



FIT Technique Plus*

Lipohypertrophy

*Educational tools based on FIT Canada Recommendations for Injection Technique, updated February 11th, 2020



Meet Phil



22 year old ♀

Type 1 diabetes for 12 years
BMI = 22kg/m²

- Diligent with his diabetes regimen for the first 5-6 years, regularly attending appointments with his mother.
- He has graduated from university and started his career.
- He is using a basal bolus regimen.
- Too busy to attend appointments, despite encouragement from his mother.

Current Challenges



- Erratic blood glucose readings, testing infrequently.
- A1c was 11.2% on his first return appointment.

Technique Review:



- **Site selection:** abdomen only.
- **Site rotation:** left side to right side with no attention to proper rotation within the zone.
- **Site inspection:** he does not inspect his zones and was surprised to learn that there were two large lumps present at his two usual injection sites.
- **Technique:** injects 8mm pen needle at 90° angle with a proper skin lift. Reuses his needles regularly.

Duration of diabetes, lack of attention to proper site rotation and needle reuse have all potentially led to the development of lipohypertrophy.1 Insulin injected into an area of lipohypertrophy will not be absorbed properly and will affect blood glucose control.2

What does the research say?



Vardar 20071

Three independent risk factors for the development of lipohypertrophy include the duration of insulin use, repeated injections into a smaller injection area(zone) and the reuse of needles.



De Coninck 20103

In an international injection technique survey over 4300 people living with diabetes, 48% of the patients reported lipohypertrophy at their injection sites.



Frid 20104

Injection sites should be inspected by the healthcare professional at every visit, especially if lipohypertrophy is already present.



Recommendations for Phil:



Avoid injecting into lipohypertrophy to improve insulin absorption and allow the affected areas to reduce in size.



Use a personalized, structured rotation regimen for injection and insertion sites.



Based on current glycemic control, continue with usual insulin regimen and try 4mm pen needles, no skin lift.



Check blood glucose a minimum of 2 times per day.

In his 3 month follow-up, he felt encouraged seeing improved blood glucose results. He continued to use the 4mm pen needles and improved his injection site rotation, as recommended. He also started checking his blood glucose at least 2-3 times a day and is considering flash testing to further improve making adjustments.

FIT Canada Recommendation:⁵

When changing injection sites from a lipohypertrophic to healthy site patients should be cautioned to initially reduce the insulin dose and monitor their blood glucose more frequently.





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Did you know?



Lipohypertrophy is present at the injection sites of many people who inject insulin.

- Lipohypertrophy, sometimes referred to a “lipo”, is a thickened rubbery area of fat tissue, characterized by fibrous poorly vascularized lesions, that can grow and develop in the subcutaneous fat where injections of insulin are given.

- Areas of lipohypertrophy vary greatly in size and are often felt more easily than seen.⁴
- Regular site inspection should be a normal part of your injection routine. To check your injection site, feel the area where you normally inject. Look for puffiness, raised areas and redness. Feel for hardness or lumpiness. If it is difficult to see your injection sites, a mirror may help.



Did you know?

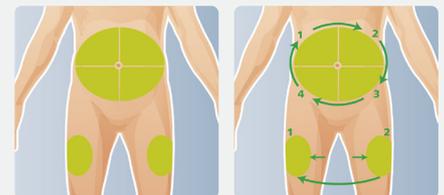


Lipohypertrophy can be prevented.

- The risk of developing lipohypertrophy increases with repeated injections into a small area less than the size of a postage stamp.³
- Areas for injection should be at least the size of a postcard and each injection should be rotated within the area, spaced at least one finger width apart.⁵ In other words, don't inject in exactly the same point each time.



- Your doctor or diabetes educator can recommend a structured site rotation plan that will work for you. This will involve rotation between injection sites and within injection sites.



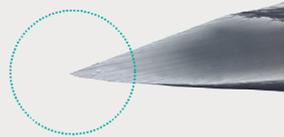
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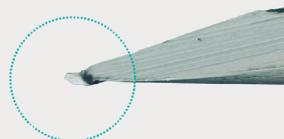
Lipohypertrophy has also been associated with needle reuse.

Needles should be used only once (and then disposed of in an approved sharps container).⁵

New needle



Reused needle



At x 370 magnification

An area of lipohypertrophy can affect your blood glucose control.

Injecting into an area of lipohypertrophy can cause irregular insulin absorption and have an impact on your blood glucose characterized by slower absorption and delayed peak effect.²

Talk to your doctor or diabetes educator if you think you have lipohypertrophy at your injection sites.

1. Vardar B, Kizilc S. Incidence of lipohypertrophy in diabetic patients and a study of influencing factors. *Diabetes Res Clin Pract* 2007; 77:231-236.
 2. Famulla, S, Hovelmann U, Fischer A. et al. Insulin Injection Into Lipohypertrophic Tissue: Blunted and More Variable Insulin Absorption and Action and Impaired Postprandial Glucose Control. *Diabetes Care* 2016;39:1486-1492
 3. De Coninck C, et al. Results and analysis of the 2008-2009 Insulin Injection Technique Questionnaire Survey. *J Diabetes* 2010;2(3):168-79.
 4. Frid A, et al. New injection recommendations for patients with diabetes. *Diabetes & Metabolism* 2010; 36: 53-518.
 5. Berard L, et al. FIT Forum for Injection Technique Canada. Recommendations for Best Practice in Injection Technique. October 2011.

