Vascular Access Devices

- Vascular access devices: IV access over 7 days.
- VAD multiple purposes:
- Chemotherapy Blood/Blood Products or Blood Drawing
- Antibiotics/Antivirals/Antifungal
- Intravenous Therapy: Hydration
- Nutrition: TPN
- Hemodialysis [temporarily]

Central Catheters

- Central Catheters:

- Risks:

TYPES

- PICC (peripherally inserted central catheter)
- Non-tunneled central catheter
- Tunneled central catheter
- Implanted Ports

PICC

- Inserted percutaneously into a peripheral vein
  - i.e. basilica, median cubital, cephalic, brachial
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- US guided; single, double, and triple lumen available
- Size:
- Length:
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Advantages	Disadvantages
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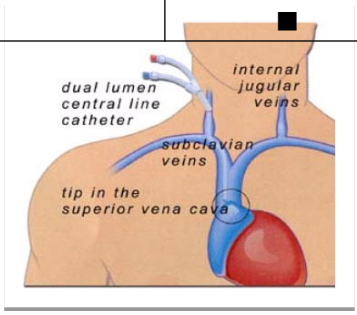
Nursing Implications:

- Sterile procedure
- Consent, Order, Time Out Required
- Flushing:
- Dressing Change Q 7 days or prn (caps changed with dressing change)
- New tubing to be hung with PICC insertion

Non-tunneled Central Catheter

- Placed directly into vessel
  - I.E:
- Temporary or Emergent Access
- Skin sutured at insertion site

Advantages	Disadvantages
■ ■ ■ ■	■ High incidence of: ■ Infection ■ air embolism ■ pneumothorax



Tunneled Central Catheter

- Surgically "tunneled" through tissue into vein
  - Tunneling decreases risk of dislodgement and migration of infection
- Cuff allows for tissue and skin growth around catheter
- Long-term use
- Common Names:
- Insertion:
  - One incision:
  - Second incision:
  - A tunnel is made under your skin between the two incisions, catheter pulled through tunnel, and then placed into vein
  - Sutured in place

Advantages	Disadvantages:
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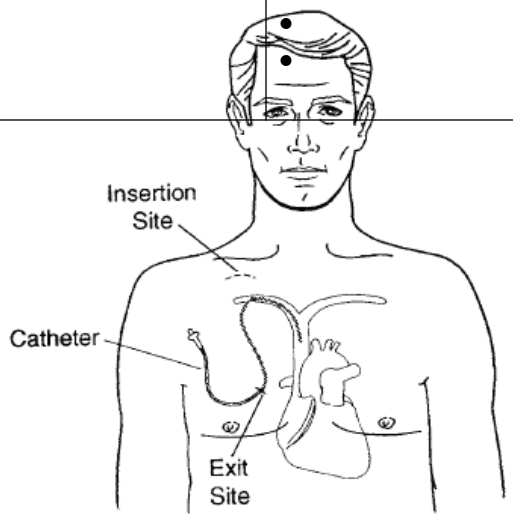

Implanted Ports

- Surgically implanted
- Long-term therapy
- Composed of catheter and small reservoir
  - o
- Reservoir just under the skin
- Catheter attached to large vein
- Accessed through skin
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  - o
  - o

Advantages	Disadvantages
■ ■ ■ ■ ■ ■	■ ■

Care of Vascular Access Devices

- **Follow your institution's policy and procedures!!!**
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Complications of VAD's

- Bleeding
  - o
- Pneumothorax
  - o
- Ventricular Arrhythmias
  - o
  - o
- Dislodgement
  - o

- Sepsis
  - Sterile technique with placement
  - Aseptic technique when accessing hubs
  - Wash Hands!

- Air Embolism
  - Sudden onset of pallor, cyanosis, dyspnea, cough, and tachycardia, progressing to syncope and shock
  - Place in left sided trendelenburg
- Thrombosis

Troubleshooting

- Catheter lodged on vessel wall
  - Reposition
    - Raise arm of side catheter
  - Roll to opposite side
  - Cough and DB
  - Attempt to flush
  - May require repositioning of catheter by VAT
- Unable to palpate port
  - Use deep palpation
  - Seek assistance
  - Attempt to identify scar
- Kinked Cath/ Cath Migration
  - Notify provider
  - Do not use
- "Pinch off Syndrome"
- Clot Formation
  - Do not force
    - R/F Cath Rupture
  - VAT may use CathFlo
    - Clot buster
  - Prevent blood reflux when flushing by leaving 1 ml of flush in syringe

Nursing Assessments

- Documentation
  - Size and type of catheter
  - Dressing
  - Easily flushed
  - Blood return noted

- Skin:
- Catheter measurements prn

Blood Administration

- **Be aware of your institutions policy and procedures!**

Consent & Refusal

- Consent required
  - Inpatient:
  - Outpatient:
  - Emergent:
- Refusal required
  - Be sensitive to religious belief
  - Must sign refusal of blood transfusion form
  - Parent/decision maker (for adults without decision making ability) cannot refuse unless a Living Will or Advanced Directive exists
    - If occurs Child Protective Services (CPS) and/or hospital attorney would be notified to obtain court order for transfusion

Blood Products:

- Whole Blood:
- PRBC's:
- Plasma:

- Fluid, composed of about 92% water, 7% vital proteins such as albumin, gamma globulin, anti-hemophilic factors, and other clotting factors, and 1% mineral salts, sugars, fats, hormones, and vitamins
- Not typically transfused but separated into specific products
- i.e. Albumin, IVIG (intravenous immune globulin)

- FFP:
  - Plasma frozen within hours after donation to preserve clotting factors (uncoagulated), stored for one to seven years, and thawed before transfused
  - Warfarin reversal, coagulation deficiencies
  - Must be administered within 6 hours of thawed
  - Infuse over 15-30 minutes
  - Indicator is high PT/PTT, INR
  - Yellow in color

- Platelets:

- Cryoprecipitate:
  - Prepared from plasma and contains fibrinogen, von Willebrand factor, factor VIII, factor XIII and fibronectin. Cryoprecipitate is the only adequate fibrinogen concentrate available for intravenous use
  - DIC, hypofibrinogenemia, hemophilia
  - Rich in clotting factors
  - Prevent or control bleeding in people with clotting disorders

- Aphresis:
  - “to remove”
  - Blood is removed from body and goes into a apheresis machine where it separates various components of blood
  - Plasma, stem cells, platelets, WBC, RBC’s
  - one of the components is discarded and the other components are returned to patient
  - Used to treat various conditions
  - Guillian Barre, hyperviscosity syndromes, myasthenia gravis

- Universal Donor: O
- Universal Recipient: AB

Administering Blood (PRBC)

1. Confirm order
2. Ensure type and screen is completed
3. Obtain Consent
4. Request blood from blood bank
5. Gather supplies (blood tubing, IV pump, 500 ml bag NS, flush)
    a. New tubing with each unit
    b. #20 gauge or larger IV site
6. Teach patient about transfusion
7. Initiate transfusion within 30 minutes of arrival to floor from BB
8. Obtain baseline VS
9. 2 Nurses confirm patient and blood products at bedside and sign transfusion record (Bridge System with Cerner)
    a. Name, DOB, BB ID, MRN, Blood Type
10. Invert blood bag gently to mix cells
11. Spike blood bag and prime tubing with blood
    a. Ensure that NS clamp is closed when blood spiked
12. Initiate transfusion at 50 ml/hr for 15 minutes
    a. VTBI rate-
    b. Document date time and place of initiation on transfusion record
13. Reassess patient and VS
14. If NO signs or symptoms of rxn, increase blood product rate to 125 ml/hr
15. Reassess VS Q1 hour or prn
16. Blood infused within 4 hours
17. At completion, reassess pt, VS, document date, time, and patient location of completion, amount of blood transfused
18. Remove transfusion record from empty blood bag and send bottom copy to Blood Bank. The original will stay on chart
19. Flush IV site and dispose of blood bag and tubing in biohazard

Transfusion Reactions

- Allergic:

- Anaphylactic:

- Febrile:

- Hemolytic:

- Bacterial:

- Circulatory Overload:

- TRALI:
    - Transfusion Related Acute Lung Injury caused by donor WBC antibodies
    - Fever, chills, hypotension, hypoxemia, pulmonary edema, occurs during or within 6 hours of infusion
        - Need vent support
        - Can be fatal depending on co-morbidities
        - Can return to baseline in 96 hours

- When suspected the nurse will…

Always check your institution's policy and procedures on blood administration!!

NG and PEG Tubes

- NG Tubes

- PEG/G-tubes

- Nursing Considerations