Administration of Subcutaneous Injections:
Nurses can help family caregivers enhance their knowledge, experience, and skill in managing injectable treatments

According to a recent study conducted by AARP and the National Alliance for Caregiving, many family caregivers experience stress when managing the complex care of older relatives, particularly in regard to the administration of medication. Advances in the management of diseases like diabetes, cancer, and autoimmune diseases—as well as in preventive care for conditions such as thrombosis—have led to a proliferation of injectable treatments that are often administered at home by family caregivers. The technique used to administer these injections can affect the absorption of the medication and the achievement of therapeutic dosing. It can also influence the amount of pain and bruising experienced by the care recipient. It’s essential that professionals teach family caregivers the correct administration technique to ensure a therapeutic response is achieved and to minimize anxiety for the family caregiver and harm to the recipient.

Performing new procedures can be frightening, especially to family caregivers, who may not be adequately prepared or instructed. Combine this with a fear of harming a loved one, and the result can be an overwhelmed family member. It’s important that nurses instructing family caregivers understand and acknowledge the complicated and conflicted feelings caregivers may have about learning to perform new procedures. Nurses can then collaborate with family caregivers to enhance their knowledge, experience, and skill in managing injections.

The following evidence-based recommendations can facilitate teaching family caregivers how to administer subcutaneous injections safely and effectively. The examples cited in this article focus on insulin injections, because these are the most

By Kathryn Sexson, PhD, RN, ANP, FNP-BC, Allison Lindauer, PhD, RN, FNP, and Theresa A. Harvath, PhD, RN, FAAN

It’s important that nurses examine the available evidence on administering injections in order to minimize the risk of complications and improve comfort for the injection recipient, which should also help to reduce the family caregiver’s anxiety.

**Skin preparation prior to injection.** Current recommendations call for washing hands carefully and ensuring that the area to be injected is clean to minimize the risk of infection. Hutin and colleagues conducted a review of the evidence and recommend the use of soap and water to clean the site if the area is visibly soiled.³ In the past 45 years, research has consistently shown that swabbing the skin with alcohol before injection is unnecessary, though it’s still common practice.⁴-⁷ If the decision is made to teach the caregiver to use an alcohol pad, the site should be cleaned and allowed to air dry for 30 seconds to ensure adequate inactivation of surface bacteria and to minimize the risk of stinging.³,⁸

**Strategies to minimize pain.** To help minimize bruising and pain, the person administering the injection should allow a refrigerated medication to warm to room temperature for about 30 minutes.
Considerations when teaching injection techniques

In developing the following suggestions for nurses, we drew on the principles of the “just culture” movement in health care, which is supported by the American Nurses Association.11 (For a description of the just culture concept, see the first article in this series, “Managing Complex Medication Regimens,” November.)

When developing a teaching plan, it’s important to consider the principles of adult learning theory.12 People bring a variety of experiences, skills, and knowledge to any new situation, and this influences how they acquire new knowledge and skills. Most adults are goal and relevancy oriented, need to understand the rationale behind the knowledge or action, and are practical and like to be respected. They have different learning styles—some will learn by listening, some by seeing, and some by doing. Applying these principles, we make the following recommendations for teaching subcutaneous medication administration.

Assessment. Assessment is variable from site to site. The most rapid absorption occurs from injections to the abdomen, followed by the lateral or posterior aspect of the upper arm, and, finally, the upper lateral thigh and hips or buttocks. Koivisto and Felig have suggested that rotating systematically within a site (for example, among the four quadrants of the abdomen) may result in a more consistent drug effect.10

Factors affecting absorption include the concentration and dose of the medication, the patient’s body mass, and massage of the injection site, among others. It’s important to assess these parameters when making site recommendations.

Needle length. Needle length should be chosen based on the ability to penetrate through the dermal layer to the subcutaneous layer while avoiding the muscle layer. For subcutaneous injections in adults, this translates to a length between 4 mm and 8 mm.2

Lipohypertrophy. Fat pads can accumulate under the surface of the skin as a result of the lipogenic properties of insulin, lack of adequate site rotation, and needle reuse. It can take months to years for this condition to resolve.2 It’s crucial to explain the rationale for rotating sites, demonstrate rotation techniques, and discuss the importance of not reusing needles to avoid this complication.

Encourage family caregivers to create a chart in which they can track injection sites, helping to ensure systematic rotation. If lipohypertrophy is present, advise the family caregiver to avoid the area because this condition will have an impact on absorption rates.2

How to Use This Series

- Read the article, so you understand how best to help family caregivers manage medications.
- Encourage the family caregiver to watch the video at http://links.lww.com/AJN/A75.
- Ask the family caregiver if she or he has any questions.
more comfortable practicing on an injection pad at first, but they should be encouraged to perform a monitored injection using the care recipient prior to doing so at home unsupervised.

Be sure to discuss common adverse effects of the injection as well as how the family caregiver should address these, should they occur.

Provide written materials to family caregivers that they can refer to at home. Most manufacturers include culturally appropriate pictorial instruction sheets with their products. If these are not included, be sure to provide a handout. The font should be at least 14 point to ensure it’s easy to read.

Provide contact information for the patient’s health care provider, nurse, or pharmacist, should the family caregiver have additional questions while caring for the patient at home. Remind the caregiver that mistakes are likely to happen. It is important that she or he understands what to do and who to call should they occur.

Video case example
Go to http://links.lww.com/AJN/A75 to watch a video that shows a nurse instructing Mr. and Mrs. Davis in the technique for subcutaneous administration of insulin using a syringe.

This is Mr. Davis’s first time administering an injection. In the video, the nurse allows Mr. Davis to practice on an injection pad. This is recommended if one is available. The nurse has prepared for an initial demonstration as well as a return demonstration by Mr. Davis. The nurse speaks respectfully to both the patient and the family caregiver, carefully explaining the steps as he demonstrates the injection. He then coaches Mr. Davis through the steps, checking to be sure both Mr. and Mrs. Davis understand the rationale of each.

The risk of lipohypertrophy with insulin administration is not broached in the video and needs to be discussed if the caregiver will be administering insulin. Taking time to review contributing factors for lipohypertrophy, its effects on absorption, and strategies to avoid its development will help the caregiver to successfully master the subcutaneous injection technique.

Kathryn Sexson is a family NP at Denali Family Healthcare and an assistant professor in the School of Nursing, University of Alaska, Anchorage.

Allison Lindauer is an assistant professor at Oregon Health and Science University, Portland.
Theresa A. Harvath is the associate dean for academics in the Betty Irene Moore School of Nursing, University of California, Davis, in Sacramento. The authors would like to acknowledge Susan C. Reinhard and Heather M. Young, leaders of the No Longer Home Alone video project; and the contributions of Carol Levine, who conducted focus groups with family care givers regarding the challenges of medication management.

Contact author: Kathryn Sexson, kesrs@aol.com. The authors have disclosed no potential conflicts of interest, financial or otherwise.


DOI:10.1097/NHH.0000000000001064

REFERENCES


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