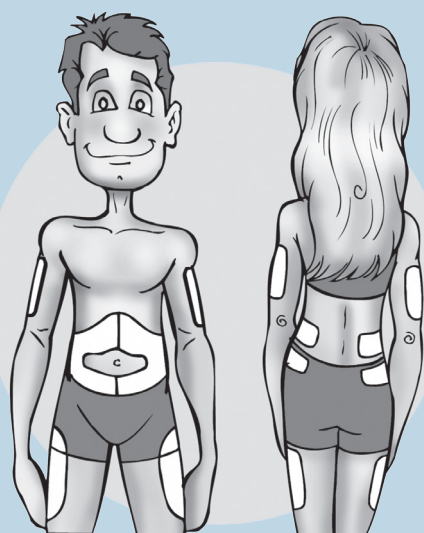


# Getting started with insulin

## Insulin Injection Sites



**NOTE:** It is really important to change (rotate) where you give yourself insulin to prevent fatty lumps from forming since these can affect how your body absorbs insulin. For example, you can move from one side of your abdomen to the other side, and you can also move your injection site to a different location within each side of your abdomen.

Avoid a 2-inch area around the belly button as well as scar tissue.

## Insulin Pens:

Your pen comes with an instruction book. Please review it to understand how your pen works, how to load the cartridge, and how to prepare your pen for an insulin injection.

## Mixing Insulin:

Insulin that is cloudy (NPH, premixed) needs to be mixed before using. The pen should be rolled ten times, tipped ten times, and checked for a milky-white consistency.

## Check Insulin Flow (Prime):

Attach pen needle. Dial up 2 units and, with pen tip facing upwards, push the dosing button. If no stream of insulin appears, repeat with another 2 units.

## Giving Your Injection:

After you have checked the insulin flow, dial up the dose of insulin to be taken. Insert pen tip into skin at a 90° angle. Push the dosing button until you see '0'. Count 10 seconds before removing the needle from your skin to ensure you receive the full dose. With longer needles ( $\geq 8\text{mm}$ ), you may need to gently lift the skin before injection.

Site	Pros	Cons
<b>Abdomen (tummy)</b> <ul style="list-style-type: none"><li>Stay 2 inches (5 cm) away from your belly button</li></ul>	Easy to reach Insulin absorbs fast and consistently	
<b>Buttock and thigh</b>	Slower absorption rate than from abdomen and arm sites	Slower absorption Absorption can be affected by exercise
<b>Outer arm</b>	After abdomen, arm provides the next fastest absorption rate	Harder to reach for self-injections

## Insulin Types:

Type	Onset (How quickly it starts working)	Peak (When it is most effective)	Duration (How long it works)	Timing of injection (When should it be given)
<b>Bolus insulins</b>				
<b>Rapid acting analogues</b> <ul style="list-style-type: none"> <li>• Apidra / Humalog / NovoRapid</li> </ul>	10 – 15 min	1 – 2 hours	3 – 5 hours	Given with 1 or more meals per day. To be given 0 – 15 minutes before or after meals.
<b>Short-acting</b> <ul style="list-style-type: none"> <li>• Humulin-R / Toronto</li> </ul>	30 min	2 – 3 hours	6.5 hours	Given with one or more meals per day. Should be injected 30 – 45 minutes before the start of the meal.
<b>Basal insulins</b>				
<b>Intermediate-acting</b> <ul style="list-style-type: none"> <li>• Humulin-N / NPH</li> </ul>	1 – 3 hours	5 – 8 hours	up to 18 hours	Often started once daily at bedtime. May be given once or twice daily. Not given at any time specific to meals.
<b>Long-acting analogues</b> <ul style="list-style-type: none"> <li>• Lantus</li> <li>• Levemir</li> </ul>	90 min	not applicable	up to 24 hours 16 – 24 hours	Often started once daily at bedtime. Insulin detemir (Levemir) may be given once or twice daily. Not given at any time specific to meals
<b>Premixed insulins</b>				
<b>Premixed regular insulin</b> <ul style="list-style-type: none"> <li>• Humulin 30/70 / Novolin ge 30/70, 40/60, 50/50</li> </ul>	Varies according to types of insulin	contains a fixed ratio of insulin (% of rapid-acting or short-acting insulin to % of intermediate-acting insulin): see above for information about peak actions based on insulin contained		Given with one or more meals per day. Should be injected 30 – 45 minutes before the start of the meal.
<b>Premixed insulin analogues</b> <ul style="list-style-type: none"> <li>• NovoMix 30 / Humalog Mix 25, Mix 50</li> </ul>	Varies according to types of insulin			Given with one or more meals per day. Should be injected 0 – 15 minutes before or after meals.

## Insulin Care and Storage:

Unopened insulin should be stored in the fridge between 2°C and 8°C. Opened insulin can be stored at room temperature for up to 1 month. Insulin detemir (Levemir) is an exception; it is safe at room temperature for 42 days. Keep all insulins away from direct heat and light. Discard insulin that has been frozen or exposed to temperatures greater than 30°C. Do not use insulin after its expiry date.

## Diabetes Identification:

You should always wear identification, such as a bracelet or necklace, to identify that you have diabetes. Identification bracelets, such as MedicAlert®, can be purchased at pharmacies and jewellery stores. Always carry identification in your wallet or purse that provides information about your diabetes.

## Low Blood Sugars (Hypoglycemia):

### Treatment of Low Blood Glucose (Hypoglycemia)

#### What is low blood glucose?

When the amount of blood glucose (sugar in your blood) has dropped below your target range (i.e. is generally less than 4.0 mmol/L), a condition called low blood glucose or hypoglycemia occurs.

#### When this happens, you may feel:

- Shaky, light-headed, nauseated
- Nervous, irritable, anxious
- Confused, unable to concentrate
- Hungry
- A faster heart rate
- Sweaty, headachy
- Weak, drowsy
- A numbness or tingling in your tongue or lips

#### How do I treat low blood glucose?

If you are experiencing the signs of a low blood glucose level, check your blood glucose immediately. If you do not have your meter with you, treat the symptoms anyway. It is better to be safe.

Eat or drink a fast-acting carbohydrate source (containing 15 grams). For example:

- 15 g of glucose in the form of glucose tablets (preferred choice)
- 15 mL (1 tablespoon) or 3 packets of table sugar dissolved in water
- 175 mL (¾ cup) of juice or regular soft drink
- 6 LifeSavers® (1 = 2.5 g of carbohydrate)
- 15 mL (1 tablespoon) of honey (do not use for children less than 1 year)

Low blood glucose can happen quickly, so it is important to treat it right away. If your blood glucose drops very low, you may need help from another person.

#### Causes of hypoglycemia:

- More physical activity than usual
- Not eating on time
- Eating less than usual
- Taking too much medication
- Drinking alcohol

## Checking Blood Sugars and Adjustment of Insulin:

Insulin: \_\_\_\_\_ Starting Dose: \_\_\_\_\_ units at \_\_\_\_\_

Blood glucose goals: \_\_\_\_\_

Contact for help with insulin adjustments: \_\_\_\_\_

What to do with your diabetes pills: \_\_\_\_\_

## Please check blood sugars using the following schedule.

	Breakfast		Lunch		Supper		Bedtime	Night
	before	after	before	after	before	after		
Insulin								
SMBG pattern*								

\* SMBG = self-monitoring of blood glucose



## Proper Use of Pen Tips (needles):

Use pen tips only once; they are thin and can become bent or broken if re-used. Reusing pen tips can make the injection more painful. Leaving pen tips on the cartridge may cause leaking or allow air into the cartridge which may affect the concentration of the insulin.

## Safe Sharps Disposal:

Pen tips and lancets should be disposed of in a sharps container. Check with your local pharmacy. Many pharmacies supply safe, puncture-proof containers. When the container is full, it is returned to the pharmacy in exchange for a new container. Sharps otherwise should be disposed of in accordance with local regulations.

## Diabetes Driving Guidelines

### Prevention of hypoglycemia for all insulin-treated drivers

- Measure your blood glucose level immediately before and at least every 4 hours during long drives. Always carry blood glucose monitoring equipment and treatment for hypoglycemia within easy reach (e.g. attached to the visor).
- You should not drive when your blood glucose level is less than 4.0 mmol/L. You should not begin to drive without having some carbohydrate-containing food when your blood glucose level is between 4.0 – 5.0 mmol/L.
- Stop and treat yourself as soon as hypoglycemia and/or impaired driving is suspected. You should not drive for at least 45 – 60 minutes after effective treatment of mild to moderate hypoglycemia (i.e. blood glucose level 2.5 – 4.0 mmol/L).

### Professional Drivers must

- Carry supplies when you are driving:
- A blood glucose monitor
- A source of readily available, rapidly absorbable carbohydrate
- Test your blood glucose 1 hour before starting to drive and approximately every 4 hours while driving
- Stop driving if your glucose level falls below 6.0 mmol/L and do not resume driving until your glucose level has risen to 6.0 mmol/L or higher following food ingestion

Each province has its own rules regarding glucose control and being able to drive.

### I want to apply for a commercial licence.

#### Can I drive in Canada? In the United States?

Canadians with diabetes who are using insulin can apply for a commercial licence. Motor vehicle licensing authorities require a greater level of medical fitness for drivers operating passenger vehicles (buses/commercial vans), trucks, and emergency vehicles. Commercial drivers spend more time driving and are often under more adverse conditions than private drivers.

Canadians with diabetes who are using insulin can be licensed to drive a commercial vehicle in Canada. The Canada/US Medical Reciprocity Agreement (effective March 1999) recognizes the similarity between Canadian and American medical standards and provides for reciprocal arrangements on medical fitness requirements for Canadian and American drivers of commercial vehicles.

However, Canadian commercial drivers who have diabetes requiring insulin, have monocular vision, are hearing impaired, or have epilepsy requiring anticonvulsive medication are not permitted to drive in the United States.

### What is the Canadian Diabetes Association's position on diabetes and driving and licensing?

The Canadian Diabetes Association believes people with diabetes should be assessed for a driver's licence on an individual basis.

<http://www.diabetes.ca/get-involved/helping-you/advocacy/faq/driving/>

*Adapted from Canadian Diabetes Association's Clinical Practice Guidelines for Diabetes and Private and Commercial Driving. Canadian Journal of Diabetes. 2003;27(2):128-140.*

*Across the country, the Canadian Diabetes Association is leading the fight against diabetes by helping people with diabetes live healthy lives while we work to find a cure. Our community-based network of supporters help us provide education and services to people living with diabetes, advocate for our cause, break ground towards a cure and translate research into practical applications.*

\*This document reflects the 2013 Canadian Diabetes Association Clinical Practice Guidelines. ©2013 Copyright

 Canadian  
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Association

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