

# **Aseptic Technique: Admixing Medications & Solutions**

**TXCH Global HOPE**



**Texas Children's  
Hospital**

**CANCER AND  
HEMATOLOGY CENTERS**

# Objectives

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*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 disposal procedure for needles

# Prior to Admixture

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- 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

# Before Admixture

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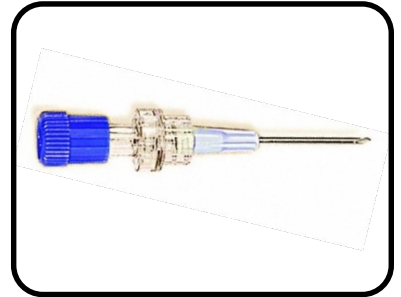
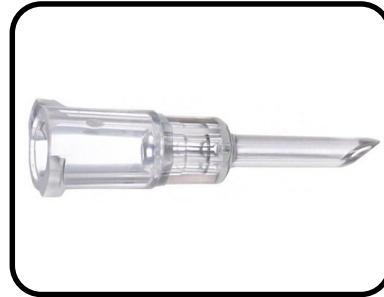
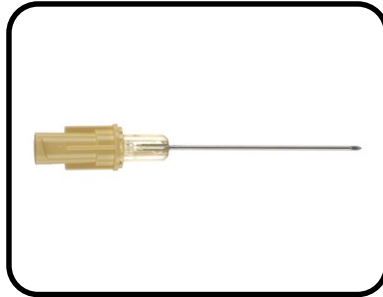
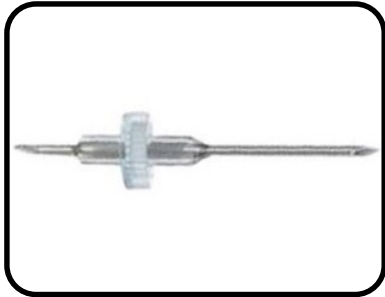
- Aseptically clean entry ports and/or diaphragms of all medication vials, neck of ampoules, medication administration ports on IV bags with 70% isopropyl alcohol and allow them to air dry
- Waving vials/bags/ampoules or wafting air towards them should not be done – this increases turbulence, breaks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

# 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



# 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.

# Dispensing pin

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- 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



# Dispensing pin types

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Basic dispensing pin

For vials >50 mL



Mini-spike dispensing pin

For  $\leq 50$  mL



Chemo dispensing pin

For chemotherapy vials when closed system transfer devices are not appropriate



# Using a Dispensing Pin

Insert spike into stopper



Insert tip of syringe into valve port while holding valve flange



Invert vial when removing medication from vial



Hold valve flange when removing syringe



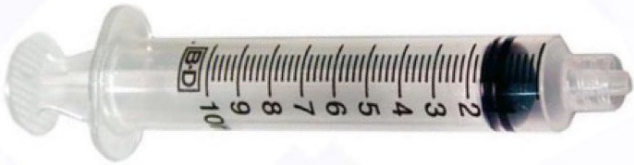
# Syringe Anatomy

- 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



# Syringe types

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## Luer-lock syringe

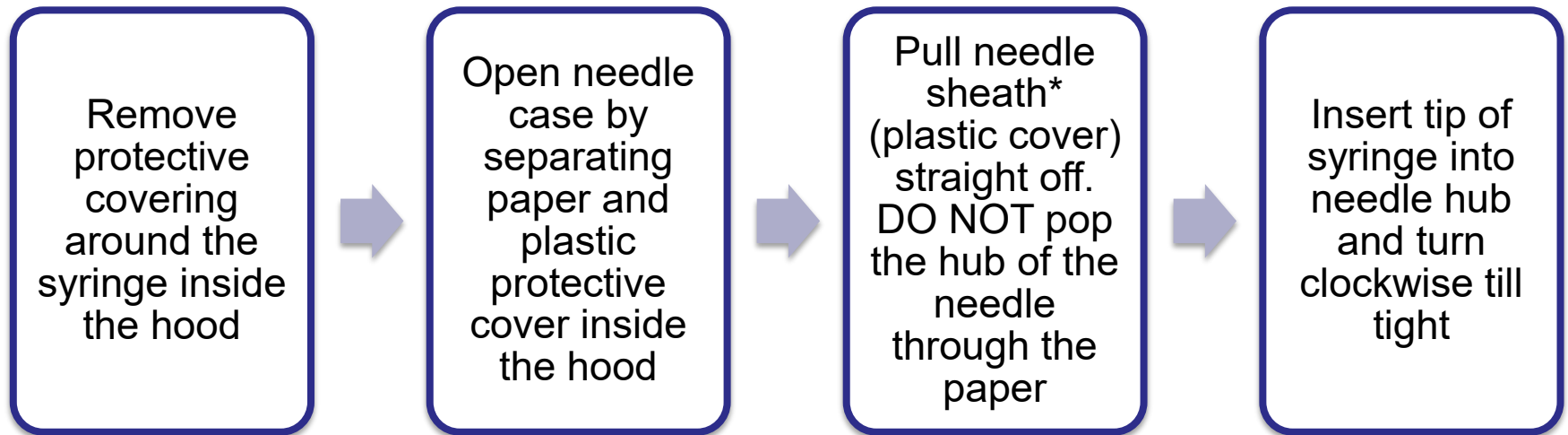
Contains a self-locking tip



## Slip tip syringe

Tip of syringe is smooth with no self locking feature

# Use of syringe and needles



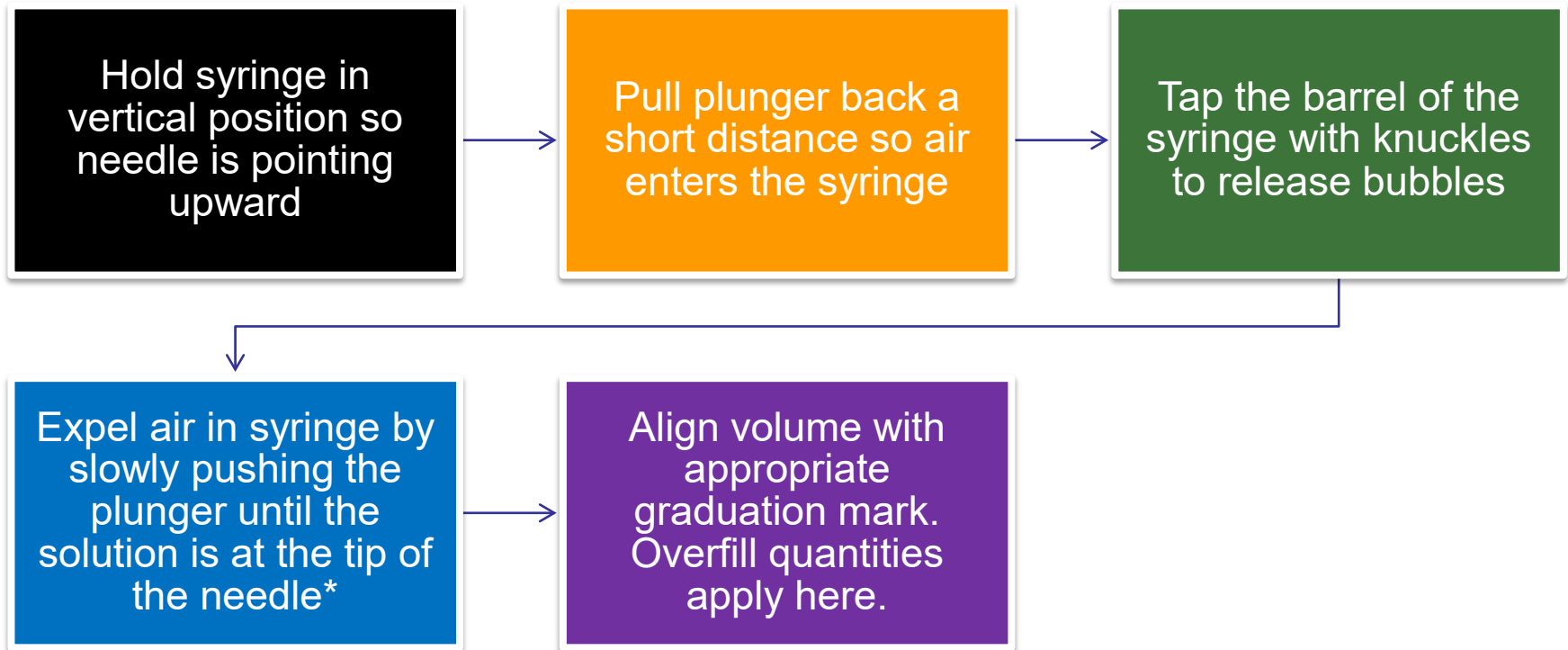
*\*If needle sheath is improperly placed or dropped it is considered contaminated. If the needle then contacts the sheath it must be disposed of in the sharps container*

# 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



# 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.*

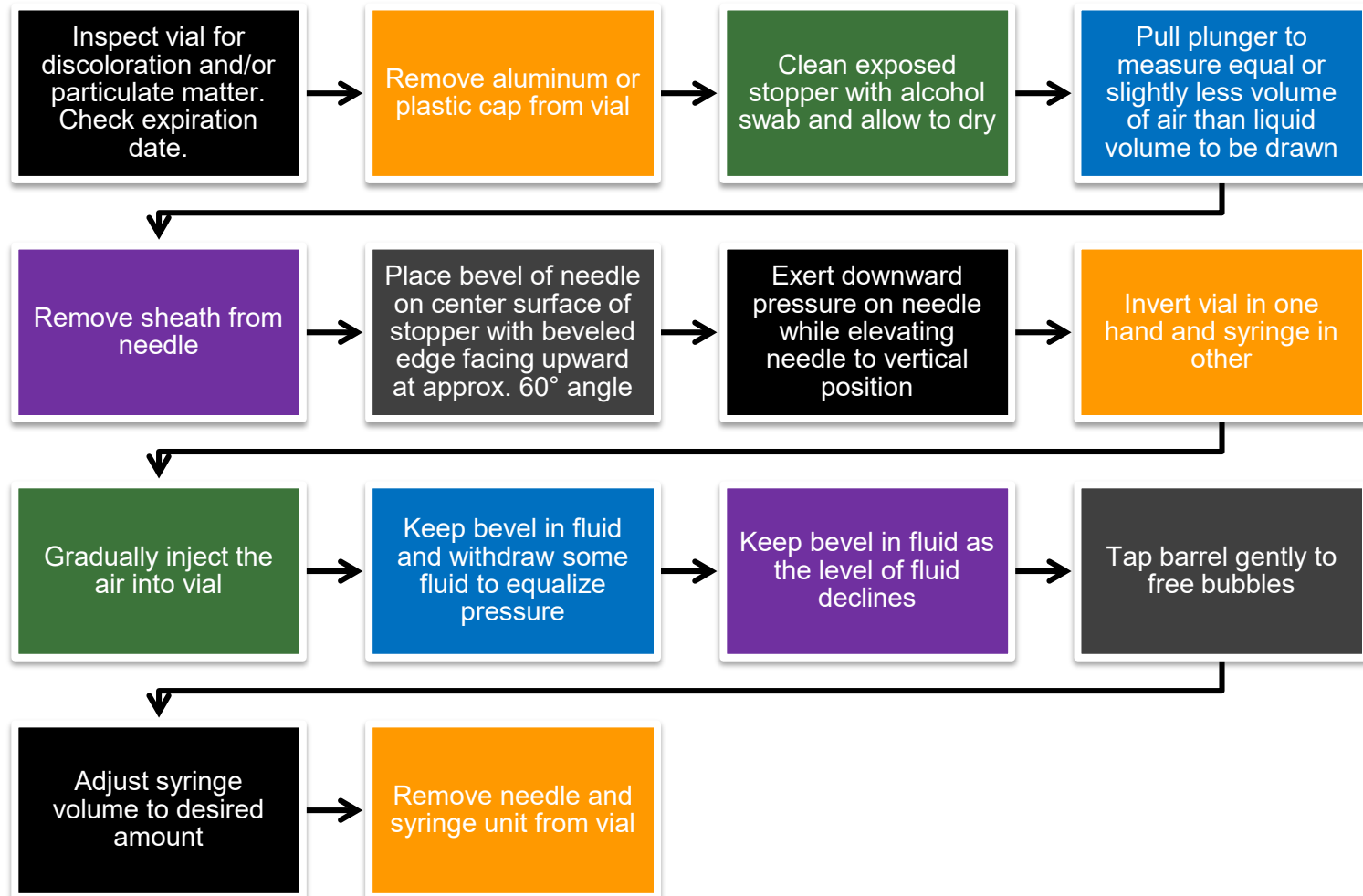
# Vials

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- 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

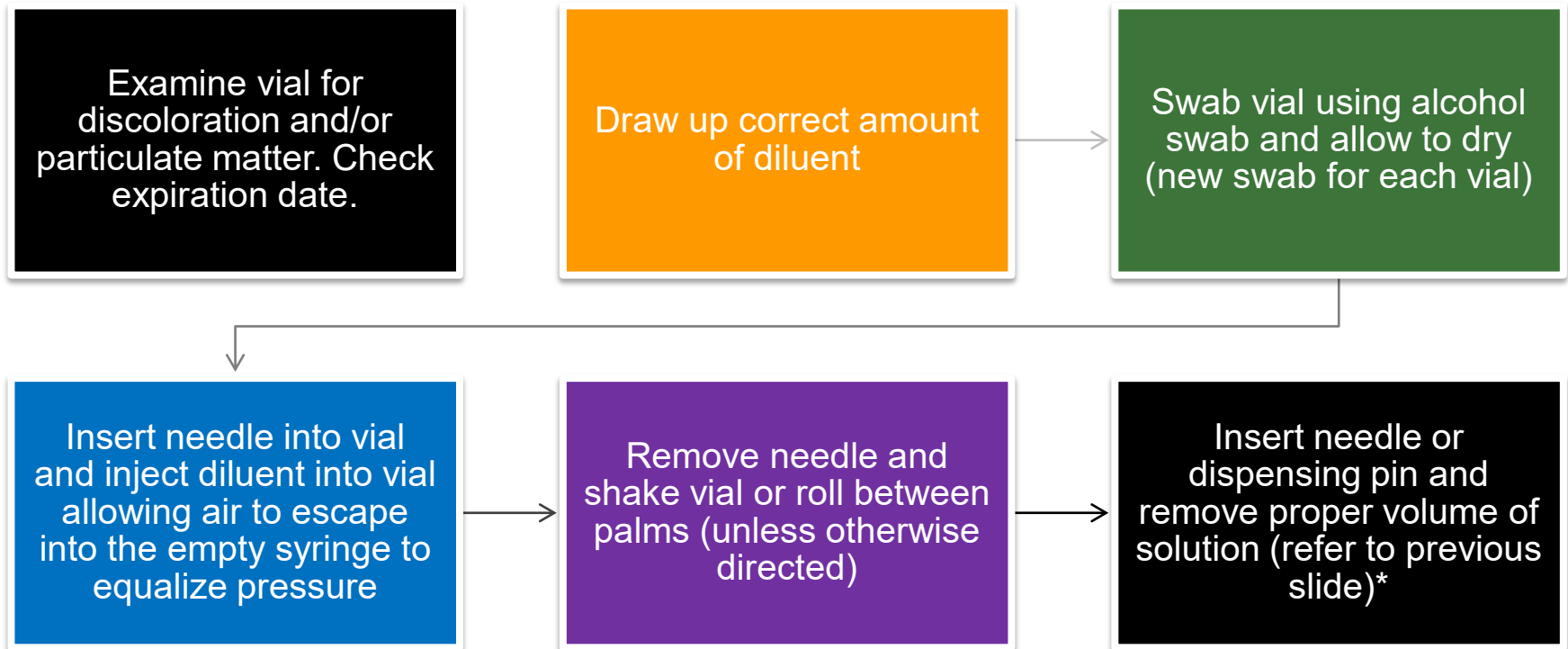


# Penetration of needle through stopper





# 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.*

# 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



# Luer slip tip cap use

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***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***

# 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



# What's next?

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- Watch videos
- Complete practice questions
- Review answer file

# Global HOPE Pharmacy Education

