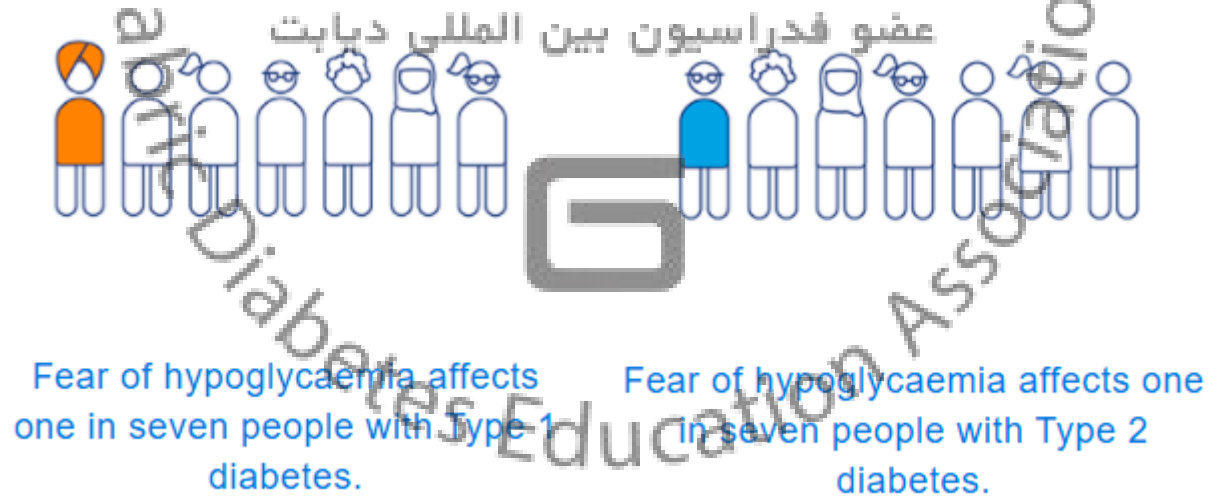


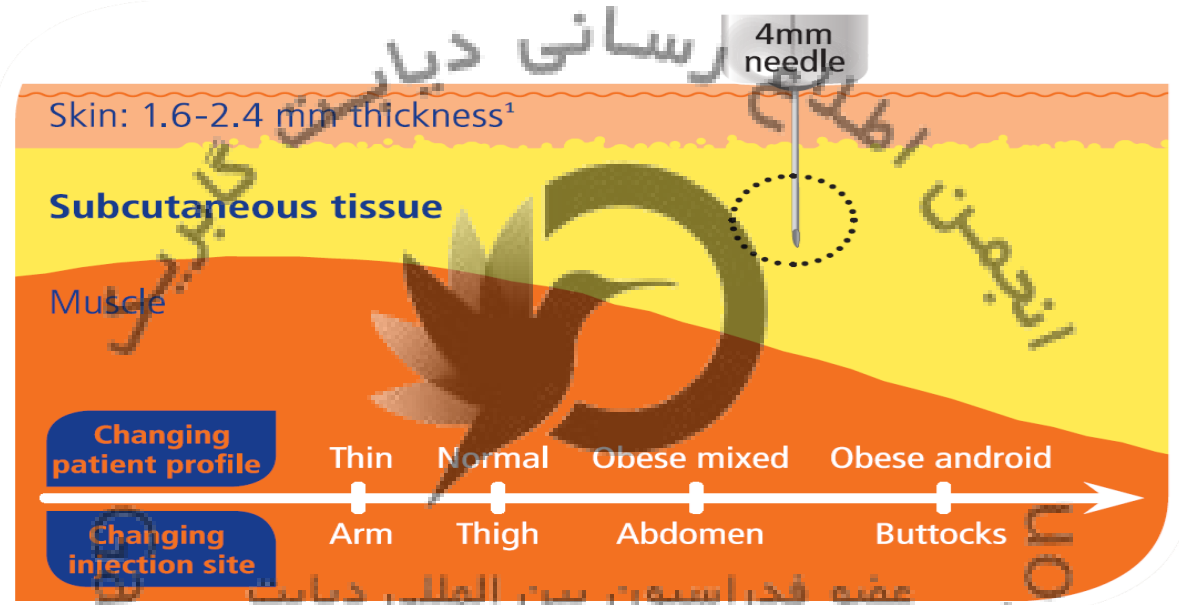
Psychological Barriers to Insulin Use

Diabetes-specific fears:

- Fear of hypoglycemia
- Fear of needles or needle phobia
- Worries about complications



Needle Length



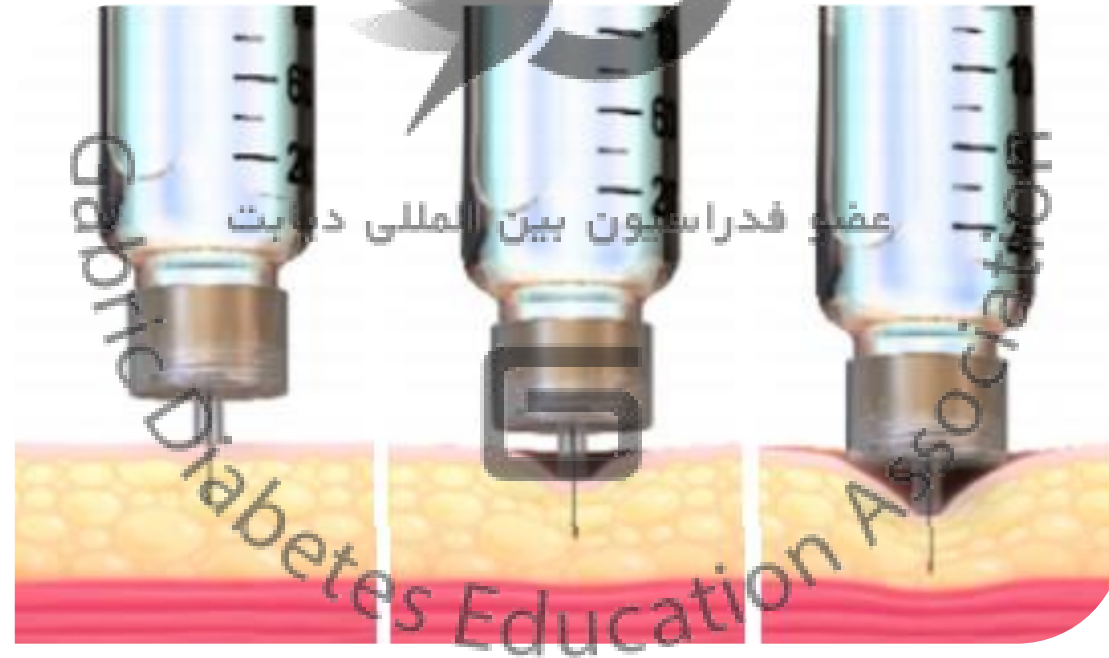
4 mm pen needle is considered the safest pen needle for adults and children regardless of age, sex, ethnicity, or BMI.

4-mm pen needles provide equivalent A1C control to 8-mm and 12-mm pen needles in people with obesity who are taking large doses of insulin.

FIT Forum for Injection Technique Canada. Recommendations for Best Practice in Injection Technique. 4th ed. 2020.
FIT UK & FIT Ireland Forum for Injection Technique. The UK & IRE Injection and Infusion Technique Recommendations. 5th ed. 2020.

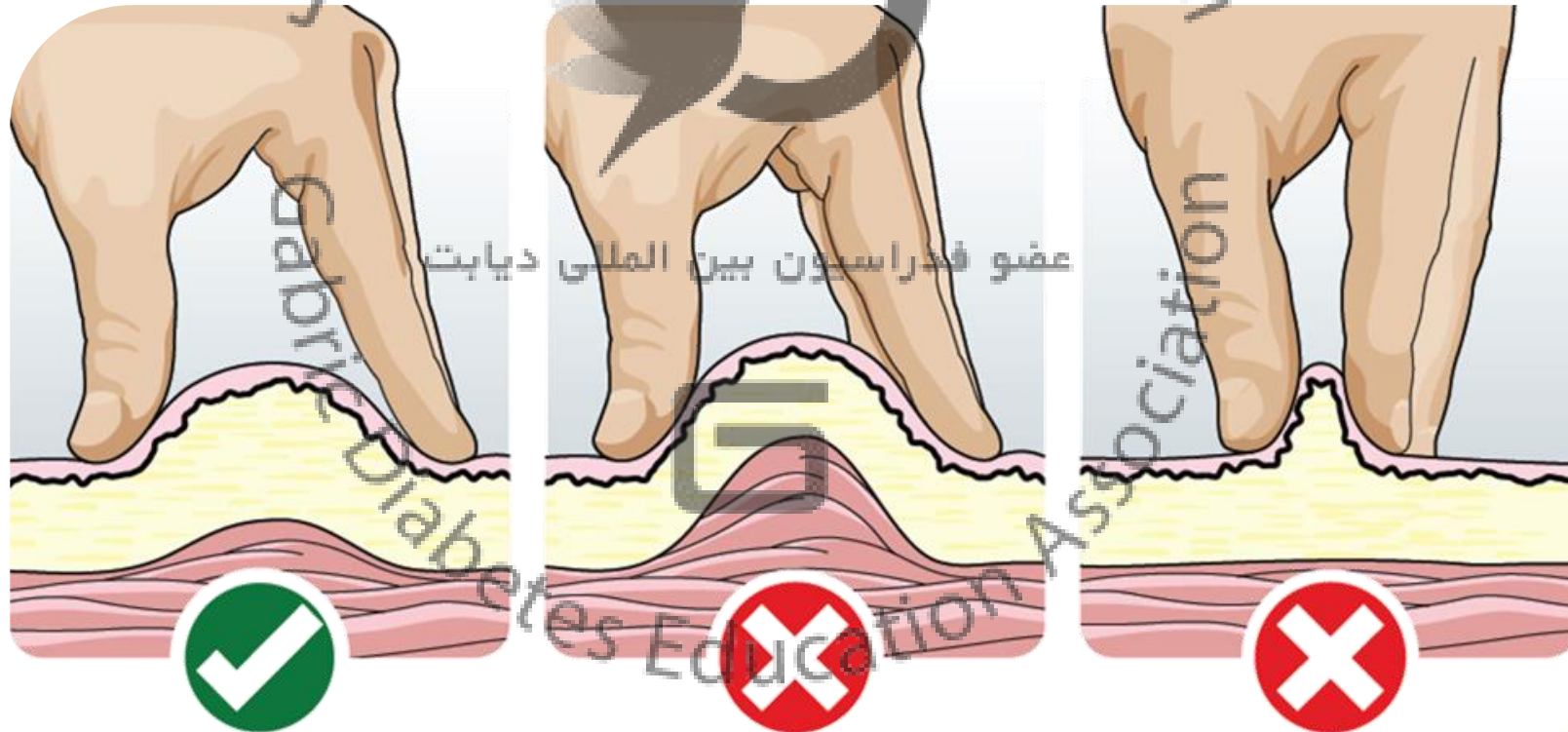
Intramuscular Injection

- Excessive injection force can increase risk of IM injection.



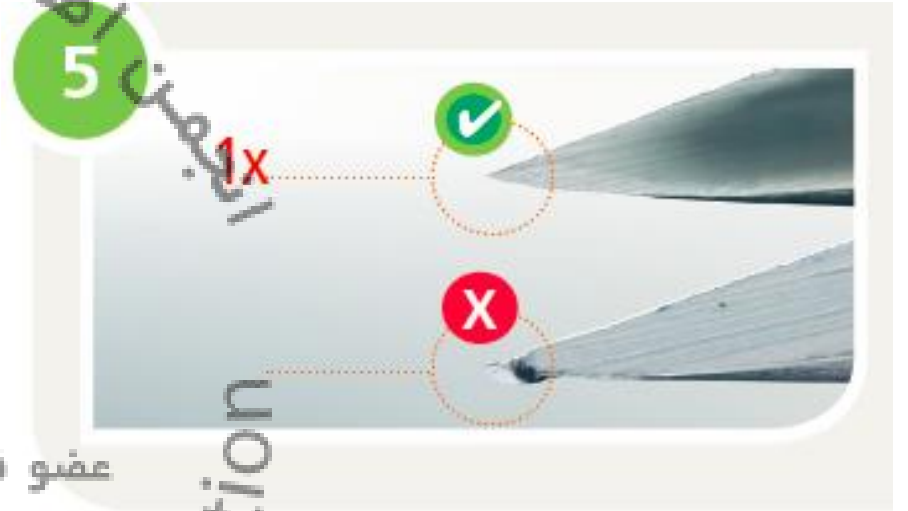
Skin Pinch

- A skin lift may be warranted to prevent an IM injection in a slim limb or abdomen, even when a shorter needle is used.



Insulin Injection Technique

- Use pen needles and syringes only once.
- Syringe or pen needles should only be used once.
- Reusing insulin needles is not optimal injection practice and patients should be discouraged from doing so.



رسائی دیابت گابریک
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Diabetes Education Association

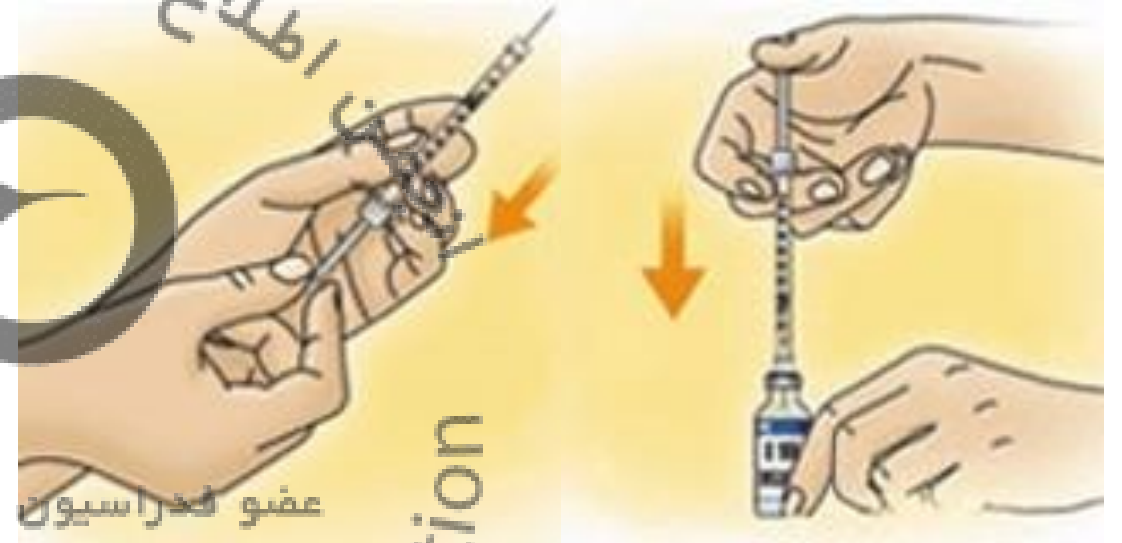
Pen Priming Importance in Correct Dose Delivery

- Greater than 50 μl of air: the accuracy in clinical use might suffer.
- Accumulate 200 μl of air in cartridge, the pen might deliver only 37 % of the dialed dose and a full 2/3 of the dose would be wasted.
- Air buffers the flow rate of the insulin and slows it.
- The greater amount of the air, the slower the flow rate.



Insulin Injection Technique

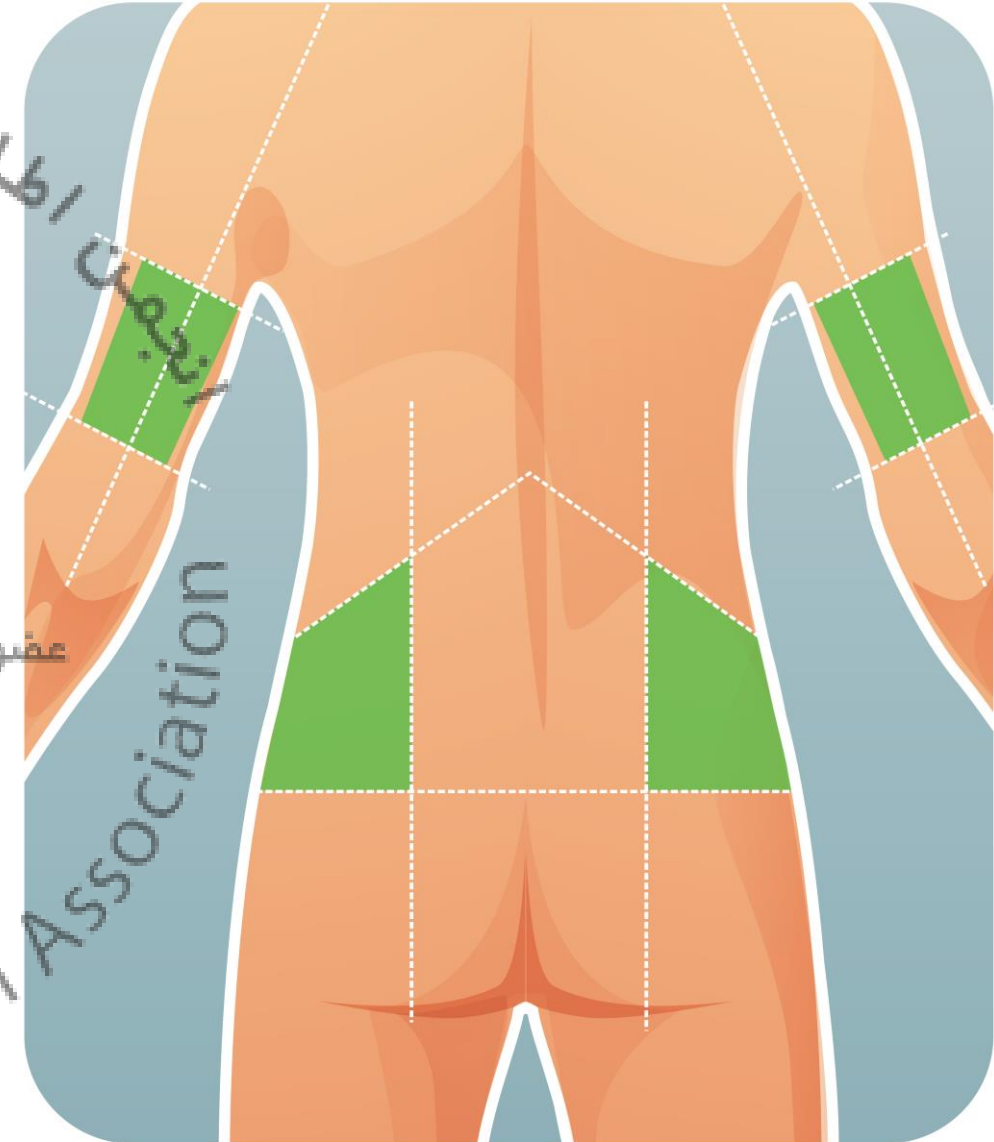
- When using syringe to draw up the insulin from vial, the air equivalent to the dose should be drawn up first and injected into the vial, to facilitate easier withdrawal.
- If air bubbles are seen in the syringe, hold it with the needle pointed upwards, tap the barrel to bring them to the top, and then remove the bubbles by pushing the plunger to expel the air.



Correct Injection Site

- Buttocks:
 - Upper outer quadrant of the upper buttocks and flanks
- Arms:
 - Middle 3rd of the back of the upper arm

Rapid- and long-acting insulin analogues may be given at any of the injection sites, as absorption rates do not appear to be site-specific.



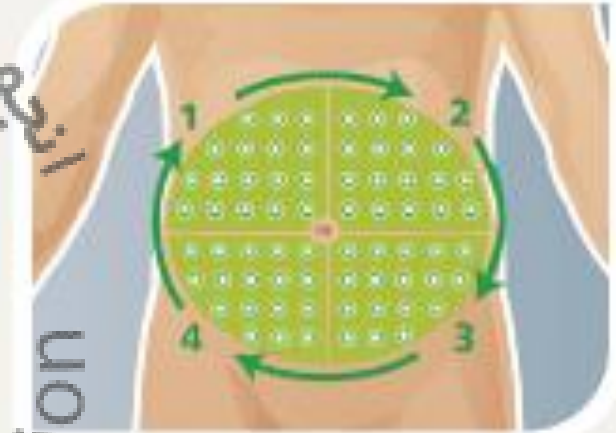
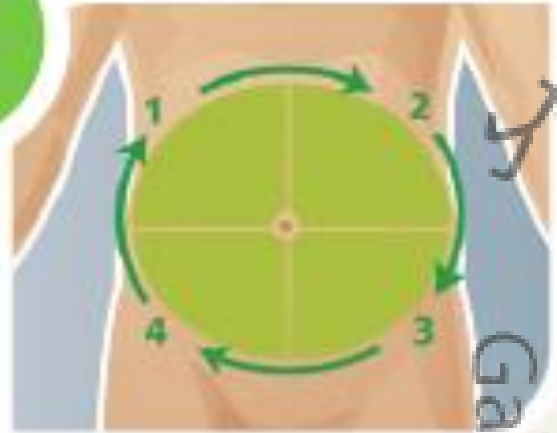
Correct Injection Site in Pregnancy

- **First trimester:** Women should be reassured that no change in insulin site or technique is needed.
- **Second trimester:** Lateral parts of the abdomen can be used to inject insulin. Insulin can be injected over the entire abdomen as long as properly raised skinfolds are used
- **Third Trimester:** Injections can be given into the lateral abdomen as long as they are made into properly raised skinfolds.



Insulin Injection Technique

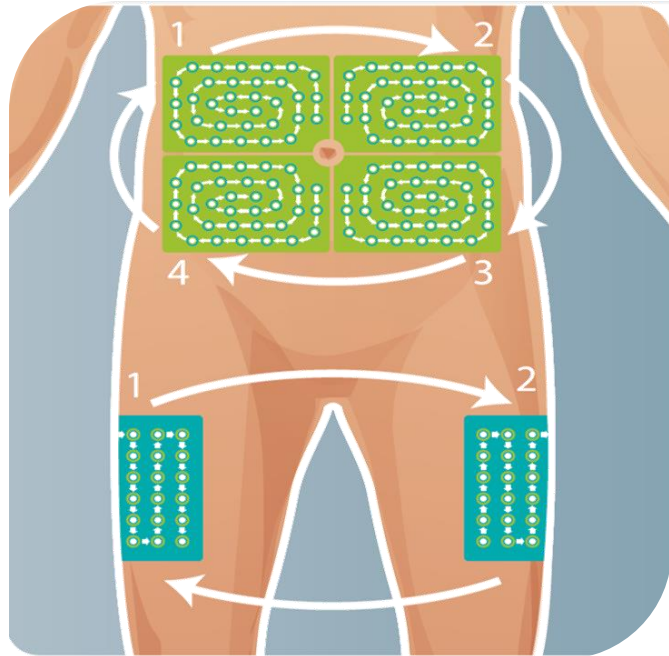
8



- Rotate between injection areas
- Rotate within injection zones

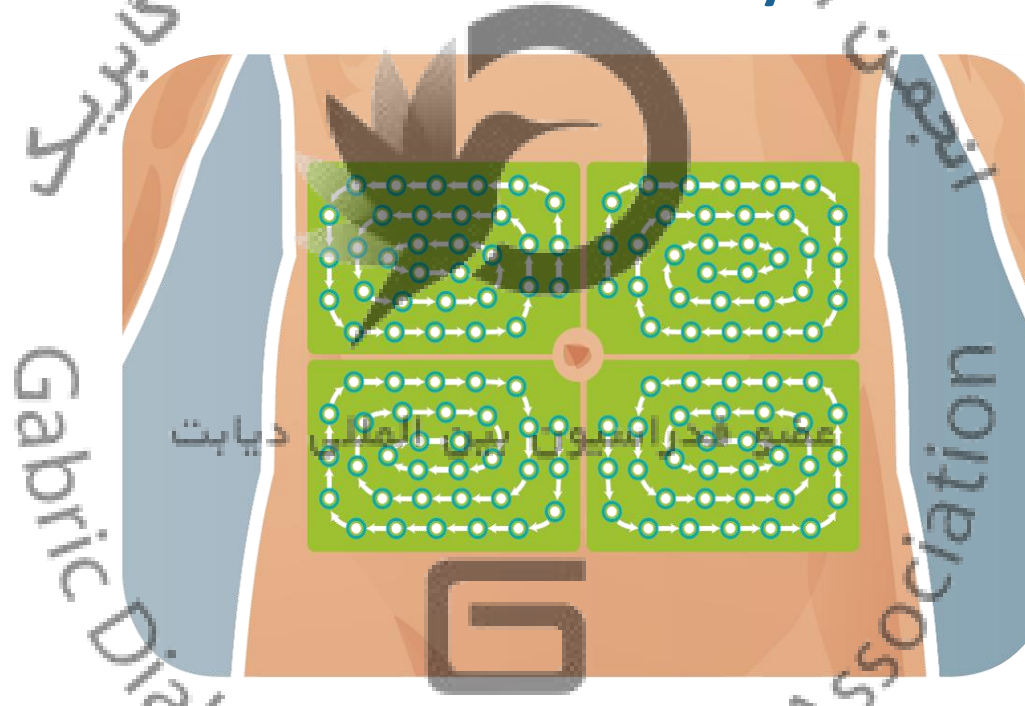
Structured Rotation Plan

Rotate the site you use

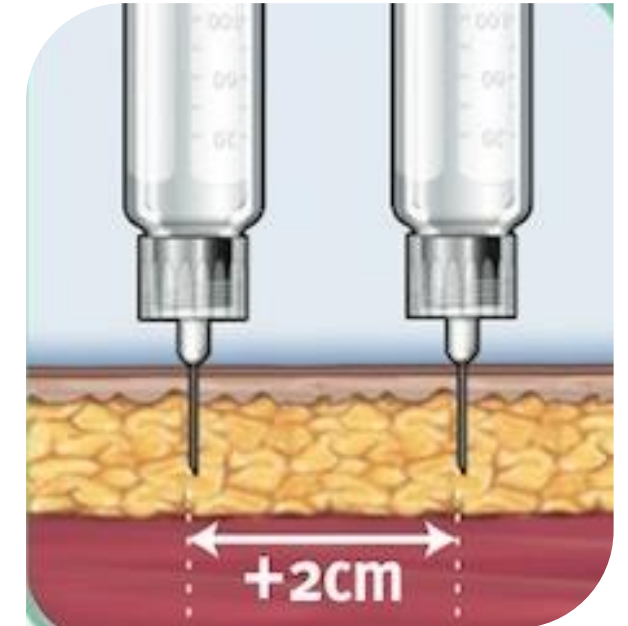


Use 1 zone per week
and move clockwise

Rotate within the site you use



Injections within any quadrant should be spaced at least
1-2cm from each other



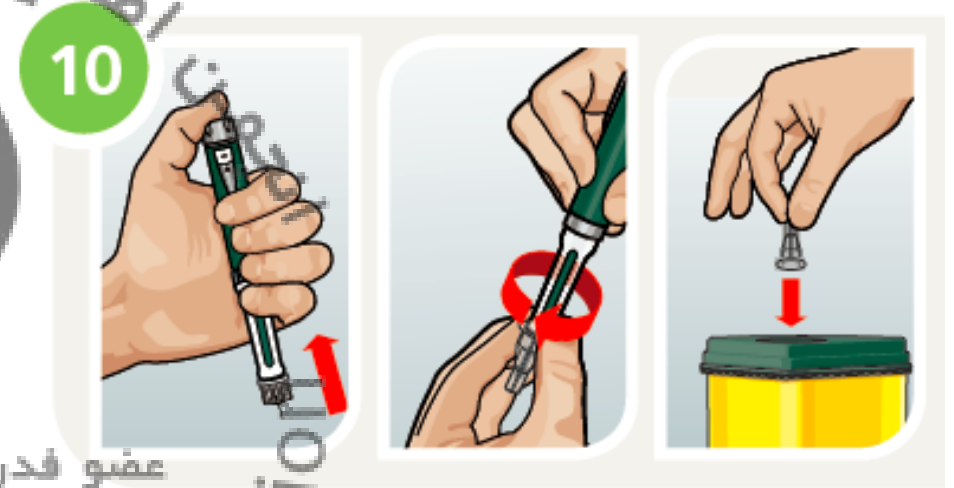
Insulin Injection Technique



- Dial dose, Insert, push completely and count to 10.
- Always push the button vertically (along the axis of the pen)

Insulin Injection Technique

- Needles should be safely disposed of immediately after use and should not remain attached to the pen.
- This prevents the entry of air or other contaminants into the cartridge or leakage of medication from the cartridge, both of which can affect subsequent dose accuracy.
- Pen devices and cartridges are for single-person use only and should never be shared, due to the risk of cross-contamination.



Insulin Injection challenges: Lipohypertrophy (LH)

- The most common cutaneous complication of insulin therapy
- Change in the SC tissue
- A raised or mound-like, convex pattern with no change in skin color or hair distribution
- A harder, and more rubbery or less bouncy tissue.



LH Examination

- Frequency:
 - At least once a year on all persons injecting insulin.
- Patients with LH lesions:
 - More frequently
- Educate patient for monthly self-examination and to report any change to the HCP.
- Technique:
 - Visual Inspection
 - Palpation
- Documentation and monitoring



LH Management

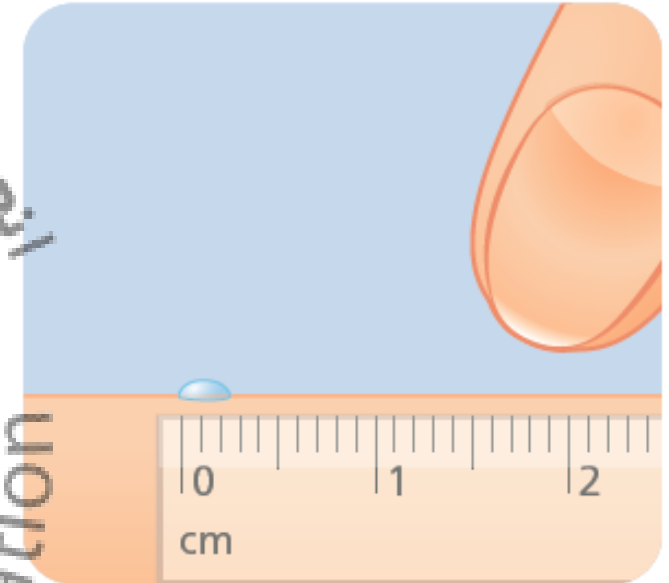
2- Decrease insulin dose based on patient BG report

- In order to reduce the risk of hypoglycemia when changing from a lipohypertrophic injection site to a healthy site, patients should be cautioned to reduce their insulin dose initially and monitor their blood glucose levels more frequently.

Insulin Leakage

Skin leakage:

- A small amount of skin leakage (little pearl of liquid at injection site) can be ignored.
- Use needles with thin-wall or extra thin-wall technology
- Count to 10 after the plunger is fully depressed (More/ less seconds in higher/ lower dose)
- Frequent skin leakage: a direct observation of their self-injection is important to detect possible technique-related issues



Factors That Affect Insulin Absorption

Inadvertent intramuscular (IM) injections may **increase pain** and/or **adversely affect blood glucose control.**

Injecting into areas of lipohypertrophy can result in a significant **delay in insulin absorption** and cause **fluctuating blood glucose results.**



