

CONSIDERATIONS:

1. The Extended Dwell Catheter procedure includes procedural steps for:
 - a. Catheter Insertion
 - b. Flushing
 - c. Site care and dressing change
 - d. Injection port (cap) change
 - e. Blood Draw
 - f. Management of complications
2. Extended Dwell catheters are the preferred vascular access device when:
 - a. IV therapy is anticipated to be greater than 3 days week but less than 29 days
 - b. Anticipated infusion therapy is **not**:
 - i. A vesicant
 - ii. Total parental nutrition (TPN)
 - iii. An infusion with a pH less than 5 or greater than 9
 - iv. An infusion with an osmolality greater than 600 mOsm/L
 - c. Line may be utilized for blood draws with physician order
3. Extended Dwell catheters are appropriate for administering:
 - a. Hydration and IV solutions
 - b. Some antibiotics
 - c. Pain medications
4. Extended Dwell Catheter characteristics:
 - a. Classified as peripheral lines
 - b. Length is 6-8cm
 - c. May be placed in a peripheral vein or artery
 - d. Have a maximum dwell time of 29 days
5. Insertion requires training, knowledge and skills beyond those of standard infusion therapy. The nurse who inserts an Extended Dwell catheter should:
 - a. Be skilled in intravenous therapy
 - b. Successfully complete an approved Extended Dwell insertion class
 - c. Demonstrate knowledge and skill in the procedure through rigorous competency assessment
 - d. Read and follow the manufacturer's instructions for the specific Extended Dwell catheter. Instructions may vary from the procedure described here
6. Insertion of an Extended Dwell catheter requires maximum sterile barrier precautions and rigorous aseptic technique:
 - a. Sterile field, sterile gloves, and masking of both clinician and patient
 - b. Site preparation using a "surgical scrub" approach with required wet and drying times for solution used (2 to 5 minutes depending on solution). Options for solutions include:
 - i. Chlorhexidine (preferred)
 - ii. Alcohol 70%
 - iii. Tincture of iodine (2%)
7. If a saline-flushed extension tube is prepared and attached under sterile conditions when the Extended Dwell is inserted, it is considered part of the catheter, not a part of tubing, and does not need to follow tubing change frequency.
8. Maintenance care of Extended Dwell catheter:
 - a. Flushing:
 - i. Pre and post medications
 - ii. At least once a day
 - b. Site care and dressing change:
 - i. Gauze dressing: Every 2 days
 - ii. Transparent semipermeable membrane (TSM): Every 7 days and PRN
 - c. Injection port (cap) change every seven day and PRN
9. Flushing Recommendations:
 - a. Flushing solutions are preservative-free normal saline and heparin 10 units/mL
 - b. Flushing may be with saline alone, or saline and heparin solution depending on physician instructions
 - c. Flushing may require "positive fluid displacement" (flushing while locking) depending on manufacturer's instructions
 - d. When medications are administered, a saline flush must be administered immediately pre- and post-medication, to prevent drug incompatibility with heparin
 - e. Usual flush orders:
 - i. Normal saline: 5mL – 10mL
 - ii. Heparin 10 units/mL - 5 mL
 - iii. Prefilled syringes reduce contamination risk
 - f. Procedure for SASH:
S – Saline
A – Administer drug/solution
S – Saline
H – Heparin
 - g. Aspirate to confirm blood return prior to first saline flush:
10. Site Care Frequency:
 - a. Perform at routine intervals:
 - i. 2 days for gauze dressing
 - ii. 7 days and PRN for transparent semipermeable membrane (TSM) dressing
 - b. Perform whenever the dressing becomes compromised (moisture, drainage, blood)

11. Site care consists of:
- Removing old dressing
 - Thoroughly assessing site for redness, puffiness, drainage, etc.
 - Cleansing the site with chlorhexidine or alcohol and betadine
 - Applying a polymer skin coating with skin preparation swabs (Request orders as extends life of dressing)
 - Securing the line
 - Applying a new gauze or TSM dressing
 - Initialing the dressing with date/time/initials

12. Gauze dressing or TSM dressing:
- Gauze dressings preferred for:
 - Bleeding or oozing anticipated at site
 - Diaphoretic or very moist skin
 - TSM dressings preferred for:
 - Easy visualization of site
 - Decreased need for “opening” dressing

13. Removal of Extended Dwell catheter:
- Physician order to remove catheter
 - Decision to remove based on:
 - Length of therapy
 - Condition of site
 - Condition of tissue at tip of catheter along path
 - When removing:
 - Apply digital pressure until hemostasis
 - Apply sterile occlusive dressing
 - Measure catheter to ensure entire catheter has been removed

14. Blood draw from catheter:
- Blood draws may be obtained through catheter with physician approval
 - Follow current blood draw policy from central lines

15. Complications:
- Assess for the following complications at every visit
 - Phlebitis
 - Thrombophlebitis
 - Venous thrombosis
 - Occlusion
 - Infiltration
 - Catheter embolus
 - Septicemia
 - Inadvertent arterial puncture
 - Nerve injury
 - Hematoma
 - Air embolism
 - Site infection
 - Cellulitis

16. Patient Education: Teach patient/caregiver to:

- Check site for excessive drainage, bleeding, redness, swelling at exit site
 - Report pain, soreness, swelling or tenderness of the insertion site
 - Report any pain or discomfort during infusion of IV solution
 - Never allow blood pressures or venipuncture of affected arm
 - Always use meticulous aseptic technique when administering medications or performing flushes
17. All tubes and catheters must be labeled to prevent the possibility of tubing misconnections. Staff should emphasize to all patients the importance of contacting a clinical staff member for assistance when there is an identified need to disconnect or reconnect devices.

EQUIPMENT:

- Venous access device (appropriate gauge for specific therapy)
Towel (for under patient’s arm)
Tourniquet
Sharps container
Insertion kit containing:
-Catheter system with appropriate gauge and length
-swab stick skin protectant
-3mL applicator with 2% ChloroPrep
-Drape
-Arm Drape
-Label for venous or arterial placement
-paper tape measure
-gauze pad 2X2
-gauze pad 4X4
-mask
-Tegaderm 4X5
-Statlock
-Bouffant cap
PPE Recommendation:
-mask
-eyewear
-gown
-sterile gloves
Flush solutions as ordered:
Syringe with 5-10 mL saline
Heparin solution 5mL (10 units/mL)
Puncture-proof container
Impervious trash bag

PROCEDURE: INSERTION OF CATHETER

- Check order for type of catheter and for flush solutions.
- Read the insertion instructions from the manufacturer that comes with the catheter, as procedures can vary.
- Use two patient identifiers

4. Explain the procedure and purpose to the patient/caregiver.
 5. Adhering to Standard Precautions, position patient in a place where:
 - a. Patient can lie down comfortably
 - b. Arm is accessible and fully extended and supported on a towel or sheet
 - c. Lighting is good
 - d. Towels can be placed under arm, optional
 6. Assess veins in the selected arm:
 - a. Apply tourniquet visualizing veins
 - b. If site is hairy, clip hair
 - c. Select appropriate insertion site
 7. Assemble the equipment on a clean surface close to the patient:
 - a. Put sharps container “at hand” and open it
 - b. Prepare to create a sterile field
 8. Prepare sterile field and don PPE:
 - a. Put on a mask, protective eye wear and apron/gown
 - b. Wash hands
 - c. Open catheter package and drop on sterile field
 - d. Open other supplies and drop on sterile field
 9. Cleanse the site:
 - a. Don sterile gloves
 - b. Clean skin:
 - i. If using chlorhexidine, scrub back and forth, 30 seconds for each swab. Allow to air dry
 - ii. If using alcohol and betadine, wipe using a circular fashion, moving from the exit site out at least 4 inches in diameter. Allow to air dry. Do not blot.
 - c. Repeat procedure using antimicrobial applicator three times
 - d. Remove gloves
 10. Prepare for insertion:
 - a. Drape insertion site
 - b. Apply tourniquet
 - c. Administer local anesthetic per institutional policies and procedures
 - d. Don Sterile gloves
 - e. Check the extension line clamp is not engaged and vent plug is secure
 - f. Remove needle guard
 - g. Prepare catheter by loosening catheter tip and seal adhesion
 - i. Retract the guidewire slider to the 2cm mark
 - ii. Advance the catheter forward approximately 3mm
 - iii. Return catheter to its original position making sure junction hub and catheter release hub fit together and the distal tip of the catheter is retracted past needle bevel
 - iv. Advance the guidewire slider back to its original position making sure the “0” mark on the slider is visible. This will withdraw the guidewire into the device and return the needle support to its original position
 11. Insert Catheter system
 - a. Access chosen vessel using a continuous, controlled, slow, forward motion. Observe blood flashback through the catheter
 - i. When appropriate, utilizing lower insertion angles during vessel access optimizes the success of catheter placement
 - b. Carefully advance an additional 1mm to ensure bevel is fully seated within vessel
 - c. Stabilize position of needle/handle and carefully advance guidewire into vessel by pulling guidewire slider back into handle
 - d. Fully advance guidewire. Guidewire should advance slowly without resistance
 - e. While firmly holding device needle/handle stationary, advance catheter over guidewire into vessel with the opposite hand Advance catheter using a continuous, controlled, slow, forward motion. Catheter should advance slowly without resistance
 - f. Fully advance catheter until the junction hub advance nose is against the insertion site
 - g. Hold catheter stationary by grasping catheter junction hub with one hand. With the other hand, withdraw needle/guidewire out of catheter
 - h. Upon removal of the needle/handle, ensure guidewire is intact. Slowly retract guidewire into needle for disposal.
 - i. Remove junction hub advancer from catheter by gently lifting up on the catheter while holding the junction hub advance. Once disengaged, remove junction hub advancer and discard.
 - j. Engage extension line clamp and remove the vent plug from catheter extension line luer hub, attach a 10mL syringe filled with normal saline for injection, unclamp and check for brisk, free-flowing blood return, flush, and reengage extension line clamp
 - k. Remove syringe and attach needleless connector or stopcock and flush per institutional policies and procedures
 - l. Secure catheter and dress according to institutional policies and procedures. A catheter stabilization device should be utilized. Ensure all external portions of catheter line are completely under the dressing
 - m. Discard soiled supplies in appropriate containers.
- AFTER CARE:**
1. Document in patient record:
 - a. Procedure and observations
 - b. Time and date of procedure
 - c. Catheter size, length and brand

- d. Location of insertion site; vein site
- e. Site appearance and surrounding skin condition
- f. Catheter status after insertion: blood return and ease of flushing
- g. Arm circumference 2 inches above insertion site
- h. Patient's response to procedure

FLUSHING/HEPARINIZATION PROCEDURE

EQUIPMENT:

- Gloves
- Alcohol applicator (wipe/ swab/ disk/ ampule)
- Syringe of 10mL Normal Saline
- Syringe of 5 mL of Heparin 10 units/mL or as prescribed
- Tape
- Puncture-proof container
- Impervious trash bag

PROCEDURE:

1. Adhere to Standard Precautions.
2. Explain the procedure and purpose to the patient/caregiver.
3. Assemble the equipment on a clean surface close to the patient.
4. Place patient in comfortable position, making sure that site is accessible.
5. Ensure adequate lighting.
6. Prepare syringes by removing air from saline and heparin.
7. Clean injection port with alcohol applicator, using friction for a least 15 seconds. Allow to air dry.
8. If medication administered, follow SASH method.
9. If medication not administered, insert heparin-filled syringe into injection port.
10. Inject heparin solution into injection port using steady pressure.
11. If port does not have a positive pressure adapter, before syringe is completely empty, clamp line and apply pressure on plunger while withdrawing syringe.
12. Discard soiled supplies in appropriate containers.

AFTER CARE:

1. Document in patient's record:
 - a. Date, time and procedure performed
 - b. Amount of saline and heparin solution flush, including strength of heparin
 - c. Medication administered dosage and time
 - d. Appearance of venous access site: ease of flushing and/or blood return
 - e. Patient's response to procedure
 - f. Instructions given to patient/caregiver

SITE CARE, DRESSING CHANGE PROCEDURE

EQUIPMENT:

- Gloves, sterile and non-sterile
- Alcohol applicator (wipe/ swab/ disk/ ampule)
- Antimicrobial applicator (wipe/ swab/ disk/ ampule)
- 5 x 7 cm transparent, semipermeable membrane dressing
- Steri-Strips or Securement Device
- Skin prep swab, optional
- Mask,
- Impervious trash bag

PROCEDURE:

1. Adhere to Standard Precautions.
2. Explain the procedure and purpose to the patient/caregiver. Ask if patient is allergic to any creams, ointments or solutions that are put on the skin, i.e., iodine.
3. Prepare for procedure:
 - a. Assemble the equipment on a clean surface, close to the patient
 - b. Place patient in comfortable position, making sure that site is accessible
 - c. Ensure adequate lighting
4. Remove current dressing and assess site:
 - a. Assist patient apply mask or have them turn away
 - b. Don non-sterile gloves and mask
 - c. Support and anchor catheter tube with non-dominant hand
 - d. Slowly loosen transparent dressing at the distal end
 - e. Peel dressing toward the exit site and parallel to the skin
 - f. Inspect site for signs and symptoms of infection. If present, notify physician
 - g. Remove gloves, wash hands
5. Create a sterile field and cleanse site:
 - a. Don sterile gloves
 - b. Prepare sterile field and prepare supplies
 - c. Clean exit site as per cleansing solution's directions:
 - i. If using chlorhexidine, scrub back and forth, 30 seconds for each swab. Allow to air dry
 - ii. If using alcohol, wipe using a circular fashion, moving from the exit site out at least 4 inches in diameter. Allow to air dry. Do not blot. Follow with betadine swabs. Allow to dry 2 minutes.
6. Apply new dressing:
 - a. Anchor the catheter to the skin using Steri-strips, sterile tape or securement device.
 - b. Apply transparent permeable adhesive dressing. Dressing must cover entire exit site, catheter and extension tubing connector leaving

only the injection port accessible for therapy and procedures

- c. Put date, time, and initials on dressing
7. Discard soiled supplies in appropriate containers.

AFTER CARE:

1. Document in patient record:
 - a. Procedure and observations
 - b. Appearance of venous access site
 - c. Patient's response to procedure
 - d. Instructions given to patient/caregiver
 - e. Circumference of arm

INTERMITTENT INJECTION PORT CHANGE PROCEDURE

EQUIPMENT:

Gloves
Alcohol applicator (wipe/ swab/ disk/ ampule)
Injection port
Prefilled Heparin syringe 5mL (10 units/mL or as prescribed)
Tape
Puncture-proof container
Impervious trash bag

PROCEDURE:

1. Adhere to Standard Precautions.
2. Explain the procedure and purpose to patient/caregiver.
3. Assemble equipment on clean surface close to patient.
4. Place patient in comfortable position, making sure that site is accessible and below the level of the heart.
5. Ensure adequate lighting.
6. Remove air from prefilled Heparin syringe
7. Open protective packaging of new injection port.
8. Insert heparin-filled syringe into injection port.
9. Slowly inject flush to fill dead space of injection port and extension if used.
10. Wrap alcohol wipe around junction until injection port is removed:
 - a. Remove old injection port
 - b. Clean end of catheter
 - c. Remove protective cover from new injection port
 - d. Attach new pre-filled injection port, twisting firmly to secure
 - e. Tape extension set and injection port junction
11. Inject 5mL- heparin solution, using steady pressure.
12. If the port has a positive pressure valve, exert positive pressure on syringe as while removing and clamping.
13. Remove syringe.
14. Discard soiled supplies in appropriate containers.

AFTER CARE:

1. Document in patient record:
 - a. Date, time and procedure performed
 - b. Amount of heparin flush and strength
 - c. Appearance of venous access site
 - d. Patient's response to procedure
 - e. Instructions given to patient/caregiver

Management of Complications:

- a. A good physical assessment *and patient education are the first line of defense in the management of post-insertion complications.*
- b. The following are the possible complications that may be encountered in the care of Extended Dwell catheters and their management:
 - i. Phlebitis
 - ii. Thrombophlebitis
 - iii. Venous thrombosis
 - iv. Occlusion
 - v. Infiltration
 - vi. Catheter embolus
 - vii. Septicemia
 - viii. Inadvertent arterial puncture
 - ix. Nerve injury
 - x. Hematoma
 - xi. Air embolism
 - xii. Site infection
 - xiii. Cellulitis

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AFTER CARE:

1. Document in patient medical record:
 - a. Presence of problem, providing information about the problem's location, quality, quantity, onset, duration, frequency, aggravating and mitigating factors (as applicable) and nursing interventions provided
 - b. Physical assessment findings, including vital signs, condition of skin at site, along path of catheter, and at distal tip
 - c. Patient's level of pain/discomfort with the problem
 - d. Teaching and advice provided to patient/caregiver
 - e. Communicate with physician
 2. Communicate with the physician about abnormal assessment findings, especially signs of infection/inflammation.
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