



Appendix E: Insulin: Therapeutic Considerations and Availability

Basal Insulin (Long-acting)^a

Generic Name (Trade Name), Dosages	Cost/ 100 units ^b	Pharmacare Coverage	Therapeutic Considerations 10, 11
Insulin NPH (neutral protamine Hagedorn) <i>Humulin N</i> <i>Novolin ge NPH</i> Pre-filled pen, cartridge, vial: 100 units/mL	\$4	Regular Benefit	- Duration of action: up to 18 hours - Once a day at bedtime or twice a day dosing - Must be re-suspended by gently rolling the pre-filled syringe or vial before repeated use. - Only basal insulin which can be mixed in same syringe with bolus insulin (i.e., regular, aspart, lispro): draw up regular insulin first; generally, not advised to mix with aspart or lispro as binding occurs rapidly, must inject immediately after mixing - Prefilled pen provides 1 to 60 units per single injection
Insulin glargine <i>Basaglar (biosimilar)</i> <i>Lantus</i> Pre-filled pen, cartridge, vial: 100 units/mL <i>Toujeo</i> Pre-filled pen: 300 units/mL (high concentration)	Basaglar: \$5 Lantus: \$7 Toujeo: \$7	Basaglar: Limited Coverage^c (hyperlinked to Special Authority criteria and form) Lantus: Non-benefit Toujeo: Non-benefit	- Duration of action: up to 24 hours - Once a day or twice a day dosing - Health Canada: biosimilar = no clinically meaningful differences in pharmacokinetics, pharmacodynamics, clinical efficacy, safety or immunogenicity - Prefilled pen provides 1 to 80 units per single injection - Toujeo is not bioequivalent to glargine 100 units/mL
Insulin detemir <i>Levemir</i> Pre-filled pen, cartridge: 100 units/mL	\$8	Limited Coverage^c (hyperlinked to Special Authority criteria and form)	- Duration of action: 18 to 24 hours - Once a day or twice a day dosing - Prefilled pen provides 1 to 80 units per single injection
Insulin degludec <i>Tresiba</i> Pre-filled pen: 100 units/mL; 200 units/mL (high concentration)	\$8	Non-benefit	- Duration of action: 42 hours - Once a day dosing - Minimum time between dose increases: 3 to 4 days 100 units/mL prefilled pen provides 1 to 80 units per single injection 200 units/mL prefilled pen provides 2 to 160 units per single injection; dose counter shows exact number of insulin units, if switching from another insulin, no dose recalculation required

Prandial Insulin (Mealtime)^a

Generic Name (Trade Name), Dosages	Cost/ 100 units ^b	Pharmacare Coverage	Therapeutic Considerations 10,11
Insulin glulisine <i>Apidra</i> Prefilled pen, cartridge, vial: 100 units/mL	\$4	Regular Benefit	- Onset of action: 10 to 15 minutes - Duration of action: 3.5 to 5 hours
Insulin lispro <i>Admelog</i> Pre-filled pen, cartridge, vial: 100 units/mL <i>HumaLOG</i> Prefilled pen, cartridge, vial: 100 units/mL; 200 units/mL (high concentration)	<i>Admelog</i> : \$4 <i>HumaLOG</i> : \$5	<i>Admelog</i> : Regular benefit <i>HumaLOG</i> , <i>HumaLOG Mix 25</i> , <i>HumaLOG Mix 50</i> : Non-benefit	- Onset of action: 10 to 15 minutes - Duration of action: 3.5 to 5 hours - ADMELOG is biosimilar to <i>HumaLOG</i>; these insulin lispro 100units/mL products have similar pharmacokinetic profiles (same onset and duration) and adverse effects.¹¹
Insulin lispro/lispro protamine <i>HumaLOG Mix 50</i> <i>HumaLOG Mix 25</i>			
Insulin aspart <i>Trurapi</i> Pre-filled pen, cartridge: 100 units/mL <i>Novorapid</i> Prefilled pen, cartridge, vial: 100 units/mL <i>Fiasp</i> Pre-filled pen, cartridge, vial: 100 units/mL	<i>Trurapi</i> : \$4 <i>Novorapid</i> : \$5 <i>Fiasp</i> : \$5	<i>Trurapi</i> : Regular benefit <i>Novorapid</i> , <i>Novomix 30</i> : Non-benefit <i>Fiasp</i> : Non-benefit	<i>Trurapi</i> - Onset of action: 10 to 20 minutes - Duration of action: 3 to 5 hours - Biosimilar to Novorapid <i>Novorapid</i> - Onset of action: 10 to 15 minutes - Duration of action: 3 to 5 hours <i>Fiasp</i> : - Onset of action: 5 minutes - Duration of action: 3 to 5 hours - Not biosimilar to Novorapid
Insulin aspart/aspart protamine <i>NOVOMIX 30</i>			
Insulin regular <i>HumuLIN R</i> Pre-filled pen, cartridge, vial: 100 units/mL <i>NovoLIN ge Toronto</i> Cartridge, vial: 100 units/mL <i>Entuzity</i> Pre-filled pen: 500 units/mL (high concentration)	<i>HumuLIN R</i> : \$4 <i>NovoLIN ge Toronto</i> : \$4 <i>Entuzity</i> : \$4	<i>HumuLIN R</i> , <i>NovoLIN ge Toronto</i> : Regular benefit <i>Entuzity</i> : Regular benefit	<i>HumuLIN R. Novolin ge Toronto</i> : - Onset of action: 30 to 60 minutes - Duration of action: 5 to 8 hours <i>Entuzity</i> : - Onset of action: 15 minutes - Duration of action: 17 to 24 hours - Reserved for people with severe insulin-resistant i.e. requiring >200 units of insulin per day (basal and/or prandial)¹¹; recommended to be used by experienced clinicians only. - Not biosimilar to insulin regular; e.g. <i>HumuLIN R</i>; pharmacokinetic profile is similar to NPH (high concentration delays onset & lengthens duration of action).¹¹
Insulin regular/NPH <i>NovoLIN ge 50/50</i> <i>NovoLIN ge 40/60</i> <i>NovoLIN ge 30/70</i> <i>HumuLIN 30/70</i>			

Glucagon

Generic Name (Trade Name), Dosages	Adult Dosage ^b	Cost/unit ^c	PharmaCare Coverage	Therapeutic Considerations
Glucagon <i>Glucagen, Glucagen Hypokit, G</i> Vial: 1 mg	1 mg SC; may repeat in 15 minutes as needed	Vial: \$110	Vial/Hypokit: Regular Benefit	IV dextrose should be administered as soon as it is available; if patient fails to respond to glucagon, IV dextrose must be given.
<i>Baqsimi</i> Nasal powder: 3 mg single dose	Hypokit: IM/IV Nasal powder: intranasal	Nasal powder: \$145	Nasal powder: Regular benefit	Nasal powder come as a single use, pre-filled nasal device.

Footnotes: a Not an exhaustive list; b for reference only; pricing is approximate of usual dose as of September 2021 for generics, and does not include dispensing fees or additional markups; only include the lowest price for drugs with multiple dosage forms and package sizes; c Special Authority Required; please refer to this link for specific criteria: https://www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/pharmacare/prescribers/special-authority#_Special_Authority_drug

Note: Please review product monographs at <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/applications-submissions/guidance-documents/product-monograph.html> and regularly review current Health Canada advisories, warnings and recalls at <https://recalls-rappels.canada.ca/en>.

PharmaCare Coverage Definitions: **Regular Benefit:** Eligible for full reimbursement*; does not require Special Authority. **Partial Benefit:** Eligible for limited reimbursement*.

Limited Coverage: Requires Special Authority to be eligible for reimbursement*. **Non-benefit:** Not eligible for coverage under any circumstances.

*Subject to a patient's PharmaCare plan including any deductibles and co-pays.

References:

- Wexler, D. (2020). Metformin in the treatment of adults with type 2 diabetes mellitus. In Nathan, D (Ed.), *UpToDate*. Retrieved December 18, 2020, from <https://www.uptodate.com/contents/metformin-in-the-treatment-of-adults-with-type-2-diabetes-mellitus>
- Diabetes Canada Clinical Practice Guidelines Expert Committee, Lipscombe L, Butalia S, Dasgupta K, Eurich DT, MacCallum L, Shah BR, Simpson S, Senior PA. Pharmacologic Glycemic Management of Type 2 Diabetes in Adults: 2020 Update. *Can J Diabetes*. 2020 Oct;44(7):575-591.
- Wexler, D. (2020). Management of persistent hyperglycemia in type 2 diabetes mellitus. In Nathan, D (Ed.), *UpToDate*. Retrieved December 18, 2020, from <https://www.uptodate.com/contents/management-of-persistent-hyperglycemia-in-type-2-diabetes-mellitus>
- Trischuk, T., Regier, L., LeBras, M. (2020, November). The RxFiles: Diabetes Agents Outcomes Comparison Summary Table. Retrieved December 18, 2020, from <https://www.rxfiles.ca/rxfiles/uploads/documents/Diabetes-Agents-Outcomes-Comparison-Summary-Table.pdf>
- BC Provincial Academic Detailing (PAD) service. (2015, October). Glucose Lowering Medications for Type 2 Diabetes. https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/provincial-academic-detailing-service/pad_glucose_lowering_medications_booklet.pdf
- Inzucchi, S., Lupsa, B. (2020). Thiazolidinediones in the treatment of type 2 diabetes mellitus. In Nathan, D (Ed.), *UpToDate*. Retrieved December 18, 2020, from <https://www.uptodate.com/contents/thiazolidinediones-in-the-treatment-of-type-2-diabetes-mellitus>
- Dungan, K. DeSantis, A. (2020). Dipeptidyl peptidase 4 (DPP-4) inhibitors for the treatment of type 2 diabetes mellitus. In Nathan, D (Ed.), *UpToDate*. Retrieved December 18, 2020, from <https://www.uptodate.com/contents/dipeptidyl-peptidase-4-dpp-4-inhibitors-for-the-treatment-of-type-2-diabetes-mellitus>
- Dungan, K. DeSantis, A. (2020). Glucagon-like peptide 1 receptor agonists for the treatment of type 2 diabetes mellitus. In Nathan, D (Ed.), *UpToDate*. Retrieved December 18, 2020, from <https://www.uptodate.com/contents/glucagon-like-peptide-1-receptor-agonists-for-the-treatment-of-type-2-diabetes-mellitus>
- DeSantis, A. (2020). Sodium-glucose co-transporter 2 inhibitors for the treatment of hyperglycemia in type 2 diabetes mellitus. In Nathan, D (Ed.), *UpToDate*. Retrieved December 18, 2020, from <https://www.uptodate.com/contents/sodium-glucose-co-transporter-2-inhibitors-for-the-treatment-of-hyperglycemia-in-type-2-diabetes-mellitus>
- BC Provincial Academic Detailing (PAD) service. (2019, June). Basal Insulins for Type 2 Diabetes: How Does Insulin Choice Affect the Risk of Hypoglycemia and Medication Cost? <https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/provincial-academic-detailing-service/pad-2019-basal-insulins-type-2-diabetes-newsletter.pdf>
- LeBras, M., Jensen, B., Regier, L. (2021, January). The RxFiles: Insulin: Drug Comparison Chart. Retrieved January 13, 2021, from <https://www.rxfiles.ca/RxFiles/uploads/documents/members/cht-diabetes-InsulinComp.pdf>