Recommendations for Safe Injection Practices

Committee of Origin: Occupational Health

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INTRODUCTORY COMMENTS

Anesthesia professionals regularly prepare parenteral medications and fluids and administer them to patients using injection equipment such as syringes, needles (or cannulae designed to replace needles), in conjunction with intravenous delivery systems.

Safe injection practices are designed to prevent transmission of infectious diseases to patients and protect anesthesia professionals from acquiring infections during the preparation, handling, and administration of medications and fluids.

Unsafe injection practices by healthcare personnel, including anesthesia professionals, have resulted in infrequent but serious preventable outbreaks of hepatitis B, hepatitis C, and bacterial and fungal infections [1-4]. These outbreaks occurred in many different settings in which anesthesia professionals provide direct care, including acute care hospitals, ambulatory surgery facilities, and endoscopy and pain management centers. The Centers for Disease Control and Prevention (CDC) investigated these outbreaks and identified the causative unsafe practices [5]. These were: 1) using syringes and/or needles/ cannulas for multiple patients; 2) accessing medications or fluid containers with used syringes and/or needles/cannulas and then inadvertently administering the contaminated contents to other patients; and 3) cross-contamination during preparation and of medications and fluids.

In 2007, the CDC published safe injection practice recommendations in 2007 [5]. These practices are essentially standard precautions applied during the preparation, handling, and administration of medications and fluids.

These recommendations are the product of revising and updating the ASA Committee on Occupational Health’s Work Product entitled, “Recommendations for Infection Control for the Practice of Anesthesiology (Third Edition, 2010): Preventing Contamination of Medications.”

These recommendations are designed by anesthesiologists and encourage quality patient care and safety. They apply to anesthesiologists and non-physician anesthesia professionals who practice within the anesthesia care team model.

RECOMMENDATIONS:

1. Aseptic technique
   a. Use aseptic technique, including hand hygiene and a clean work area, during medication preparation to avoid cross-contamination of medications and sterile injection equipment. [4-7]

2. Syringes, needles, and the cannulae
   a. Consider a syringe or needle/cannula contaminated once it has entered or connected to any component of a patient’s intravenous delivery system.
b. Once contaminated, do not use a syringe and/or needle/cannula to administer a medication or fluid to another patient or to access a medication or fluid container.
c. Do not administer a medication from a syringe to multiple patients, even if the needle or cannula is changed.
d. Avoid removing, recapping, breaking, bending or separating contaminated needles before discarding them. [9]
e. Discard a needle attached to a syringe directly into a nearby sharps container without recapping or disassembling. [9]

3. Medications and Fluids
   a. Use pre-filled syringes intended for administration to a single patient and prepared by pharmacy personnel in a licensed compounding facility that adheres to the conditions and practices described in USP Chapter 797 (e.g., a hospital pharmacy, a manufacturer, or an outsourcing establishment). [8-10] See comment A.
   b. If pre-filled syringes as described above are not available, use single-dose vials for parenteral medications, whenever possible. Discard opened vials at the end of the case and do not use residual contents for other patients.
   c. When working in the immediate patient care area *, use medications packaged as multi-use vials for a single patient, whenever possible. Discard opened containers when empty or at the end of the case. [2-4,12,13] See comment B.
   d. Use a new, sterile syringe and needle/cannula each time a medication or fluid container is accessed. See comment C.
   e. Prior to access, wipe the medication vial or ampule neck or access port with 70% isopropyl alcohol and let dry. [7-9,14]
   f. Prepare medications as close as possible to the time of administration.
   g. After drawing up, use propofol as soon as possible and discard any remaining contents within 12 hours (propofol with preservative additive) or 6 hours (propofol without preservative). Flush the intravenous line to remove residual propofol at the end of the case. [15,16]
   h. For multi-day infusions, use sterile products compounded by a manufacturer or your pharmacy in accordance with United States Pharmacopeia (USP) Chapter 797 guidelines. [17,18]

4. Fluid Infusion and Administration Sets (intravenous bags, tubing, connectors, arterial tubing)
   a. Use for a single patient only and dispose appropriately after use.
   b. Minimize the time between spiking an intravenous bag and patient administration. Certain emergent or urgent circumstances require advanced set-up of intravenous fluids and arterial tubing. [9,12]

5. Injection ports: (e.g., open lumen stopcocks or closed lumen needleless access ports)
   a. Use aseptic technique when accessing injection ports to avoid introducing microorganisms which can result catheter-associated blood stream infections. [7,8,19]
   b. Closed needleless injection ports with valves are preferred to open lumen stopcocks because closed ports can be effectively disinfected before access. [19]
   c. If open lumen access ports are used, cover the port with a sterile cap or syringe when not in use. [19]
   d. Disinfect closed lumen needleless access ports by either: [19]
      i. Scrubbing with a 70% isopropyl alcohol swab for at least 5 seconds followed by drying.
      ii. Using Luer-lock caps containing isopropyl alcohol-impregnated pads.

Comments:
A. Injectable drugs prepared in immediate patient care areas are more likely to be contaminated than medications prepared in a compounding facility. The Anesthesia Patient Safety Foundation has recommended standardization of pre-filled medications and the discontinuation of routine provider-prepared medications since 2010.

B. If a contaminated syringe/needle/cannula is used to access a medication vial, then evidence of contamination may not be visible to the naked eye. The medication could then be inadvertently administered to another patient, potentially transmitting disease. This scenario is more likely in a bedside location where medications are needed urgently to treat unstable patients and multiple factors may distract the clinicians’ attention. For these reasons, we suggest that anesthesia professionals working in an immediate patient care location discard any used and/or opened containers, including multi-dose vials, when empty or at the end of the case.

C. When multiple dosages of the same medication must be administered to the same patient at different times, then, using aseptic technique, either: 1) draw the entire contents of a medication container into a sterile syringe and then administer sequential doses to the same patient; or, 2) draw sequential doses using a clean needle and cannula or syringe each time the vial is accessed. *The immediate patient treatment area is any bedside location, including an operating room or other procedure room, including medication carts within these areas*

REFERENCES
16. Cole DC, Baslanti TO, Gravenstein NL, Gravenstein N. Leaving more than your fingerprint on the intravenous line: a prospective study on propofol anesthesia and implications of stopcock contamination. https://doi.org/10.1097/01.SA.0000469896.38318.ad
18. USP General Chapter <797> Pharmaceutical Compounding – Sterile Preparations. Available at: https://www.usp.org/compounding/general-chapter-797