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PICC & PIZZA NIGHT

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The Right Line › The Right Patient › The Right Time › The Right Securement

This session will cover

- New INS & CDC Guidelines
- Prevention & Management of PICC Related Thrombosis.
- The Blocked PICC. Management & Prevention
- Discussion on Insertion Practice & PICC Exchange

Clinical Information

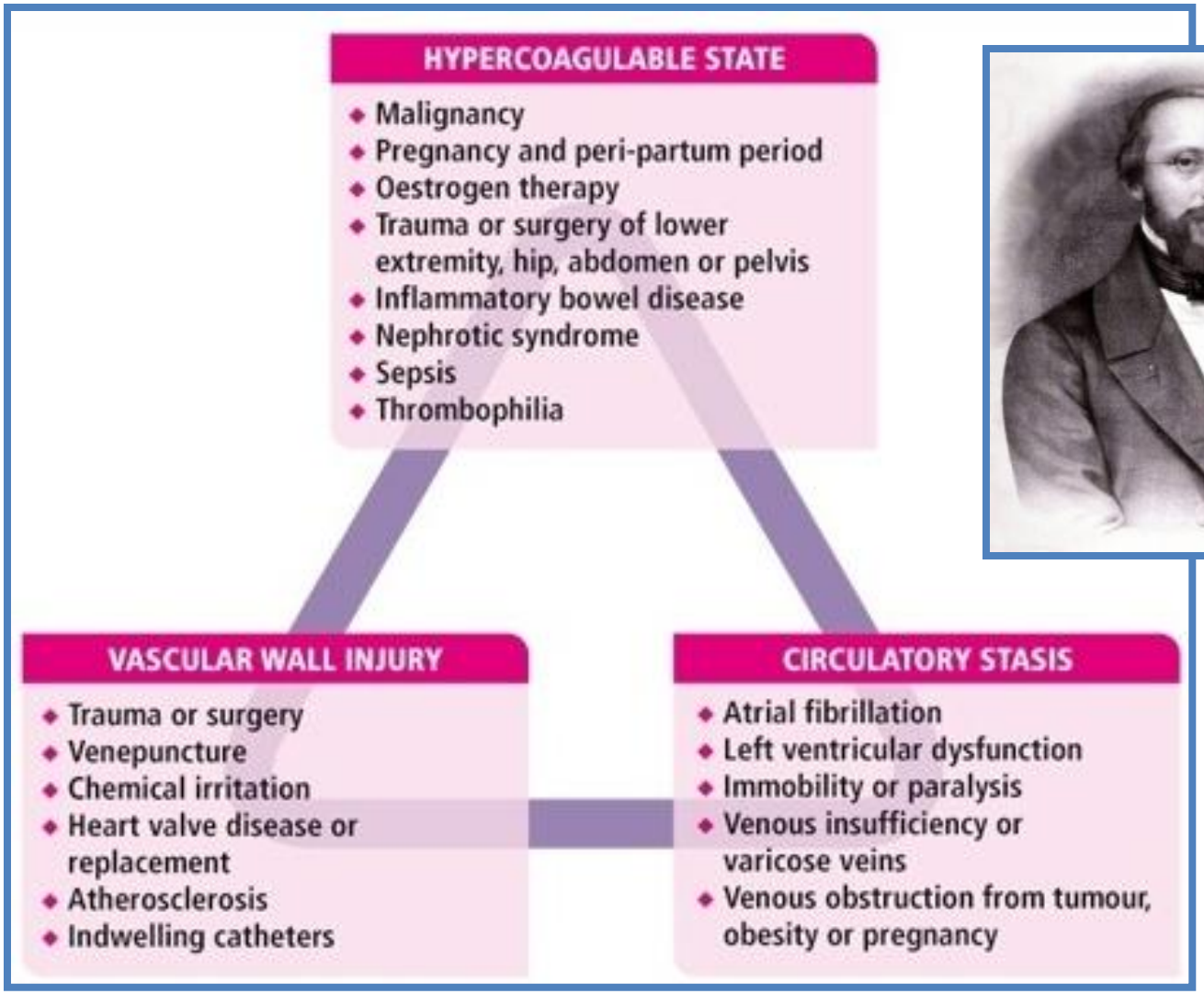
- http://www.cdc.gov/hicpac/BSI/BSI-guidelines-2011.html
- www.ins1.org
- http://store.untreedreads.com/index.php?main_page=index&cPath=6_150

CDC 2011 Recommendations

http://cid.oxfordjournals.org/content/early/2011/03/30/cid.cir257.full

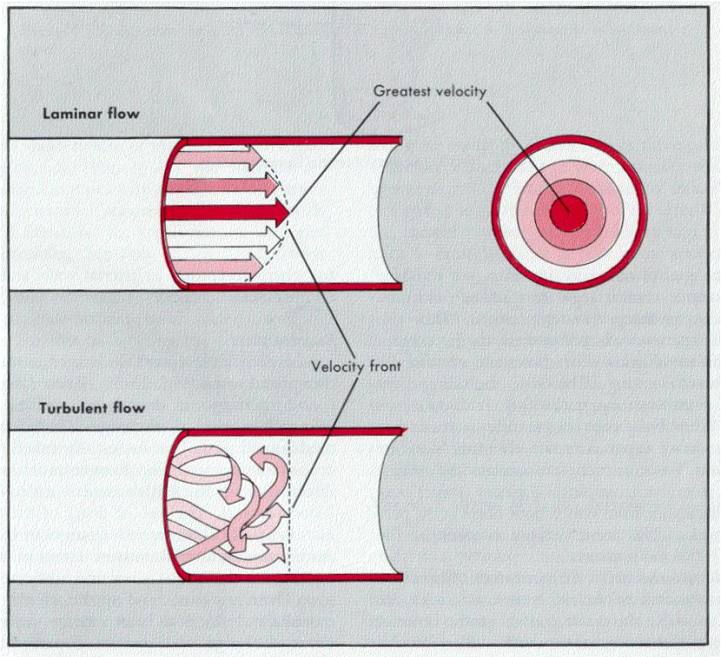
- **Select device based on intended purpose, duration of use, known infectious and non-infectious complications and experience of individual catheter operators . (Category 1B)**
- **Use a midline catheter or a PICC, instead of a short peripheral catheter, when the duration of IV therapy is likely to exceed six days . (Category 11)**
- **Educate health-care workers regarding indication for ivcs, proper procedures for the insertion & maintenance of ivcs (Category 1A)**
- **Assess knowledge of & adherence to guidelines periodically for all persons who insert & manage intravascular catheters (Category 1A)**
- **Designate only trained personnel who demonstrate competence for the insertion and maintenance of peripheral & central intravascular catheters (Category 1A)**
- **Use a chlorhexidine /silver sulfadiazine or minocycline /rifampin impregnated CVCs in patients whose catheters are expected to be > 5 days (Category 1A)**
- **Use a 2% chlorhexidine wash for daily skin cleansing to reduce CRBSI (Category 11)**
- **Use a sutureless securement device to reduce the risk of infection for intravascular catheters (Category 11)**
- **Use a > 0.5% Chlorhexidine & Alcohol Solution for skin preparation**

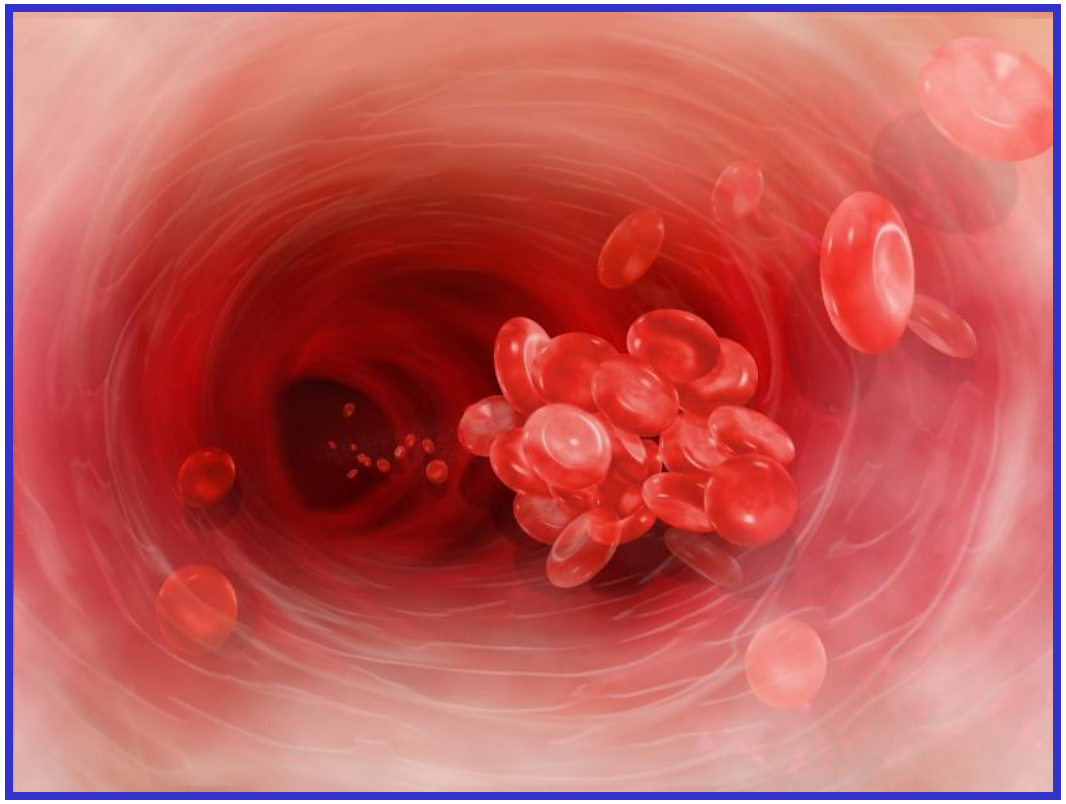
PICC Related Thrombosis



Poiseuille's Law

A cross section of a hypothetical tube shows the lamina moving at different speed. Those closest to the edge are moving slowly (due to friction), while those near the center are moving quickly.





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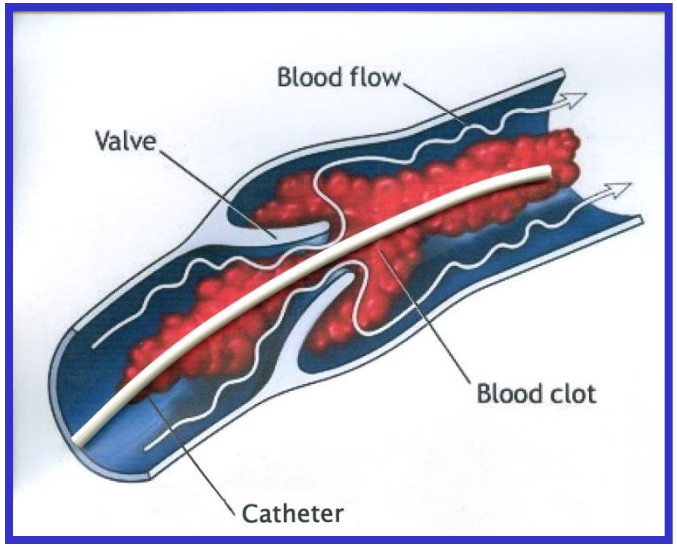
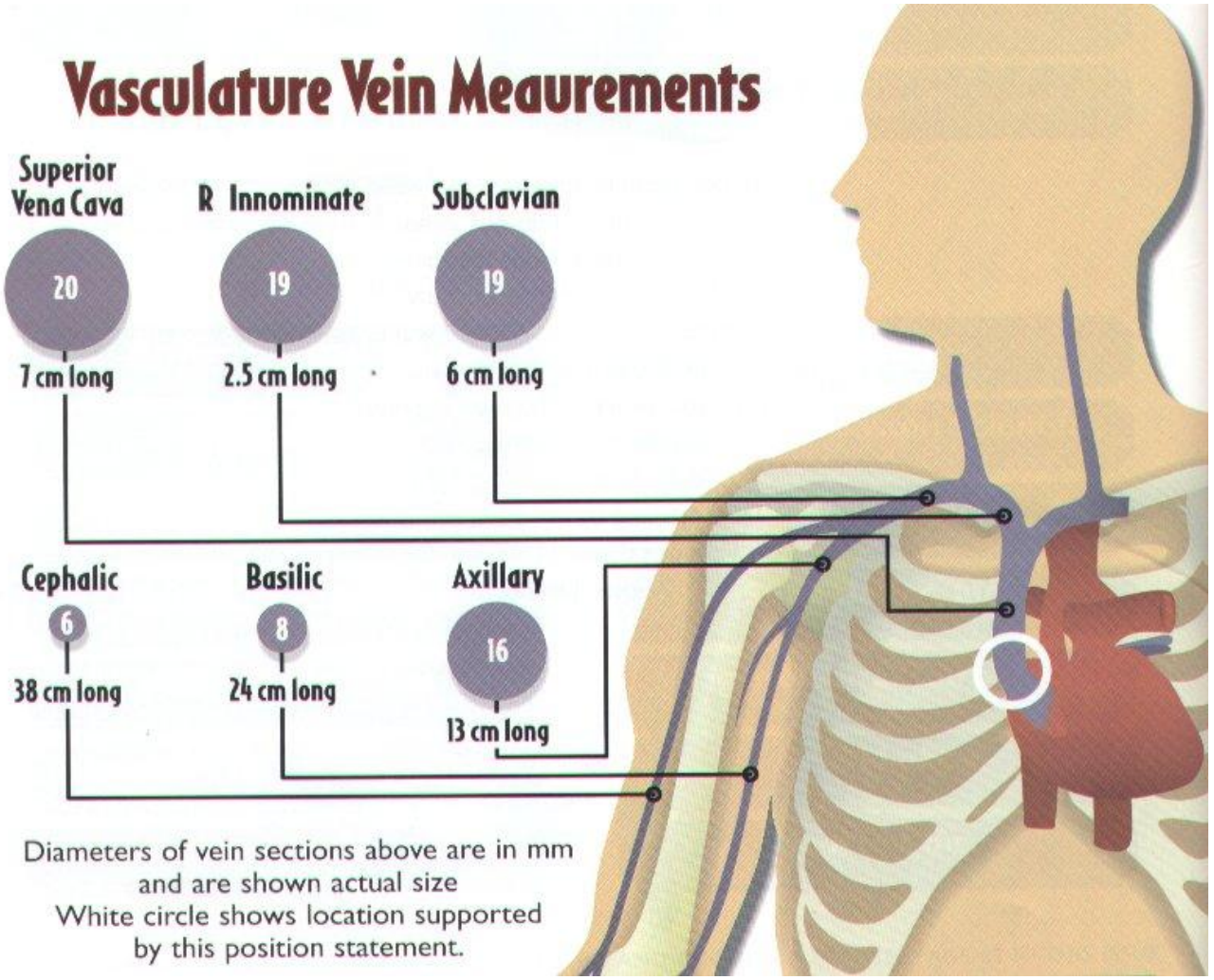
The Flow


Blood flow
Valve
Blood clot
Catheter

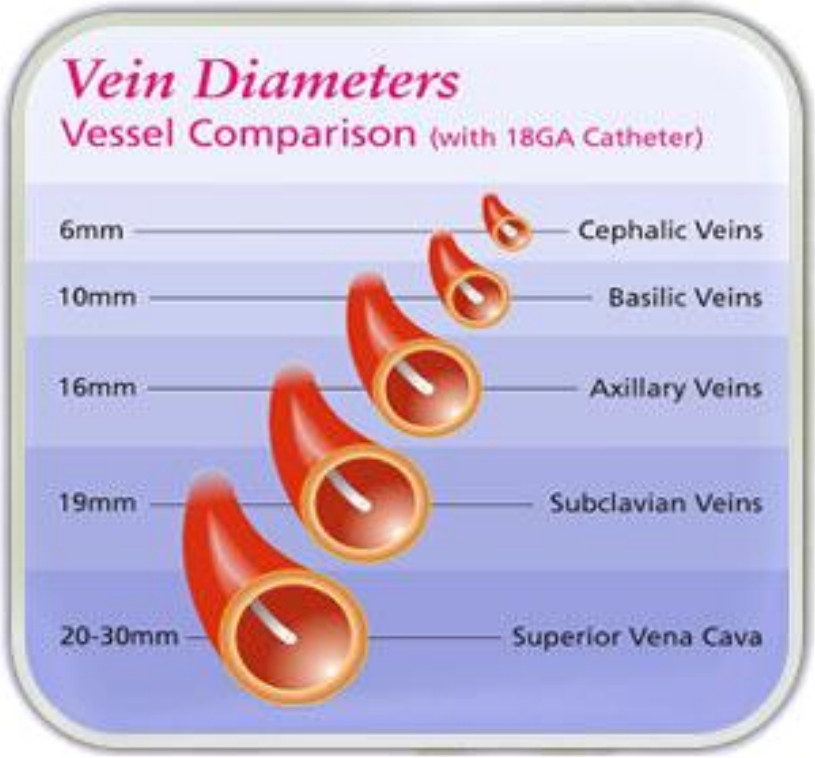

Longitudinal View Basilic Vein

The long passage of a PICC

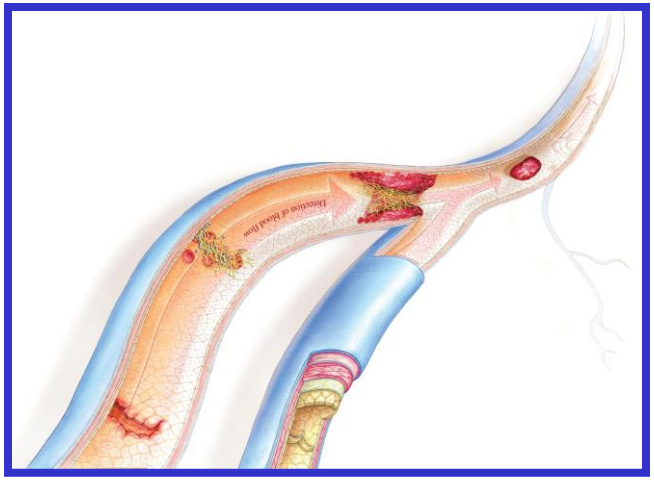


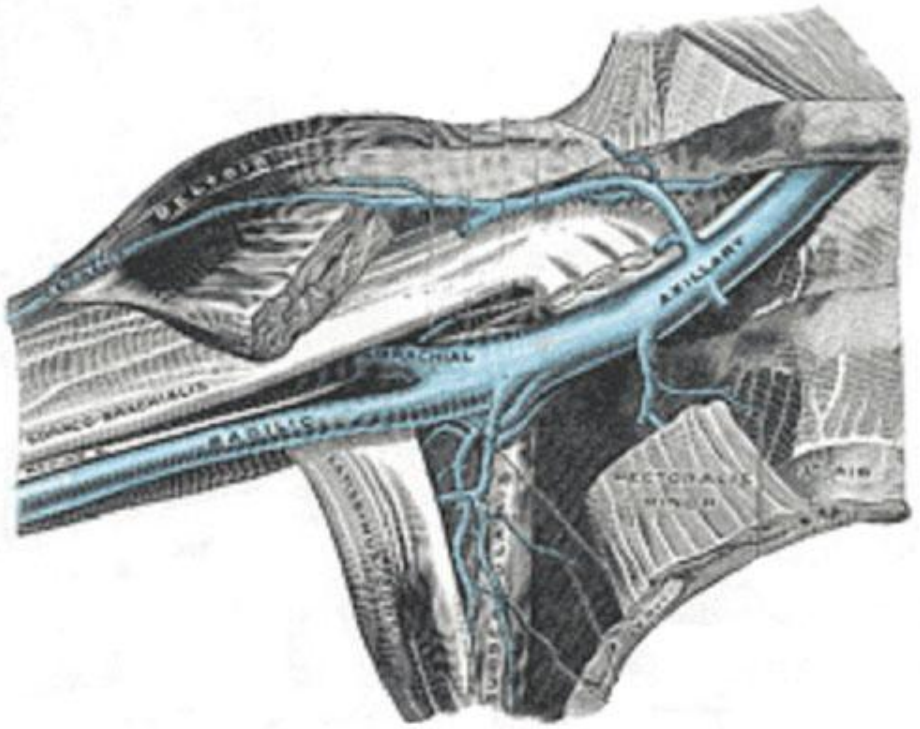
Vessel Diameter, Flow & PICCs

- Cephalic **40 ml/min**
- Basilic **95 ml/min**
- Axillary **333 ml/min**
- Subclavian **800 ml/min**
- Brachio-Cephalic **800 ml/min**
- SVC **2-2.5 l/min**



Flow Issue





Symptoms of CR DVT

- Swelling
- Pain

Diagnosis of CR DVT

1) Difficult ~ needs an integrated approach.

2) Exam and history ~ arm swelling predominate feature.

3) Chest X-ray, D-dimer.

4) Colour Doppler Duplex Sonography/ Venogram.

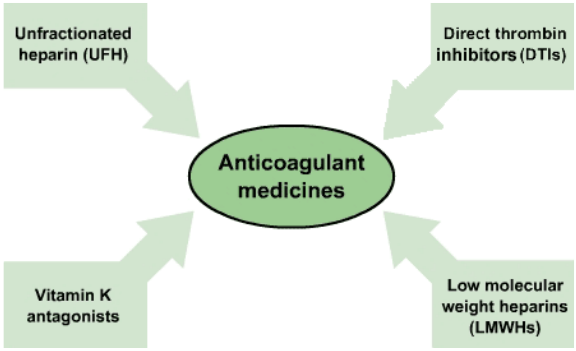
5) Echo, CT, MRI, VQ-scan.

6) 78% of PICC associated DVTs occurred within 20 days.

Different Levels Mural Thrombus

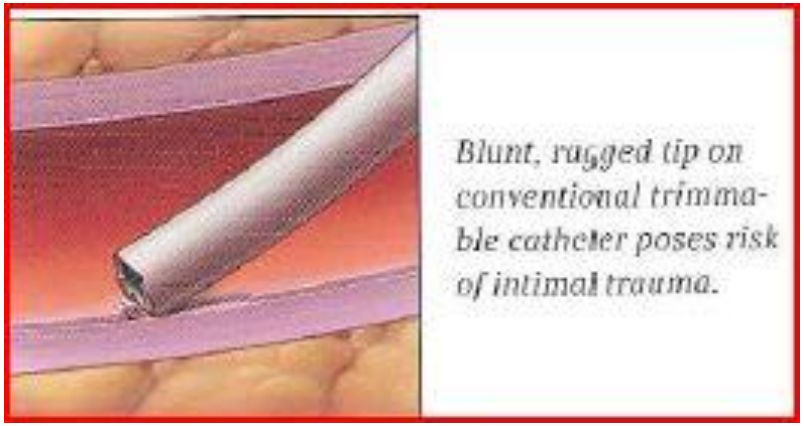
Treatment of CR DVT

1) Studies show conflicting benefit.
2) UFH ~ Heparin sodium.
3) LMWH ~ clexane.
4) Vit K antagonist ~ warfarin.
5) DTI ~ Melagatran.
6) Fibrinolytics ~ t-PA and urokinase.
7) Filters/ anti-coagulant catheter bonding.

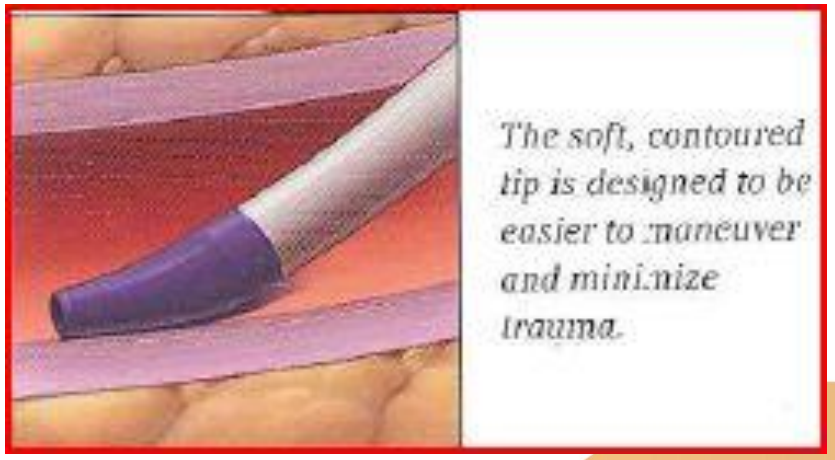


Prevention is Easier than Cure

- Decrease Phlebitis Risk
- Minimise Vigorous Arm Activity
- Beware of Trimming PICCs
- Have the tip in the distal superior vena cava
- Insert PICC above ante cubital fossa
- Use Right Side
- Ensure good securement to minimise movement



Blunt, rugged tip on conventional trimmable catheter poses risk of intimal trauma.



The soft, contoured tip is designed to be easier to maneuver and minimize trauma.

The Occluded Catheter !

Hardy, G. a. and P. b. Ball (2005). "Clogbusting: time for a concerted approach to catheter occlusions?. [Article]." Current Opinion in Clinical Nutrition & Metabolic Care May **8**(3): 277-283.

Hadaway, L. C. R. C. C. M. (2003). "Prevent occlusions with these flushing pointers. [Miscellaneous]." Nursing January 2003;33(1):28.

Gorski, L. A. M. R. C. C. (2003). "Central Venous Access Device Occlusions: Part 1: Thrombotic Causes and Treatment. [Miscellaneous Article]." Home Healthcare Nurse February **21**(2): 115-121.

Gorski, L. A. M. S. R. N. C. S. C. (2003). "Central Venous Access Device Occlusions: Part 2: Nonthrombotic Causes and Treatment. [Miscellaneous]." Home Healthcare Nurse March **21**(3): 168-171.

The Blocked PICC

1) Catheter occlusion accounts for 25 - 70% of all CVC related complications.

2) 50% of people have their devices removed due to occlusion before their treatment is complete.

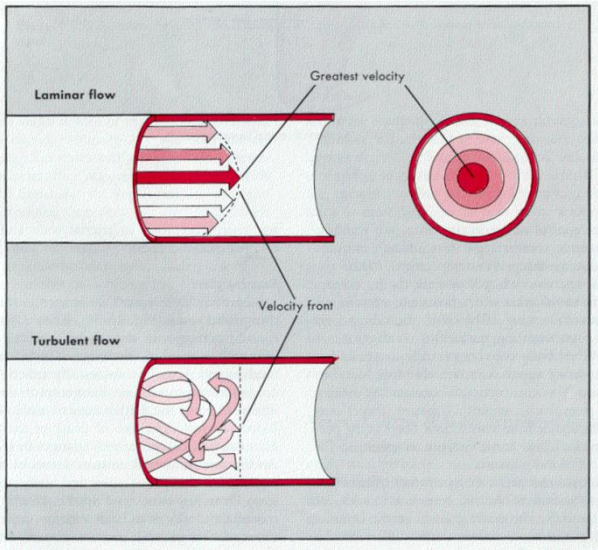
3) Flushes ~ PICC occlusions dropped from 29% to 8.5% with education of a push-pause and positive pressure flush technique (Ngo, 2005).

Flush Techniques

Pulsatile flushing to create turbulence & clean inside of catheter (Controversial)

Positive Pressure to reduce blood reflux

- "Clamp technique" or positive pressure displacement devices

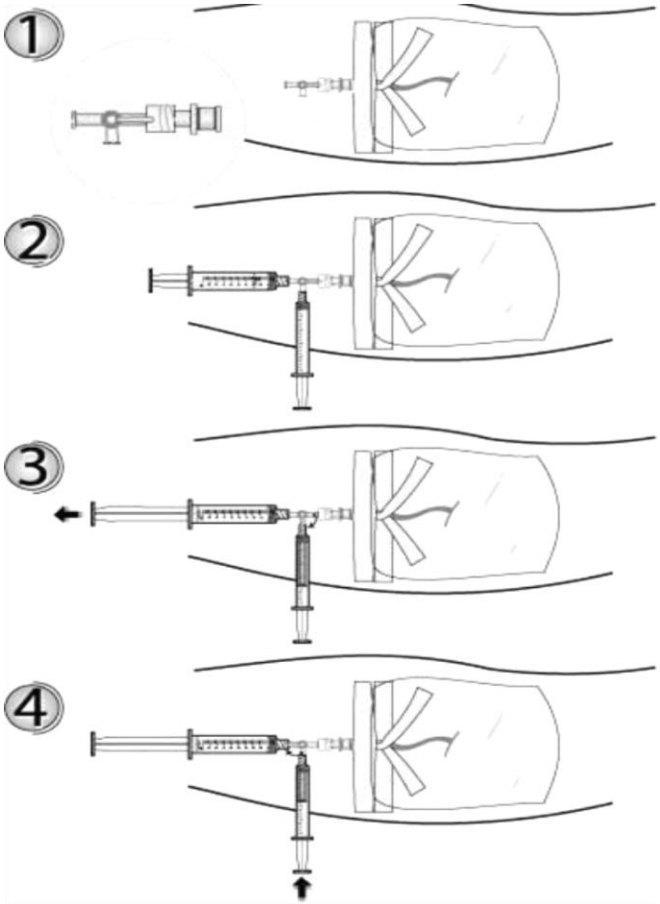


- If using positive displacement devices **DO NOT** clamp until syringe is removed from injection bung
- **Clamping sequence is what is important**

Unblocking PICCs

- The Stop Cock Technique
- The Drugs we can use
- Is it easier to exchange the PICC

Getting the drug in……



Exchanging A PICC

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Principles: Risks & Benefits

- Pulling Back and trimming (Wires do not come in touch with any of the new PICC)
- Or wiring the whole PICC (130cm Wire)

Tips for Practice

- Assessment, Assessment & Assessment
- Insertion Site
- Know your wires
- Use Ultrasound