IV ADMIXING OUTSIDE OF PHARMACY

Athens-Limestone Hospital 2013-14

TRAINING MODULE

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Objectives

By the end of this training module, the participant will be able to:

- Discuss the importance of competency related to admixing outside of pharmacy
- Identify basic steps in IV admixing outside of pharmacy
- Understand the importance of using aseptic techniques for admixing

Documented Competency

All nurses who prepare sterile admixtures must have documented competency to do so. Competency assessment includes training & assessment of the nurse's competency to perform this skill.

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IV Admixing

When an onsite, licensed pharmacy is available, sterile medications, IV admixtures, and other drugs are compounded or admixed only in the pharmacy, *EXCEPT* in emergencies or when this practice is not feasible (e.g., when the duration of product stability is short).

Admixture performed outside of pharmacy should be for short term / immediate use.

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IV Admixing

"Admixture system" refers to sterile IV solutions that are prepared by using one or more medications or electrolytes and will be administered via the parenteral route (not through the digestive tract).

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Designated Area

Admixture should be performed in a designated area that is clean and clutter free.
Eating, drinking, and the storage of food are prohibited in the area designated for sterile product preparation.

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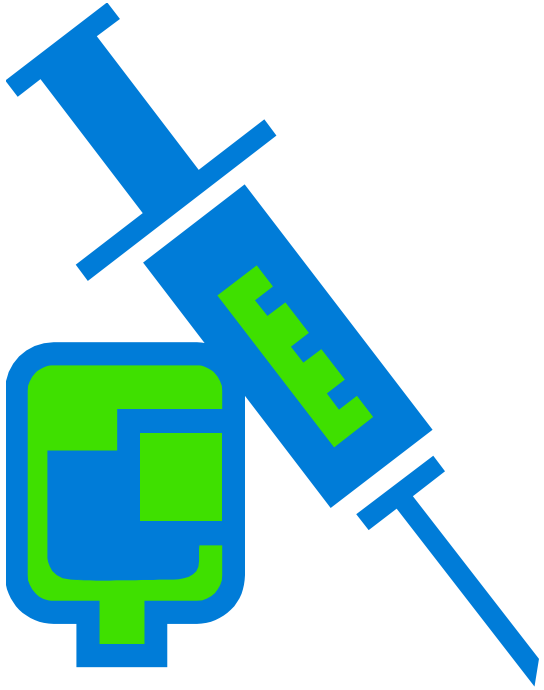
Introduction

- **Parenteral (IV) route is considered to be the most dangerous mode of drug delivery for 2 reasons**
- Cannot be removed once administered
- Direct route into the blood stream through which pathogens can enter

- **Parenteral route also has special advantages**
- More rapid absorption of medication
- More reliable blood levels of the medication



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Hand Washing

- ✓ The nurse should wash hands with an antiseptic prior to admixing medications. For routine hand washing, a 15 second soap and water wash is performed.
- ✓ The hospital approved hand sanitizer may be used when hands are not visibly soiled.

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Contamination

- The most common way products are contaminated is by touch
- Common organisms shed from skin, hair, and the respiratory tract include:
- Staphylococcus
- Streptococcus
- Pseudomonas
- E. Coli

- Particulate matter is also a contaminate:
- Can be undissolved mobile substances present in parenteral solutions
- Harmful and possibly fatal to patients
- Usually brought into solution during addition of a medication or electrolyte to the base solution

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Contamination

- **Common sources of particulate matter include:**
- Glass from ampules
- Rubber from a rubber stopper which has been cored by the syringe
- Paper fibers from the wrapping of syringes or alcohol swabs
- Spores created by resistant type bacteria or fungi
- Dust from vents, shelving, counters, or dirty drug containers
- Dandruff from the head, hands, or facial hair
- Crystals from saturated solution (such as mannitol)
- Precipitates from medication incompatibilities

- Particulate matter can cause numerous problems when it enters the circulatory system, becoming lodged in organs such as the brain, lungs, liver, and kidneys causing
- Thrombi
- Phlebitis
- Systemic emboli

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Reducing the Risk of Contamination

- Always use a designated IV prep area in your medication room
- Area should be well lit and uncluttered, free of food, trash, and drink
- Ensure that the prep area is clean
- It should be wiped with an anti-microbial cloth such as Sani-Cloth
- The rubber stopper under the vial cap is not sterile. It needs to be wiped with alcohol.
- Do not allow the injection port to the IV solution bag or the rubber vial stopper to come in contact with any other material or surface after wiping
- When opening the syringe or needle, do not push it through the paper side. This will help avoid any fibrous particulate matter from being caught in the syringe and needle.
- Assemble the needle and syringe without touching any area that may contact the parenteral fluid
- Remove the needle's cap and with the bevel of the needle facing up, start to insert the needle at approximately a 45 degree angle
- The syringe should be straightened to a 90 degree angle as it is inserted. This will help eliminate 'coring' or the process of cutting a bit of rubber out of the stopper with the needle.

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Reducing the Risk of Contamination

- Flip the vial upside down and remove the contents required
- Do not wrap your hand around the needle and vial as this may lead to accidental contamination of the needle
- Inject the contents of the syringe into a the IV solution using the same procedure
- Care must be taken not to touch tip of syringe, plunger, or needle to maintain sterility and prevent contamination

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Filter Needles

- Must be used when drawing up solution from an ampule
- Filter traps small particles of glass
- Only for unidirectional use – either to withdraw or inject

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Basic Characteristics of IV Solutions

- Intravenous solutions should be:
- Free of particulate matter
- Sterile and pyrogen free
- Sterility and pyrogen free condition may only be assured when a solution is compounded in the proper setting (i.e. the pharmacy clean room or prepared in a barrier isolation hood)
- Nurses may decrease the risk for contamination by proper technique

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Aseptic Technique

- Technique involving procedures designed to prevent contamination of drugs, packaging, equipment, or supplies by microorganisms during processing
- Maintaining the sterility of already sterile products

Technique - Ampule

1. Tap contents of ampule out of neck before breaking
2. Clean ampule with sterile alcohol swab
3. Wrap neck of ampule with a fresh alcohol swab for breaking
4. To break:
   - Place one hand below the neck of ampule
   - Use thumb of opposite hand to apply pressure to the neck, while using index finger of this same hand to hold the neck in such a way as to prevent the ampule from flying out of the hand when broken
   - Aim away from yourself and use a quick firm snapping motion to break the ampule

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Technique - Ampule

5. Attach filter needle to syringe, remembering not to touch tip of syringe or hub of needle, and withdraw a little more than the desired amount of substance from ampule
6. Replace filter needle with regular needle for injection into IV bag
7. Remove any air bubbles
8. Measure the proper amount of substance to be injected into the IV bag, taking care not to touch needle to any part of the ampule
9. Wipe injection port of IV bag with sterile alcohol swab prior to injection of syringe contents
10. Once substance is added, squeeze and mix contents by inverting IV bag a few times. Do not shake.
11. Check bag for particulate matter
12. Dispose of all materials properly

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Technique - Vial

1. Clean rubber top of vial with sterile alcohol swab (area beneath cap is not sterile)
2. Attach needle to syringe, remembering not to touch tip of syringe or hub of needle
3. Before removing contents of vial, add an equal amount of air as the desired amount of substance
4. To avoid coring (the process of cutting a bit of rubber out of a vial stopper) insert needle into the vial, bevel up, at a 45 angle

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Technique - Vial

5. Inject the air
6. Turn the vial upside down to withdraw proper amount of substance
7. Inspect syringe for any particulate matter such as vial core
8. Remove air bubbles prior to withdrawing the needle from the vial, making sure to keep the needle below the liquid level in the vial

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Technique - Vial

9. Once air bubbles have been cleared, place the vial flat on the counter to remove the needle (prevents spills and protects preparer)
10. Wipe injection port of IV bag with sterile alcohol swab prior to injection of syringe contents
11. Once substance is added, squeeze and mix contents by inverting IV bag a few times. Do not shake.
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Inspection

Inspect the IV bottle / bag and the medication for cracks, particulate matter, clarity, and color.
Any questionable product is appropriately discarded.

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Admixing in Summary

- ✓ Clean area before mixing
- ✓ Use aseptic technique
- ✓ Use the diluent (and amount) noted on the medication vial.
- ✓ The admixture includes no more than two ingredients.
- ✓ Use the size syringe that will accurately measure the required volume.

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Labeling

Label the solution with the following information:

- Patient's name and room number
- Medication name
- Quantity/volume and strength of drug added
- Diluent
- Expiration date if shorter than 24 hours
- Date and time of preparation
- Initials of person preparing

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IV Incompatibilities

Consult with Pharmacy for questions regarding IV incompatibilities!

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In Summary

- Medications must be labeled in a standardized manner according to organizational policy, applicable laws and regulations, and standards of practice to minimize errors.
- Unfortunately sometimes the extensive familiarity we have with these products can lead us to underestimate the importance of the simple basics of their preparation

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References

1. ISMP Medication Safety Alert! Safe practices in pharmacy sterile compounding areas. Available at: http://www.ismp.org/newsletters/acutecare/articles/20110602.asp
2. ASHP Guidelines on Quality Assurance for Pharmacy-Prepared Sterile Products Am J Health-Syst Pharm. Available at: http://www.ashp.org/DocLibrary/Bestpractices/MgmtGdlOutsourcingSterileComp.aspx

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End of Study Module

- Please review this material again if there are areas of content that are not clearly understood.
- Complete the post-test when you are ready.
- This module will not be considered complete until the post test is taken

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