Injection Safety

Medication Preparation Questions

FAQs regarding Safe Practices for Medical Injections

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1. Where should I draw up medications?

Medications should be drawn up in a designated clean medication preparation area that is not adjacent to potential sources of contamination, including sinks or other water sources. Water can splash or spread as droplets more than a meter from a sink. In addition, any item that could have come in contact with blood or body fluids, such as soiled equipment used in a procedure, should not be in the medication preparation area. Examples of contaminated items that should not be placed in or near the medication preparation area include: used equipment such as syringes, needles, IV tubing, blood collection tubes, or needle holders (e.g., Vacutainer® holder).

The medication preparation area should be cleaned and disinfected on a regular basis and any time there is evidence of soiling. In addition, there should be ready access to necessary supplies (such as alcohol-based hand rub, needles and syringes in their sterile packaging, and alcohol wipes) in the medication preparation area to ensure that staff can adhere to aseptic technique.

2. How should I draw up medications?

Parenteral medications should be accessed in an aseptic manner. This includes using a new sterile syringe and sterile needle to draw up medications while preventing contact between the injection materials and the non-sterile environment. Proper hand hygiene should be performed before handling medications and the rubber septum should be disinfected with alcohol prior to piercing it.

3. How far in advance of administration may I prepare an injection?

From an infection control perspective, the safest practice is to prepare an injection as close as possible to the time of administration to the patient. This is to prevent compromised sterility (i.e., microbial contamination or proliferation) or compromised physical and chemical stability (e.g., loss of potency, adsorption to the container) of the medication when it is transferred outside of its original container and stored for a period of time before administration.

If there is a need for “predrawn syringes”, one option is to purchase conventionally manufactured pre-filled syringes, which undergo quality assurance, including sterility and stability, testing by the manufacturer. If a drug is not produced in a prefilled syringe by a conventional manufacturer, another option is to obtain pre-filled syringes from an FDA-registered outsourcing facility. Outsourcing facilities are subject to current good manufacturing practice requirements and other requirements to help assure drug quality.

4. Is it acceptable to leave a needle inserted in the septum of a medication vial for multiple medication draws?

No. A needle should not be left inserted into a medication vial septum for multiple uses. This provides a direct route for microorganisms to enter the vial and contaminate the fluid.

5. What is sterile compounding?

The United States Pharmacopeia (USP) chapter on sterile compounding General Chapter <797> Pharmaceutical Compounding – Sterile Preparations defines sterile compounding as "combining, admixing, diluting, pooling, reconstituting, repackaging, or otherwise altering a drug or bulk drug substance to create a sterile medication."

6. What standards apply if I am performing sterile compounding in my clinic?

USP General Chapter <797> Pharmaceutical Compounding – Sterile Preparations describes the minimum requirements when performing sterile compounding, including compounding personnel responsibilities and training, facilities, environmental monitoring, and storage and testing of finished preparations. Depending on the drug (e.g., hazardous drugs) additional Chapters (e.g., Hazardous Drugs – Handling in Healthcare Settings <800>) may also apply. These requirements apply anywhere sterile compounding is performed, including physician offices.

7. If I plan to mix 2 drugs in a syringe and immediately administer them to a patient, does USP General Chapter <797> Pharmaceutical Compounding – Sterile Preparations still apply?

Yes. USP requirements for sterile compounding apply anywhere sterile compounding is performed. However, Section 1 of the chapter describes circumstances when sterile compounding may be performed outside of the full requirements of the chapter (e.g., without use of an ISO Class 5 primary engineering control). See, for example, Sections 1.3 (Immediate Use CSPs) and 1.4 (Preparation Per Approved Labeling).

8. Is it acceptable to use a syringe (that has not been used on a patient) to draw up and mix contents from multiple medication vials?

The safest practice is to always enter a medication vial with a sterile needle and sterile syringe. There has been at least one outbreak attributed to healthcare personnel using a common needle and syringe to access multiple multi-dose vials for the purpose of combining their contents into a single syringe [14]. If one vial becomes contaminated, this practice can spread contamination to the others, prolonging presence of the pathogen and increasing the potential for disease transmission. Syringe reuse in this fashion may also have been a factor in additional outbreaks [9]. While it is not recommended to use the same needle and syringe to enter more than one medication vial because of the risks described above, there are circumstances where more than one vial may need to be entered with the same syringe and needle (e.g., when reconstituting medications or vaccines). In these circumstances, aseptic technique must be followed and reconstitution should be performed in a designated clean medication preparation area that is not adjacent to areas where potentially contaminated items are placed.

As described in Section 1.3 of USP General Chapter <797> Pharmaceutical Compounding – Sterile Preparation, there are limits on the number of medications that can be combined when performing sterile compounding outside of the full requirements of the chapter (e.g., without use of an ISO Class 5 primary engineering control).

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