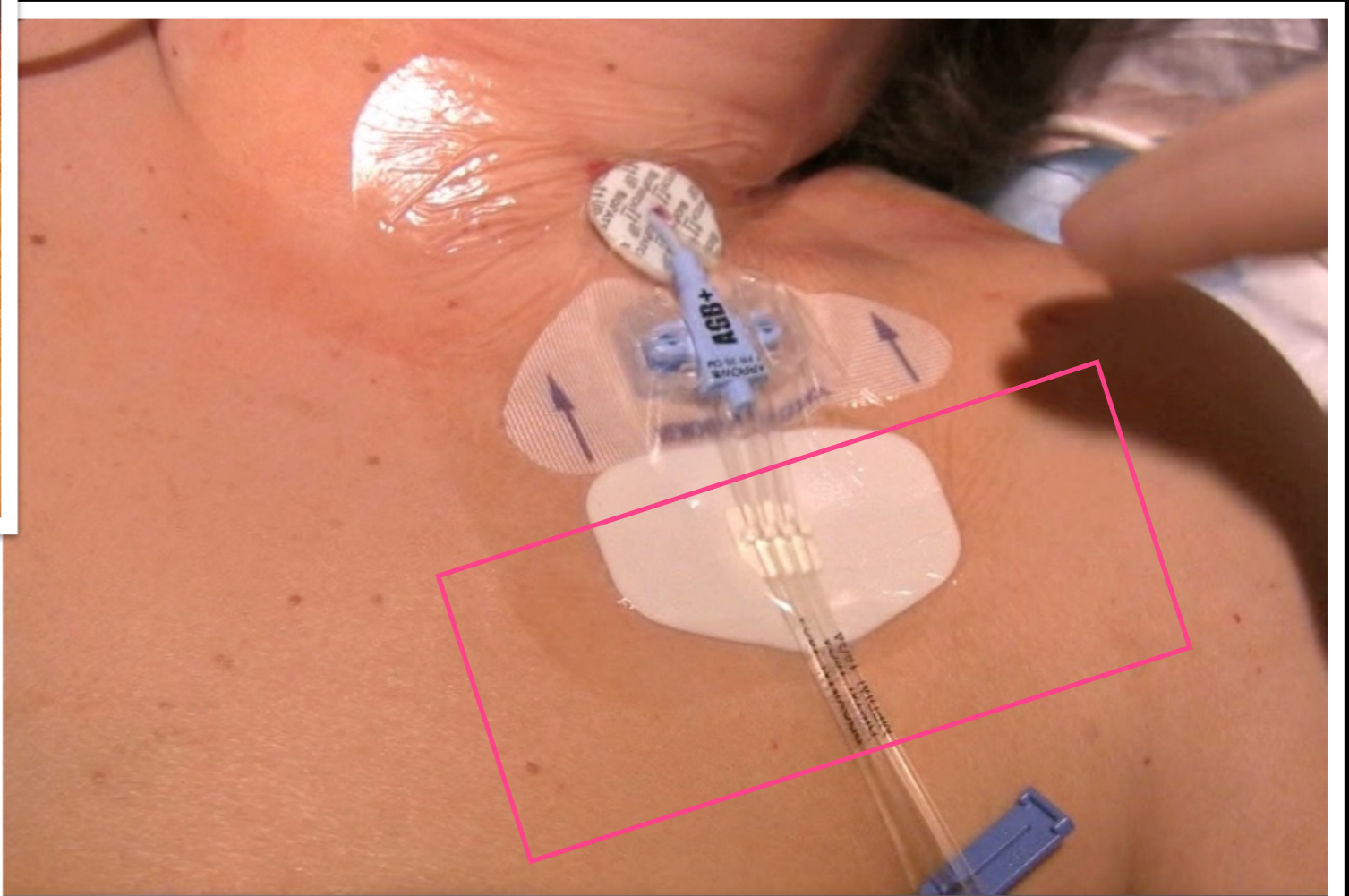
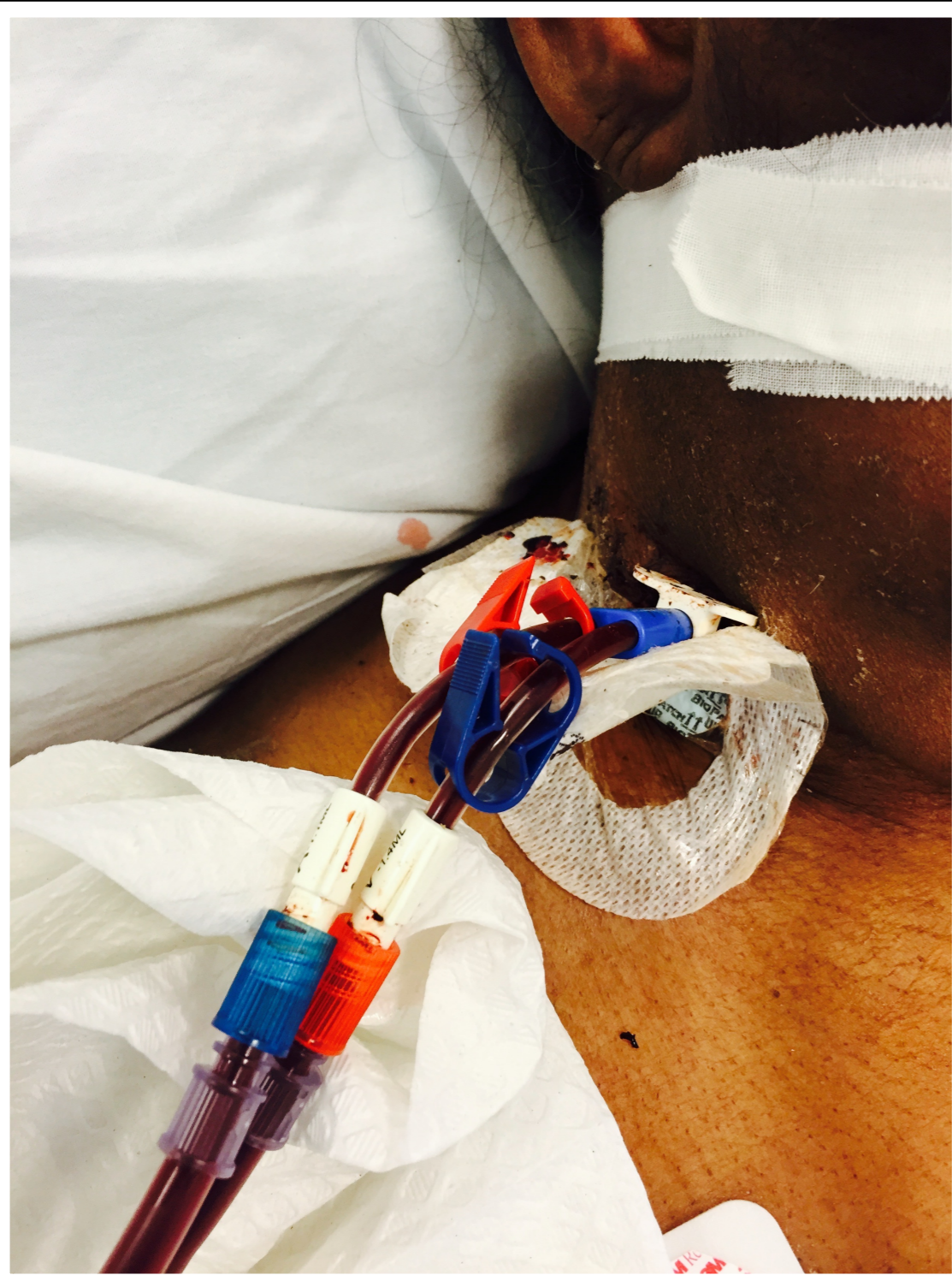


# Gravity

2. “Ask, **why** is the dressing disrupted?”

**Lisa Gorski** RN, J. LeDonne MD

Catheter exits from **Top of Dressing (north)**



# Hospitals under Invested in VA

## 4 Uniform Findings

1. Nobody in Charge of VA

2. QI “always” starts with C&M

3. Many hospitals only have 1 CVAD

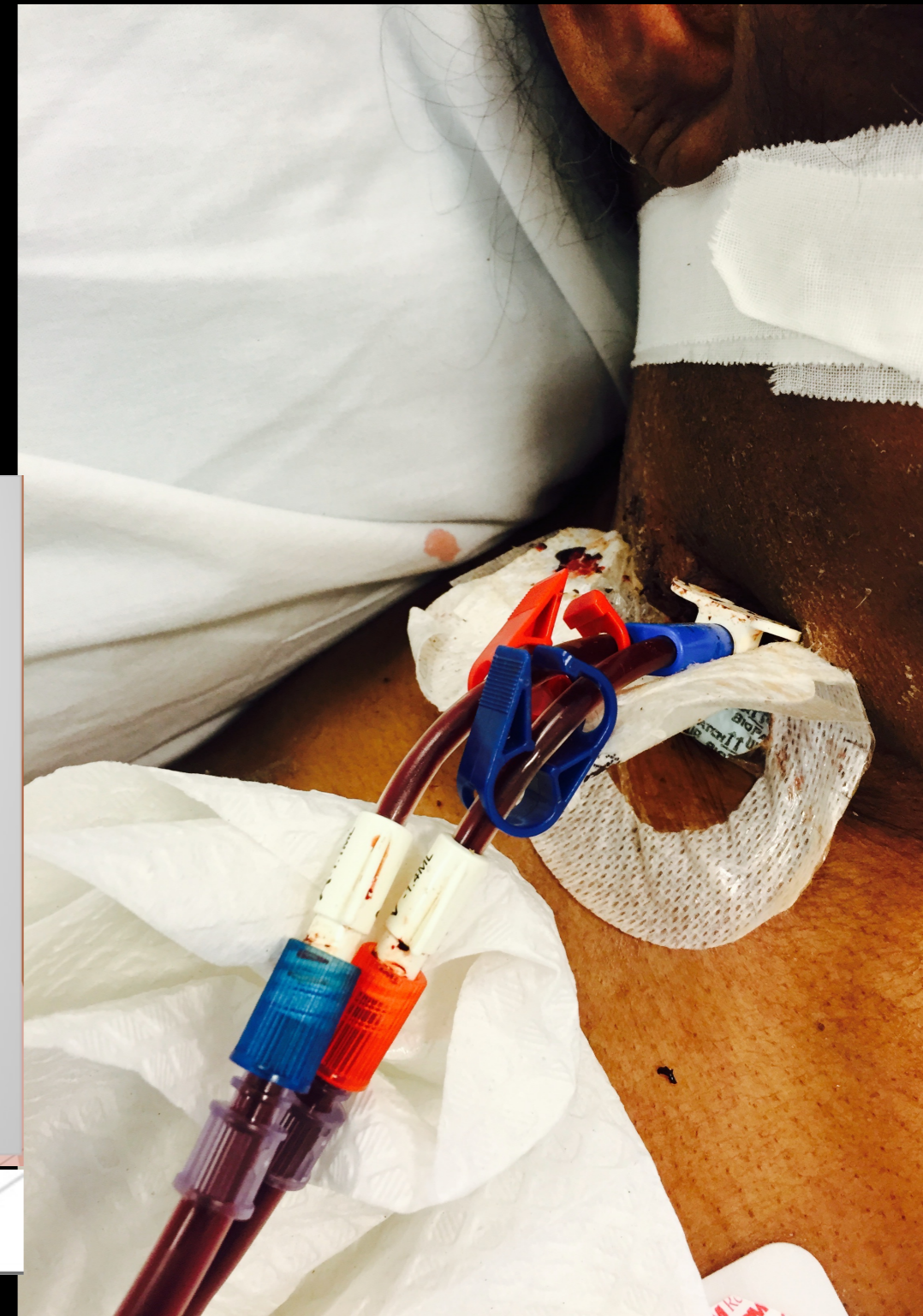
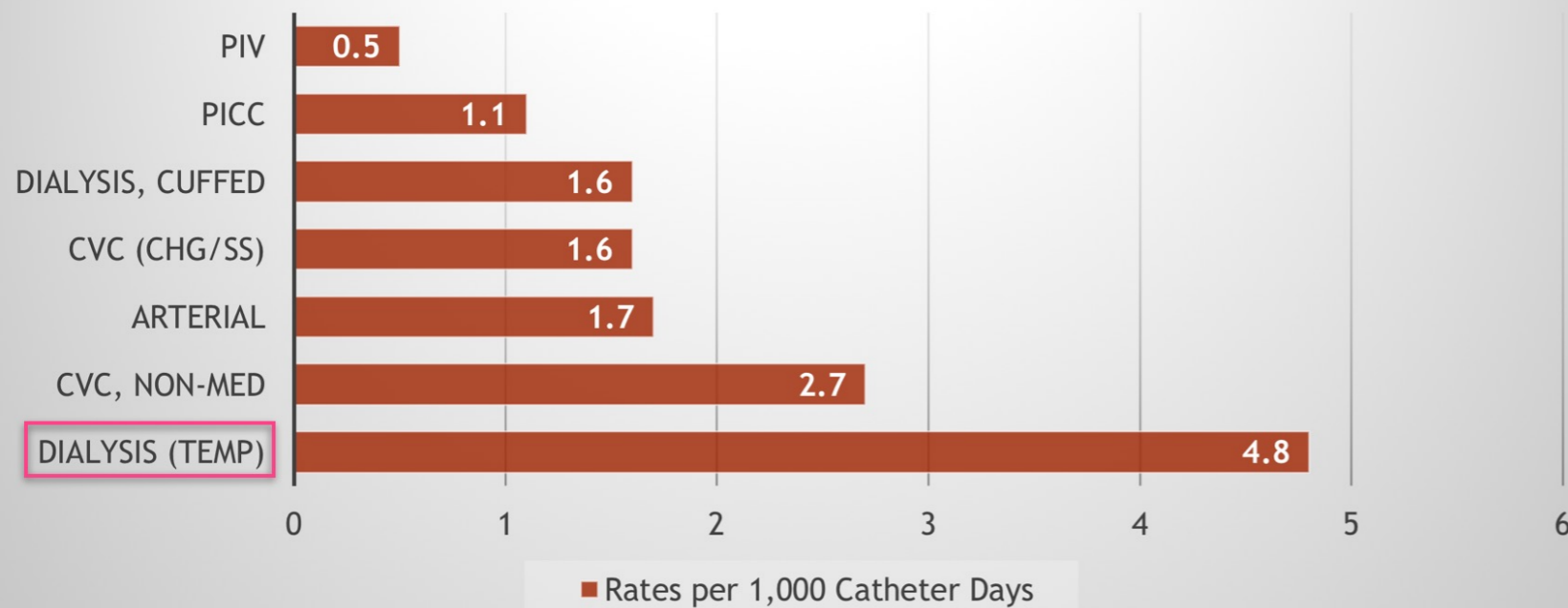
4. Acute HD catheters have the worst record



# The Findings...

## 3. Acute HD Catheters have the Worst Record

Rates per 1,000 Catheter Days



Maki, D. et al. Mayo Clin Proc. 2006; 81(9): 1159 - 1171



**Low Cervical  
Left IJV**









# **Beyond Bean Counting: Creating a Vascular Access Jamboree**

Michelle DeVries MPH, CIC, VA-BC, CPHQ, FAPIC



# Disclosures



Speaker's Bureau/Advisory Board: Baxter, B Braun, Becton Dickinson, Eloquest, Ethicon, ICU Medical, Kurin, Teleflex, 3M



Senior Adjunct Research Fellow: AVATAR, Griffith University



Administrator and Moderator: Vascular Access and Infusion Specialists Facebook Group



AVA: President/National, Co-president/HoosierVAN

# Learning Objectives

01

REVIEW VASCULAR ACCESS  
DEVICE  
PERFORMANCE MEASURE  
RECOMMENDATIONS FROM  
CURRENT VASCULAR  
ACCESS AND  
INFUSION GUIDELINES AND  
STANDARDS.

02

DISCUSS STRATEGIES FOR  
PROSPECTIVE AND  
RETROSPECTIVE DATA  
COLLECTION

03

ARTICULATE THREE  
SCENARIOS IN WHICH USE  
OF PERFORMANCE DATA  
CAN BE LEVERAGED TO  
ENHANCE VASCULAR  
ACCESS IN AN  
ORGANIZATION



# Recommendations for data collection



# **CDC: Guideline for the Prevention of Intravascular Catheter Related Infections**

- While not integrated into the language in the same manner as the other documents, in the body of the guideline they specify:
  - “These guidelines also emphasize performance improvement by implementing bundled strategies, and documenting and reporting rates of compliance with all components of the bundle as benchmarks for quality assurance and performance improvement.”



## **INS: Infusion Therapy Standards of Practice**

- CLABSI/CRBSI
- Number of attempts
- Reason for device removal
- Infiltration rates (in neonates and children)
- Phlebitis rates

- Other considerations are use of the data from required documentation including items such as:**
- **External catheter length**
    - **Tip location**
  - **Dressing status/frequency of unscheduled dressing changes**
  - **Presence/absence of blood return**

# SHEA: Compendium of Strategies for the Prevention of Central Line Associated Bloodstream Infection

Monitor compliance with hub/connector/port disinfection

```
graph TD; A[Monitor compliance with hub/connector/port disinfection] --> B[Audits to determine whether CVCs are routinely removed after their intended use may be helpful.]; B --> C[Monitor compliance with daily assessment of need for continued CVC access]; C --> D[Monitor compliance with central line insertion practices: hand hygiene, maximum barrier precautions and skin antisepsis.];
```

Audits to determine whether CVCs are routinely removed after their intended use may be helpful.

Monitor compliance with daily assessment of need for continued CVC access

Monitor compliance with central line insertion practices: hand hygiene, maximum barrier precautions and skin antisepsis.



# CVAA:

Baseline and quality improvement data collection related to:

- Catheter-related infections (CRI), occlusions, thrombosis
- Adverse events (e.G., Infiltration, extravasation, hematoma, phlebitis)
- Insertion and maintenance bundles and checklists

Analyze against internal and external benchmarks

Share with leadership and healthcare providers

**How do you make the data  
happen?**



# Does it feel like magic?

- Or MAGIC?



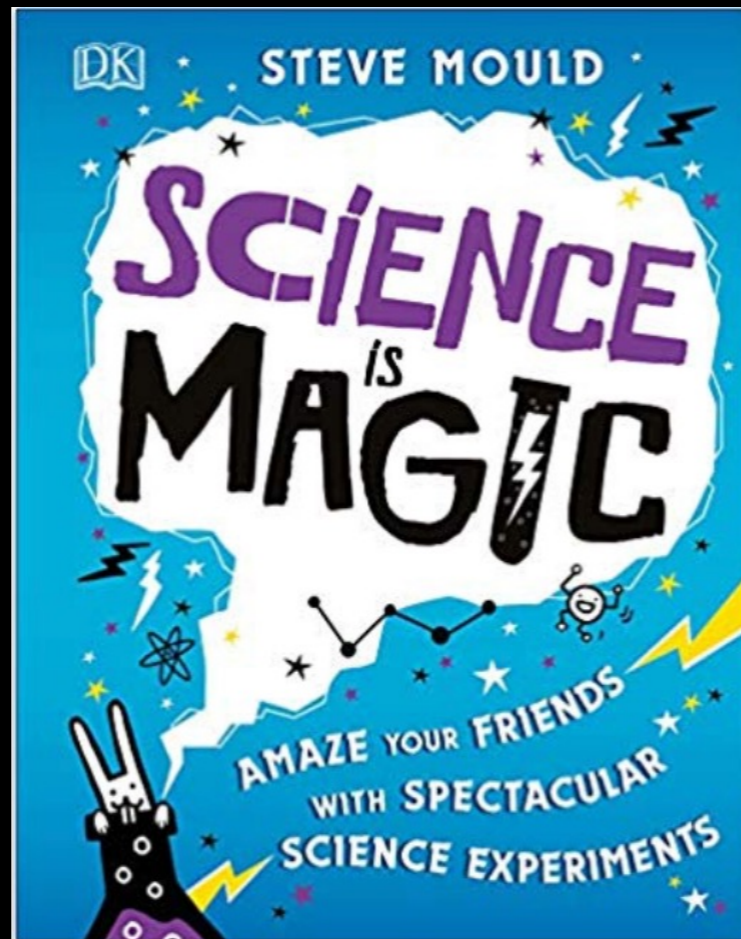
**Annals of Internal Medicine**

**SUPPLEMENT**

## The Michigan Appropriateness Guide for Intravenous Catheters (MAGIC): Results From a Multispecialty Panel Using the RAND/UCLA Appropriateness Method

Vineet Chopra, MD, MSc; Scott A. Flanders, MD; Sanjay Saint, MD, MPH; Scott C. Woller, MD; Naomi P. O'Grady, MD; Nasia Safdar, MD, PhD; Scott O. Trerotola, MD; Rajiv Saran, MD, PhD; Nancy Moureau, BSN, RN; Stephen Wiseman, PharmD; Mauro Pittiruti, MD; Elie A. Akl, MD, MPH, PhD; Agnes Y. Lee, MD, MSc; Anthony Courey, MD; Lakshmi Swaminathan, MD; Jack LeDonne, MD; Carol Becker, MHSA; Sarah L. Krein, PhD, RN; and Steven J. Bernstein, MD, MPH

**Remember...science is magic that works**



**And data will set the story free!**



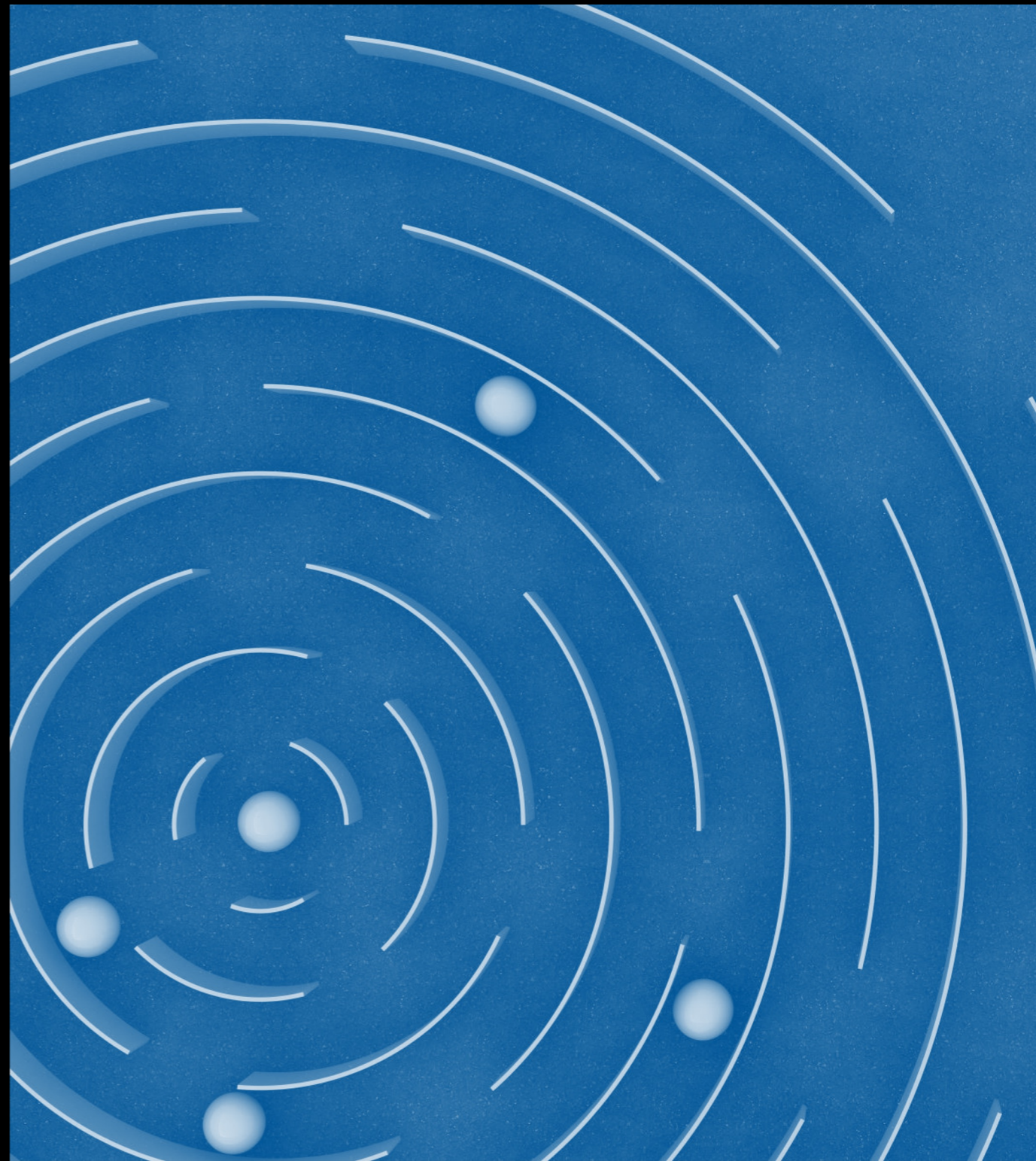
# Shoe Leather Epidemiology

- Go the the Gemba
  - Talk to staff
  - Ask the tough questions
  - Listen to their answers
  - Quietly observe



# Focused Rounding

- Plastic Rounds
  - What is it?
  - Why is it here?
  - Is it still working?
  - Is it still needed?
  - What is its exit strategy?







DRESSING INTEGRITY		
DRESSING STATUS	# OF DEVICES	% OF TOTAL
INTACT	11239	92.30%
NON-INTACT	501	4.11%
REINFORCED/LIFTED	437	3.59%
<b>TOTAL</b>	<b>12177</b>	<b>100.00%</b>
BIOPATCH PLACED APPROPRIATELY		
PLACEMENT APPROPRIATE	# OF DEVICES	% OF TOTAL
YES	12090	98.78%
NO	90	0.74%
NO- DRESSING CHANGED	59	0.48%
<b>TOTAL</b>	<b>12239</b>	<b>100.00%</b>
SITE ASSESSMENT		
ASSESSMENT	# OF DEVICES	% OF TOTAL
WNL	12018	98.87%
RED	12	0.10%
SWOLLEN	7	0.06%
LEAKING	14	0.12%
DRAINAGE	72	0.59%
PUS	19	0.16%
PAIN	12	0.10%
NO BLOOD RETURN	1	0.01%
<b>TOTAL</b>	<b>12155</b>	<b>100.00%</b>

NEEDLELESS ACCESS CAPPED		
YES OR NO	# OF DEVICES	% OF TOTAL
YES	11813	98.41%
NO	191	1.59%
<b>TOTAL</b>	<b>12004</b>	<b>100.00%</b>
INTERVENTIONS		
INTERVENTION	# OF DEVICES	% OF TOTAL
NONE	7881	55.46%
DRESSING CHANGED	436	3.07%
BEDSIDE RN NOTIFIED	437	3.08%
IV REMOVED-MD NOTIFIED	5455	38.39%
<b>TOTAL</b>	<b>14209</b>	<b>100.00%</b>

# Aggregating the data



# Next steps

Tell the story you learn from the data

Spreadsheets and tables aren't going to change outcomes on their own

Speak in a language that is meaningful to your audience

- Why did we start?
- Where did we start?
- Where are we now?
- Where are we going?

SBAR can help you go far.

- Situation
- Background
- Assessment
- Recommendation



**Getting started in the hardest part!**

- Establishing clear goals and definitions
- Roles to invite
- Needed tools & resources
- Obtaining consensus
- Scheduling considerations



# What the heck is a Vascular Access Jamboree?



Vascular Access Jamboree (noun) vas·cu·lar  
ac·cess jam·bo·ree



a large festive gathering of nursing unit leadership, infection prevention, professional development and industry partners collectively performing routine bedside rounding and documenting observations with the goal of improving patient care



A monthly opportunity to partner around best practice for the patients

## Roles to invite

Hospital team: Infection Prevention, Professional Development/Clinical Nurse Specialists, Vascular Access/Infusion Nursing Team, Nursing Leadership, Bedside staff, Quality/Patient Safety, medical staff

Industry partners (productive representatives/clinical specialists/executives/product engineers): catheter (central, PIV, midline); dressing; securement; adjunct (gum mastic, CHG sponge, alcohol impregnated caps, flush syringes, Alteplase...)





- Why are we here?
  - The patient
- What don't we do?
  - Sell/upsell
- Agreement to work together respectfully
- Data collection tools

**Needed tools & resources**

# Obtaining consensus



Direct observation at the bedside



Discussion of findings before leaving the unit



Hand off to bedside staff for anything requiring immediate intervention



Photos if permitted by hospital policy



# Using data to drive continued improvements

## JAMBOREE: BRINGING IT ALL TOGETHER

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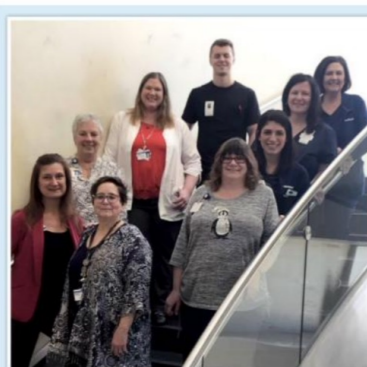
Are you looking for a way to broaden the interest and awareness around vascular access outcomes? Is your goal to make it a priority for more than just the vascular access team?

Several years ago, the infection prevention team at our large, urban community hospital handled rounding on vascular access devices. Soon, an identified gap between the general understanding of a unit-based staff and the observations reported in bedside rounds became apparent. With the support of hospital administration, the expectation of ongoing rounds was expanded to include nursing leadership in all inpatient care units. The institution developed data dictionaries and spreadsheets to assist in the standardization of observations and analysis of data and conducted trainings for individuals who would begin assisting in the collection. Monthly nursing score cards were updated to include performance measures obtained through these rounds.

Analysis of the data led to the identification of trends and planned interventions. Often

vascular access providers in addition to our internal stake holders and learn together, through bedside rounding, where there remained opportunities to optimize outcomes by improving the understanding around the appropriate use of the products provided in the vascular access kits for central and peripheral vascular access devices.

Product representatives and their clinical support are invited monthly to attend inclusive rounds at the hospital. Two VA-BC™ members of the infection prevention team lead the team, with organization invitations including the vascular access team, professional development/clinical nurse specialists and nursing leadership. Front line nurses are engaged during the team's rounds. Industry involvement includes the companies represented in the hospitals central and peripheral line options, semi-permeable transparent dressing, CHG skin preparation, CHG sponge dressing, gum mastic liquid adhesive/adhesive remover, flush syringe manufacturer and alteplase clinical support.



The Jamboree team rounds monthly consisting of industry partners and hospital staff. Representation varies each month.

From left to right, front to back:

*The Art and Science of Infusion Nursing*

## Beyond Bean Counting: Gathering and Using Data to Drive Improvements

Michelle DeVries, MPH, CIC, VA-BC

### ABSTRACT

Data collection of process and outcome measures for vascular access procedures and devices is recommended in all relevant guidelines and standards. A variety of strategies for achieving these objectives and how the findings can be aggregated and presented to improve patient care is discussed, along with a review of specific recommendations.

**Key words:** analysis, data, outcomes, process measures, vascular access

Patient safety is a priority for every clinician in a health care organization. Vascular access and infusion specialists provide a tremendous service that clinical competence is developed and routinely assessed for specialist vascular access and infusion clinicians, there is still a critically undervalued companion proficiency that

# Quality Improvement -- Standard 6

6.1 Quality improvement (QI) activities are implemented to advance safety and excellence in infusion administration and VAD insertion and management.

6.2 QI programs incorporate surveillance, aggregation, analysis, and reporting of patient quality indicators and adverse events with clinicians taking action as as needed to improve practice, processes, and/or systems.



# Opportunities are often at an interface

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Leveraging expertise between various devices

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Direct observation rather than chart review

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Reviewing practice rather than policy

# Have a plan

- What needs to happen?
- How do we work together?
- What resources are needed?
- Who else should be invited?





# Product Evaluation and Quality Improvement

## Evaluation

Establish clear goals of what is to be measured and evaluated during the process of product evaluation (eg, enhance continuity of care, reduce a complication, improve clinician compliance, save time, and standardize use) and define in advance the minimum parameters that must be met for evaluation to be considered successful.

Develop data collection tools for analysis and ongoing monitoring.

## Improvement

Evaluate quality and safety indicator outcomes, including close calls (ie, good catches), errors, and adverse events to identify areas for improvement

Plan for sustainability of QI at the onset; integrate changes into the organization through staff engagement education, and leadership, as well as through organizational infrastructure and culture; consider issues such as transparency, simplicity, and actionability of the plan.<sup>20-21</sup>

Use audit and feedback when implementing changes in practice.

Include rationale for practice changes and for audit activities; ensure that there is a link between audit criteria and patient outcomes (eg, disinfection of needleless connector and catheter-associated bloodstream infection [CABSI]); provide both written and verbal feedback; translate

# Unit Based CLABSI review:

- Apparent cause analysis reveals that the patient developed a CLABSI with a common skin related organism (ie, Staphylococcus aureus) that occurred 9 days after insertion of the device.
- Review of the chart reveals numerous premature dressing changes, which the literature associates with an increase in bloodstream infections.
- Staff verbalize difficulty maintaining dressing integrity for the patient and include reasons such as placement of the device (internal jugular) and securement (sutures).
- The process measures collected are referenced and can be used to demonstrate that the opportunity exists beyond the individual case discussed.
  - Overall performance on the unit's score card is within target range however when stratified by anatomical location, the internal jugular consistently falls below.
  - Further review of the process measures reveals that trend is true with the device throughout the organization.
  - The unit based council is able to provide that data to nursing and medical leadership to advocate for additional education for providers on optimal site selection and securement as well as a review of available dressing solutions.
  - The existing process measures serve as a historic baseline for measuring improvement once action plan is developed and implemented and serve as an objective measure when leading the discussion with stakeholders who may be resistant to change.



# Device complication – provider concern

- Following insertion by the vascular access team, a patient develops a DVT.
- The provider is understandably concerned and is verbally non-supportive of the team.
- Because ongoing data has been collected, the team is quickly able to demonstrate their DVT rate for the month, quarter, rolling twelve months and previous five years to help reassure the individual that this was a rare occurrence rather than a reflection of a trend of increased patient harm.
- This leads to discussion of whether comparative information is available for provider inserted lines and also through apparent cause analysis an agreement is made to begin including catheter to vessel ratio calculations in the data tracking to allow for further analysis of predictive trends in the future.

# Performance by device type

- By keeping robust performance metrics on each device type placed by the vascular access team, it becomes an increasingly data-based recommendation when suggesting the most appropriate device to insert.
- INS, CDC and MAGIC offer some guidance on aligning device type with patient needs but understanding how each of those devices performs within your own institution can help further refine the suggestions made by the team, particularly in less clear areas.
- If PICCs have routinely been placed for infusions longer than 5 days, but midlines placed by the team have a high successful completion of therapy it may be possible to avoid placing a central line if it is not indicated based on infusate considerations if an order for 7 days of therapy is indicated.
- Similarly, if an ultrasound guided peripheral IV placed in the forearm is able to achieve those same outcomes based on the team's internal data it can be used to advocate against moving into the upper arm.
- Collecting these statistics is not enough, however, if staff and leaders are not frequently consulting them to guide practice recommendations. Within device performance, there is also value with understanding variation between manufacturers (when multiple options exist within supplies) as well as lumens to further guide selection within available product choices.



**What  
have we  
changed  
because  
of audits?**

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Policies

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Practices

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Increased collaboration

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Stronger understanding

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Optimized product use



**What story will you tell?**

Whose lives can you help save?



# Infection Prevention

is an **organizing principle** of **VA**

Guidelines: **HH, Max Barrier**

Manufacturers will sell you:

**AM Caths** and **AM Dressings**

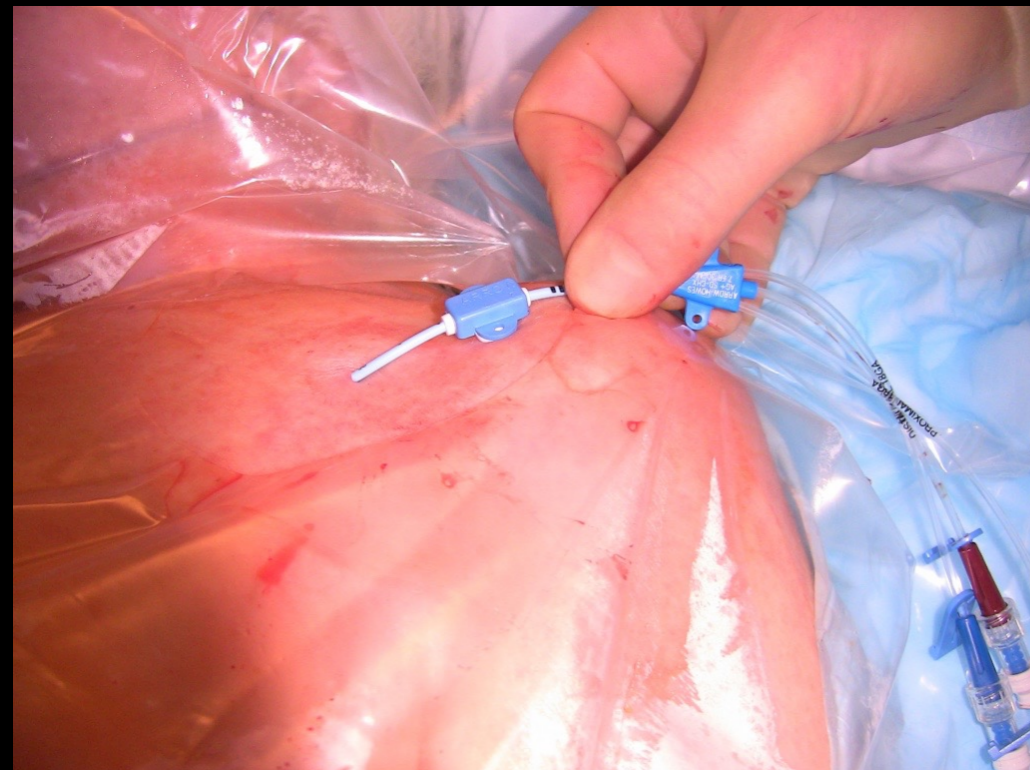
Special **End Caps** (anti-reflux)

**AM Caps** for the End Caps

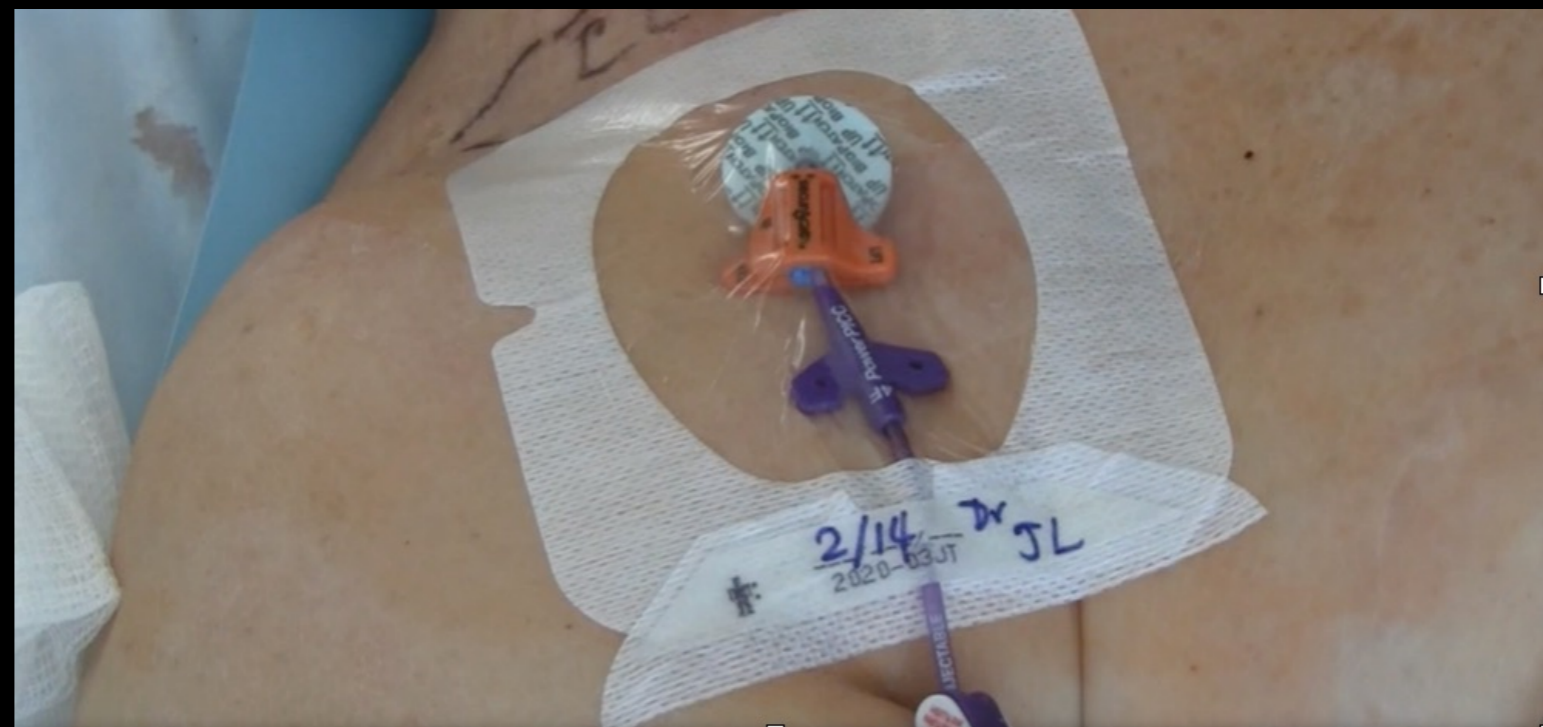


# On your list of **InfPrev** measures The **Cost** where is...

Insert the Catheters **Properly**...



and **Dress** them **Properly**





# Suppose there was a Study...

