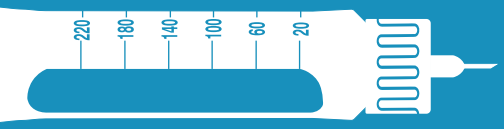


INJECTING WITH INSULIN

A Guide to Good Injection Technique

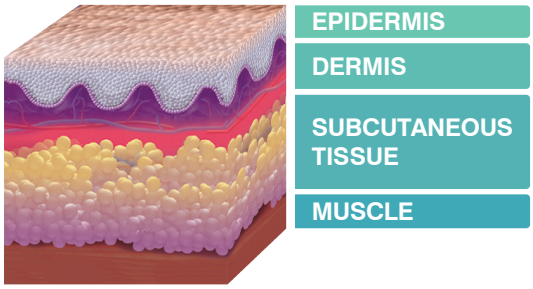
The information provided follows Insulin Administration guidelines outlined by the American Diabetes Association. This information is provided for educational purposes only. Always consult your healthcare professional before making changes to your treatment plan.

QUICK TIPS

Type of injection: Subcutaneous

1. Inject into the abdomen, upper arm, thigh or buttocks
2. Rotate injections within that region
3. Always change your pen needle between injections

LAYERS OF HUMAN SKIN



INSULIN INJECTION TIPS

If your treatment plan includes injection therapy, it is especially important to follow a healthy injection routine, including proper site selection, rotation and injection technique. By sticking with a healthy injection routine, your injections may be less painful and you can reduce your risk of developing complications like lipohypertrophy.

INJECT SUBCUTANEOUSLY

Insulin is injected into the fat layer just under the skin, known as subcutaneous tissue. Unlike injecting into a vein or muscle, a subcutaneous injection allows for slower, sustained rates of absorption. Injecting into a muscle (intramuscular) or a vein is not recommended for routine insulin injection because the drug absorption rates are too fast and can lead to dangerous insulin spikes.

To avoid injecting into muscle, many healthcare professionals recommend lightly pinching the skin, then injecting at a 90° angle. When using shorter needles (ie. 4mm), a skin-pinch may not be necessary. In thin individuals or children, injections may need to be made at a 45° angle to avoid intramuscular injection.

SITE SELECTION

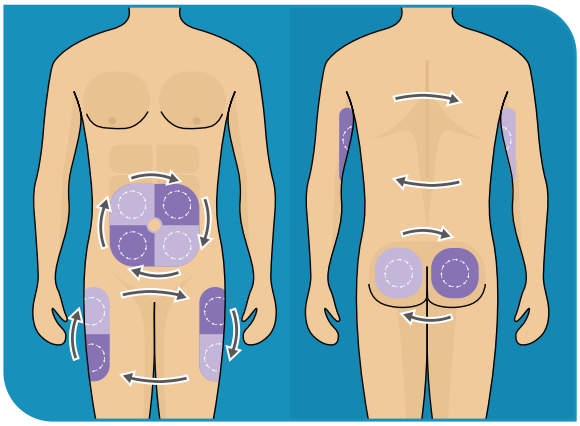
The most popular site to inject insulin tends to be the abdomen. Other injection sites include the subcutaneous tissue of the upper arm, the thigh and the buttocks. When injecting in the abdominal region, one should avoid injecting within a 2 inch radius of the navel. Avoid injecting into areas with scar tissue, moles, swelling or unusual changes in texture.

Absorption rates will vary between injection sites. The abdomen has the fastest rate of absorption, followed by the arms, thighs and buttocks. These factors should be taken into account when selecting a site. If injecting into an area of lipohypertrophy, expect slower absorption.

IMPORTANT:

Following injection, most insulin manufacturers recommend leaving the needle imbedded 5-10 seconds after complete depression of the plunger to ensure delivery of the full insulin dose.

ROTATE BETWEEN SITES



RATE OF ABSORPTION

Absorption rates can be affected by multiple variables, including exercise, temperature and injection site. It is important to understand how these variables impact absorption, as too fast of absorption can increase insulin levels and trigger hypoglycemia.

PREFERRED INJECTION AREAS

Abdomen • Buttocks • Thigh • Back of arms

SITE ROTATION

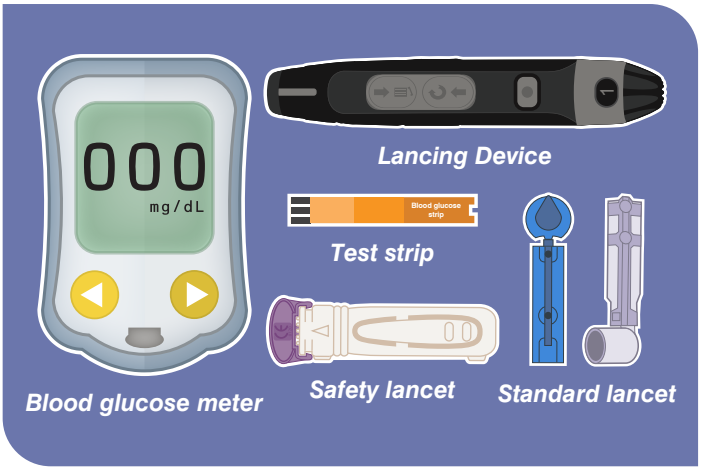
Rotation of the injection site is critical for preventing lipohypertrophy (fatty lumps) and lipoatrophy (fat loss). Besides being unattractive and mildly irritating, these complications can adversely impact drug absorption rates.

To avoid these complications, rotating within one area is recommended (ie. within the abdominal area), versus rotating to different body areas (ie. from the abdomen to the thigh). The latter can cause variability in absorption from day-to-day, creating further imbalance.

BLOOD GLUCOSE MONITORING

The goal in treating diabetes is to bring the body into balance. With so many factors influencing insulin absorption rates (including exercise, stress, hormonal changes, illness, changes in routine, etc.), attaining balance demands frequent blood testing, and insulin dosage should be based on blood glucose measurements.

DEVICES FOR BLOOD GLUCOSE MONITORING



USE NEEDLES ONCE AND ONLY ONCE

Syringes and pen needles are sterile, single-use devices. After one use they lose their sterility and can collect bacteria, posing an increased risk of infection. Repeated use of needles can also adversely affect needle integrity, resulting in needle bending, blockage or breakage.

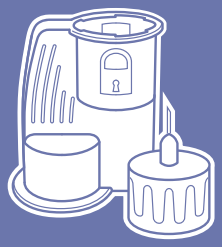
Attempts to cleanse the needle with alcohol are not recommended, as alcohol can strip the needle of the silicone lubricant which allows for less painful skin puncture.

If using an injection pen, do not leave your pen needle on the pen between injections. Doing so can introduce air into the insulin cartridge, and the underdelivery of insulin may occur.

Reference: ADA Position Statement: Insulin administration. Diabetes Care Jan 2004;27 (Suppl 1) S106-S109

RISKS ASSOCIATED WITH PEN NEEDLE REUSE

Use pen needles once...*and only once*

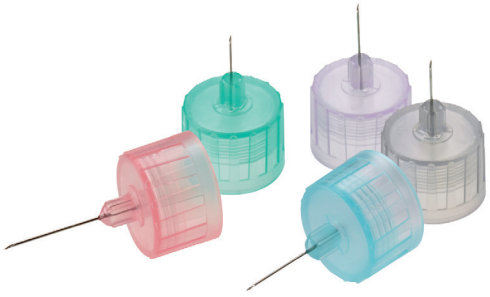


Courtesy of **Unifine** Pentips *Plus* by OWEN MUMFORD

FACT

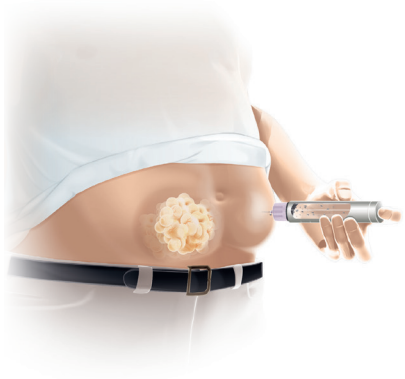
Contrary to the caution of healthcare professionals:

57% of injection pen users do not change their pen needle after each use[1]

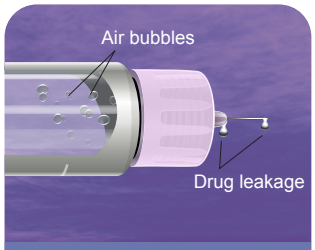


PROBLEM

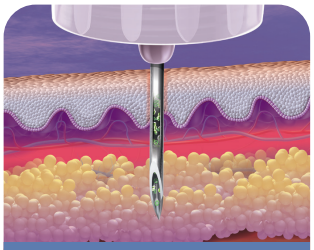
Pen needles are sterile, single-use devices, intended to be used only once. After one use, the needle is no longer sterile and the tip may be damaged. Repeated reuse worsens these risks.



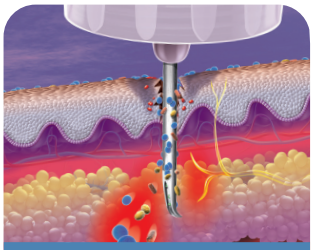
The reuse of pen needles can result in complications ranging from mild discomfort to poor glycemic control, infection and lipohypertrophy[3].



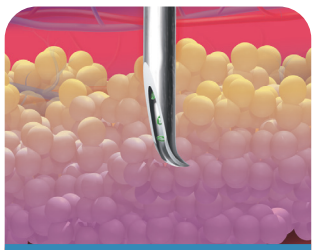
Air bubbles and leakage[2]



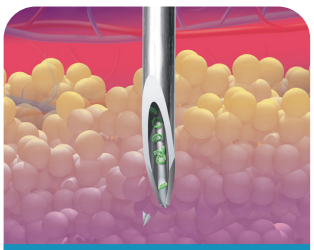
Needle blockage and clogging[2]



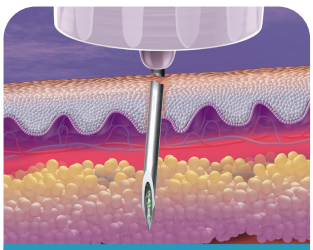
Accumulation of bacteria on the needle[3]



Bent needle tips[4]



Broken needle tips[4]



Whole needle breakage[4]

RISKS

Dose Inaccuracy

Caused by air bubbles, leakage and needle blockage

Skin Damage & Discomfort

Caused by reduced needle integrity

Painful Injection

Due to the tip of the needle being broken or bent, causing a laceration of the skin

1. DeConninck et al. Results and analysis of the 2008-2009 insulin injection technique questionnaire survey. Journal of Diabetes 2 (2010). 2. King L (2003) Subcutaneous insulin injection technique. Nursing Standard. 17, 34, 45-52. Date of acceptance: February 17 2003. 3. I.V. Miniskova et al. Journal of Diabetology. The Risks of repeated Use of Insulin Pen Needles in Patients with Diabetes Mellitus. February 2011; 1:1. 4. Teresa Torrance. Effect of insulin needle reuse, size and site of injection on the risk of bending and breaking. Journal of Diabetes Nursing Vol 12 No 1 2008.

TIPS FOR REDUCING PAIN[5]

To maximize comfort during the injection process:

- Inject insulin at room temperature
- Ensure there are no air bubbles in the syringe or injection pen
- If using topical alcohol to cleanse the site, ensure it has evaporated prior to injecting
- Keep muscles relaxed (not tense) when injecting
- Penetrate the skin quickly
- Do not change the direction of the needle during injection or withdrawal
- Do not reuse needles

SOLUTION

Unifine Pentips Plus features a built-in removal chamber, designed to make pen needle removal easier, safer and more convenient.

A study observing the impact of Unifine Pentips Plus among patients injecting insulin revealed that patients changed their pen needle more often, with **61% preferring Unifine Pentips Plus** to their previous pen needle[6].

OptiFlow™ TECHNOLOGY

SafetyClick™ TECHNOLOGY

DiamondPoint™ TECHNOLOGY

RECOMMENDATIONS

4 mm x 32G 100 COUNT	5 mm x 31G 100 COUNT	6 mm x 31G 100 COUNT	8 mm x 31G 100 COUNT	12 mm x 29G 100 COUNT
NDC: 08470-3840-01	NDC: 08470-3850-01	NDC: 08470-3890-01	NDC: 08470-3830-01	NDC: 08470-3829-01
UPC: 384703840010	UPC: 384703850019	UPC: 384703890015	UPC: 384703830011	UPC: 384703829015

owenmumford.com/ip

5. ADA Position Statement: Insulin administration. Diabetes Care Jan 2004;27 (Suppl 1) S106-S109. 6. HRW (2014) Impact of Unifine Pentips Plus on pen needle changing behavior amongst people with diabetes medicating with injectable formats. 7. Melab GmbH Testing 2014. 8. The used pen needle is secured in the interim container and must be placed in a sharps container at the earliest opportunity.