INTERNATIONAL
IV NUTRITIONAL THERAPY
GLOBAL PHYSICIAN EDUCATION

Central Venous Access

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Central Venous Access Devices (CVAD)

CVAD: Types

- Midline Catheter
- Peripherally Inserted Central Catheters (PICC)
- Implanted Port Devices
- Tunneled devices (i.e. Hickman)

CVAD: Benefits

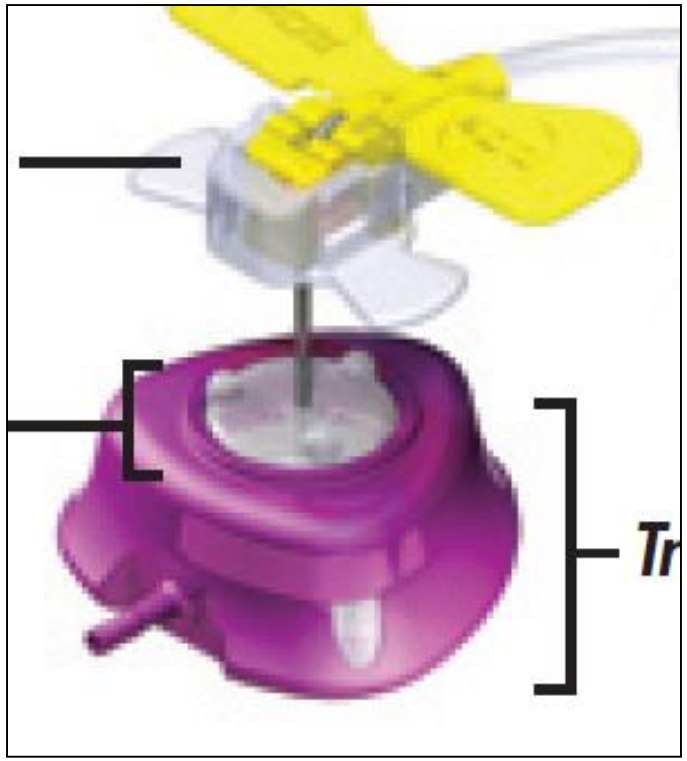
- Direct central access for medications / Blood Draws
- No need for multiple peripheral IV access
- Ability to infuse higher osmolarity solutions without phlebitis and pain.
  - The only access used for power-infusions or Lipid infusions (TPN).

CVAD: Concerns / Dangers

- Infection:
  - Improper line and access maintenance
- Speed Shock / Dehydration:
  - REMEMBER: You are directly accessing the Heart. You have NO peripheral IV pain to slow your infusion. Use care with IV rates.
- Thrombi:
  - Improper flushing / Inactivity.
- Catheter DAMAGE:
  - Rapid flushing with syringes smaller than 10 mL size.
- Phlebitis (PICC):
  - Dressing maintenance / Monitoring the site each time.

Implanted Port Devices:

Port-A-Cath™ (button port) / Power Port™



Access: Implanted Port

- **HUBER Needle ONLY**
  - Non-coring needle with tubing extension

- **<u>Site Prep is STERILE:</u>**
  - Sterile gloves!
  - Draping and prep is sterile, same as minor procedure set up.
  - Sterile site prep
    - IPA skin scrub X3
    - Chlorhex / IPA (Hibicleans) – let dry!

Access: Implanted Port

- Set HUBER needle
  - Locate three raised landmarks under skin (center of stopper is between these three raised areas) [Power-Ports] or round stopper top.
  - Insert needle until wings are flush with the skin.
  - Attach 10mL syringe and withdraw to get blood flash
- Transparent dressing
  - Apply Tegaderm ™ like dressing over wings and leave tubing end exposed.
  - CHECK MANUFACTURER FOR LENGTH OF ACCESS WITH EACH HUBER. Varies from 2-7 days, but 5 is generally safe.
- HUBER changes
  - Sterile Prep! / Remove HUBER / Prepare and implant new HUBER if needed.

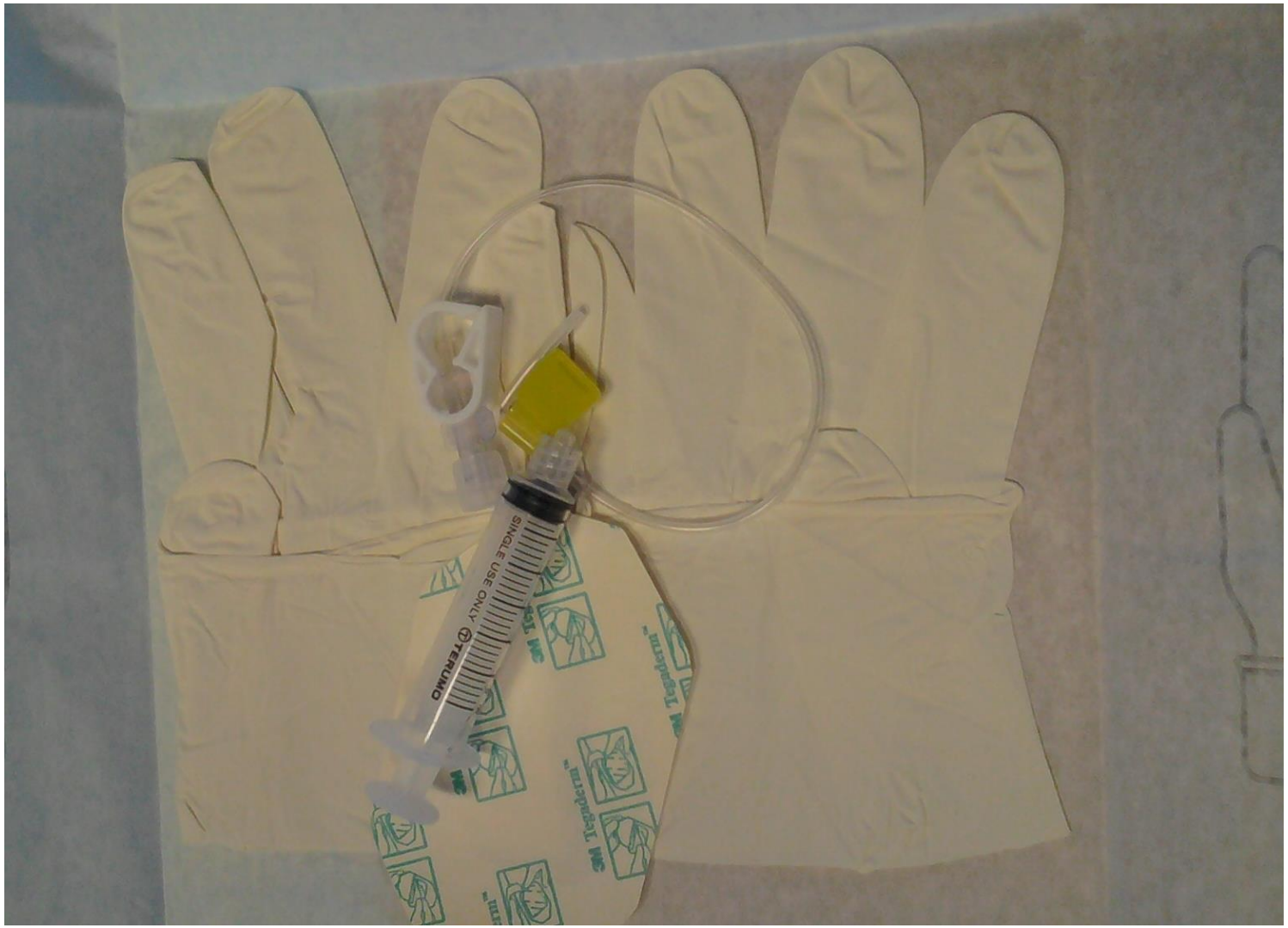
Port Access Set-up

Mask – Anesthetic – Site Prep

Flush syringes – HUBER Needle – Tegaderm dressing - Sterile Procedure Gloves [Photo © AMSA 2012]

Site draped and palpated for landmarks

Ready for site-prep. Also anesthetic if needed. [Photo © AMSA 2012]



Sterile field for access supplies

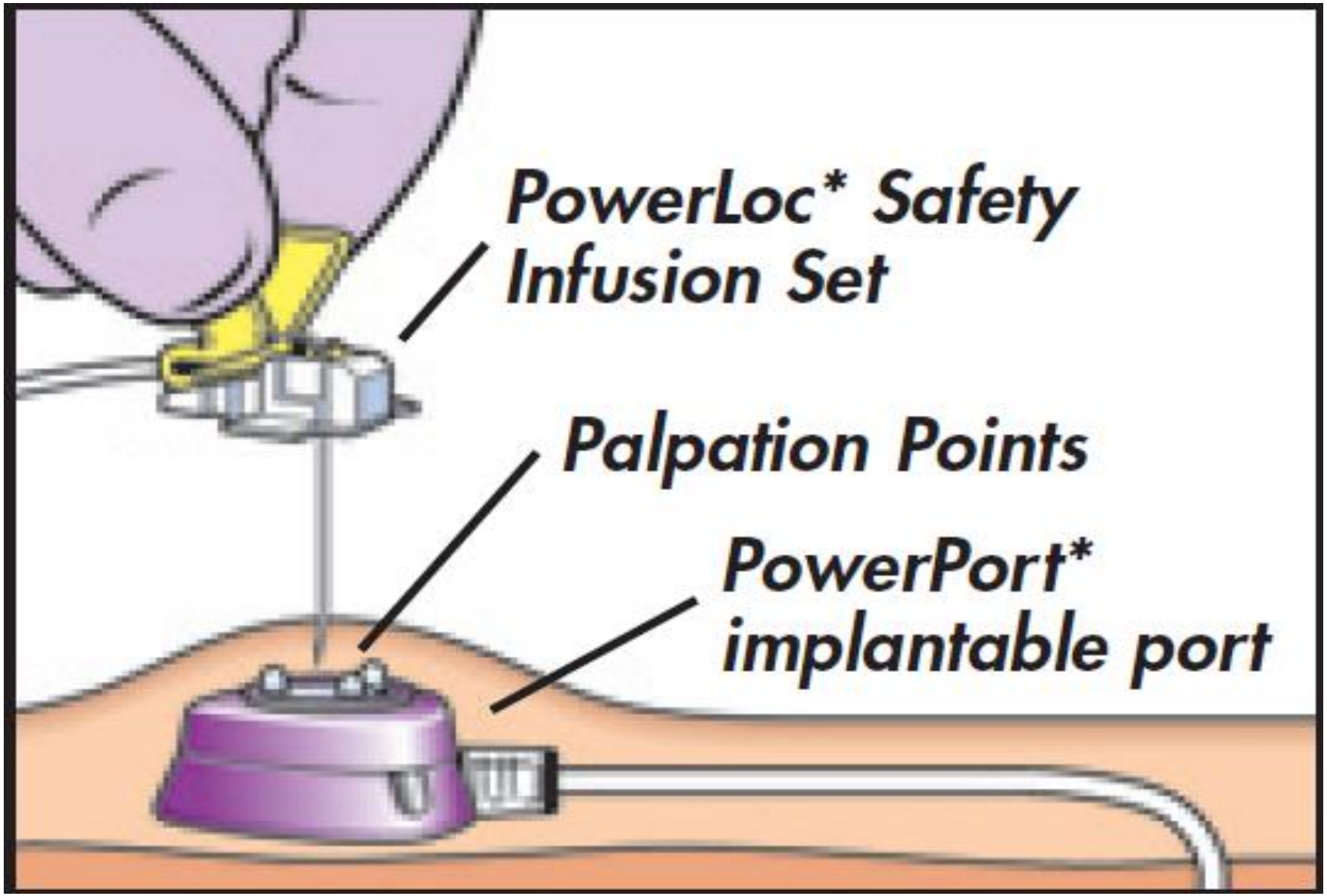
[Photo © AMSA 2012]

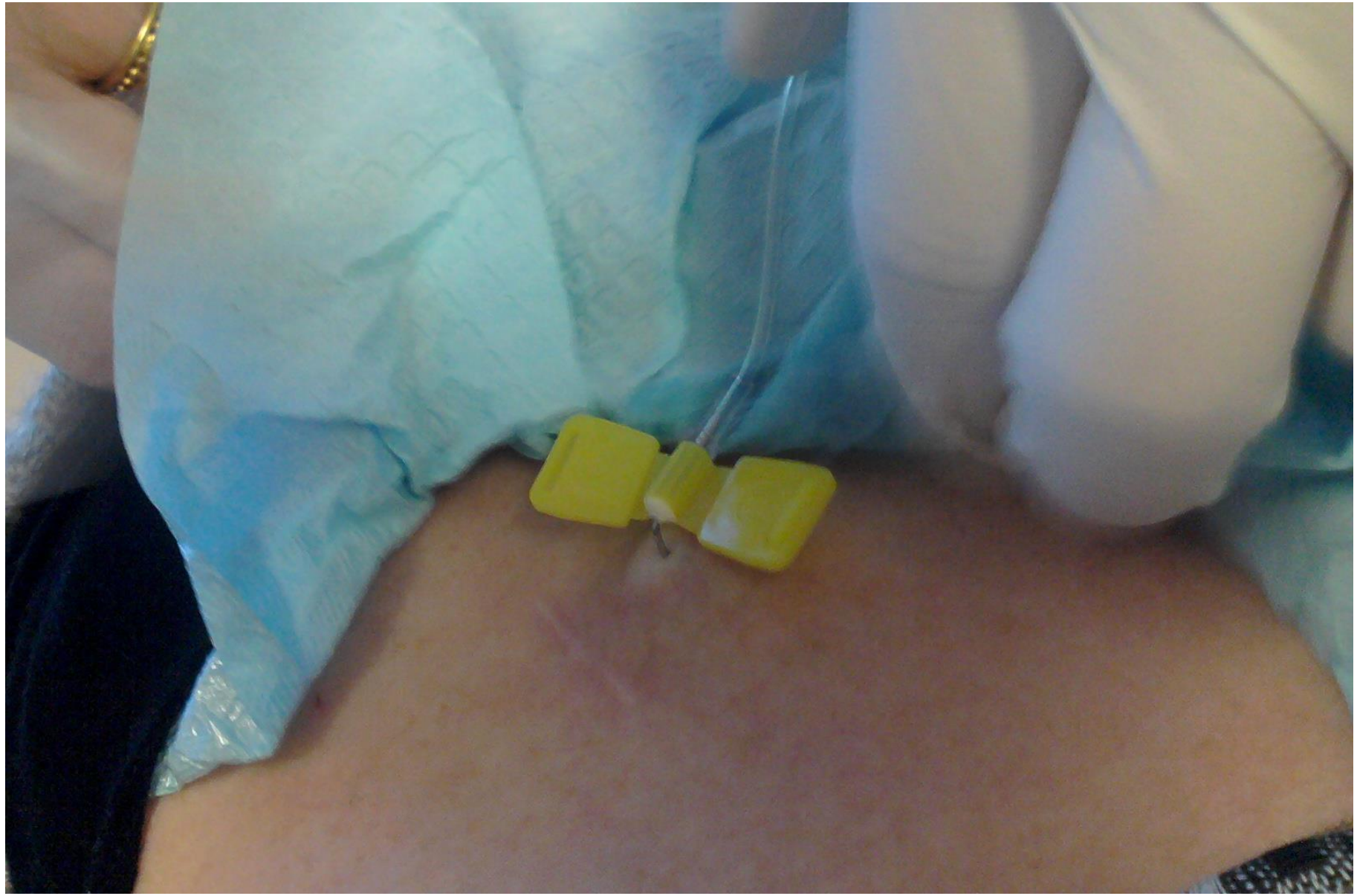
The Non-coring ‘HUBER” needle

[Photo © AMSA 2012]

Setting the HUBER needle – Centered in the port

[Photo © AMSA 2012]





Ready for the Tegaderm / Occlusive dressing [Photo © AMSA 2012]

Pre IV flush and flash procedure

[Photo © AMSA 2012]

IV Placed and running

[Photo © AMSA 2012]

Prep for flush prior to D/C

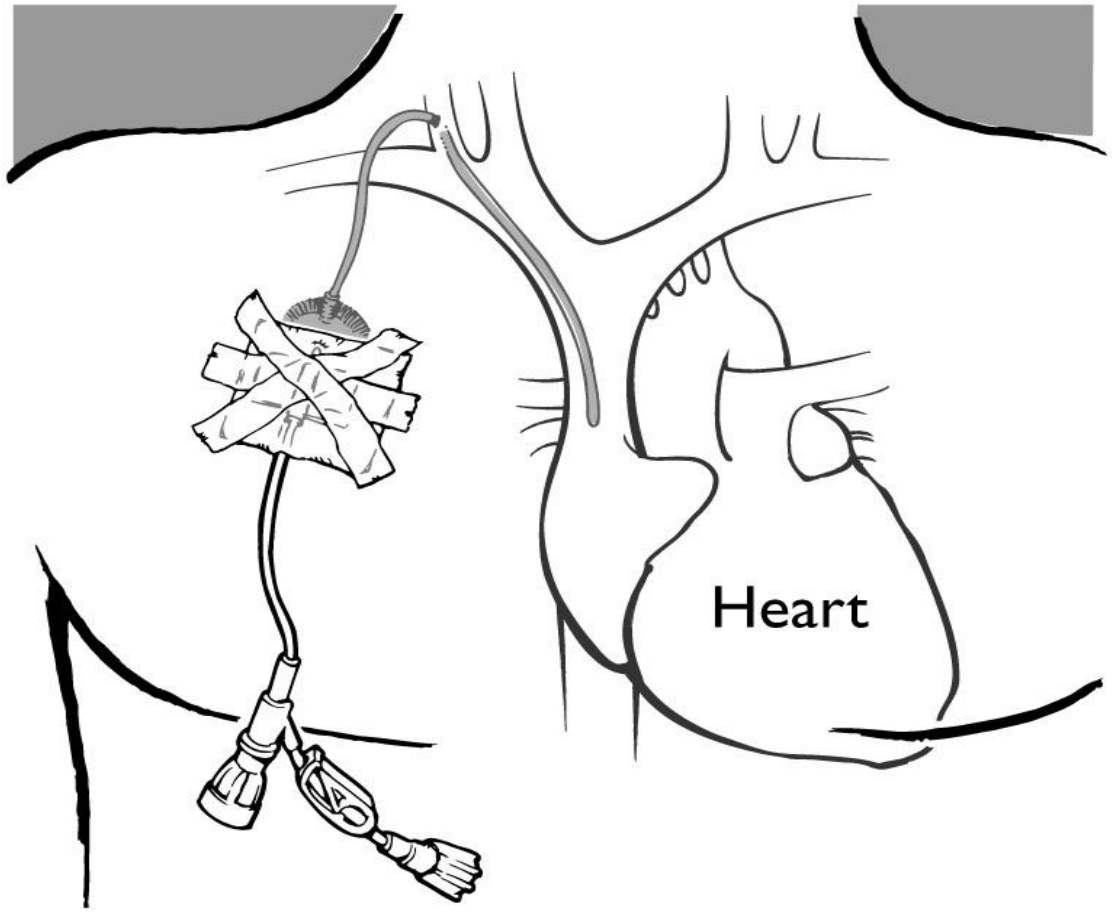
2 X 10 mL Saline and 1 X 5 mL Hep-Lock-Flush

[Photo © AMSA 2012]

Flush then D/C (SAS or SASH)

[Photo © AMSA 2012]

Indwelling catheter:Hickman, Broviac, or Groshong catheter



Access: Multi-Lumen Devices

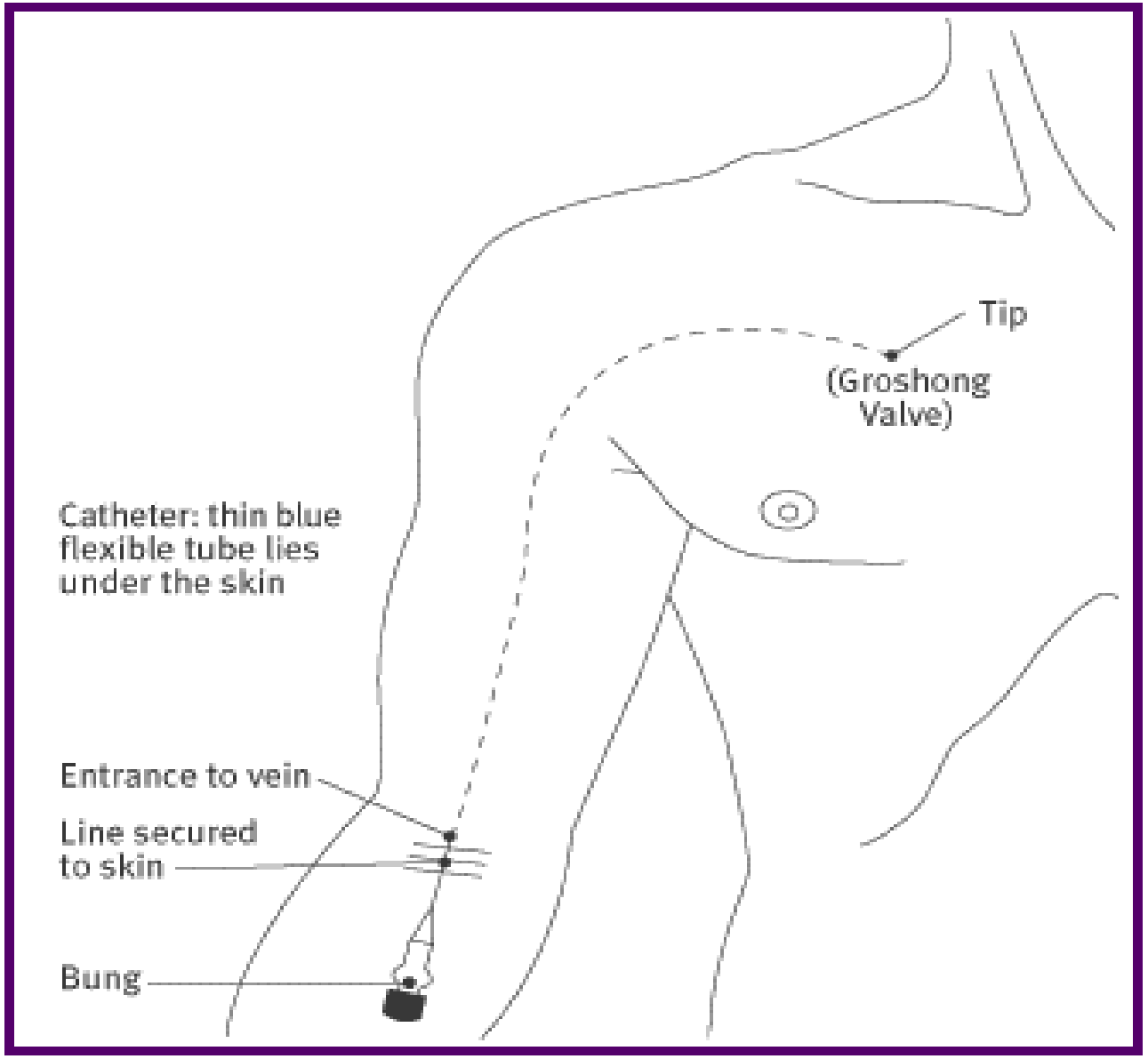
- If you see two to four IV access lines attached to a CVAD:
  - NEVER use the RED line for anything other than Blood Draws.
  - Use the same line each time you infuse and appropriately flush.

Access: PICC

- Assess the line and access point.
  - Infection / soiled tegaderm / phlebitis
    - PATIENT with fever?
      - Consider sepsis and Blood Cultures.
    - Assess the connector for blood or organic matter.
    - Use CLEAN gloves / drape if necessary.

- CLEAN!
  - IPA X3
  - (Note: Not a sterile procedure like a Port access, BUT clean technique is a MUST.)

PICC line



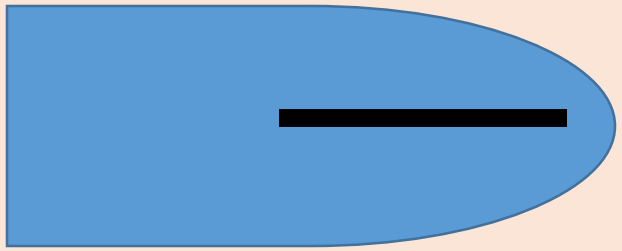
Access: PICC

- Flush
  - Draw back with 10 mL syringe to see blood flash
  - If heparinized, draw out 4-6 mL of fluid
  - Perform pre flush with 10mL saline
- Attach device
- Infuse IV
- Flush
  - Post IV flush 10 mL minimum with 10 mL or larger syringe
  - Recommend 20 mL saline flush with nutrient IV's

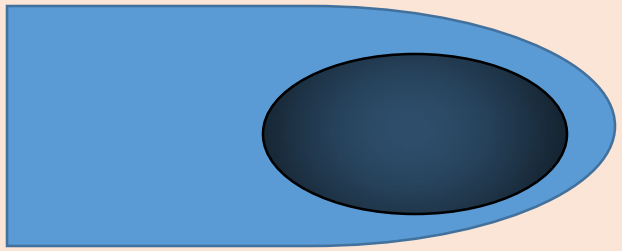
Catheter Types

(Note: Either can be damaged by pressure)

- Groshong:
  - End has a “slit valve”
  - No Heparin Needed



- Non-Groshong (Hickman):
  - Open ended catheter
  - Must be heparinized



Flushing:

- Amount of saline for PICCs is 5mL.
- Amount for Ports is per manufacturers specs.
- There are times when lines need to be flushed with more than 5mL of saline
  - Flush with 10 mL after administration of blood or blood products or after blood draws.
  - Flush with 20mL after the discontinuation of TPN **(INCLUDING HIGH DOSE IVC or other nutrient solutions).**
- Heparin for non-Groshong PICCs is 1 – 3 mL.

FLUSHING:

- **If you do not know – use heparinized saline flush.**

- **SASH technique**
  - **Saline – Access – Saline – Heparin**
  - **For ‘open’ (a.k.a. Hickman) lines**

- **SAS technique**
  - **Saline – Access – Saline**
  - **For ‘valve’ (a.k.a. Groshong) lines**

FLUSHING VOLUMES - Open-Ended Catheters	
PROCEDURE	**VOLUME** (100 U/ml)
When port not in use	5ml heparinized saline every 4 weeks
After each infusion of medication or TPN	10ml sterile normal saline then 5ml heparinized saline
After blood withdrawal	20ml sterile normal saline then 5ml heparinized saline
After power injection of contrast media	10ml sterile normal saline then 5ml heparinized saline

Power Port Flushing: © Bard Access Systems Inc.

Other Types of Central Venous Lines:

- Other venous access devices such as:
  - Quinton cath
  - Cook cath
  - Shunts
    - are surgically placed for the sole purpose of dialysis and plasmaphoresis therapy.
    - **<u>These are not meant to be used for IV therapy</u>**