

October 12, 2017



This alert is based on information from the National Medication Errors Reporting Program operated by the Institute for Safe Medication Practices.

Severe hyperglycemia in patients incorrectly using insulin pens at home



The Institute for Safe Medication Practices (ISMP) National Medication Errors Reporting Program (MERP) has received several reports of patients who failed to remove the inner cover of a standard insulin pen needle prior to attempting to administer the insulin. The latest event resulted in a fatality. A recently hospitalized patient with type 1 diabetes did not know to remove the standard needle cover from the insulin pen needle prior to administration. She was unaware that she was using the pen incorrectly and, thus, had not been receiving any of the insulin doses. The patient developed diabetic ketoacidosis and later died.

To protect staff from needlestick injuries and guard against the reuse of needles, many hospitals use insulin pen needles that automatically re-cover and lock the pen needle once injection has been completed and the needle has been withdrawn from the skin. Such products include **NOVOFINE AUTOCOVER** (Novo Nordisk) and **BD AUTOSHIELD DUO**. These safety needles are also recommended for some patients with manual dexterity limitations or if a caregiver is administering the injection to a patient.

With the NovoFine Autocover (**Figure 1**) safety needle for example, the user holds the outer cover of the needle while it is attached to the insulin pen and then removes it, exposing a plastic needle shield that covers the needle. During administration, as the device is held against the skin and pressure is applied, the needle shield slides back to allow the skin to be punctured and the insulin to be injected once the dose button is pressed. As the needle is removed from the skin after administration, the shield slides back over the needle. The needle is hidden throughout the process so the patient will never see it.

Safety Pen Needle

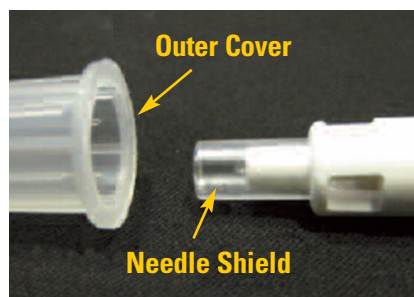


Figure 1. NovoFine Autocover is an example of insulin pen needle with a needle shield that automatically retracts upon injection and re-covers and locks over the needle when withdrawn from the skin. (BD AutoShield Duo, not pictured here, is another example of a safety needle used with pens.)

Standard Pen Needle

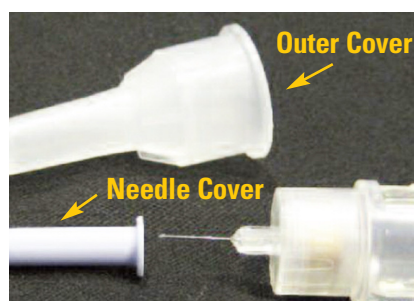


Figure 2. BD Ultra-fine III is an example of a standard pen needle. Both the outer cover and inner needle cover must be removed prior to injection.

The Autocover safety needle system is different from standard insulin pen needles widely used by patients in the home, which do not employ an automatic needle shield. These standard needles are available from brand and generic manufacturers. Because standard pen needles and those with an automatic needle shield may look similar, patients may not be aware of the differences in preparation for administration. Both the automatic safety needle and standard needle systems have a larger outer protective cover that, when removed, exposes either a retractable needle shield (**Figure 1**) or a plain inner needle cover (**Figure 2**). The automatic safety needle shield is

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The National Alert Network (NAN) is a coalition of members of the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP). The network, in cooperation with the Institute for Safe Medication Practices (ISMP) and the American Society of Health-System Pharmacists (ASHP), distributes NAN alerts to warn healthcare providers of the risk for medication errors that have caused or may cause serious harm or death. NCCMERP, ISMP, and ASHP encourage the sharing and reporting of medication errors both nationally and locally, so that lessons learned can be used to increase the safety of the medication use system.

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not intended to be removed prior to injection, **but the inner needle cover on the standard needle system must be removed before the injection** to allow the administration of insulin.

Patients using insulin pens with automatic needle retraction devices while hospitalized, but who will be using standard pen needles at home, must be made aware that the standard needle is different. It is imperative that removal of **BOTH** covers is explained to patients during diabetes education as depicted in this video: www.myclickfine.com/clickfine-overview.html. Prior to injection, the pen should be “primed” using 2 to 3 units of insulin to make certain that the needle is correctly attached and to remove any air bubbles or pockets in the insulin cartridge. This is known as an ‘air shot’ or safety shot, and the patient should see about 2 drops of insulin come out of the needle. If no insulin appears after two or three attempts, the needle should be tightened or changed until a drop of insulin appears. If a patient continues to see no drops, they might have failed to remove the inner needle cover and will likely bypass this step prior to injection.

Healthcare organizations, practitioners, and patients using these products should take steps to safeguard against incorrect use of pen needles. Consider the following:

- Teach all patients receiving an insulin pen how to use it properly, and require a return demonstration to verify understanding.
- Verify which pen needle the patient will be using at home, and tailor the training to that needle. One

hospital that reported an event to ISMP has changed to using standard non-safety needles when training patients prior to discharge to make sure they know how to administer insulin with the same pen and needle they will use at home.

- A community pharmacist should verify that the patient understands the appropriate administration technique whenever pens and insulin needles are dispensed. A request to conduct this verification at the point of dispensing could be entered in the notes section of an electronic prescription or included on handwritten prescriptions.
- Ask patients to question the pharmacist if the pen needle is different than what they expect or what they have been taught to use.
- To determine whether it is due to a problem with the injection technique or if a dose adjustment is needed, remind patients to consult a member of their healthcare team if blood glucose levels are elevated after insulin injection.
- Review the injection technique with the patient if faulty technique is suspected due to poorly controlled blood glucose levels.
- Manufacturers of standard pen needles should include clear warnings about removing both covers in the instructions for use as well as on outer cartons.

The US Food and Drug Administration (FDA) Center for Devices and Radiological Health is aware of reported errors.



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