



FIT Technique Plus*

FIT for Pregnancy

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



Meet Sylvia



33 year old ♀

- Sylvia is 33 years old and expecting her second child.
- She had gestational diabetes with her son who is now five years old.
- Three years ago Sylvia developed type 2 diabetes.
- Since then she has adopted healthy eating habits and walks for exercise as part of her daily routine.

When Sylvia was planning her second pregnancy she attended a preconception counselling session with her interprofessional team where she learned that she should:

- Have an A1C $\leq 7\%$ prior to conception
- Supplement her diet with 5mg of folic acid at least 3 months preconception
- Discontinue any ACE, ARB or statin medication
- Switch from non insulin antihyperglycemic agents to insulin¹

What does the research say?

GAPP 2012²

94% of patients have anxiety related to insulin use.



Valk 2011³

Hypoglycemia is a limiting factor in insulin use in pregnancy.



Valk 2011³

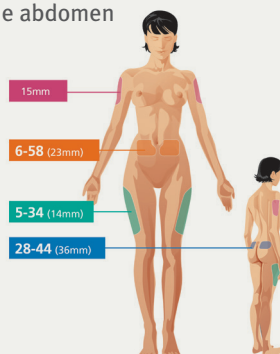
Insulin requirements increase in the second and third trimester.



Injection sites for pregnancy

With the growing abdomen and the stretching skin you may become concerned that the injection will touch the baby. However, when properly used, 4-6 mm needles can safely deliver insulin past the skin layer and into the fatty layer where it is absorbed best. The baby is safely encased in the uterus many layers beneath this fat. Although the legs, arms or buttocks are acceptable sites the abdomen is recommended due to its consistent rate of absorption, thickness of the fat layer underneath the skin and the ease of use.⁴

The subcutaneous fat is thickest in the abdomen in women.⁵



During pregnancy the abdominal fat increases⁶ and the fatty layer of the skin is not affected by the expanding uterus or the taut skin.⁷



Suggestions for Sylvia



Use shortest needle possible



Use abdomen for most rapid and consistent absorption⁴



Use needles one time only



Use insulin pens for ease of injection



Avoid areas around the umbilicus and areas on the abdomen with taut skin



Avoid stretch marks



Rotate the injection sites with each injection at least 1-2 cm away from the last.

1. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee, Canadian Diabetes Association 2013 Clinical Practice guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes 2013;37(Suppl 1):S1-S212.
2. Barnett AH, et al. The GAPP (Global Attitudes of Patients and Physicians in Insulin Therapy) study: identifying risk factors associated with injection omission/non-adherence in insulin treated patients with type 1 and type 2 diabetes. Diabet Med 2012;29(Suppl 1):168.
3. Valk H, Visser G. Insulin during pregnancy, labour and delivery. Best Practice & Research clinical Obstetrics and Gynaecology 2011;25:65-76.
4. Berard, L, et al. FIT Forum for Injection Technique Canada. Recommendations for Best Practice in Injection Technique October 2011.
5. Gibney MA, et al. Skin and subcutaneous adipose layer thickness in adults with diabetes at sites used for insulin injections: implications for needle length recommendations. Curr Med Res Opin. 2010; 26 (6): 1519-1530.
6. Soltani H, Fraser R. A longitudinal study of maternal anthropometric changes in normal weight, overweight and obese women during pregnancy and postpartum. British Journal of Nutrition, 2000;84:95-101
7. Kinoshita T, Itoh M. Longitudinal variance of fat mass deposition during pregnancy evaluated by ultrasonography: the ratio of visceral fat to subcutaneous fat in the abdomen. Gynecol Obstet Invest 2006;61:115-118.





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If your health care team has suggested that you need to inject insulin during your pregnancy you will probably have some very important questions.



1. Will taking insulin hurt the baby?

- having your blood glucose in target before and during your pregnancy is the most important factor for the health of your baby;
- when you have type 1 or type 2 diabetes before pregnancy good control is needed to prevent early development problems as the baby is forming
- when you have gestational diabetes good control is needed to help prevent large size babies and complications for the baby at birth
- insulin, in the prescribed dose, does not circulate in the baby's blood^{1, 2}
- if your blood glucose stays high during your pregnancy it can cause low blood glucose for your baby at birth

2. Will the injection hurt the baby?

- no, the injection will not hurt the baby
- the baby is growing many layers below the skin, in the uterus, which cannot be touched by 4-6mm insulin pen needles
- insulin is designed to be delivered into the fat layer below the skin; in adults the abdominal area has a thicker layer of fat than the thigh or arm³
- when short needles (4 to 6mm) are used there is less risk of injecting into the muscle below the fat⁴

3. Are the injections painful?

- patients report that shorter, finer needles are more comfortable
- using the right site for each injection and using the right injection technique is key⁴



How should I give the insulin injection?

Hold the insulin pen at a 90° angle and inject straight into the skin. The needle will go through the skin into the fatty layer.

During pregnancy, the skin is often taut over the central part of the abdomen. For this reason, most women prefer to use the sides of their abdomen, especially in the third trimester. A skin lift can be used^{5,6}.

It is important to give each injection at least 1-2 cm apart.

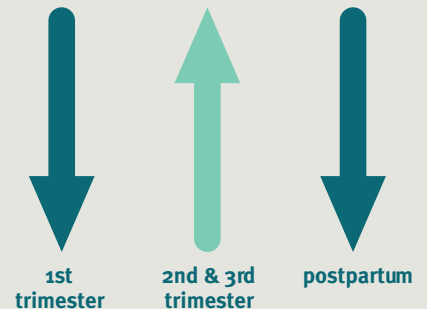
After each injection be sure to remove the needle and dispose of it in a sharps container.



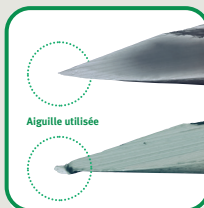
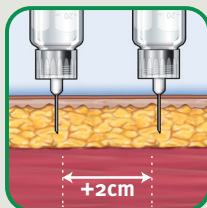
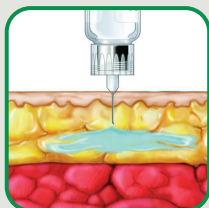
Insulin requirements



Requirements during pregnancy



Injection Tips



- Inject straight into the skin using a 90° angle
- Rotate injection sites at least 1-2 cm apart
- Avoid the area around the umbilicus
- Use a new needle for each injection

1. Pollex E, Feig D, Lubetsky A et al. Insulin glargine safety in pregnancy. Diabetes Care 2010;33:29-33.

2. McCance D, et al. Evaluation of insulin antibodies and placental transfer of insulin aspart in pregnant women with type 1 diabetes mellitus. Diabetologia 2008;51:2141-2143.

3. Gibney MA, et al. Skin and subcutaneous adipose layer thickness in adults with diabetes at sites used for insulin injections: implications for needle length recommendations. Curr Med Res Opin. 2010; 26 (6): 1519-1530.

4. Berard L, et al. FIT Forum for Injection Technique Canada. Recommendations for Best Practice in Injection Technique October 2011.

5. Eisenbeiss C, et al. The influence of female sex hormones on skin thickness: evaluation using 20 MHz sonography. Br J Dermatol 1998;139:462-467.

6. Frid AH, Kreugel G, Grassi G, et al. New insulin delivery recommendations. Mayo Clin Proc. September 2016;91(9):1231-1255

