18.3: Evidence-Based Practices for Injections

It is important to follow evidence-based practices regarding parenteral medication administration to provide safe and effective care. Evidence-based practices include the following:

- Guidelines for preventing medication errors
- Recommendations to prevent infection from injections
- Guidelines for patient safety and comfort
- Recommendations to prevent needlestick injuries

Each of these practices is further described in the following sections.

Guidelines for Preventing Medication Errors

Medication errors can occur at various steps of the medication administration process. It is important to follow a standardized method for parenteral medication administration. Agency policies on medication preparation, administration, and documentation may vary, so it is important to receive agency training on using their medication system to avoid errors. See Table 1 for a summary of guidelines for safe medication administration.\[1\]

Additional details about preventing medication errors can be found in the "Administration of Enteral Medications" chapter.

Table 1: Summary of Safe Medication Administration Guidelines

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Additional Information</th>
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Be cautious and focused when preparing medications. Avoid distractions. Some agencies have a no-interruption zone (NIZ) where health care providers can prepare medications without interruptions. [2]

Check and verify allergies. Always ask the patient about their medication allergies, types of reactions, and severity of reactions. Verify the patient’s medical record for documented allergies.

Use two patient identifiers and follow agency policy for patient identification. Use at least two patient identifiers before administration and compare information against the medication administration record (MAR). [3]

Perform appropriate patient assessments before medication administration. Assess the patient prior to administering medications to ensure the patient is receiving the correct medication, for the correct reason, and at the correct time. For example, a nurse reviews lab values and performs a cardiac assessment prior to administering cardiac medication. See more information regarding specific patient assessments during parenteral medication administration in the “Applying the Nursing Process” section.

Be diligent and perform medication calculations accurately. Double-check and verify medication calculations. Incorrect calculation of medication dosages causes medication errors that can compromise patient safety.

Use standard procedures and evidence-based references. Follow a standardized procedure when administering medication for every patient. Look up current medication information in evidence-based sources because information changes frequently.

Communicate with the patient before and after administration. Provide information to the patient about the medication before administering it. Answer their questions regarding usage, dose, and special considerations. Give the patient an opportunity to ask questions and include family members if appropriate.

Follow agency policies and procedures regarding medication administration. Avoid work-arounds. A work-around is a process that bypasses a procedure or policy in a system. For example, a nurse may “borrow” medication from one patient’s drawer to give to another patient while waiting for an order to be filled by the pharmacy. Although performed with a good intention to prevent delay, these work-arounds fail to follow policies in place that ensure safe medication administration and often result in medication errors.
Ensure medication has not expired.

Check all medications’ expiration dates before administering them. Medications can become inactive after their expiration date.

Always clarify an order or procedure that is unclear.

Always verify information whenever you are uncertain or unclear about an order. Consult with the pharmacist, charge nurse, or health care provider, and be sure to resolve all questions before proceeding with medication administration.

Use available technology to administer medications.

Use available technology, such as bar code scanning, when administering medications. Bar code scanning is linked to the patient’s eMAR and provides an extra level of patient safety to prevent wrong medications, incorrect doses, or wrong timing of administration. If error messages occur, it is important to follow up appropriately according to agency policy and not override them. Additionally, it is important to remember that this technology provides an additional layer of safety and should not be substituted for the checking the five rights of medication administration.

Be a part of the safety culture.

Report all errors, near misses, and adverse reactions according to agency policy. Incident reports improve patient care through quality improvement identification, analysis, and problem-solving.

Be alert.

Be alert to error-prone situations and high-alert medications. High-alert medications are those that can cause significant harm. The most common high-alert medications are anticoagulants, opiates, insulins, and sedatives. Read more about high-alert medications in the "Administration of Enteral Medications" chapter.

Address patient concerns.

If a patient questions or expresses concern regarding a medication, stop the procedure and do not administer it. Explore the patient’s concerns, review the provider’s order, and, if necessary, notify the provider.

Preventing Infection

Administering parenteral medications is considered an invasive procedure. It is imperative to take additional measures when administering parenteral medications to prevent health care associated infections. The Centers for Disease Control and Prevention provides several recommendations for safe injection practices to prevent contamination and spread of pathogens. These recommendations include hand hygiene, prevention of needle/syringe contamination, preparation of the patient’s skin, prevention of contamination of the solution, and use of new, sterile equipment for each injection. Each of these recommendations is discussed below.

Perform Hand Hygiene

Always perform hand hygiene before preparing and after administering the injection with facility-approved, alcohol-based hand sanitizer. See more information about performing effective hand hygiene in the "Aseptic Technique" chapter.
Prevent Needle/Syringe Contamination

Keep the parts of the needle and syringe sterile. Keep the tip of the syringe sterile and keep it covered with a cap or needle. Avoid letting the needle touch unsterile surfaces, such as the outer edges of the ampule or vial, the surface of the needle cap, or the counter. Always keep the needle covered with a cap when not in use and avoid touching the length of the plunger.

After administration, use the scoop-cap method to recap the needle to avoid needlestick injuries and place the used syringe/needle immediately in the sharps container.

Video Review of Scoop-Cap Technique

Prepare Patient’s Skin

Wash the patient’s skin with soap and water if it is soiled. Follow agency policy for skin preparation. When using an alcohol swab, use a circular motion to rub the area for 15 seconds, and then let the area dry for 30 seconds. If cleaning a site, move from the center of the site outward in a 5-cm (2 in.) radius.
Prevent Contamination of Solution

Use single-dose vials or ampules whenever possible. Do not keep multi-dose vials in patient treatment areas. Discard a container if sterility is compromised or questionable. Medications from ampules should be used immediately and then discarded appropriately. Additional information about ampules is provided in the "Basic Concepts" section.

Use New Sterile Equipment

Use a new, sterile syringe and needle with each patient. Inspect packaging for intactness and discard if there are rips or torn corners. If single-use equipment is not available, use syringes and needles designed for steam sterilization.

Guidelines for Patient Safety and Comfort During Injections

With proper preparation and technique, injections can be given safely and effectively to patients to prevent harm. It is essential to use correct needle sizes and angles of insertion and select appropriate anatomical locations based on patient age, size, and type of injection to avoid complications. For example, for intramuscular injections the ventrogluteal site is preferred in adults because it has the greatest muscle thickness, is free of nerves and blood vessels, and has a small layer of fat, resulting in less painful administration and optimal absorption of the medication.

Use the correct needle length according to the type of injection to ensure delivery of medication into the correct layer of tissue and to reduce complications such as abscesses, pain, and bruising. Needle selection should be based on the patient’s size, gender, and injection site. Be aware that women tend to have more adipose tissue around the buttocks and deltoid fat pad, which means a longer needle is required. Larger diameter (smaller gauge) needles have been found to reduce pain, swelling, and redness after an injection because less pressure is required to depress the plunger.

Removing medication residue on the tip of the needle has been shown to reduce pain and discomfort of the injection. To remove residue from the needle, change needles after medication is removed from a vial and before it is administered to the patient. Additionally, place the bevel side of the needle up on the patient’s skin for quick and smooth injection of the needle into the tissue.

Proper positioning of the patient will facilitate proper landmarking of the site and may reduce perception of pain from the injection. Position the patient’s limbs in a relaxed, comfortable position to reduce muscle tension. For example, when giving an intramuscular injection in the deltoid, have the patient relax their arm by placing their hand in their lap.

The nurse can also encourage relaxation techniques to help decrease the patient’s anxiety-heightened pain. For example, divert the patient’s attention away from the injection procedure by chatting about other topics.

Recommendations for Preventing Needlestick Injuries

Nurses are at high risk for needlestick injuries when administering injections. Needlestick injuries can result in the transmission of blood-borne pathogens and should always be reported according to agency policy for appropriate follow-up. Table \(\PageIndex{2}\) outlines guidelines for preventing needlestick injuries.\(^{[10]}\)
<table>
<thead>
<tr>
<th>Practice Guidelines</th>
<th>Additional Information</th>
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<tbody>
<tr>
<td>Do not recap needles with both hands.</td>
<td>Recapping needles with two hands creates high risk for needlestick injuries. Use the scoop-cap method by laying the cap on a hard surface and using one hand to hold the syringe and scoop up the cap from the surface. Whenever possible, use devices with safety features such as a safety shield on needles so that recapping is not necessary.</td>
</tr>
<tr>
<td>Dispose of the needle immediately after injection.</td>
<td>Immediately dispose of used needles in an approved sharps disposal container that is puncture-proof and leakproof.</td>
</tr>
<tr>
<td>Reduce or eliminate all hazards related to needles.</td>
<td>Use a needleless system and engineered safety devices for prevention of needlestick injuries when preparing injectable medications whenever possible.</td>
</tr>
<tr>
<td>Plan disposal of sharps before injection.</td>
<td>Plan for the safe handling and disposal of needles and other sharp objects before beginning the procedure. Locate the sharps container before administration, so that you can quickly dispose of the sharps after injection.</td>
</tr>
<tr>
<td>Follow all standard policies related to prevention or treatment of injury.</td>
<td>Follow all agency policies regarding infection control, hand hygiene, standard precautions, and blood and body fluid exposure management.</td>
</tr>
<tr>
<td>Report all injuries.</td>
<td>Report all needlestick injuries and sharp-related injuries immediately. Know how to manage needlestick injuries and follow agency policy regarding exposure to blood-borne pathogens. These policies help decrease the risk of contracting a blood-borne illness.</td>
</tr>
<tr>
<td>Participate in required training and education.</td>
<td>Attend training on injury-prevention strategies related to needles and safety devices per agency policy.</td>
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7. RegisteredNurseRN. (2021, February 25). Recap a needle using the one-hand scoop technique nursing skill | Medication administration. [Video]. YouTube. All rights reserved. Video used with permission. youtu.be/bEeAo2jCJjw

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