MIDLINES/EXTENDED DWELL

Peripheral venous access devices 3”-8” inserted within 1.5” above or below antecubital fossa, tip terminates below axilla

Therapies 2-4 weeks ideally, if no complications may extend with MD order and supporting documentation, non-vesicant therapies preferred

Not generally reliable for blood draws but always verify patency

Sterile Procedure

Image Reference: http://www.ufrgs.br/imunovet/molecular_immunology/invivo_surgical.html

MIDLINES/EXTENDED DWELL

pH between 5-9 and osmolarity less than 600

Currently interventions limited for fibrin occlusions, always check for mechanical occlusion (kinks, clamps, needleless connector, restrictive dressing and Securement devices)

Flush according to policy to decrease drug precipitations and incompatibilities.

Care and Maintenance same as PICC lines with dressing changes every 7 days or when soiled. Always follow facility's most current policies and procedures.

PICC LINES

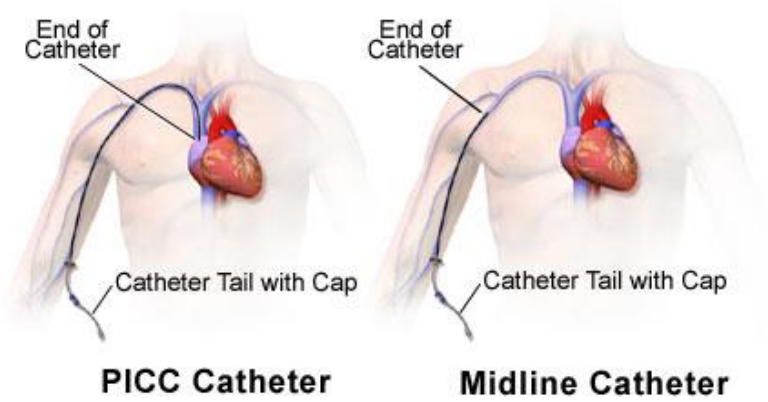
Peripherally Inserted Central Catheter

Central Line, inserted in peripheral Upper Extremity

Tip terminates at distal (lower) vena cava – above the heart.

Sterile Procedure (Bundle)

Must be verified prior to use with CXR or EKG



PICC Catheter **Midline Catheter**

Image Reference:
http://intranet.tdmu.edu.ua/data/kafedra/internal/i_nurse/classes_stud/rn-bsn%20program/full%20time%20study/first%20year/professional%20nursing%20role%20transition%20practicum/01.%20Practice%20nursing%20care%20to%20clients%20with%20Infusion%20Therapy.htm

PICC LINES

Peripherally Inserted Central Catheter

Dwell time – indefinitely, Vascular access screening important for right line

Vesicant drugs with PH greater then 9 less then 5 or infusate with >600 mOsm (hypertonic fluids) consideration

Can be placed in outpatient broad based infusion centers and LTC facility setting

CARE & MAINTENANCE PICC

PICC line device & insertion information needed upon admission to assess and verify catheter total length, internal length and external length exposed – determine correct placement

Catheter tip confirmation to determine central line vs. peripheral

Arm circumference measurement upon insertion 10cm from Antecubital Fossa and then when clinically indicated and assess by RN for increased swelling & pain in the arm, chest or neck

Place of and inserter of PICC line for any questions related to insertion and site issues.

Document education provided to the family and patient and response. Able to recognize and report complications associated with CVAD.

Dressing change every 7 days and prn when soiled or compromised including all Securement devices and any antimicrobial site protection underneath dressing

PICC (CANTRAL LINE) DRESSING CHANGE

Remember a PICC is a Central Line

Hand Hygiene

Clean gloves, 2 masks, sterile gloves, Chlorhexidine-alcohol swabs and/or povidone-iodine swabs (facility policy),

Sterile dressing

Mask for RN and patient

Remove old dressing in direction of insertion

Inspect catheter site for inflammation, erythema/streaks, exudate,

Inspect catheter and hub for intactness, and remove clean gloves

Wash hands

Sterile Technique

Sterile gloves

Clean site with swabs, circular motion, inside to outside, hold catheter with free hand.

Allow site to dry

Secure catheter with securement device (facility policy)

Gently but firmly attach dressing.

Dispose of used supplies, Hand hygiene

Label dressing, Document – Name, date, time

LUMENS

Single-Double-Triple: All lumens need to be addressed and labeled on IV Kardex/flow sheet for care and maintenance tracking using colors or markers. Singles preferred, lower risk of complications and infection risk.

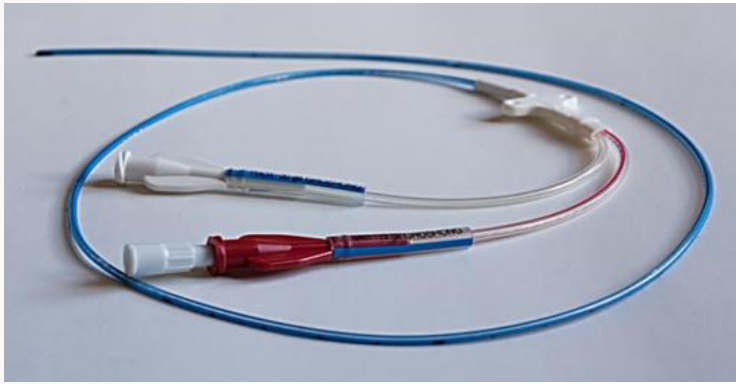
TPN line is recommended to be a dedicated line
NEVER use dialysis line for anything except Dialysis

VASCULAR ACCESS DEVICES (VAD)

So many options…

What's in a name? Groshong, Hickman, Broviac, Port-A-Cath

VALVED = NO CLAMP
(Groshong, Solo, Pasv)



CLAMP = NO VALVE
(Hickman, Broviac)

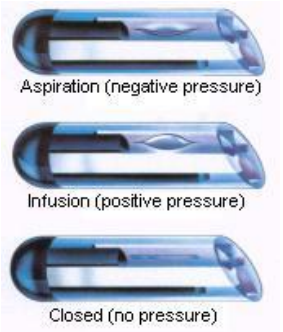


Image Reference:
http://www.ufrgs.br/imunovet/molecular_immunology/invivo_surgical.html

VASCULAR ACCESS DEVICES (VAD)

Valved device:

- Saline only Flush indication
- Less risk for blood reflux & clotting
- Less risk of air embolism
- Cost savings (no heparin requirement)

VS.

Clamped device:

- Heparin indication (increased cost)
- Risk for blood reflux due to error in clamping sequence of needleless connector
- Increase Risk for Air-embolism due to design
- Increased access due to flushing recommendation

Image Reference: http://www.nydailynews.com/sports/cassius-clay-sonny-liston-50-years-gallery-1.1701598?pmSlide=1.1701573

TUNNELED CATHETERS

Surgically inserted; tunneled through subcutaneous tissue to an exit site on the chest or abdominal wall

Provides a more reliable IV access for extended courses of parental nutrition, chemotherapy and antibiotics

Stay away from Tradenames for documentation purposes (Hickman, Broviac, Cook)

Non-tunneled catheters not generally recommended for alternative care settings, removal risk and immediate intervention

Care and maintenance similar to PICC lines with flushing protocols, always reference your most current P&P.

Dressing every 7 days along with Securement device & antimicrobial site protection underneath if present

Healed cuff secures catheter in place and reduces risk of bacteria migrating into bloodstream; dressing optional

Image Reference: http://intranet.tdmu.edu.ua/data/kafedra/internal/i_nurse/classes_stud/rn-bsn%20program/full%20time%20study/first%20year/professional%20nursing%20role%20transition%20practicum/01.%20Practice%20nursing%20care%20to%20clients%20with%20Infusion%20Therapy.htm

IMPLANTED PORTS

Surgically inserted for long term dwell capacity for ongoing infusion therapies such as chemotherapy; requiring little maintenance when not in use

Used in Chronic illnesses with exacerbations and remissions (Crohn's, MS and Cancer)

Single and dual lumen currently available, each treated separately for access.

Assess upon admission skin integrity of port and document last time accessed and flushed, patient's wishes to continue port care and maintenance

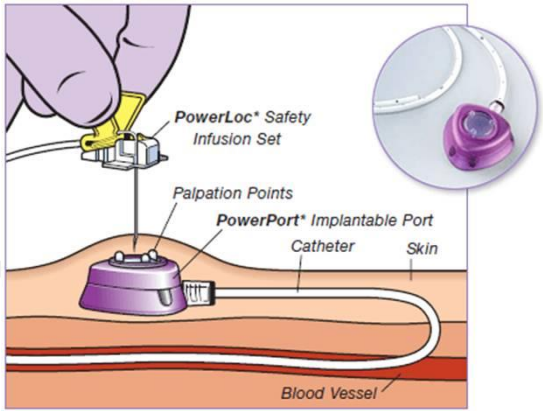


Image Reference: http://powerportadvantage.com/clinicians.html

IMPLANTED PORTS

Smallest-gauge, non-coring needle to support therapy prescribed. Needle to sit flush to the skin and securely within the port. If dual port each port treated separately with access using 2 needles.

Strict aseptic during access use of sterile gloves and mask, perform skin antisepsis per policy

Confirm brisk free flowing blood return prior to use.

Most common practice with infusions is to change non coring needle every 7 days. If not in use per MD order or per manufacturer guidelines, monthly recommended.

Document observation of site – skin and port position.

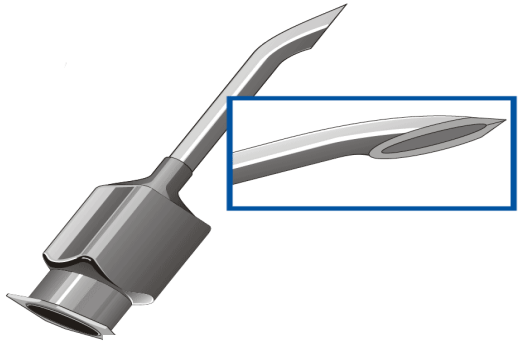


Image References:
- http://www.i-ma.com/Interventional-Pain/Needles-Catheters.html
- http://www.cascadehealthcaresolutions.com/huberplus-non-coring-needle-safety-infusion-set-p/bas012034.htm

CATHETER-ASSOCIATED INFECTION

Local & systemic

Local – CELLULITIS

Systemic – BACTEREMIA, SEPSIS PIV & Central Lines

Majority of systemic infections – Central Line infections = CLABSI's

CATHETER-ASSOCIATED INFECTION

CLABSI – Central Line Associated Blood Stream Infection

CLABSIs are serious but often preventable infections when evidence-based guidelines are followed for the insertion and maintenance of central lines [joint commission (2012)]

National and Global issue – Zero Tolerance for CLABSI

Reimbursement Clampdown on CLABSI's by Centers for Medicare and Medicaid Services (CMS)

Reportable to the CMS

CLABSI STATS:

- 250,000 cases of CLABSI each year - ICU and beyond
- Prolong hospital lengths of stay by up to three weeks.
- 32,996 people die annually from clabsi's (Madison square garden - 20,789 capacity)
- 12.3% mortality rate
- Cost of each CLABSI at $16,550. = $ 4.1 billion annually

- Affects lives
- Strain on healthcare
- Strain on taxpayer

CATHETER-ASSOCIATED INFECTION

Cellulitis

Definition: Microbial Contamination of catheter or infusion delivery system resulting in Inflammation of the skin and surrounding tissue

Causes:

- Poor Insertion technique
- Non-sterile environment
- Sutures – Use securement device
- Catheter movement in and out of infection site – Pistoning

Image Reference: https://www.drugs.com/health-guide/cellulitis.html

CATHETER-ASSOCIATED INFECTION

Cellulitis

Signs and Symptoms: Diffuse-spreading erythema, warm to touch, fever, increased heart rate

Interventions: Remove IV catheter, if drainage-culture site, culture catheter tip, Antibiotics

CATHETER-ASSOCIATED INFECTION

Bacteremia/Sepsis

Definition: Microbial Contamination of catheter or infusion delivery system resulting in systemic microbial infection

Causes:

- Poor Insertion technique
- Non-sterile environment
- Sutures – Use securement device
- Catheter movement in and out of infection site – Pistoning

CATHETER-ASSOCIATED INFECTION

Bacteremia/Sepsis

Signs and Symptoms:

- May be as simple as fever and elevated Heart rate.
- Possible reddish/ pink streaks from site of catheter, Drainage at site, erythema, edema, elevated blood glucose, mental changes, fatigue and chills

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Prevention: Scrub hub and all access points prior to infusion, disinfect skin with appropriate agent, allow dry time, Utilize the bundle, stabilization to decrease catheter movement, replace PIV / Central Line when first signs of irritation / infection show, (inflammation, erythema, warmth, induration, drainage), no touch technique with PIV insertion (see needless connector slides for more prevention tips)

Interventions: Remove IV catheter, culture site & catheter tip / blood Cx per MD order, initiate antibiotic therapy, monitor site and apply appropriate topical agent (local symptoms)

CATHETER-ASSOCIATED INFECTION BUNDLES

CATHETER-ASSOCIATED INFECTION BUNDLES

Insertion & Maintenance

Bundle: groupings of best practices with respect to a disease process that individually improve care, but when applied together result in substantially greater improvement. The science supporting the bundle components is sufficiently established to be considered standard of care." Institute for Healthcare Improvement (IHI) (2012)

INSERTION BUNDLE – CDC

1. Perform hand hygiene before insertion
2. Adhere to aseptic technique
3. Use maximal sterile barrier precautions (i.e., mask, cap, gown, sterile gloves, and sterile fullbody drape)
4. Perform skin antisepsis with >0.5% chlorhexidine with alcohol
5. Choose the best site to minimize infections and mechanical complications
6. Avoid femoral site in adult patients
7. Cover the site with sterile gauze or sterile, transparent, semipermeable dressings

MAINTENANCE BUNDLE – CDC

1. Comply with hand hygiene requirements
2. Scrub the access port or hub immediately prior to each use with an appropriate antiseptic (e.g., chlorhexidine, povidone-iodine, or 70% alcohol)
3. Access catheters only with sterile devices
4. Replace dressings that are wet, soiled, or dislodged
5. Perform dressing changes under aseptic technique using clean or sterile gloves
6. Perform daily audits to assess whether each central line is still needed

NEEDLESS CONNECTORS (NC) & INFECTION CONTROL

Luer Access device/many registered brand names

Attached to almost all VAD's – Central and Peripheral

Clear or Opaque

Negative, Positive and Neutral Pressure options

Neutral & Positive option – no reflux during connection & disconnection

Advantages:

- Reduces needle stick injuries

Disadvantage:

- Known source of infection – 50% of post-insertion infections
- Negative pressure NC – line occlusion
- Positive pressure NC – CLABSI
- Opaque NC – Hidden Blood residue

Image Reference:
http://www.aquilantmedical.ie/products/products_detail.asp?subp=products_by_all.asp&idProduct=12485

NEEDLESS CONNECTORS (NC) & INFECTION CONTROL

Change every 72-96 hours or when changing IV – whichever is sooner

Specific to facility & manufacturers' policies

If drawing Cultures remove NC – false positive

If drawing other blood samples, NC can remain but must be changed if blood residue or precipitate remain - infection risk

Opaque NC – Remove NC for blood draw – Blood residue usually does remain.

CHG cap – Eg. SwabCap, Placed on NC when not in use

Image Reference: http://www.carefusion.dk/our-products/infusion/iv-therapy/needle-free-systems-and-connectors/smartsite-needle-free-valve

CHG PROTECTIVE DISK SPONGES & INFECTION CONTROL

BioPatch Chlorhexidine sponge – Clinically proven to prevent CLABSI's by up to 60%

Currently facility dependent

7 day release of CHG

Absorbs 8X its own weight

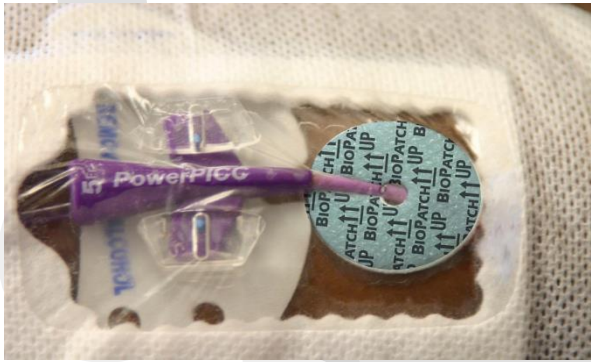

Image Reference: http://evoluzione-dm.it/piccbiopatchstat/?lang=en

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