

# 2017 ISMP Guidelines for Optimizing Safe Subcutaneous Insulin Use in Adults

ISMP Guidelines for Optimizing Safe Subcutaneous Insulin Use in Adults; 2017. <https://www.ismp.org/guidelines/subcutaneous-insulin>.

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**Purpose and Background:** The ISMP is an independent, nonprofit organization that works to provide information about medical errors and how to avoid them. Insulin is classified as a high-alert medication that can cause significant patient harm when used inappropriately. In a 2014 survey of the top 40 high alert drugs that concerned pharmacists and nurses, insulin appeared twice in the top 10 (#1 for intravenous (IV) insulin, #9 for subcutaneous (SQ) insulin). Hypoglycemia is one of the most serious complications of inappropriate insulin therapy. It is associated with significant morbidity and mortality, contributing to vascular and fall events. Medical errors involving insulin are as serious as they are common, with approximately 1/3 of all errors causing death within 48 hours. Errors with insulin therapy are common due to the complexity of sliding scale dosing, variable order sets, and measurement of insulin doses for injections with syringes. Insulin is available in a variety of analogues, most of which have drastically different pharmacokinetic properties. Additionally, patients may require multiple insulin analogues for effective glycemic control, which can lead to confusion and errors during treatment. Finally, both the overdosing and underdosing of insulin can lead to serious consequences for patients. While it is a valuable tool for practitioners, care should be taken to ensure that insulin is administered in accordance with guidelines for safe use.

**Selected Recommendations:** Evidence suggests that a 4-6 mm needle is effective for subcutaneous insulin injections in the adult population, including obese adults.

Insulin pens should never be used on more than one patient. Retrograde travel of blood and tissue through the cannula (needle) and into the pen reservoir has been observed. As a result, insulin pens should be considered non-sterile after one use. Barcode scanning should always be used during every administration, to make sure patient-specific insulin pens are used to administer the correct insulin to the correct patient.

Sliding scale insulin should not be used as the sole method of glucose control. The society recommends that hospitalized patients with diabetes in non-critical condition be treated with scheduled SQ insulin therapy encompassing basal, nutritional, and correctional dosing components.

Transitions of care are critical junctures during any inpatient stay. During the discharge process, prescribers oftentimes forget to write for the supplies necessary for glycemic control outside of insulin itself. A standardized checklist of items including insulin, pen needles or syringes, blood glucose meter related equipment, and acute glucose supplements should be utilized to ensure that every patient is discharged with all the items necessary for safe and effective glucose control when they return home.

Patients discharged on insulin should be assessed for understanding of their self-management. At discharge, patients with diabetes should be well versed in:

1. Proper dose measurement and self-administration of insulin, using the same device and supplies that will be used at home.
2. Proficiency in monitoring and interpreting their own blood glucose values, as well as what to do if they are experiencing hypo or hyperglycemia.
3. Understanding common problems that arise with insulin therapy, how to store insulin, and when to return to their health care provider for follow up.

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