

Aseptic Technique: Admixing Medications & Solutions

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Objectives

By the end of this presentation, the participant should be able to:

- Recall required procedures to be completed prior to admixture
- Restate types of needles, dispensing pins, and syringes
- Demonstrate proper use of needles, dispensing pins, syringes, and vials
- Explain proper to disposal procedure for needles



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Prior to Admixture

- Before beginning the admixture process, the pharmacist should double check each order for:
 - Patient age, weight, body surface area
 - Appropriateness of the dose and regimen
 - Infusion rate
 - Concomitant medications
 - Supportive care
- All employees should be trained and validated annually for proper aseptic admixture technique



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Before Admixture

- Aseptically clean entry ports and/or diaphragms of all medication vials, neck of ampules, medication administration ports on IV bags with 70% isopropyl alcohol and allow them to air dry
- Waving vials/bags/ampoules or wafting air towards them should not be done – this increases turbulence, breaks laminar airflow, and introduces a potential risk of contamination



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Needle Anatomy

- Needles consist of a metal shaft with a hub
 - The hub is the plastic piece onto which the tip of the syringe is inserted
 - A bevel is the slanted part at the end of the needle opening
- Needle size is determined by length and diameter (gauge) of the stem
 - Length: 12.7 mm to 88.9 mm
 - Diameter: 31 to 13 gauge
 - 18 to 20 gauge recommended for aseptic prep
 - Smaller diameter = larger gauge
 - 30 to 31 gauge may be needed for some intra-ocular injections




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Other Needle Types

			
Double-ended transfer needle 2 needles back to back connected by a hub	Filter needle Needle with a one-way 5 micron filter located in the hub	Vented needle Prevents pressure formation in some medication containers.	Back-check valve Needle with a valve opening for multiple additives (4 or more) into a single stoppered container. Add smallest volume first.

These needle types are not recommended for use with hazardous agents, such as chemotherapy



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Dispensing pin

- A spike with a valve opening used for removal of medication from a vial or addition of a diluent or medication to a vial
- Eliminates the use of a needle
- Single use only




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Dispensing pin types



Basic dispensing pin
For vials >50 mL



Mini-spike dispensing pin
For ≤ 50 mL



Chemo dispensing pin
For chemotherapy vials when closed system transfer devices are not appropriate



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Using a Dispensing Pin

Insert spike into stopper

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Insert tip of syringe into valve port while holding valve flange

↓

Invert vial when removing medication from vial

↓

Hold valve flange when removing syringe





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Syringe Anatomy

- Consists of a barrel and a plunger
- Volume of solution inside the syringe is indicated by the calibrated graduation lines on the barrel
- When measuring, volume should not exceed 80% of the total syringe volume, and measurements should only be as small as the calibrated graduation lines
- Tip of plunger should not be pulled beyond the last graduation mark





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Syringe types



Luer-lock syringe
Contains a self-locking tip



Slip tip syringe
Tip of syringe is smooth with no self locking feature



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Use of syringe and needles

Remove protective covering around the syringe inside the hood

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Open needle case by separating paper and plastic protective cover inside the hood

→

Pull needle sheath* (plastic cover) straight off. DO NOT pop the hub of the needle through the paper

→

Insert tip of syringe into needle hub and turn clockwise till tight

*If needle sheath is improperly placed or dropped it is considered contaminated. If the needle then contacts the sheath it must be disposed of in the sharps container



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Proper Syringe Handling

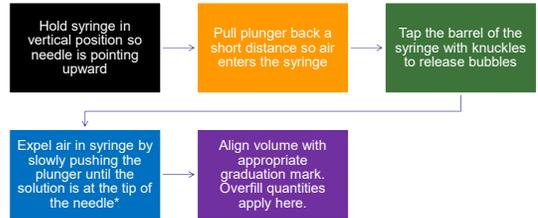
- Hold barrel of syringe with one hand and grip flat knob at the end of the plunger with index finger and thumb of the other hand
- Do not contact plunger in any other part except for the flat knob
- Do not palm the plunger
- Ensure that critical sites maintain access to laminar airflow



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Removing air bubbles from syringe



**DO NOT expel air if using a single-use, locking syringe. They will lock after air is pushed out and be unusable.*

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Vials

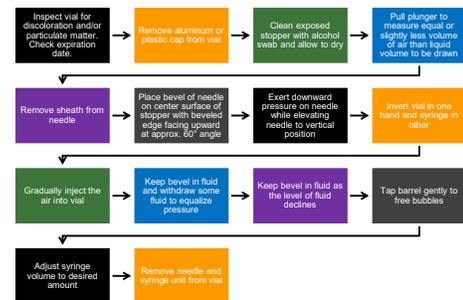
- Glass or plastic containers sealed by a stopper, covered by a protecting band and tab
- Aluminum tab or plastic cap must be removed to insert the needle through the stopper
- **Coring:** When needle entry into the stopper cuts small pieces of material into the solution



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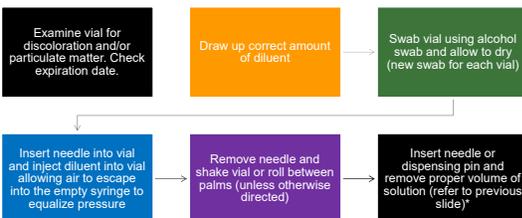
Penetration of needle through stopper



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Removing reconstituted medication



**If coring occurs use filter needle to withdraw contents from vial and discard remaining liquid in syringe. Discard filter needle after use.*

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Luer slip tip caps

- Sterile caps which attach to the tip of a syringe to reduce chances of airborne contamination
- Caps are for single use only
- If cap is removed it should be replaced with a new cap
- Opened packages of unused caps should be discarded at the end of every shift



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Luer slip tip cap use



Note: Placement of the cap on the syringe tip may create downward pressure and may move the black piston inside the barrel of the syringe



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Disposing needles after use

- To dispose, replace needle sheath and remove needle from syringe using a counter clockwise twisting motion
 - For sterile product preparation use scoop technique
 - For injectables replace sheath directly
- Note: Cap can be placed on an alcohol swab to minimize movement of cap
- Discard sheathed needle in appropriate sharps container



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What's next?

- Watch videos
- Complete practice questions
- Review answer file



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