

## Intravascular Devices

- Ref: (a) Guidelines for Prevention of Intravascular Device-Related Infections, Part 1. Intravascular Device-Related Infections, Part 2. Recommendations for the Prevention of Nosocomial Intravascular Device-Related Infections. Hospital Infection Control Practices, Advisory Committee, CDC, 2002.
- (b) APIC, Text of Infection Control and Epidemiology, Vol. II, Scientific and Practice Elements, 3<sup>rd</sup> Edition, Mosby, 2009, pages 24-1 to 24-22.
- (c) Guidelines for the Prevention of Intravascular Catheter-Related Infections. Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Centers for Disease Control and Prevention (CDC), 2011.

### GENERAL RECOMMENDATIONS

#### Handwashing

- Observe proper hand hygiene procedures either by washing hands with conventional antiseptic-containing soap and water or with waterless alcohol-based gels or foams. Observe hand hygiene before and after palpating catheter insertion sites as well as before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter. Palpation of the insertion site should not be performed after the application of antiseptic unless aseptic technique is maintained.
- Use of gloves **DOES NOT obviate** the need for hand hygiene.

#### Barrier precautions during catheter insertion and care

- Wear non-latex or latex gloves when inserting an intravascular device as required by the Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen Standard.
- Wear non-latex or latex gloves when changing the dressings on intravascular devices.

#### Catheter insertion

- Do not routinely use cut down procedures as a method to insert catheters.
- In adults, use the upper extremity site in preference to one in a lower extremity for catheter insertion. Transfer a catheter inserted in a lower extremity site to an upper extremity site as soon as the latter is available.
- In pediatric patients, insert catheters into scalp, hand, or foot site in preference to a leg, arm, or antecubital fossa site.
- The date of insertion, size of cannula and initials of person inserting the cannula should be recorded.

#### Catheter site care

- Cutaneous antisepsis
  - To cleanse the skin site before catheter insertion, the following preparations can be used: 2% chlorhexidine-based (preferred), 70% alcohol, 10% povidone-

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iodine, or 2% tincture of iodine. Allow the antiseptic to remain on the insertion site for an appropriate length of time before inserting the catheter.

- When tincture of iodine is used for skin antisepsis before catheter insertion, allow it to remain on the skin for at least 2 minutes or longer if it is not yet dry before insertion.
- Do not palpate the insertion site after the skin has been cleansed with the antiseptic (this does not apply to maximum barrier precautions during which the operator is working in a sterile field).
- Catheter site dressing regimens
  - Use either a sterile gauze or transparent dressing to cover the catheter site.
  - Replace catheter site dressings at least weekly for adults or adolescent patient, or when the device is removed or replaced, or when the dressing becomes damp, loosened, or soiled. Change dressings more frequently in diaphoretic patients.
  - Avoid touch contamination of the catheter insertion site when the dressing is replaced.
  - Do not routinely apply topical antimicrobial ointment to the insertion site of peripheral venous catheters.

#### Monitoring

- The IV site should be evaluated at least every shift for evidence of cannula-related complications and the condition of the site must be documented. This evaluation should include gentle palpation of the insertion site through the intact dressing. If the patient has a fever or pain or tenderness at the site, the dressings should be removed and the IV site inspected. If the site exhibits redness, warmth, pain, drainage or tenderness, the site is to be changed.

#### Selection and replacement of intravascular devices

- Select a device with the lowest relative risk of complications and the lowest costs for the anticipated type and duration of IV therapy. The risk and benefits of replacing a device at a recommended schedule to reduce infectious complications should be weighed against the risk of mechanical complications and the availability of alternate sites. Decisions regarding the type of device and its frequency of replacement should be determined on an individual patient basis.
- Remove any intravascular device as soon as its use is no longer clinically indicated.
- Remove peripheral venous catheters when the patient has development of signs of phlebitis (i.e., warmth, tenderness, erythema, palpable venous cord) at the insertion site.
- **In adults**, replace short peripheral venous catheters and rotate peripheral venous sites at least every 96 hours to minimize the risk of phlebitis. If the site is not changed every 96 hours, the reason should be documented in the chart. This would apply predominantly in the **Pediatric** setting where venous access is possibly more difficult to achieve and once successful, routinely rotating the IV site at 96 hours may not be feasible. These cases must be evaluated individually while observing strict IV site care, maintaining its integrity as long as possible.

- Remove catheters inserted under emergency conditions, where breaks in aseptic technique are likely to have occurred and insert a new catheter at a different site ASAP and no longer than 48 hours.
- In adults, replace heparin locks at least every 96 hours.

#### Replacement of administration sets

- In general, administration sets include the area from the spike of the tubing entering the fluid container to the hub of the vascular device.
- Replace IV tubing, including piggyback tubing and stopcocks no more frequently than every 72 hours or when clinically indicated. All IV fluid bags or bottles should be changed every 72 hours.
- Change the needleless components at least as frequently as the administration set. Change caps no more frequently than 72 hours or according to manufacturer's recommendations.
- Tubing used to administer blood, blood products, or lipid emulsions must be changed within 24 hours of initiating the infusion.
- Between changes of components, the IV system should be maintained as a closed system as much as possible. All entries into the tubing, as for administration of medications, should be made through injection ports that are disinfected prior to entry. Clean injection ports with 70% alcohol or povidone-iodine before accessing the system.

#### Preparation and quality control of intravenous admixture

- Check all containers of parenteral fluid for visible turbidity, leaks, cracks, particulate matter, and the manufacturer's expiration date before use.
- Use single-dose vials for parenteral additives or medications whenever possible.
- If a multi-dose sterile parenteral (injectable) vial (MDV) is used:
  - Refrigerate MDV after it is opened, if recommended by the manufacturer.
  - Cleanse the rubber diaphragm of the MDV with alcohol before inserting a device into the vial.
  - Use a sterile device each time a MDV is accessed, and avoid touch contamination of the device before penetrating the rubber diaphragm.
  - Discard MDV when empty, when suspected or visible contamination occurs, or when the stated expiration date is reached.
- **REMEMBER: ALL MDV's** are to contain the following: Opened **DATE** and Expiration **DATE** which will be 28 days after the MDV is opened. Discard the MDV per manufacturer's guidance with **BEYOND USE DATING NOT TO EXCEED 28 DAYS.**

#### Potential infections

- If an IV system is to be discontinued because of suspected IV related infection, such as purulent thrombophlebitis or bacteremia, the skin at the cannula junction should be cleansed with alcohol and the alcohol allowed to dry before cannula removal. The cannula is to be removed aseptically and sent to the laboratory for culture.

- **When septicemia related to IV therapy is suspected**, the remaining fluid in the IV bag or bottle is to be saved. **Immediately notify the Infection Control Department.** The bag or bottle is to go the Microbiology lab with a lab chit, listing the nature of the solution and the lot number.

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