

Indications for Insulin Initiation

Patient Information

Starting Insulin Step 1 - Preparation

Physician Information

Starting Insulin Step 2

- Primarily fasting/pre-meal hyperglycemia +/- post-meal hyperglycemia

- Preference for fewer injections
- Consistent daily routine
- Unwilling to self monitor BG
- Limited cognitive function
- Limited healthcare support

Option A Basal +/- Bolus

Testing & Insulin Adjustment

Short-Term Follow-up

Long-Term Follow-up

Stop TZDs

Option B Pre-mixed Insulin

Testing & Insulin Adjustment

Short-Term Follow-up

Long-Term Follow-up

1 – 4 wks

3 months

Insulin Initiation

Insulin may be used at almost any stage of diabetes

In primary care, consider insulin if:

- Using 2 or more oral glucose lowering agents at or near maximal doses
- Diet, activity and medication have been reviewed and modified to minimize contributing factors

AND

- A1C persistently > 8% (> 3-6 months) or
- A1C > 9% and hyperglycemic Sx (wt. loss, polyuria, polydipsia) or
- A1C > 11% or glucometer readings > 15.0 (one or more times)

Preparation to Starting Insulin

- Optimize diet and activity

Diet Handout

Activity Handout

- Determine glucose pattern
 - Prescribe and teach glucometer

Glucometer Handout

- Test 2 – 3 times per day for 2 – 4 weeks
 - Before and 2 hours after different meals each day
- Glucose targets
 - Fasting, pre-meal and bedtime: 4 – 7 mmol/L
 - 2 hour post-meals: 5 – 10 mmol/L

OPTION A

Basal added to Oral Agents

- Stop any TZDs
- Continue other oral agents initially (until glucose control improves with insulin)

Start insulin

- NPH (Humulin N[®], Novolin NPH[®])
 - least expensive, reasonable first choice for most T2DM
- Glargine (Lantus[®])
 - less nocturnal hypoglycemia, for patients who are prone to hypoglycemia, special authority form required
- Detemir (Levemir[®])
 - less nocturnal hypoglycemia, for patients who are prone to hypoglycemia, less weight gain, not covered by Pharmacare

**A¹ – Basal + Bolus
with Meals**

Titration

- Starting dose: 5-10 units OD at bedtime
- Test glucose 1-2x per day: before breakfast and bedtime
- Increase basal insulin by 2 units every 3-5 days until fasting glucose is in target (FBG 4 – 7 mmol/L)

OPTION A¹

Bolus Insulin with Meals

- Regular (Humulin R[®], Toronto[®])
 - Lower cost
 - Should be given 30-40 minutes before a meal
 - Reasonable first choice for patients with consistent lifestyle, who do not require flexibility in their diet/activity

- Rapid (Aspart [Novorapid[®]], Lispro [Humalog[®]], Glulisine [Apidra[®]])
 - Greater cost
 - Must be given within 10-15 minutes before meal (may be given during or immediately after meal in some cases)
 - Better choice for patients who desire flexibility in their diet and activity

Titration

- Start with 4-6 units before largest meal
- Increase by 1 unit every 2-3 days until 2-hr post-meal glucose is in target (< 10.0, or < 8.0 if A1C not in target)

OPTION A

Testing & Insulin Adjustment

Basal +/- Bolus Insulin

- Basal Insulin
 - Test glucose 1 – 2 per day: before breakfast and bedtime
 - Increase basal insulin by 2 units every 3-5 days until fasting glucose in target

- Bolus insulin with meal(s)
 - Test glucose 2 hours after meal(s)
 - Increase bolus insulin by 1 – 2 units every 3 – 5 days until PPG < 10.0 mmol/L (or < 8.0 mmol/L if A1C still elevated)

OPTION A

Short Term Follow-up

After 1 – 4 weeks:

- Basal Insulin
 - Fasting glucose still elevated – continue to increase dose
 - FBG in target – no further increase, A1C in 3 months
 - Post-meal glucose


- Bolus insulin with meal(s)
 - 2 hour post-meal(s) glucose > 10 – increase bolus insulin by 1 – 2 units every 3 – 5 days until PPG < 10.0 mmol/L (or < 8.0 mmol/L if A1C still elevated)

OPTION A

Long Term Follow-up

After 3 months:

- *Review A1C and glucose records after 3 months*
- *If A1C above target, consider intensifying insulin*

 Basal Insulin and oral agents

- If FBG in target, consider adding bolus insulin with meal(s)

 Bolus insulin with meal(s)

- If post-prandial glucose still elevated, consider increasing bolus doses or refer to endocrinology/internal medicine

OPTION B

Pre-mixed Insulin

- Pre-mixed insulins
 - Human Premix (30/70, 50/50, 40/60)
 - Analogue Premix (Novomix-30®, Mix-25®, Mix-50®)

Titration

- Start with major meals at 0.3u/kg/day divided doses
- Split dose 50/50 or 70/30, depending on largest meal
- Titrate dose for glucose covered by NPH
 - acB insulin - target acS glucose
 - acS insulin - target FBG
- Increase 2 units every 2-3 days until target reached

OPTION B

Testing & Insulin Adjustment

Pre-mixed Insulin

- Pre-mixed insulins BID
 - Test glucose 2 per day: acBreakfast and acSupper
 - Increase pre-mixed insulin by 2 units every 3-5 days until pre-meal glucose in target

OPTION B

Short Term Follow-up

After 1 – 4 weeks:


- Pre-mixed Insulin BID
 - Pre-breakfast glucose elevated – increase supper insulin
 - Pre-supper glucose elevated – increase breakfast insulin & avoid afternoon snacking

OPTION B

Long Term Follow-up

After 3 months:

- *Review A1C and glucose records after 3 months*
- *If A1C above target, consider intensifying insulin*

-  Pre-mixed Insulin BID
- Review diet and activity (more consistency, avoid simple carbs – especially at lunch)
- Consider switching to Basal/Bolus (depends on patient)

Insulin Initiation – Physician Package

**Insulin & Supplies
Prescription**

**Insulin Initiation &
Teaching in the Office**

**Instructions for Starting &
Adjusting Basal Insulin**

**Instructions for Starting &
Adjusting Pre-mix Insulin**

**Instructions for Adding &
Adjusting Bolus Insulin**

**Estimated Blood
Glucose Levels**

**Insulin Start
Check List**

**Antidiabetic & Adjunctive
Agents for use in DM II**

**Insulin Therapeutic
Considerations**

Antidiabetic Drugs

**Diabetes Patient
Patient Care Flow Sheet**

**Tips When Discussing
Insulin Therapy**

Initial Regimen Selection

Insulin Starting Doses

**Tips for Insulin Dose
Adjustment**

**VCH & FH
Trained Pharmacists**

**RACE Contact
Information**

Dr. _____

Address _____

FOR _____

ADDRESS _____

DATE _____

1) Insulin Type _____

(Pen with cartridges)

Sig: Use as directed by physician

Mitte: __ month(s) supply Repeats _____

2) Pen Nano Needles (#) _____

3) Diabetic Test Strips/Lancets (#) _____

_____ MD

Insulin Initiation and Teaching in the Physician's Office

The time for each of these visits will depend upon patient comfort with starting insulin and educational level, other issues that may need to be dealt with in the same visit and the physician's time frame (availability and preferred process).

Visit #1: 5-20 minutes

- 📌 Discuss rationale of need for insulin, potential barriers to be overcome
- 📌 Encourage home blood glucose testing for 2-4 weeks before next appointment and provide glucose log book and other educational materials if necessary (e.g. dealing with barriers)

Visit #2: 5-20 minutes

- 📌 Review blood glucose log book
- 📌 Discuss use of oral anti-diabetic agents if need to be adjusted
- 📌 Review any barriers and answer any concerns
- 📌 Discuss how insulin works
- 📌 Write a prescription for insulin and supplies (needles, lancets, test strips) which will be brought to the next appointment – consider recommending viewing of youtube video on injecting insulin

Visit #3: 20-30 minutes

- 📌 Review any questions
- 📌 Demonstrate/teach use of insulin pen and be sure to watch patient inject themselves at least once
- 📌 Provide handouts on sites for injection, recognizing and dealing with hypoglycemia, diet advice, etc.
- 📌 Complete and provide the patient instruction sheet outlining insulin dosing and adjustments by patient based on blood glucose readings
- 📌 Suggest resources – CDA website, Nurses line (811)

Visit #4: one week later, 5-20 minutes

- 📌 Review injection technique, injection sites, any problems
- 📌 Review blood glucose log book
- 📌 Advise re: any further insulin dosing adjustments
- 📌 Discuss safety issues – hypoglycemia, driving, illness, travel – provide handouts as needed

Visits #5 and ongoing

- 📌 Review blood glucose log book, any problems encountered, safety issues, etc.
- 📌 Follow up labs – A1c, etc.

Instructions for Starting and Adjusting Basal (Long-acting background) Insulin

Starting Basal (Background) Insulin

- Inject _____ units of _____ (type) insulin at _____ (time) every day
- Continue taking your other diabetes medication(s) as prescribed unless you have been told by your doctor to change the dose or stop them.

Monitoring Your Blood Sugar

- It is important to regularly test your blood sugar while your insulin treatment is being started or changed. Blood sugar checks help you and your doctor adjust your insulin or medication if needed.
- Write down the results, along with any changes in activity or food in your log book and bring it to your next appointment. This information helps us improve your diabetes control.
- Test your blood sugar:
 - Before breakfast (fasting) every day
 - _____ (lunch, dinner, bedtime) every _____ day(s)
- Be aware of your blood sugar targets. Unless otherwise instructed, try to aim for the target outlined below.

Basal blood sugar target:

- Before breakfast (fasting) _____ mmol/L (usually 4.0 to 7.0 mmol/L)

Adjusting Your Basal Insulin Dose

- Increase your insulin dose by _____ unit(s) every _____ day(s) until you reach your target fasting blood sugar
- Do not increase your insulin once your fasting blood sugar is less than _____ mmol/L (usually < 7.0 mmol/L)
- If your fasting blood sugar is less than _____ mmol/L (usually < 4.0 mmol/L) on more than one occasion, reduce your basal insulin dose by _____ units (usually 2-4 units, or by 10%).

Low Blood Sugar (Insulin Reaction)

- Insulin can sometimes cause low blood sugars (hypoglycemia). A low blood sugar can happen if you take too much insulin, increase your physical activity (exercise) more than usual, or if you don't eat on time or eat less.
- It is important that you and your family and/or close friends know how to recognize and treat a low blood sugar
- Symptoms of low blood sugar can include: dizziness, heart racing, feeling warm, sweating, intense hunger
- If you think your blood sugar is low, check it and record the blood sugar in your log book
- Treat a low blood sugar by following the instructions in your handout titled "Insulin Reaction (hypoglycemia)"
- If your blood sugar does not improve within 15-30 minutes, call your doctor or the **Nurse line (811)**
- If you are having low blood sugar reactions more than once per week, call your doctor to review your insulin

Other Instructions:

Instructions for Starting and Adjusting Pre-Mixed insulin

Starting Pre-Mixed Insulin

- Continue taking your other medications as prescribed, unless instructed by your doctor
- Try to keep your meals and activity (exercise) generally the same (consistent) every day
- Avoid large carbohydrate meals at lunch (unless you are also taking insulin at lunch)
- Inject _____ (type) insulin _____ minutes before:
 - Breakfast _____ units
 - (Lunch _____ units)
 - Dinner (Supper) _____ units

Monitoring Your Blood Sugar

- It is important to regularly test your blood sugar while your insulin treatment is being started or changed. Blood sugar tests help you and your doctor adjust your insulin or medication if needed.
- Write down the results, along with any changes in activity or food in your log book and bring it to your next appointment. This information helps us improve your diabetes control.
- Your blood sugar tells you whether your **PREVIOUS** (last) insulin dose was correct
 - e.g. the breakfast blood sugar tells you whether your dinnertime insulin dose was correct
 - the dinnertime blood sugar tells you whether your breakfast (or lunch) insulin dose was correct
- Test your blood sugar (check one or more):
 - Immediately before giving your bolus insulin/meal every day
 - Immediately before _____ (breakfast, lunch, dinner, bed) every _____ day(s)
- Be aware of your blood sugar targets. Unless otherwise instructed, try to aim for the targets outlined below.

Blood sugar targets (Pre-mixed insulin):

- Before meals _____ mmol/L (usually 4.0 to 7.0 mmol/L)

Adjusting Your Pre-Mixed Insulin Doses

- Increase your pre-mixed insulin dose by _____ unit(s) every _____ day(s) until you reach your target
- If your blood sugar is less than _____ mmol/L (usually < 4.0 mmol/L) dose on more than one occasion, reduce your **PREVIOUS** (last) insulin dose by _____ units (2-4 units, or by 10-20%).
e.g. if your early morning (before breakfast) blood sugar is low, reduce your dinnertime insulin and vice versa

Low Blood Sugar (Insulin Reaction)

- Insulin can sometimes cause low blood sugars (hypoglycemia). A low blood sugar can happen if you take too much insulin, increase your physical activity (exercise) more than usual, or if you don't eat on time or eat less.
- It is important that you and your family and/or close friends know how to recognize and treat a low blood sugar
- Symptoms of low blood sugar can include: dizziness, heart racing, feeling warm, sweating, intense hunger
- If you think your blood sugar is low, check it and record the blood sugar in your log book
- Treat a low blood sugar by following the instructions in your handout titled "Insulin Reaction (hypoglycemia)"
- If your blood sugar does not improve within 15-30 minutes, call your doctor or the **Nurse line (811)**
- If you are having low blood sugar reactions more than once per week, call your doctor to review your insulin

Instructions for Adding and Adjusting Bolus (short-acting, mealtime) Insulin

Starting Bolus Insulin

- Continue taking your basal (background) insulin and other medications as prescribed, unless instructed by your doctor
- Inject _____ (type) insulin _____ minutes before:
 - Breakfast _____ units
 - Lunch _____ units
 - Dinner (Supper) _____ units

Monitoring Your Blood Sugar

- It is important to regularly test your blood sugar while your insulin treatment is being started or changed. Blood sugar tests help you and your doctor adjust your insulin or medication if needed.
- Write down the results, along with any changes in activity or food in your log book and bring it to your next appointment. This information helps us improve your diabetes control.
- Test your blood sugar (check one or more):
 - Immediately before giving your bolus insulin/meal
 - 2-hours after giving your bolus insulin/meal every _____ days
 - Immediately before the **NEXT** meal after your bolus insulin/meal (or bedtime for dinner bolus)
- Be aware of your blood sugar targets. Unless otherwise instructed, try to aim for the targets outlined below.

Bolus blood sugar targets:

- 2-hours after meal _____ mmol/L (usually 5.0 to 10.0 mmol/L)
- Before **NEXT** meal (or bedtime) _____ mmol/L (usually 4.0 to 7.0 mmol/L)

Adjusting Your Bolus Insulin Dose

- Increase your bolus insulin dose by _____ unit(s) every _____ day(s) until you reach your target
- If your blood sugar is less than _____ mmol/L (usually < 4.0 mmol/L) within 2-3 hours after giving bolus dose (on more than one occasion), reduce your bolus insulin dose by _____ units (1-2 units, or by 10%).

Low Blood Sugar (Insulin Reaction)

- Insulin can sometimes cause low blood sugars (hypoglycemia). A low blood sugar can happen if you take too much insulin, increase your physical activity (exercise) more than usual, or if you don't eat on time or eat less.
- It is important that you and your family and/or close friends know how to recognize and treat a low blood sugar
- Symptoms of low blood sugar can include: dizziness, heart racing, feeling warm, sweating, intense hunger
- If you think your blood sugar is low, check it and record the blood sugar in your log book
- Treat a low blood sugar by following the instructions in your handout titled "Insulin Reaction (hypoglycemia)"
- If your blood sugar does not improve within 15-30 minutes, call your doctor or the **Nurse line (811)**
- If you are having low blood sugar reactions more than once per week, call your doctor to review your insulin

Other Instructions:

Estimated Blood Glucose Levels

Hbg A1c	MBG*		Hbg A1c	MBG*		Hbg A1c	MBG*
0.061	6.5		0.093	12.4		0.125	18.3
0.062	6.7		0.094	12.6		0.126	18.5
0.063	6.9		0.095	12.8		0.127	18.7
0.064	7.0		0.096	13.0		0.128	18.9
0.065	7.2		0.097	13.1		0.129	19.1
0.066	7.4		0.098	13.3		0.130	19.3
0.067	7.6		0.099	13.5		0.131	19.4
0.068	7.8		0.100	13.7		0.132	19.6
0.069	8.0		0.101	13.9		0.133	19.8
0.070	8.2		0.102	14.1		0.134	20.0
0.071	8.3		0.103	14.3		0.135	20.2
0.072	8.5		0.104	14.4		0.136	20.4
0.073	8.7		0.105	14.6		0.137	20.5
0.074	8.9		0.106	14.8		0.138	20.7
0.075	9.1		0.107	15.0		0.139	20.9
0.076	9.3		0.108	15.2		0.140	21.1
0.077	9.4		0.109	15.4		0.141	21.3
0.078	9.6		0.110	15.6		0.142	21.5
0.079	9.8		0.111	15.7		0.143	21.7
0.080	10.0		0.112	15.9		0.144	21.8
0.081	10.2		0.113	16.1		0.145	22.0
0.082	10.4		0.114	16.3		0.146	22.2
0.083	10.6		0.115	16.5		0.147	22.4
0.084	10.7		0.116	16.7		0.148	22.6
0.085	10.9		0.117	16.8		0.149	22.8
0.086	11.1		0.118	17.0		0.150	23.0
0.087	11.3		0.118	17.2		0.151	23.1
0.088	11.5		0.120	17.4		0.152	23.3
0.089	11.7		0.121	17.6		0.153	23.5
0.090	11.9		0.122	17.8		0.154	23.7
0.091	12.0		0.123	18.0		0.155	23.9
0.092	12.2		0.124	18.1		0.156	24.1

*Estimated MBL in mmol/L = (Hgb A1c * 185) -4.8

Insulin Start Check List

Check	Topic	Comment
	Physician Order – Insulin	Insulin type, dose, time, route * While a nurse may make a recommendation to the physician regarding insulin type and dose, a physicians order is always required (CRNBC)
	Oral Agents	Order to include directions on oral agents: Stop/Continue
	Prescription for Patient	Include insulin; pen tips/syringes; (blood glucose monitoring supplies) Some extended benefit plans require this. Provide Supply List
	Assess for cognitive impairment	Clock test : takes 2 minutes; applicable to all languages; may need assistance from home care, family
	Teach patient	
	Return demonstration	
	Injection sites	Use PERK handout
	Storage of insulin	
	Hypoglycemia	Provide written materials Reevaluate diet to see if snacks are needed
	Driving	CDA Guidelines
	HBGM	Provide written directions
	Book Follow- up appointment	Assessment to include: Reassess injection technique and answer questions
		Assess blood glucose levels
		Teach insulin dose titration
		Arrange follow up: telephone Next visit to office; include lab req.

Appendix C: Antidiabetic Agents and Adjunctive Agents for Use in Type 2 DM

Class	Dosage	Cost
Biguanides		
metformin (Glucophage® †, generic†)	• 250 or 500 mg PO BID to max. 2.55 g/day (850 mg TID or 5 X 500 mg in divided doses)	\$0.86/day (3x500 mg) G: \$0.39/day (3x500 mg)
metformin extended-release (Glumetza®) Δ	• 1000 mg PO daily with evening meal, ↑ by 500 mg weekly to max 2000 mg/day	\$1.73/day (1500 mg)
Insulin secretagogues – sulfonylureas		
gliclazide (Diamicon® , Diamicon® MR, generic)°	• 80-160 mg PO BID • gliclazide MR: 30-120 mg daily with breakfast	\$0.80/day (2x80 mg) G: \$0.60/day (2x80 mg) gliclazide MR: \$0.15/day (1x30 mg)
glimepiride (Amaryl™, generic) Δ	• 1-8 mg PO daily	\$0.87/day (1x1 mg) G: \$0.52/day (1x1 mg)
glyburide (Diabeta®†, Euglucon®†, generic†)	• 5-10 mg PO daily or 2.5 mg BID	\$0.25/day (1x5 mg) G: \$0.07/day (1x5 mg)
chlorpropamide and tolbutamide are available, but rarely used		
Insulin secretagogues - meglitinides		
nateglinide (Starlix®) Δ	• 60-180 mg PO TID 1-30 min. before meals	\$1.73/day (3x120 mg)
repaglinide (GlucoNorm®) Δ	• 0.5 mg PO TID to 4 mg QID 1-30 min. before meals	\$0.99/day (3x2 mg)
Insulins		
See Appendix D		
Alpha-glucosidase inhibitor		
acarbose (Glucobay®) †	• 100 mg PO daily slowly titrating to 100 mg TID • taken at beginning of meals	\$0.83/day (3x50 mg)
Insulin sensitizers (TZDs)		
pioglitazone (Actos®, generic)†‡	• 15-45 mg PO daily	\$3.37/ day (1x30 mg)
rosiglitazone (Avandia®)° §	• 2-8 mg PO daily or 4 mg BID (max daily dose 4 mg when combined with sulfonylurea)	\$2.31/day (1x4 mg)
Combination formulation		
rosiglitazone & metformin (Avandamet™)° §	• 2 mg/500 mg PO BID with meals, max 8 mg/day of rosi or 2500 mg/day of metformin	\$2.48/day (2x2 mg/500 mg)
rosiglitazone & glimepiride (Avandaryl™) Δ §	• 4 mg/1mg or 4 mg/2 mg PO daily with meal, max 4 mg/ day rosi and 4 mg/day glimepiride	\$3.18/day (1x4 mg/1 mg)
sitagliptin & metformin (Janumet™) Δ	• 50 mg/500 mg PO BID, max 100 mg sitagliptan 2000 mg metformin/day	\$3.25/day (2 tablets of any strength)
DPP-4 inhibitor (incretin enhancer)		
sitagliptin (Januvia™) Δ	• 100 mg PO daily	\$3.00/day (1x100 mg)
saxagliptin (Onglyza™) Δ	• 5 mg PO daily	\$2.84/day (1x5 mg)
Incretin mimetic (GLP-1)		
liraglutide (Victoza®) Δ	• 0.6 mg subcut once daily x 1 week then 1.2 mg subcut once daily, max 1.8 mg once daily.	\$ 5.25 (1x1.2 mg) plus \$0.40 per needle

Dosage ranges based on expert opinion and the eCPS. Lower dosage range is usual starting dose.

Abbreviations: G = generics; min. = minutes; MR = modified release; rosi = rosiglitazone

PharmaCare coverage and prices as of December 2009 (subject to revision):

† = regular coverage, ‡ = partial coverage, ° = restricted coverage, special authority required, Δ = no coverage,

§ = in Canada, rosiglitazone containing products are indicated as last line oral anti-diabetic agents for patients with type 2 diabetes mellitus. Note new safety and prescribing restrictions: http://www.hc-sc.gc.ca/dhp-mps/alt_formats/pdf/medeff/advisories-avis/public/2010/avandia_6_pc-cp-eng.pdf. Also check Health Canada's MedEffect website for the latest advisories and warnings: www.medeffect.ca

Note: Physicians should refer to the most recent edition of *the Compendium of Pharmaceuticals and Specialties* for product monographs and detailed prescribing information.

References: e-CPS [Internet]. Ottawa (ON): Canadian Pharmacists Association; c2009 [cited 2009 Jun 19]. www.e-cps.ca. Health Canada MedEffect Website. 2009. www.hc-sc.gc.ca/dhp-mps/medeff/index-eng.php



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Appendix D: Insulin Therapeutic Considerations and Availability

Therapeutic Considerations			
<p>Type 1 diabetes: Intensive treatment e.g. basal-bolus regimens (e.g. multiple daily injections or continuous subcutaneous insulin infusion) are the insulin regimen of choice.</p> <ol style="list-style-type: none"> Basal insulin: insulin NPH once or twice daily as first line in addition to bolus insulin. If severe hypoglycemia try long-acting insulin analogues (glargine once daily, detemir once daily or bid). Bolus insulin: either regular human insulin or rapid-acting insulin analogues bid or tid with meals as first line. <ol style="list-style-type: none"> regular human insulin if cost is an issue. rapid-acting insulin analogues if: <ul style="list-style-type: none"> - flexibility needed (given just before or within 15 minutes of starting meal), - significant hypoglycemia with regular human insulin, - concern for hypoglycemia. <p>Type 2 diabetes:</p> <ul style="list-style-type: none"> • Potentially greatest A1C reduction and no maximal dose. • Increased risk of weight gain (=2-4 kg) relative to sulfonylureas and metformin . • Associated with hypoglycemia (long-acting analogues <NPH; Rapid analogues <regular insulin). • Beneficial effects on triglyceride and HDL cholesterol. • Avoid insulin in patients on thiazolidinedione (increased heart failure, weight gain and edema). Stop therapy with thiazolidinedione before adding insulin. <ol style="list-style-type: none"> Basal insulin: consider adding bedtime insulin NPH as first line to daytime oral antidiabetic. <ul style="list-style-type: none"> - Starting dose: 10 units basal insulin at qhs, increase by 1 unit/day until achieving FPG ≤ 5.5 mmol/L. - If severe hypoglycemia to insulin NPH try long-acting insulin analogues. Bolus insulin: consider intensive insulin with regular human insulin if basal insulin regimen fails to attain glycemic targets. <ul style="list-style-type: none"> - If severe hypoglycemia to regular human insulin try rapid-acting insulin analogue. 			
Insulin type/action	Trade names	Approx. price per mL (=100 IU of insulin)	
B O L U S	Fast-acting (clear): Onset 0.5-1 h. Peak 2-4 h. Duration 5-8 h.	<ul style="list-style-type: none"> • Humulin®-R (insulin human)[†] • Novolin®ge Toronto (insulin human)[†] 	<ul style="list-style-type: none"> • Vial = \$2.00 Cartr = \$2.62 • Vial = \$2.04 Cartr = \$2.66
	Rapid-acting analogue (clear): Onset 10-15 min. Peak 60-90 min. Duration 4-5 h.	<ul style="list-style-type: none"> • Apidra™ (insulin glulisine)[‡] • Humalog® (insulin lispro)[‡] • NovoRapid® (insulin aspart)[‡] 	<ul style="list-style-type: none"> • Vial = \$2.37 DPen = \$3.16 • Vial = \$2.69 Cartr = \$3.58 DPen = \$3.58 • Vial = \$2.77 Cartr = \$3.70
B A S A L	Intermediate-acting (cloudy): Onset 1-3 h. Peak 5-8 h. Duration up to 18 h.	<ul style="list-style-type: none"> • Humulin®-N (insulin isophane)[†] • Novolin®ge NPH (insulin isophane)[†] 	<ul style="list-style-type: none"> • Vial = \$2.00 Cartr = \$2.62 DPen[‡] = \$3.36 • Vial = \$2.04 Cartr = \$2.67
	Extended long-acting analogue (clear): Onset 90 min. Duration 24 h	<ul style="list-style-type: none"> • Lantus® (insulin glargine)[°] • Levemir® (insulin detemir)^Δ 	<ul style="list-style-type: none"> • Vial = \$5.79 Cartr = \$5.79 DPen = \$5.79 • Cartr = \$7.32
P R E M I X	Premixed (cloudy): A single vial contains a fixed ratio of insulin (% rapid- or fast-acting to % intermediate-acting insulin)	<ul style="list-style-type: none"> • Humalog® Mix25™ Mix 50™[‡] • Humulin® (30/70)[†] • Novolin®ge (30/70, 40/60, 50/50)[†] • NovoMix™ 30[‡] 	<ul style="list-style-type: none"> • Cartr = \$ 3.58 DPen = \$4.47 • Vial = \$2.00 Cartr = \$2.62 • Vial = \$2.04 Cartr = \$2.66-2.72 • Cartr = \$3.46
<p>Abbreviations: Approx. = approximate Cartr = Cartridge (for reusable pens); DPen = Disposable pens with cartridge Cost of syringes (used with vials) and needles (used with pens) is approximately equal.</p> <p>PharmaCare coverage and prices as of December 2009 (coverage subject to revision, manufacturer's price subject to wholesale and retail mark-up): [†] = regular coverage; [‡] = partial coverage [°]= restricted coverage, special authority required; ^Δ= non benefit.</p>			

Class	Drug	Brand name (non-exhaustive list)	Commercial presentation	Risk of hypoglycemia
<input type="radio"/>	Biguanides	Metformin	Glucophage 	No
<input type="radio"/>	Biguanides	Extended release metformin	Glumetza 	No
<input type="radio"/>	Amino acid derivate (insulin secretagogues)	Nateglinide	Starlix 	Yes
<input type="radio"/>	Dipeptidyl peptidase-4 inhibitors (incretin pathway)	Sitagliptin	Januvia 	No
<input type="radio"/>	Dipeptidyl peptidase-4 inhibitors (incretin pathway)	Saxagliptin	Onglyza 	No
<input type="radio"/>	Dipeptidyl peptidase-4 inhibitors and biguanides	Sitagliptin and metformin	Janumet* 	No
<input type="radio"/>	Alpha-glucosidase inhibitors	Acarbose	Glucobay 	No
<input type="radio"/>	Meglitinides (insulin secretagogues)	Repaglinide	GlucNorm 	Yes
<input type="radio"/>	Sulfonylureas (insulin secretagogues)	Glimepiride	Amaryl 	Yes
<input type="radio"/>	Sulfonylureas (insulin secretagogues)	Glyburide	DiaBeta 	Yes
<input type="radio"/>	Sulfonylureas (insulin secretagogues)	Gliclazide	Diamicon 	Yes
<input type="radio"/>	Sulfonylureas (insulin secretagogues)	Modified release Gliclazide	Diamicon MR 	Yes
<input type="radio"/>	Thiazolidinediones	Pioglitazone	Actos 	No
<input type="radio"/>	Thiazolidinediones	Rosiglitazone	Avandia 	No
<input type="radio"/>	Thiazolidinediones and biguanides	Rosiglitazone and metformin	Avandamet 	No
<input type="radio"/>	Thiazolidinediones and sulfonylureas	Rosiglitazone and glimepiride	Avandaryl 	Yes
<input type="radio"/>				
<input type="radio"/>	Analogs of GLP-1 (incretin pathway)	Liraglutide (with needles novofine® 6-8 mm)	Victoza 	No

* The commercial presentation is real size to the exception of Janumet, reduced to 75%.

References : Diabetes Day-Care Unit, CHUM Hôtel-Dieu, Understand Your Diabetes... and Live a Healthy Life! New Edition 2009, Montreal : Rogers Media.

THIS DOCUMENT WAS PRODUCED THANKS TO AN UNRESTRICTED GRANT FROM Isabelle Schmidt, graphist / Marcel La Haye, photographer.

Realisation : Diabetes Day-Care Unit, CHUM Hôtel-Dieu, Montréal-Françoise Desrochers, nurse clinician, diabetes educator, CHUM.

2nd edition 2010/08/04



Name of patient _____

Date : _____

My treatment	Dose (mg)				

Signature _____

Licence number _____

REP.	1	2	3	4	5	NR
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	Pen-injectors	Insulins	Needles (suggested by companies)
Eli Lilly Canada Inc.	<input type="radio"/> HumaPen® Luxura® HD 	<input type="radio"/> Humalog® (lispro) 	BD Ultra-Fine™ needles <input type="radio"/> 4 mm 
	<input type="radio"/> HumaPen® Luxura® 	<input type="radio"/> Humulin® R 	<input type="radio"/> 5 mm 
	<input type="radio"/> HumaPen® Memoir® 	<input type="radio"/> Humulin® N 	<input type="radio"/> 8 mm 
	<input type="radio"/> Humulin® N KwikPen™ (disposable)  (available fall 2010)	<input type="radio"/> Humulin® 30/70 	<input type="radio"/> 12 mm 
	<input type="radio"/> Humalog® KwikPen™ (disposable) 	<input type="radio"/> Humalog® Mix25® 	
	<input type="radio"/> Humalog® Mix25® KwikPen™ (disposable) 	<input type="radio"/> Humalog® Mix50® 	
	<input type="radio"/> Humalog® Mix50® KwikPen™ (disposable) 		
Novo Nordisk Canada Inc.	<input type="radio"/> Novolin-Pen® Junior 	<input type="radio"/> NovoRapid® (aspart) 	novofine® needles <input type="radio"/> 6 mm 
	<input type="radio"/> NovoPen® 4 	<input type="radio"/> Novolin® ge Toronto 	<input type="radio"/> 8 mm 
	<input type="radio"/> NovoPen Echo® 	<input type="radio"/> Novolin® ge NPH 	<input type="radio"/> 12 mm 
		<input type="radio"/> Novolin® ge 30/70 	
		<input type="radio"/> Novolin® ge 40/60 	
		<input type="radio"/> Novolin® ge 50/50 	
		<input type="radio"/> NovoMix® 30 	
sanofi-aventis Canada Inc	<input type="radio"/> Apidra® SoloSTAR® (disposable) 	<input type="radio"/> Apidra® (glulisine) 	SoloSTAR® and CliKSTAR® pen-injectors are compatible with most needles available in Canada except novofine®. sanofi-aventis recommends the use of BD Ultra-Fine™ needles.
	<input type="radio"/> Lantus® SoloSTAR® (disposable) 	<input type="radio"/> Lantus® (glargine) 	
	<input type="radio"/> CliKSTAR® 		
	<input type="radio"/> Others :		
	Note : Check the product monograph for the type of needle that can be used with the pen-injector selected.		





*References : Diabetes Day-Care Unit, CHUM Hôtel-Dieu, Understand Your Diabetes... and Live a Healthy Life! New Edition 2009, Montreal: Rogers Media.

THIS DOCUMENT WAS PRODUCED THANKS TO AN UNRESTRICTED GRANT FROM



Realisation : Diabetes Day-Care Unit, CHUM Hôtel-Dieu, Montréal-Françoise Desrochers, nurse clinician, diabetes educator, CHUM. Isabelle Schmidt, graphist / Marcel La Haye, photographer. 2nd edition 2010/08/04

Rx Name of patient _____ Date : _____

My treatment (units of insulin injected)				

Signature _____ Licence number _____

REP.	1	2	3	4	5	NR
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DIABETES PATIENT CARE FLOW SHEET

This Flow Sheet is based on the Guideline, *Diabetes Care*
Web site: <http://www.bcguidelines.ca>

NAME OF PATIENT	SEX <input type="checkbox"/> M <input type="checkbox"/> F	DIABETES <input type="checkbox"/> T1 <input type="checkbox"/> T2	DATE OF BIRTH	AGE AT DIAGNOSIS
-----------------	--	---	---------------	------------------

CARE OBJECTIVES

RISK FACTORS AND CO-MORBID CONDITIONS

Obesity (Measure BMI and waist circumference annually)

HEIGHT (cm)

DATE	BMI	TARGET (kg/m ²)	DATE	WAIST CIRC.	Male (cm) Caucasian ≤ 94 Asian ≤ 90
		Normal: 18.5-24.9 Overwt: 25-30 Obese: ≥30			Female (cm) Caucasian ≤ 80 Asian ≤ 80

- Hypertension (Target: ≤130/80)
- Dyslipidemia
- CVD
- Renal (microalbuminuria)
• ACR (Target: M: <2.0; F: <2.8)
- Smoker
- Alcohol (assess/discuss)

SELF MANAGEMENT (Discuss with patient)

- Refer to diabetic team/educator
- Weight management
 - diet/nutrition
 - Exercise: 2.5 hrs wk
- Smoking cessation: *Quit Now*
Phone toll free in BC: 1 877 455-2233
- Glucose meter lab comparison
 - within 20%
- Patient care plan and resource sheet

VISITS (3 TO 6 MONTHS)

DATE	BP	WEIGHT	RECENT A ₁ C	NOTES (E.G. HYPOGLYCEMIA, GOALS, CLINICAL STATUS)	DM MEDICATION NOTES
		Lbs Kg	TARGET: ≤7%		
					BASELINE (Note allergies, side effects & contraindications) *Consider low dose ASA and ACEI/ARB as indicated
					<input type="checkbox"/> NO CHANGE
					<input type="checkbox"/> NO CHANGE
					<input type="checkbox"/> NO CHANGE
					<input type="checkbox"/> NO CHANGE
					<input type="checkbox"/> NO CHANGE
					<input type="checkbox"/> NO CHANGE
					<input type="checkbox"/> NO CHANGE
					<input type="checkbox"/> NO CHANGE

REMINDERS: REVIEW BLOOD GLUCOSE RECORDS Target premeal 4-7 mmol/L; 2 h postmeal 5-10 mmol/L

LABORATORY ← ANNUALLY (OR AS INDICATED) → SCREEN FOR DIABETIC COMPLICATIONS

NEPHROPATHY (yearly if high risk, q2y if mod. risk)

RENAL		
DATE	ACR	eGFR
TARGETS	M: < 2.0 F: < 2.8	> 60


LIPIDS

LIPIDS					UKPDS 10-YR RISK
DATE	TC	LDL	TC/HDL	ApoB	%
DESIRABLE	< 3.5	< 5.0	< 1.05	MOD 10-19%	
	< 2.5	< 4.0	< 0.85	HIGH ≥ 20%	

NEUROPATHY

- Check feet for lesions & sensation (128 Hz tuning fork/10g monofilament)
- Check for pain, erectile dysfunction and GI symptoms

DATE DATE



RETINOPATHY

Annual Eye Exam: DATE DATE

NAME OF OPHTHALMOLOGIST/OPTOMETRIST _____

OTHER NOTES

- Commonly overlooked conditions:
- cataracts
 - carpal tunnel/tendon problems
 - dental problems

VACCINATIONS

Annual Flu: DATE DATE

Pneumovax: DATE

Many people with type 2 diabetes need insulin therapy. A variety of regimens are available. Here are some tips when discussing insulin therapy:

- Discuss insulin early to change negative perceptions (e.g., how diabetes changes over time; insulin therapy as a normal part of treatment progression).
- To encourage patient buy-in, it may be more strategic initially to begin with a regimen that will be the most acceptable to the patient even if it may not be the clinician's first choice (e.g., pre-mixed instead of basal-bolus regimen)
- Provide information on benefits (e.g., more "natural" versus pills, dosing flexibility).
- Consider suggesting a "trial" (e.g., for one month).
- Compare the relative ease of using newer insulin devices (e.g., pen, smaller needle) versus syringe or vial.
- Ensure patient is comfortable with loading and working a pen (or syringe).
- Link patient to community support (e.g., Certified Diabetes Educator [CDE] for education on injections and monitoring; nutrition and physical activity counselling).
- Show support — ask about and address concerns

Consider initiating insulin if:

- Oral agents alone are not enough to achieve glycemic control **or**
- Presence of symptomatic hyperglycemia with metabolic decompensation **or**
- A1C at diagnosis is $\geq 9\%$.

Timely adjustments to and/or additions of antihyperglycemic agents should be made to **attain target A1C** within **6 to 12 months**

Standard target blood glucose (BG) goals for type 2 diabetes:

- Before meals 4 to 7 mmol/L
- Two (2) hours after meals 5 to 10 mmol/L (5 to 8 mmol/L, if A1C targets are not being met)
- A1C $\leq 7\%$ (Less stringent A1C goals are appropriate for some individualst)

†Consider age of patient, prognosis, level of glycemic control, duration of diabetes, presence of diabetes complications or comorbidities, risk for and ability to perceive hypoglycemia.

Two-step process to insulin therapy:

1. Select an initial regimen and starting dose (See next pages).
2. Make adjustments.

Select Initial Regimen

Three Primary Insulin Regimens:	Consider as Initial Regimen if Patient:
<p>Background (basal) insulin* (added to oral agents)</p> <p><u>Key message:</u></p> <p><i>NPH recommended as first line.</i></p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Is feeling overwhelmed; is fearful of injections <input checked="" type="checkbox"/> Has mostly elevated fasting BG
<p>Premixed insulin*</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Is opposed to more than 2 injections a day; <input checked="" type="checkbox"/> has consistent mealtimes and food intake <input checked="" type="checkbox"/> Has elevated fasting and/or post-meal BG
<p>Background (basal) and mealtime (bolus) insulin*</p> <p><u>Key message:</u></p> <p><i>Basal: NPH recommended as first line.</i></p> <p><i>Bolus: Regular insulin suggested as first line.</i></p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Desires tight control and a flexible schedule <input checked="" type="checkbox"/> Has elevated fasting and/or post-meal BG

BG – blood glucose

Select a Starting Dose

Type of Regimen	Dosing	Examples
Background (basal) insulin (added to oral agents) <ul style="list-style-type: none"> Start with one dose at bedtime 	Starting dose: 5 to 10 units (0.1 to 0.2 units/kg/daily)	Starting dose 10 units at bedtime Increase dose by 1 unit every 1 night until FBG = 4 to 7 mmol/L
Premixed insulin* <ul style="list-style-type: none"> Start with 2 doses: before breakfast and before supper 	Starting dose: 5 to 10 units twice daily (0.1 to 0.2 units/kg twice daily)	10 units ac breakfast 10 units ac supper Increase breakfast dose by 1 unit every 1 day until pre-supper BG = 4 to 7 mmol/L Increase supper dose by 1 unit every 1 day until FBG = 4 to 7 mmol/L
Background (basal) and mealtime (bolus) insulin <ul style="list-style-type: none"> Calculate background and mealtime doses Initially, mealtime insulin dose is divided evenly between meals 	Calculate TDI dose as 0.3 to 0.5 units/kg, then distribute as follows: <ul style="list-style-type: none"> 40% TDI as basal insulin at bedtime 20% TDI as bolus insulin prior to each meal 	<ul style="list-style-type: none"> For an 80-kg person: $TDI = 0.5 \text{ units/kg} = 0.5 \times 80$ $TDI = 40 \text{ units}$ Basal insulin = 40% of TDI $= 40\% \times 40 \text{ units}$ Basal insulin = 16 units Bolus insulin = 60% of TDI $= 60\% \times 40 \text{ units}$ Bolus = 24 units $= 8 \text{ units with each meal}$

Tips for Insulin Dose Adjustment:

- Fix the lows first and highs later. Once the lows are gone, rebound hyperglycemia is often eliminated.
- Adjust insulin dose by 5% to 10% per week or 1 or 2 units at a time to prevent hypoglycemia.
- Adjust one insulin at a time. Begin with the insulin that will correct the first problem blood glucose of the day.
- If unexplained morning hyperglycemia is occurring, determine the cause before adjusting therapy.
- Ask the patient to check his or her blood glucose at 3:00 a.m. for **several** nights:
 - If blood glucose is **less** than 4 mmol/L, this suggests a **Somogyi Effect** (unrecognized nocturnal hypoglycemia that the patient sleeps through, resulting in rebound hyperglycemia).
 - If blood glucose is **above** 4 mmol/L, this suggests the **Dawn Phenomenon** (fasting hyperglycemia due to growth hormone being released in the early hours of the morning) or an insufficient overnight dose of insulin.⁹
- Nightmares, restless sleep, headache on waking, and wet pillow or sheets may be signs of sleeping through an episode of hypoglycemia.
- Postprandial targets are helpful when assessing the bolus (meal) insulin. Assessing postprandial glucose control provides information to determine which insulin needs adjusting (the bolus or the basal insulin). The goal is to achieve postprandial glucose levels of 5 to 10 mmol/L without lows between meals.
- Sliding Scale Insulin: This practice is generally discouraged. Consider using a basal/bolus and supplemental (correction) insulin regimen.
- It is difficult to obtain optimal control without occasional, mild episodes of hypoglycemia.

Trained Pharmacists

store #	Pharmacy	Address	City	Phone	trained pharmacists
1	Safeway	10355 KING GEORGE HIGHWAY	Surrey	604-584-8284	Albert, Peter, Selena
42	Safeway	4440 HASTINGS STREET	Burnaby	604-205-7497	Linda, Theresa
44	Safeway	6564 EAST HASTINGS STREET	Burnaby	604-291-0118	Tona
47	Safeway	700-15355 24TH AVENUE	Surrey	604-535-8879	Virginia
62	Safeway	8860 - 152ND STREET	Surrey	604-589-5226	Shirley
76	Safeway	1033-AUSTIN ROAD	Coquitlam	604-939-1764	Elsie, Munira
84	Safeway	3410 KINGSWAY	Vancouver	604-439-1050	Adeline
88	Safeway	100-32500 S. FRASER WAY	Abbotsford	604-852-3558	Sharon, Tricia
99	Safeway	45850 Yale Road	Chilliwack	604-795-6092	Trish
109	Safeway	12825 16TH AVENUE	Surrey	604-531-9694	Dominica
110	Safeway	185-650 WEST 41ST AVE	Vancouver	604-263-5502	Elaine, Chee
122	Safeway	8555 GRANVILLE STREET	Vancouver	604-263-7267	Josephine
142	Safeway	32520 LOUGHEED HIGHWAY	Mission	604-826-5398	Iya, Margrete
148	Safeway	5235 KINGSWAY	Burnaby	604-438-6508	Denny, Winnie
161	Safeway	10151 NO. 3 ROAD	Richmond	604-271-7734	Julia, Lucia, June
165	Safeway	27566 FRASER HWY	Langley/Aldergrove	604-856-4667	Fady, Heather
193	Safeway	45610 LUCKAKUCK WAY	Chilliwack	604-858-0437	Helen, Brian
198	Safeway	300-20201 LOUGHEED HWY	Maple Ridge	604-460-7200	Angie, Elaine, Adela
	Delta Prescriptions	101- 8425 120 STREET	Delta	604-594-4499	Michael Millman. Michael Tellis
	Howe Street Pharmacy	1070 HOWE STREET	Vancouver	604-899-0930	Mona Kwong
	Surlang Medicine Center	5-19475 FRASER HWY	Surrey	604-533-1041	Bob Sangha and Rasha Khalil
	London Drugs	26 - 32700 South Fraser Way	Abbotsford	(604) 853-6811	All provide teaching
	London Drugs	70 Kingsway Avenue	Burnaby	(604) 437-9621	All provide teaching
	London Drugs	400 - 4567 Lougheed Hwy	Burnaby	(604) 570-0252	All provide teaching
	London Drugs	101 - 9855 Austin Avenue	Burnaby	(604) 444-2222	All provide teaching
	London Drugs	7280 Market Crossing	Burnaby	(604) 412-4171	All provide teaching
	London Drugs	21 - 45585 Luckakuck Way	Chilliwack	(604) 858-8347	All provide teaching
	London Drugs	1030 - 2929 Barnet Highway	Coquitlam	(604) 464-3322	All provide teaching

London Drugs	7303 - 120th Street	Delta	(604) 591-9544	All provide teaching
London Drugs	5237 - 48th Avenue	Delta	(604) 946-5642	All provide teaching
London Drugs	20202 - 66th Ave.	Langley	(604) 533-4631	All provide teaching
London Drugs	101 - 22709 Lougheed Hwy	Maple Ridge	(604) 463-0991	All provide teaching
London Drugs	200 - 32555 London Avenue	Mission	(604) 820-8059	All provide teaching
London Drugs	555-6th Street	New Westminster	(604) 524-1121	All provide teaching
London Drugs	2032 Lonsdale Ave	North Vancouver	(604) 980-3661	All provide teaching
London Drugs	5971 No.3 Road	Richmond	(604) 278-4521	All provide teaching
London Drugs	3200 - 11666 Steveston Hwy	Richmond	(604) 448-5468	All provide teaching
London Drugs	#130 - 15850 26th Ave.	South Surrey	(778) 545-5380	All provide teaching
London Drugs	100 - 15355 - 24th Avenue	South Surrey	(604) 535-3281	All provide teaching
London Drugs	17685 - 64th Avenue	Surrey/Cloverdale	(604) 575-5880	All provide teaching
London Drugs	2340 Guildford Town Centre	Surrey	(604) 588-7881	All provide teaching
London Drugs	10348 King George Boulevard	Surrey	(604) 584-3281	All provide teaching
London Drugs	5639 Victoria Drive	Vancouver	(604) 322-6050	All provide teaching
London Drugs	2230 West Broadway	Vancouver	(604) 742-6000	All provide teaching
London Drugs	1650 Davie Street	Vancouver	(604) 669-2884	All provide teaching
London Drugs	2585 East Hastings St.	Vancouver	(604) 253-4484	All provide teaching
London Drugs	710 Granville St.	Vancouver	(604) 685-5292	All provide teaching
London Drugs	#150 - 351 Abbott Street	Vancouver	(604) 622-7030	All provide teaching
London Drugs	2091 W 42nd Avenue	Vancouver	(604) 263-1811	All provide teaching
London Drugs	1187 Robson Street	Vancouver	(604) 669-7374	All provide teaching
London Drugs	3328 Kingsway Avenue	Vancouver	(604) 433-4700	All provide teaching
London Drugs	525 West Broadway	Vancouver	(604) 872-5177	All provide teaching
London Drugs	875 Park Royal North	West Vancouver	(604) 926-9616	All provide teaching

**All London Drugs locations have CDE pharmacist on staff*

***Safeway store numbers in bold have CDE pharmacists that work there.*

***Safeway has both CDE pharmacists and pharmacists that can initiate insulin.*

***At Safeway a CDE designation does not mean that the person can initiate insulin.*

***There are many CDE certified health professionals who do not initiate insulin.*

****Pharmasave and OverWaitea do not provide this service but would like to get involved*

Pharmacies Providing Teaching for Insulin Initiation – Responses from a Survey of Lower Mainland Pharmacies

General Summary

- ☛ Shopper's was contacted twice and communicated that they would email a list but have not done so to date.
- ☛ Pharmasave was contacted and they do not provide this service although they would be interested in doing so.
- ☛ The SaveOn, OverWaitea Food Group is also interested and have CDEs on staff but do not provide this service. They are in the process of training about 40 of their pharmacists on insulin initiation. There are many independent pharmacies that have not been contacted. It would seem that pharmacists are willing to provide this service if there is a demand for it.

London Drugs

The London Drugs pharmacists did not fill out a survey. They have one RN that does the diabetes teaching for the organization and she responded to the survey on behalf of the pharmacists. See response below.

All London Drugs CDE Pharmacists are trained to provide 1:1 insulin initiation for customers. Internally each year they offer an insulin training session to be sure that everyone has the opportunity to keep their skills up to date. They focus on insulin dosing, adjustments, etc. Depending on their experience and location (as the demand does vary by location) the average CDE probably has experience doing this with customers.

In BC they are able to offer consultations in; Korean, Mandarin, Chinese, Punjabi, and Gujrathi. They book a minimum of an hour for an insulin initiation. Depending on the patient need, an insulin follow up appointment is 30 minutes to 1 hour duration.

A typical insulin initiation appointment...

- ☛ history, labs,
- ☛ Medications (orals, OTC...)
- ☛ BG monitoring; pattern analysis, meter control check (QC), targets, technique, download
- ☛ insulin; action, device training/ injection technique, sites, storage, diabetes ID and adjustment (per physician)
- ☛ hypoglycemia; treatment, preparedness, and signs and symptoms
- ☛ sharps disposal
- ☛ nutrition/ meal planning (if needs identified or other risk factors as celiac, gestational, pediatric, gastroparesis, etc. then referred to a RDN)
- ☛ sick day management

As the above is a lot to cover in an hour, the CDE prioritizes and follows up at the next appointment. Other discussion topics include; physical exercise, lifestyle issues, pathophysiology, complications, foot care, travel.

Communication to the physician and referrals to other health care providers are encouraged. A letter or copy of the appointment notes (with patient permission) is shared with the referring physician. Smokers are referred to their smoking cessation program.

Currently they have 16 CDE Pharmacists in BC. 7 more BC pharmacists have written the CDE exam last month. Every London Drugs location is covered with a CDE Pharmacist. Here is the current breakdown in the Lower Mainland

- 📍 4 Fraser Valley
- 📍 6 Vancouver/ Lower Mainland

They use a carbohydrate counting handout and have also developed literature for patients living with diabetes which is based on the sheet developed by VGH (with VGH permission). The patient education pieces include; screening form, glucose monitoring log book (also translated into Punjabi and Chinese), exercise log book, injection rotation chart, diabetes prevention booklet, nutritional screening sheet, consultation record, patient care record, personal care plan.

Howe Street Pharmacy

This service is provided in half an hour first appointment away from the dispensary in a private setting. They do not have a checklist to make sure all information is covered and they do not provide an information package to the patient. They provide a follow up – face to face check in service. They have done three insulin starts at this pharmacy and charge no fee to patients for this service. This service is available at all hours. For a new patient they can set up an appointment within a day but they really haven't advertised this service widely. There is no obligation for a patient to buy supplies at the pharmacy if they get this teaching and there is no charge. This pharmacy would provide a consultation note back to referring physician.

Surlang Pharmacy

This service is provided in half an hour first appointment away from the dispensary in a private setting. They do have a checklist to make sure all information is covered and they do provide an information package to the patient. They provide a follow up via telephone or in person every 4 to 6 weeks as required. They have done 25 insulin starts at this pharmacy. The barriers they cited for the pharmacy were around acceptance of patients and referring physicians. Referrals by physicians are not enough to promote patient adherence to attend teaching. They also said that patient understanding of the teaching and different types of insulin was a barrier. This service is available Monday to Friday 9:30 to 5:30pm and Saturday 9:30 to 4pm. They update their patient information weekly. For a new patient they can set up an appointment within two days by physician emailing or calling pharmacy. There is an obligation for patient to buy supplies if they get this teaching and if they don't buy the supplies there is \$50 charge for teaching. This pharmacy would provide a consultation note back to referring physician regarding insulin via fax.

Delta Prescriptions

They will teach and initiate a patient on insulin upon physician request or referral. This patient must have their prescriptions filled at our store and be a patient otherwise our team will not be involved. Typical 1st appointment is 30 min, with a follow-up by phone or in person over the next several days to ensure there are

no technique problems and blood glucose readings are in line. This is done in an office located upstairs from our store - very private and no distractions.

They do not have a checklist, but feel they are thorough.

Follow-up as mentioned. 5-7 patients have been started on insulin.

The only real challenge is to make the patient understand that they will only provide this service and follow-ups as long as there is an agreement for all prescription to be filled at that pharmacy.

Most of the time there is a certain amount of fear involved with the injection itself, the procedure, the worry about low blood glucose readings, and the stigma of 'being on the needle'. With gentle persuasion they are able to allay these fears and let the patient understand they will ultimately feel better.

They are ready to train patients during our regular working hours, by appointment.

Usually we need to see the patient the same day as the request or as soon as possible, so all we need is a phone call.

There is no additional charge at this time for this service. Once the patient is trained, they will call the physician or write a memo detailing what was done in the appointment and report to the physician regarding the progress.

Safeway

Safeway did not fill out a survey. See information below.

Safeway could not determine how many insulin starts they have done amongst the group as they are not tracking this information. They have three CDE pharmacists in the Lower Mainland currently that do insulin starts. Below indicates the learning that takes place at their sessions for their internal training of their pharmacists.

The points that are covered include:

- 📌 Hypo/Hyperglycemia
- 📌 Insulin pens from the various companies
- 📌 Sick days, travel etc as well as oral medications
- 📌 Starting someone on insulin: what dose to start them at
- 📌 How the use of insulin in type 2 diabetics would be of benefit on the long term
- 📌 Review guidelines, titration regimens
- 📌 Counseling points, tips and tricks, how many units to start with and how to increase
- 📌 Initiating insulin regimen
- 📌 Benefits of the different types of insulin, practice with pen and injection
- 📌 Review of medications, description of insulin regimens, and recommendation for patients
- 📌 How to give instructions and counsel recently diagnosed patients who need insulin
- 📌 Dose adjustment according to insulin use and timing
- 📌 Insulin dosing

RACE

RAPID ACCESS TO CONSULTATIVE EXPERTISE

RACE means timely telephone advice from specialists for family practitioners, Community Specialists or Housestaff, all in one phone call.

Monday to Friday 0800-1700

Local Calls: 604-696-2131

Toll Free: 1-877-696-2131

Speak to a:

- Nephrologist
- Heart Failure Specialist
- Cardiologist
- Respiriologist
- Endocrinologist
- Cardiovascular Risk & Lipid Management Specialist
- General Internist
- Psychiatrist
- Geriatrician
- Gastroenterologist

Provincial Services Include:

- Chronic Pain
- Rheumatology

RACE provides:

- Timely guidance and advice regarding assessment, management and treatment of patients
- Assistance with plan of care
- Learning opportunity – educational and practical advice
- Enhanced ability to manage the patient in your office
- Calls returned within 2 hours and commonly within an hour
- CME credit through “Linking Learning to Practice”
http://www.cfpc.ca/Linking_Learning_to_Practice/

RACE does not provide:

- Appointment booking
- Arranging transfer
- Arranging for laboratory or diagnostic investigations
- Informing the referring physician of results of diagnostic investigations
- Arranging a hospital bed.

Unanswered Calls?

If you call the RACE line and do not receive a call back within 2 hours – call the number below. All unanswered calls will be followed up.

For questions or feedback related to RACE, call:
604-682-2344, extension 66522 or email mwilson@providencehealth.bc.ca

Insulin Initiation – Patient Package

**Sick Day Management
Type 2 Diabetes**

**Estimated Blood
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**Exercise for People
with Diabetes**

**Benefits of Using Low
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High Blood Sugar

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Carbohydrate Counting

Menu Ideas

**General Instructions for
Using an Insulin Pen**

**Medic Alert
Membership Assistance**

**Insulin Recommendation
Patient Sheet**

**Diabetes
& Driving**



Sick Day Management for Type 2 Diabetes

Living Well with Your Health Conditions

A bad cold, the flu or a serious injury can make your blood glucose too high. People not usually taking insulin may need to take insulin when they are sick. On the other hand when you take diabetes medication (pills and/or insulin) and cannot eat your usual foods, your blood glucose may go too low. Follow these guidelines to help you stay out of hospital.

Sick Day Management for Type 2 Diabetes

- Be prepared – before you get sick, ask your pharmacist how you can test for “ketones” if you do become sick.
- Continue to take your diabetes medication (pills or insulin) as usual.
- Continue to follow your meal plan. If you are unable to eat your usual foods, try to follow the Foods for Sick Days ideas in the next section.
- Drink plenty of sugar-free fluids such as water, weak or caffeine-free tea and sugar-free pop. Try to drink at least 8 to 10 cups of fluids each day.
- If you test your blood glucose, test 4 times each day (before meals and before bed)
- If your blood glucose is greater than 20 mmol/L for more than 8 hours you need to test your urine or blood for ketones.

See your doctor today or go to emergency for help if any one of the following occurs:

- Your blood glucose is greater than 20 mmol/L for more than 8 hours and your urine ketones are moderate to large or blood ketones are 1.5 mmol/L or higher.
- You take diabetes pills and/or insulin and are unable to eat or drink due to vomiting.
- You are unable to eat or drink due to vomiting for longer than 24 hours.
- You have diarrhea lasting longer than 24 hours.

What may happen when your blood glucose is high:

- You may become dehydrated.
- Dehydration can cause an increase in blood glucose and may lead to shock and coma.

Food for Sick Days

Drink plenty of sugar-free fluids such as water, weak or caffeine-free tea, sugar-free pop, Crystal light® or broth. Try to drink 8 to 10 cups of fluid per day.

Continue to eat your usual foods as much as possible. If you are not able to eat your usual foods, have one of the following every 1 to 2 hours, even if your blood glucose is high. (Each of these servings contain about 15 grams of carbohydrate.)

- ½ cup (125 mL) fruit juice
- ½ cup (125 mL) regular pop (not sugar-free)
- 1 cup (250 mL) Gatorade®
- ½ cup (125 mL) regular Jell-O®
- 1 twin popsicle
- 1 cup (250 mL) milk
- ½ cup (125 mL) ice cream, custard or pudding
- 6 soda crackers
- 1 slice toast with margarine/butter/jam
- ½ cup (125 mL) applesauce
- ½ cup (125 mL) milk shake or liquid meal replacement

Estimated Blood Glucose Levels

Hbg A1c	MBG*		Hbg A1c	MBG*		Hbg A1c	MBG*
0.061	6.5		0.093	12.4		0.125	18.3
0.062	6.7		0.094	12.6		0.126	18.5
0.063	6.9		0.095	12.8		0.127	18.7
0.064	7.0		0.096	13.0		0.128	18.9
0.065	7.2		0.097	13.1		0.129	19.1
0.066	7.4		0.098	13.3		0.130	19.3
0.067	7.6		0.099	13.5		0.131	19.4
0.068	7.8		0.100	13.7		0.132	19.6
0.069	8.0		0.101	13.9		0.133	19.8
0.070	8.2		0.102	14.1		0.134	20.0
0.071	8.3		0.103	14.3		0.135	20.2
0.072	8.5		0.104	14.4		0.136	20.4
0.073	8.7		0.105	14.6		0.137	20.5
0.074	8.9		0.106	14.8		0.138	20.7
0.075	9.1		0.107	15.0		0.139	20.9
0.076	9.3		0.108	15.2		0.140	21.1
0.077	9.4		0.109	15.4		0.141	21.3
0.078	9.6		0.110	15.6		0.142	21.5
0.079	9.8		0.111	15.7		0.143	21.7
0.080	10.0		0.112	15.9		0.144	21.8
0.081	10.2		0.113	16.1		0.145	22.0
0.082	10.4		0.114	16.3		0.146	22.2
0.083	10.6		0.115	16.5		0.147	22.4
0.084	10.7		0.116	16.7		0.148	22.6
0.085	10.9		0.117	16.8		0.149	22.8
0.086	11.1		0.118	17.0		0.150	23.0
0.087	11.3		0.118	17.2		0.151	23.1
0.088	11.5		0.120	17.4		0.152	23.3
0.089	11.7		0.121	17.6		0.153	23.5
0.090	11.9		0.122	17.8		0.154	23.7
0.091	12.0		0.123	18.0		0.155	23.9
0.092	12.2		0.124	18.1		0.156	24.1

*Estimated MBL in mmol/L = (Hgb A1c * 185) -4.8

Supply List

Insulin (initial prescription required only)

Penfill cartridges

Fast-acting insulin

Novorapid Humalog

Short-acting insulin

Novolin Toronto Humulin R

Intermediate- acting insulin

Novolin NPH Humulin N

Long-acting insulin

Lantus Detemir

Penfill needles

B-D Ultra-fine 5mm 8mm 12mm

Unifine Pentips 6mm 8mm 12mm

Novofine 6mm 8mm

Needle disposal containers available at London Drugs and Shopper's Drug Mart (costs vary and may be linked with loyalty programs)

Blood Glucose Meters

Meter

Aviva Contour Compact Plus iTest

Freestyle Freedom Freestyle Mini Ultra 2 Ultra Mini

Test strips (show Pharmacare Certificate first time you buy strips)

Lancets

Universal Softclicx Multiclix

Diaries are available at London Drugs, Shopper's Drug Mart and Safeway free of charge

Thinking About Insulin?



You and your doctor might be thinking about starting insulin to treat your type 2 diabetes. This patient handout aims to address some of the questions or concerns you might have about using insulin.

Are you concerned with pain from insulin injection?	The pain is minimal with thinner, smaller needles. Insulin pens cause even less pain than syringes.
Are you worried that starting insulin means that you didn't follow your treatment plan properly?	Diabetes is a disease that progresses no matter how well you follow your treatment plan. Good control will help prevent complications but most patients with type 2 diabetes will eventually need to take insulin because their own bodies make less of it over time.
Have you heard that insulin can cause weight gain?	With diet and exercise, you can help to prevent weight gain. If you're already taking a diabetes drug called metformin, it can reduce weight gain caused by insulin.
Do you worry about hypoglycemia (low blood sugar reactions)?	Severe hypoglycemia is rare in type 2 diabetes. Monitoring your glucose levels on a regular basis can help you to recognize and treat hypoglycemia. Ask your doctor for the patient handout, "How to Handle Hypoglycemia." When hypoglycemia occurs at night, a newer type of long-acting insulin (called insulin glargine or insulin detemir) can help to reduce these episodes.
Are you concerned that taking insulin will upset your daily routine?	You might find that taking insulin will be less intrusive on your day than other drug regimens that are far more complex. Some delivery systems, like insulin pens, are simple to carry around and easy to use, no matter where you are.
Do you believe that insulin will decrease your quality of life?	Taking insulin will improve blood sugar control, giving you more energy, help you to sleep better, and improve your overall well-being.
Do you think insulin will lead to diabetic complications?	By better controlling blood sugar, insulin actually <u>reduces</u> the chance of developing complications from diabetes.
Are you worried that you will be treated differently by friends and family?	Educate your friends and family by offering reading materials on diabetes. You can also put them in touch with support groups. Ask your nurse, doctor or diabetes educator for more information.
Do you want a more natural alternative therapy?	Insulin is the most natural therapy for diabetes. It is replacing the hormone that you do not make enough of.

Adapted from: McCulloch DK. General principles of insulin therapy in diabetes mellitus. *UpToDate* 2009; 17.1.; LeRoith D, Levetan CS, Hirsch IB, Riddle MC. Type 2 diabetes: the role of basal insulin therapy. *J Fam Pract* 2004; 53(3):215-222.



Blood Sugar Log Sheet

Name: _____

Date	Wake Up (Before breakfast)	Before Lunch	Afternoon	Before Dinner	Bedtime (Before snack)

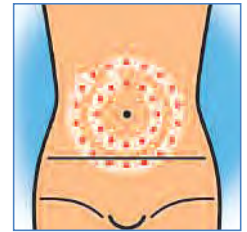
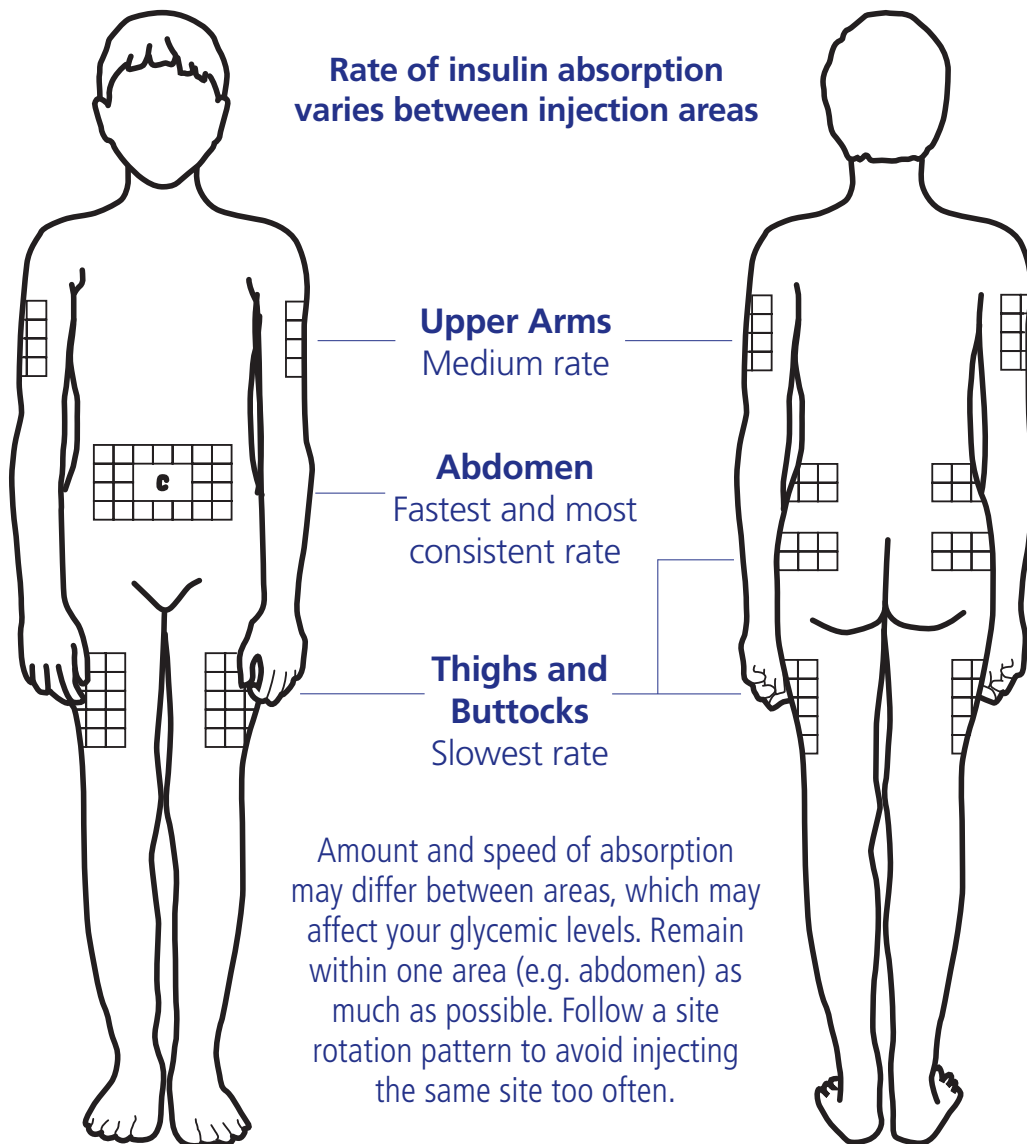


**Have you checked your feet today?
Take a close look for cuts, blisters, sores, swelling, redness
or sore toenails every day.**



Site Rotation Chart

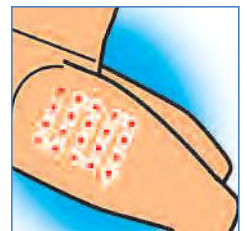
Please consult with your doctor, diabetes educator or pharmacist when considering appropriate needle length, injection site and injection technique to determine the best practices for your insulin delivery.



The abdomen is the best area for insulin absorption. Avoid injecting within two inches of your belly button.



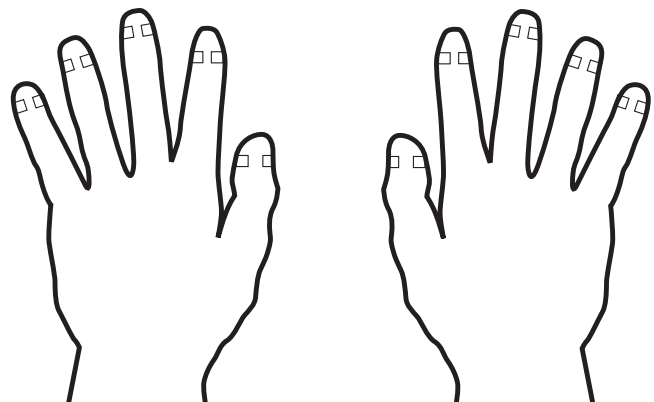
The upper arms are the next best area for insulin absorption. This site is harder to reach, which makes it more difficult to inject yourself correctly.



The outer thighs and buttocks do not absorb insulin quickly. Exercise may change the rate of absorption. Speak with your Health Care professional prior to using this site.

Obtaining Blood Drop for Blood Sugar Monitoring

- Choose a finger or thumb to poke
- Use a different site each time
- Use only the outside edges of finger tips or thumb
- Use both sides of one finger or thumb then move to next



Exercise for people with diabetes

- ✚ Before starting an exercise program, have your heart feet, and eyes checked by your physician.
- ✚ Check blood sugar levels before and after the activity.
- ✚ Best time to exercise is a short while after meals.
- ✚ Avoid strenuous exercise when blood sugar is > 14 mmol/L, especially if ketones are present.
- ✚ Have water and fast-acting sugar available (juice box, glucose tabs, pop, candies).
- ✚ Adjust insulin or have a snack as required, taking into consideration:
 - Kind of activity you do
 - Length of time doing the activity
 - Blood sugar before starting
- ✚ Inject insulin in abdomen or limb not used for activity
- ✚ Avoid swimming or taking long hikes alone
- ✚ If you cannot eat before an intense exercise, take simple sugars that are quickly absorbed (i.e. 125 ml regular pop). Have a snack during the exercise (10-15 g of rapidly absorbed sugar) every 20 to 30 minutes.
- ✚ **Tell friends, family and coaches about symptoms and treatment of hypoglycemia.**
- ✚ **Wear an ID bracelet.**

The following gives general guidelines for food replacement for extra exercise. Only you will know how strenuous you will be exercising. Adjust the guidelines as necessary.

Extra Exercise	Extra food
Light activity <ul style="list-style-type: none"> ✚ Longer than usual walk ✚ Shopping ✚ Bowling 	<ul style="list-style-type: none"> ✚ Eat an extra “starch” choice for the whole period.
Moderate activity <ul style="list-style-type: none"> ✚ Brisk walking ✚ Washing floors ✚ Vacuuming ✚ Gardening ✚ Biking for pleasure 	<ul style="list-style-type: none"> ✚ Eat 1 extra “fruit and vegetables” for ½ hour of extra exercise, or 1 “starch” for an extra hour. ✚ Consider adding “protein” to “starch” e.g., ½ meat sandwich.
Strenuous activity <ul style="list-style-type: none"> ✚ Hockey ✚ Tennis ✚ Swimming ✚ Running ✚ Skiing 	<ul style="list-style-type: none"> ✚ Eat 1-2 extra “fruit and vegetables” ½ hour before exercise. ✚ If exercise continues longer than ½ hour, eat an extra “fruit and vegetables” for every ½ hour. ✚ If glucose level before exercise is <7, consider adding 1 “protein” and one “starch” ½ hour before exercise, such as ½ meat sandwich.

What are the benefits of using low GI foods?

- Can help to 'even out' the highs and lows (more stable blood sugar)
- Can lower triglycerides & 'bad' cholesterol and may help your 'good' cholesterol
- May help you feel full for longer & eat less at the next meal or snack

Helpful Tips:

Introduce low GI foods gradually - include at least one low GI food at each meal and monitor their effects on your blood sugar level. A high GI food & a low GI food make an intermediate GI meal.

Eat a variety of foods each day - Do NOT exclude foods based only on the GI value. High GI foods are still good sources of energy. Monitor the amount of carbohydrates eaten at each meal and snack.

- Eating large amounts of low GI foods can still make blood glucose levels too high
- Checking your blood glucose before & after meals is the best way to see if you are eating the right amount of type of carbohydrate
- Aim to keep your blood glucose between 5 & 10 one to two hours after meals
- Choose foods from the low GI group more often.
- Monitor the amount of carbohydrates eaten at each meal and snack.

Low GI Menu Suggestions

See below for meal suggestion and the brief GI index reference guide.

Breakfast

- Use a low GI bread or cereal (see GI reference guide). Add some low fat milk or yogurt and fruit to kick start the day.
- Old fashioned oats with low fat milk and raisins.
- Poached egg on multigrain toast with a fresh orange.

Lunch Break

- Soups and sandwiches with a green salad or raw vegetables offer quick lunch solutions all year round.
- Sandwich made with a sprouted grain bread. Fill with tuna, salmon, lean meat or chicken; add lettuce, sprouts tomatoes &/or cucumber.
- Pumpernickel bagel topped with light cream cheese & smoked salmon.

Supper suggestions

- Base your meal on a low GI starch. Add plenty of vegetables & keep protein portions moderate
- Meatloaf made with rolled oats and grated vegetables (carrots & zucchini). Serve with new potatoes.
- Vegetable lasagna made with low fat cheese.

Snacktime!

To keep your energy up between meals, try the following nutritious snacks:

- Low fat milk & low GI cereal.
- Low fat yogurt and fresh fruit.
- Low fat milk & oatmeal cookies.
- Oat or oatbran muffins & fruit.
- Whole wheat pita and hummus.
- Stoned wheat thins or Ryvita™ with low fat cheese.

Resources:

See www.HealthLinkBC.ca or the handbook that was delivered to households throughout the province or call 8-1-1 (for TTY call 7-1-1). Visit the **Canadian Diabetes Association** at www.diabetes.ca or call toll free 1 800 226-8464 for further information. See Canada's Food Guide for healthy eating tips, available in multiple languages.

See www.ActNowBC.ca and Canada's Physical Activity Guide for tips on healthy eating and lifestyle. For assistance to quit smoking, see www.quitnow.ca or call 1 877 455-2233 (toll free in BC) to obtain self help materials.

Your family doctor may refer you to a local **Diabetes Education Clinic**. These clinics have courses and information to help you manage your diabetes. In addition to your family physician, in some parts of the province there are a number of other professionals who may assist you in the management of diabetes (**ADiabetes Team**).

Members of your diabetes team may include: Nurse educators, Nutritionists &/or specialists (example eye &/or foot doctors), Community programs etc. Your doctor will provide a referral if necessary.

A brief Glycemic Index (GI) reference guide

	Low GI Foods (55 or less) These give a slow rise in blood glucose levels	Medium GI Foods (56-69) These give a medium rise in blood glucose levels	High GI Foods (70+) These give a quick rise in blood glucose levels
Breads	<ul style="list-style-type: none"> Mixed grain Whole grain 100% Stone ground (Dempsters™) Pumpernickel Sprouted grain** (Silver Hills™, Healthy Way™) 	<ul style="list-style-type: none"> Whole wheat Pita Rye 	<ul style="list-style-type: none"> White bread White bagel Kaiser roll
Cereals	<ul style="list-style-type: none"> All Bran™ Bran Buds with psllium™ Large flake oats Oat bran Red River™ 	<ul style="list-style-type: none"> Bran Buds™ Bran Chex™ Grapenuts™ Life™ Shredded wheat™ Quick cooking oats Cream of wheat 	<ul style="list-style-type: none"> Bran flakes Corn Chex™ Cornflakes Cheerios™ Rice Krispies™ Rice Chex™ Instant cream of wheat
Grains	<ul style="list-style-type: none"> Parboiled rice Uncle Ben's converted rice™ Barley Bulgar (cracked wheat) Buckwheat Pasta/Noodles 	<ul style="list-style-type: none"> Basmati rice Brown rice Corn meal Couscous Wild rice 	<ul style="list-style-type: none"> White rice Jasmine rice Glutinous rice Short grain rice Instant rice
Starchy vegetables	<ul style="list-style-type: none"> Sweet potatoes Yams Taro 	<ul style="list-style-type: none"> New potato White potato Sweet corn 	<ul style="list-style-type: none"> Baking, Russet, Idaho potatoes Instant potatoes French fries
Other	Legumes <ul style="list-style-type: none"> Chick peas (garbanzo beans) Chana dal Kidney beans Lentils Soy beans Split peas Baked beans 	<ul style="list-style-type: none"> Black bean soup Green pea soup Arrowroot biscuits Breton crackers Oatmeal cookies Social tea biscuits Ryvita™ Stoned wheat thins Popcorn 	<ul style="list-style-type: none"> Vanilla wafers Graham wafers Rice cakes Soda crackers Pretzels

Adapted from: Practice-Based Learning Programs. *Diabetes Type 2: What's New?* Hamilton, Ontario: The Foundation for Medical Practice Education. 2009. Patient Handout, How to Handle Hypoglycemia, p18. www.fmpe.org; Vancouver General Hospital Diabetes Centre GI Index and Diabetes.

Dietary guidelines for patients using rapid acting insulin

Breakfast	Lunch	Supper	HS (bedtime)
rapid Acting (RA)	rapid Acting (RA)	rapid Acting (RA)	NPH

Timing of meals

- ☛ Meals must be eaten right away after the injection. If needed, you may also inject the insulin within 15 minutes before or after the meals.
- ☛ Try to eat meals 4-6 hours apart. If the interval between meals exceeds 6 hours, a small amount of extra rapid acting insulin may be needed until the next meal, ideal with a small snack.
- ☛ If the interval between meals is always greater than 6 hours, your physicians can add a small dose of NPH insulin to your rapid acting insulin dose before breakfast to avoid an elevated blood sugar before supper time, or prescribe another type of rapid insulin.

The meal plan

- ☛ Each meal should include 1-2 protein choices. If the amount of protein eaten is 2-3 ounces above the recommended portion in your meal plan, you may experience a high blood sugar 4 hours after the meal.
- ☛ Meals high in fat (e.g. hamburger and French fries) or fiber (e.g. chick pea salad) are digested more slowly and may cause a hypoglycemic reaction shortly after the meal. If this occurs, the next time you eat such food, take your insulin after the meal or take half the dose before and half the dose after the meals.
- ☛ There is no need for snacks between meals or at bedtime if you are using only rapid acting insulin as your meal insulin. If a bedtime snack is eaten, you may need 1-2 units of rapid acting insulin to be mixed with your bedtime N insulin to avoid high blood sugar soon after the snack.

Blood sugar levels

- ☛ Hypoglycemic reactions between meals should be treated with __grams of carbohydrate every __ minutes. Once the blood sugar is above 4 mmol/L, you may need to take a protein and starch snack if the next meal is more than 1 hour away.
- ☛ If blood sugar is less than 4 mmol/L before a meal:
 - Treat the hypoglycemia as described above.
 - Take insulin based on the low blood sugar result, according to a sliding scale prescribed by your physician.
 - Eat your meal right after the insulin injection.
- ☛ If your blood sugar before a meal is between 4-6mmol/L, take your insulin with the meal right after it.

Exercise

- ☛ Exercise preferable 2-6 hours after an injection. Try to avoid exercising during the times of peak effect of the insulin (i.e., 1-2 hours after injection) or reduce the insulin dose at the meal preceding the exercise, as recommended by your physician.

HIGH BLOOD SUGAR

SIGNS AND SYMPTOMS



Extreme tiredness



Frequent urge to urinate



Dry mouth



Extreme thirst



Drowsiness

LOW BLOOD SUGAR

SIGNS AND SYMPTOMS



Mood changes



Trembling



Paleness



Sweating



Dizziness



Blurred vision



Headaches



Extreme tiredness



Hunger

Hypoglycemia (Low Blood Glucose)

When you take insulin or some types of Type 2 medications (see page 24) your blood glucose may drop below 4.0 mmol/L. This is called hypoglycemia. Check with your diabetes health care team to see if you need to be concerned about hypoglycemia.

Hypoglycemia can happen quickly and is associated with warning symptoms.

You may feel:

- shaky & weak
- sweaty
- anxious
- hungry
- nauseous
- tired
- dizzy
- confused

You may have:

- a rapid pulse
- difficulty concentrating
- tingling
- vision changes
- difficulty speaking
- a headache



It is very important to treat hypoglycemia quickly!

Treatment of Hypoglycemia

Most people can use the "Take 15 - Wait 15" rule to treat occasional mild hypoglycemia.

If you have your meter and can test your blood glucose levels:

If your blood glucose level is less than 4.0 mmol/L, you need to take one of the following 15 grams of fast acting carbohydrate (glucose):

- 15 grams of glucose in the form of glucose tablets (3 to 5 tablets: check label)
- 175 mL ($\frac{3}{4}$ cup) of juice
- 175 mL ($\frac{3}{4}$ cup) regular soft drink (containing sugar)
- 15 mL (3 teaspoons) or 3 packets of table sugar
- 15 mL (1 tablespoon) of honey
- 6 Life Savers (15 grams)

(Note: If you take acarbose (Glucobay®) you must use glucose or dextrose tablets. If not available, 1 tablespoon of honey or 1½ cups (375 mL) milk can be used)

Wait 15 minutes.

Test your blood glucose again. If it is still less than 4.0 mmol/L, take another 15 grams of fast acting carbohydrate from the list. Wait 15 minutes and test your blood again. If your blood glucose is still less than 4.0 mmol/L on the third test, have someone take you to the nearest emergency department and tell the triage nurse that you have diabetes.

DO NOT DRIVE IF YOUR BLOOD GLUCOSE LEVEL IS LESS THAN 4.0 mmol/L!

If your blood glucose level goes back up into your target range, do not take any more of the items on the list.

If you are not going to eat your meal within 1 hour after having hypoglycemia, eat a snack (e.g. cheese and crackers, 1/2 peanut butter sandwich) right away, and then your meal at the usual time.



Carbohydrate Counting

Why count carbohydrates?

- Carbohydrates or “carbs” are the sugars and starches in your foods which make your blood sugar go up.
- Carbohydrate counting is a way to plan your meals and snacks.
- Eating the right amount of carbohydrate, spread evenly over the day, will help you with your blood sugar levels.



How much carbohydrate?

- The amount of carbohydrate you need will vary depending on how much food you need to maintain a healthy weight.
- Most people need between 10-20 carbohydrate choices per day.
- An active person may need more.
- You may want to try the following guidelines:

WOMEN	MEN
45-60 grams per meal (3-4 carb choices)	60-75 grams per meal (4-5 carb choices)
15-30 grams per snack (1-2 carb choices)	15-30 grams per snack (1-2 carb choices)

Carb choices include:

- Grains and Starches
- Fruits and some vegetables
- Milk and Alternatives
- Added sugars

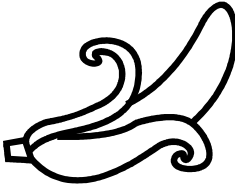


Diabetes Clinic
 Gordon and Leslie Diamond
 Health Care Centre
 4173 4th 2775 Laurel Street
 Vancouver BC V5Z 1C6
 Tel: 604-875-4111

Where are the carbohydrates?

1. Use these food lists:

Each of the following is equivalent to **1 choice** or **15 grams of carbohydrate**

GRAINS and STARCHES	FRUITS	VEGETABLES
<p>1 slice of bread</p> <p>¼ large bagel</p> <p>½ pita bread</p> <p>6” tortilla or roti</p> <p>1/3 cup cooked rice</p> <p>½ cup cooked pasta or barley</p> <p>½ cup cooked cereal</p> <p>¾ cup dry cereal</p> <p>1 cup (250ml) soup</p> <p>½ small or ½ cup potato</p> <p>½ cup corn</p> <p>½ cup cooked beans, lentils, split peas</p>	<p>1 small (“fist-full”) fresh fruit (orange, apple, pear, peach)</p> <p>1 small or ½ large banana</p> <p>½ cup canned fruit</p> <p>1 cup berries or melon</p> <p>2 medium kiwis or plums</p> <p>4 apricots</p> <p>¼ cup dried fruit</p> <p>½ cup fruit juice</p> 	<p>½ cup canned peas or corn</p> <p>¾ cup fresh or frozen peas, parsnip</p> <p>1 cup squash or pumpkin</p> <p>¾ cup tomato sauce</p> <p>*** Most other vegetables are very low in carbohydrate and high in nutrients and fibre</p>
MILK and ALTERNATIVES	OTHER CHOICES	
<p>1 cup milk or buttermilk</p> <p>1 cup plain or diet yogurt (fruit yogurts –read label)</p> <p>1 cup plain soy milk (if sweetened read label)</p>	<p>1 Tbsp sugar, syrup, jam or honey</p> <p>½ cup regular soft drink</p> <p>4 arrowroot cookies</p> <p>2 cream filled cookies</p> <p>3 cups popcorn</p>	<p>Items such as coffee, tea, diet soft drinks, herbs spices, vinegar, mustard and other condiments contain very little carbohydrate.</p>

2. How to read a food label

- Find the **Serving Size**.
(How does it compare to your portion?)
- Find the **Carbohydrate** in one serving.
(Fibre and sugar are included in this number.)
- Subtract the **Fibre** from the total.
(Fibre does not raise your blood sugar.)

In this example:

36 g - 6 g = **30 g** of available Carbohydrate

Nutrition Facts			
Per 90 g serving (2 slices)			
Amount		% Daily Value	
Calories 170			
Fat 2.7 g		4 %	
Saturated 0.5 g + Trans 0 g		5 %	
Cholesterol 0 mg			
Sodium 200 mg		8 %	
Carbohydrates 36 g		13 %	
Fibre 6 g		24 %	
Sugars 3 g			
Protein 8 g			
Vitamin A	1 %	Vitamin C	0 %
Calcium	2 %	Iron	16 %

What are my blood sugar goals?

BEFORE meals: **4-7 mmol**

2 hr AFTER meals: **Less than 10 mmol**

Ideally, your blood sugar should go up only 2-3 mmol after your meal.
If your blood sugar is within these targets – Keep up the good work!



Note: If your sugars are going **too high** after meals consider the following:

- Ensure your meals are **balanced** by including some protein and fat
- Are you eating **too many carbohydrates**?
- Do I need to switch to foods with a **lower Glycemic index**?
(course grain breads, porridge, All Bran, Bran Buds, pasta, converted rice, legumes)
- Talk with your doctor about changing medications

Menu Ideas:

Menu #1 Breakfast

Food Item	# Carb Choices	Grams of Carb
Hot cereal 1 c/250ml	2	30
Milk 1% 1 c/250ml	1	15
Raisins ¼ c/60ml	1	15
Tea or coffee, black	0	0
Totals:	4	60g

Menu #2 Sandwich Lunch

Food Item	# Carb Choices	Grams of Carb
Bread, Whole Grain, 2 slices	2	30
Sliced Turkey 2 oz/60 g	0	0
Margarine 1 tsp/5 ml	0	0
Carrot Sticks ½ c/125 ml	0	0
Grapes, green ½ c/125 ml	1	15
Milk, 1% 1 c/250 ml	1	15
Totals:	4	60g

Menu #3 Spaghetti Dinner

Food Item	# Carb Choices	Grams of Carb
Spaghetti 1½ c/375 ml	3	45
Tomato Sauce ¾ c/185 ml	1	15
Lean Meatballs 2½ oz/75 g	0	0
Mixed green salad 1 c/250 ml	0	0
Oil and vinegar Salad Dressing 1 tbsp/15 ml	0	0
Blueberries 1 c/250 ml	1	15
Totals:	5	75g

For more copies, go online at <http://vch.eduhealth.ca>
or email pchem@vch.ca and quote Catalogue No. **FB.819.C37**

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The information in this document is intended solely for the person
to whom it was given by the health care team.

www.vch.ca

General Instructions for using an Insulin Pen

1. Get Ready

- Pull pen cap off
- Attach needle to pen
- Remove both needle caps

2. Safety Test

- Turn dial on end of pen to 2 units
- Point needle upwards
- Push button on end of pen – you should see a few drops of insulin
Dial should return to “0”

3. Your Dose

- Turn dial on end of pen to your dose

4. Inject

- Poke needle into injection site
- Push down on button – dial should return to “0”
- Wait 10 seconds
- Pull needle out

5. Finish

- Using large outside needle cap, remove needle from pen and discard into sharps container

Note: Some pens are prefilled with insulin and are disposable when empty. Other pens are refillable with a fresh penfill of insulin. Please read manufacturers directions for inserting a new penfill.

The Membership Assistance Program provides partial subsidy for a Standard MedicAlert membership for Canadians in financial need, who may benefit from a MedicAlert® membership.

Individuals eligible for the Membership Assistance Program will be enrolled as a Standard member and may be required to re-qualify on an annual basis. Membership includes: a stainless steel bracelet or necklet, wallet card, electronic health record stored on the MedicAlert secure database and comprehensive 24-hour protection through the MedicAlert® Emergency Hotline.

If you are currently enrolled as an Advantage member your membership will be converted to a Standard membership.

The following information is required to review and approve your application for membership assistance. Please complete Sections A through E and sign before submitting. If you have any questions, please contact MedicAlert at 1 800 668 1507.

Section A

Personal Information

Are you, or have you ever been a MedicAlert member? No Yes, MedicAlert ID # _____

First Name: _____ Last Name: _____ Mr. Mrs. Ms. Dr.

Communications: English French Date of Birth: (month, day, year) ____/____/____ Gender: M F

Mailing Address: _____ Apt. _____

City: _____ Prov./Terr. _____ Postal Code _____

Tel: (_____) _____ Alternate Tel: (_____) _____ ext: _____

E-Mail: _____

Parent/Guardian Information

If new member is a minor or an adult in the care of a guardian, please specify name of parent/guardian responsible for keeping the member record up to date.

Name: _____ Relationship: _____

Address: _____ City _____ Prov. _____ Postal Code: _____

Tel: (_____) _____ Alternate Tel: (_____) _____ E-Mail: _____

Emergency Medical Contacts

Physician 1: _____ Specialty: _____

Tel: (_____) _____ ext: _____ Fax: (_____) _____ Pager: (_____) _____

Address: _____

City: _____ Prov./Terr. _____ Postal Code: _____

Physician 2: _____ Specialty: _____

Tel: (_____) _____ ext: _____ Fax: (_____) _____ Pager: (_____) _____

Address: _____

City: _____ Prov./Terr. _____ Postal Code: _____

Personal Emergency Contacts (non-medical)

1. Name: _____ Relationship _____

Tel: (_____) _____ Bus. Tel: (_____) _____ Cell: (_____) _____

2. Name: _____ Relationship _____

Tel: (_____) _____ Bus. Tel: (_____) _____ Cell: (_____) _____

Section B

To be eligible for Membership Assistance, this Section must be completed and signed by one of the following referrals:

Referred by: Physician Nurse Social Worker Pharmacist

Referral Name: _____

Address: _____

Phone Number: (_____) _____

I, _____ have sufficient knowledge about the applicant and his/her circumstances and health condition to recommend a *subsidized* MedicAlert® membership on the basis of financial need.

Referral Signature: _____ Date: _____

Section C

Medical Information

Note: Standard medical terminology and abbreviations will be used.

Engraving English French

Medical Conditions: _____

Allergies: _____

All Current Medications: (dosage not required) _____

Devices/Implants: _____

Special Needs: _____

Section D

Identification Products



I100-A



I101-B



I102

Sizing: Chain link bracelets come in half inch increments. Measure your wrist snugly and MedicAlert will add additional links for comfort.

Bracelet/Necklet Code #			Size
<input type="checkbox"/> I100-A	<input type="checkbox"/> I101-B	<input type="checkbox"/> I102	

Please note: Necklets are not recommended for children under the age of 10.

MedicAlert reserves the right to verify the information provided and may request additional supporting documentation.

Section E

The Membership Assistance Program provides a partial subsidy of the Standard MedicAlert® Membership valued at approximately \$100.00. We encourage a minimum contribution of \$39 to cover a portion of the membership fee; however, any contribution would be greatly appreciated. In support of this membership application, a cheque in the amount of \$_____ is enclosed.

Member Statement

Membership with the Canadian MedicAlert® Foundation ("MedicAlert") is conditional on an individual's acceptance of the following terms and conditions (the "Member Statement").

I ACKNOWLEDGE and agree that:

- on my becoming a member, MedicAlert will create and maintain, an electronic member record ("File") containing personal and personal health information that I provide or arrange to have provided to MedicAlert (together "my Personal Information"), which File will be identified by my name and held at 2005 Sheppard Avenue East, Suite 800, Toronto, Ontario M5J 5B4 and will provide me with: i) a custom engraved MedicAlert bracelet, necklet or watch; ii) the 24-hour MedicAlert Emergency Hotline service; iii) a MedicAlert membership card and iv) secure web based access to my File (collectively the "Services");
- MedicAlert will use and disclose my Personal Information for the purposes of providing and administering the Services, including without limitation, providing my Personal Information to emergency responders and other health professionals (collectively "Responders") who contact MedicAlert, may transfer my Personal Information to third party service providers retained by MedicAlert to assist it in administering or providing the Services where necessary for the provision of the Services, and will allow MedicAlert Foundation International, which operates in the USA, access to my File for the purpose of providing the MedicAlert Emergency Hotline;
- I will advise MedicAlert promptly of any error on my File, MedicAlert bracelet, necklet or watch or membership card, update my File information at least once per year and pay any and all service fees associated with my membership on or before the renewal date of my membership and I understand that if I do not pay applicable service fees or have not updated my File, MedicAlert will stop providing me with regular Services
- MedicAlert or Responders may contact the emergency contacts I have provided for or with information about me in case of an emergency and MedicAlert will accept information about my health from emergency contacts and guardians listed in my File, provided the contacts and guardians know my member number; full name, date of birth, and address, but will not disclose my Personal Information unless I have instructed otherwise;

- MedicAlert, its officers, directors, employees and representatives, will not be liable for any claims, actions, damages, losses or consequences of any kind arising out of or in connection with any errors or omissions in my Personal Information (regardless of whether such information is provided by me or by a third party); MedicAlert may use aggregate health information, which is not in a form that identifies me or any other individual, for research projects or studies of interest to the health care community; and
- unless I have checked the applicable box below, I will receive by e-mail or any other method of communication chosen by MedicAlert, informational mailings such as the MedicAlert newsletter and information on charitable works, programs and services that may be of interest to me ("Informational Mailings");
 - Do not send me Informational Mailings
 - Send me Informational Mailings by ordinary post only.
- I UNDERSTAND that I may obtain a copy of MedicAlert's privacy policy, more information about its privacy practices and information about accessing or correcting my Personal Information on MedicAlert's website at <http://www.medicalert.ca> or by calling MedicAlert's Chief Privacy Officer at 1.866.492.0939.

Signature _____ Date _____

Name (print) _____

Phone Number () _____

Relationship to member self parent guardian _____

Other (Specify) _____

If not the member, I have the authority to bind the member. _____

Recommendation for _____

Before Breakfast

1. Check blood glucose and record level
2. Take insulin _____
3. Eat Breakfast

Before Lunch

1. Check blood glucose and record level
2. Take insulin _____
3. Eat Lunch

Before Dinner

1. Check blood glucose and record level
2. Take insulin _____
3. Eat Dinner

Before Bed

1. Check blood glucose and record level
2. Take insulin _____
3. Eat snack

Diabetes and Driving

I have diabetes. Can I keep driving?

Most likely. In consultation with your doctor, a decision will be made as to whether you are medically fit to drive. In assessing the suitability of people with diabetes to drive, medical evaluations document any complications and assess blood glucose (BG) control, including the frequency and severity of any hypoglycemic incidents.

Diabetes and its complications can affect driving performance due to:

- ▣ impaired sensory or motor function
- ▣ diabetic eye disease (retinopathy)
- ▣ nerve damage (neuropathy)
- ▣ kidney disease (nephropathy)
- ▣ cardiovascular disease (CVD)
- ▣ peripheral vascular disease and stroke
- ▣ incidents of hypoglycemia.

Motor vehicle licensing authorities can require licensed drivers to be examined for their medical fitness to drive. You should not have difficulty obtaining and maintaining an operator's license if you:

- ▣ properly manage your diabetes,
- ▣ are able to recognize and treat the early symptoms of hypoglycemia, and
- ▣ do not have complications that may interfere with your ability to drive.

Driving and Low Blood Sugar

Ensure your blood sugar is at a safe level before you drive. Low blood sugars while driving make you an unsafe driver. If you feel low, stop driving. Treat symptoms of low blood sugar right away.

1. Check your blood sugar before driving
2. If your blood sugar is between 4.0 and 5.0 mmol/L you should have a snack containing carbohydrate before you start driving.
3. Treat low blood sugar immediately. You must wait at least 45-60 minutes after treating your low blood sugar before you can drive.

- ▣ **DO NOT drive if your blood sugar level is below 5.0mmol/L.**
- ▣ **Carry fast-acting sugar with you and in your vehicle at all times.**

Do I have to report diabetes to the motor vehicle licensing authority?

Yes. As a rule, anyone applying for a driver's license must disclose to the motor vehicle licensing authority any disease or disability which may interfere with the safe operation of a motor vehicle.

Is my doctor required to report that I have diabetes to the motor vehicle licensing authority?

Most likely. In most jurisdictions, your doctor is required to report anyone he or she considers unfit to drive. For example, with regard to diabetes, this could include someone who is newly diagnosed and just beginning to use insulin, someone who is not recognizing the early symptoms of

hypoglycemia (unawareness), someone who has just experienced a severe hypoglycemic reaction, or someone who is not managing diabetes responsibly.

Can the motor vehicle licensing authority suspend my license?

Yes. It has the power to issue and to suspend your driver's license. Your license may be suspended as a result of an accident caused by a hypoglycemic reaction or if your doctor reports a change in your medical condition that may affect your ability to safely operate a motor vehicle.

The Medical Review Section of the licensing authority reviews each case to determine whether a license will be reinstated. The Medical Review Section will request a report from a diabetes specialist as well as records of self-monitoring blood glucose readings for a specific period of time. Other reports or documents may also be required.

What is the National Safety Code for Motor Carriers?

The National Safety Code for Motor Carriers sets minimum performance and safety standards for drivers, including medical standards. The Code creates uniform standards across Canada, so that a driver licensed in one province/territory is considered licensed in all provinces/territories. Medical standards for drivers were developed by medical advisors and provincial and territorial motor vehicle licensing authority administrators.

What is the Canadian Medical Association's Physicians' Guide to Determining Medical Fitness to Drive ?

This handbook was created to assist physicians in determining whether their patients are medically fit to drive. Section 7.2, Diabetes Mellitus , was prepared in consultation with the Canadian Diabetes Association. The complete guide can be found on the [Canadian Medical Association website](#).

I want to apply for a commercial licence. Can I drive in Canada? In the United States?

Canadians with diabetes using insulin can apply for a commercial license. 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 often under more adverse conditions than private drivers.

Canadians with diabetes 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 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 license on an individual basis.