

Insulin Pen Start Checklist Help Sheet

Topic		Comments		
1. Cognitive Assessment				
	Prescribers need to ensure their patients/caregivers are competent to administer insulin safely. A good screening tool to test for dementia is the 'clock face'. ¹			
2. Insulin Delivery Device				
	Insulin pen type to match insulin brand ordered.			
• loading	Please refer to the pen manufacturer's instruction sheets.			
• appropriate mixing	NPH and premixed insulins. Roll 10 times – tip 10 times and visually check that insulin has a consistent milky appearance.			
• priming shot	A priming shot is required when changing a cartridge or using a new needle. Typically, it is recommended to use 2 units to prime the pen, however, please refer to the pen instruction sheets from the manufacturer.			
• dialing up dose	Dial-up units of insulin required.			
• delivery of insulin	Inject insulin at a 90° angle in desired injection site when using a shorter needle (4, 5 or 6 mm). A 45° angle may be needed if the person is thin or if a longer needle (≥8 mm) is being used. A proper skin lift should also be used in thin individuals or when using longer needles. Hold the injection for 10 seconds to ensure full delivery of dose.			
3. Insulin (When available, use pre-printed insulin orders. Reference insulin product monograph.)				
Timing of injection				
Type	Onset (How quickly it starts working)	Onset (When it is most effective)	Duration (How long it works)	Timing of injection (When should it be given)
Bolus insulins				
Rapid acting analogues • Apidra / Humalog / NovoRapid	10 – 15 min	1 – 2 hours	3 – 5 hours	May be given with 1 or more meals per day. To be given 0 – 15 minutes before or after meals.
Short-acting • Humulin-R / Toronto	30 min	2 – 3 hours	6.5 hours	May be given with 1 or more meals per day. Should be injected 30 – 45 minutes before the start of the meal.
Basal insulins				
Intermediate-acting • Humulin-N / NPH	1 – 3 hours	5 – 8 hours	up to 18 hours	Often started once daily at bedtime. May be given once or twice daily. Not given at any time specific to meals.
Long-acting analogues • Lantus • Levemir	90 min	not applicable	up to 24 hours 16 – 24 hours	Often started once daily at bedtime. Insulin detemir (Levemir) may be given once or twice daily. Not given at any time specific to meals

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Timing of injection				
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Premixed insulins				
Premixed regular insulin <ul style="list-style-type: none"> Humulin 30/70 / Novolin ge 30/70, 40/60, 50/50 	Varies according to types of insulin	contains a fixed ratio of insulin (% of rapid-acting or short-acting insulin to % of intermediate-acting insulin): see above for information about peak actions based on insulin contained		May be given with one or more meals per day. Should be injected 30 – 45 minutes before or after meals.
Premixed insulin analogues <ul style="list-style-type: none"> NovoMix 30 / Humalog Mix 25, Mix 50 	Varies according to types of insulin			May be given with one or more meals per day. Should be injected 0 – 15 minutes before the start of the meal.
<ul style="list-style-type: none"> injection sites 	Abdominal injection site has the most consistent rate of absorption. Arm injection site is difficult to self-inject. Absorption from the buttock and thighs is more likely to be affected by exercise. Avoid intramuscular injection as this can affect insulin absorption and cause high or low blood glucose levels. Follow a site rotation pattern. Avoid a 2-inch area around the belly button as well as all scar tissue.			
<ul style="list-style-type: none"> selection of needle length 	Selection should be based on patient preference, increased BMI does not increase skin thickness. Shorter needles, i.e. 4, 5 or 6 mm should be offered. 8 mm needles may increase the comfort of injection for some, especially with large insulin doses. 12/12.7 mm needles should not be recommended.			
<ul style="list-style-type: none"> storage/expiry 	Unopened insulin should be stored in the fridge between 2°C and 8°C. Opened insulin can be stored at room temperature for up to 1 month, with the exception of insulin detemir (Levemir) which is stable for 42 days. Keep insulin away from direct heat and light. Discard insulin that has been frozen or exposed to temperatures greater than 30°C.			

Topic	Comments
4. Return demonstration	
	Have patient demonstrate injection; assess for correct technique and make suggestions as appropriate.
5. Hypoglycemia	
<ul style="list-style-type: none"> signs and symptoms 	Provide information on hypoglycemia. Taking insulin can cause hypoglycemia, defined as a BG < 4.0mmol/L. Symptoms may include sweating, hunger, dizziness, vision changes, irritability, tingling, weakness and tremors. Signs of a severe low blood glucose may include confusion, unconsciousness or seizures.
<ul style="list-style-type: none"> causes / prevention 	<p>Causes of hypoglycemia:</p> <ul style="list-style-type: none"> • More physical activity than usual • Not eating on time • Eating less than usual • Taking too much medication • Drinking alcohol <p>Prevention:</p> <ul style="list-style-type: none"> • Appropriate blood glucose monitoring • Individualized blood glucose targets • Planning for activity • Adjustment of medication as necessary
<ul style="list-style-type: none"> treatment 	<ol style="list-style-type: none"> Eat or drink a source of fast-acting carbohydrate (15 grams): <ul style="list-style-type: none"> • 15 g of glucose in the form of glucose tablets (preferred choice) • 15 mL (3 teaspoons) or 3 packets of table sugar dissolved in water • 175 mL (¾ cup) of juice or regular soft drink • 6 LifeSavers® (1 = 2.5 g of carbohydrate) • 15 mL (1 tablespoon) of honey (do not use for children less than 1 year old) Wait 15 minutes, check blood glucose. If blood sugar remains <4.0 mmol/L, treat again with another 15 g of carbohydrate. Once blood sugar is >4.0 mmol/L and the next meal is more than 1 hour away, eat a snack, including a carbohydrate and a protein source, such as a half-sandwich or cheese and crackers. If a blood glucose meter is not available and a low blood sugar is suspected, treat anyway.
<ul style="list-style-type: none"> diabetes identification 	Recommend wearing a MedicAlert® bracelet. May also purchase medical identification bracelets at drug and jewelry stores. Recommend patient carries information in their wallet about their diabetes.
6. Glucose Checks	
	Recommend a monitoring schedule.
7. Sharps Disposal	
	Check local pharmacy for disposal of sharps regulations. Most pharmacies supply safe puncture-proof containers. When the container is full, some pharmacies have an exchange program for proper disposal.
8. Snacks	
	<p>For HS Snacks:</p> <p>Usually not necessary when using Lantus or Levemir if HS BG > 7.0 mmol/L, although patients may feel uncomfortable taking insulin and not snacking, especially if past history of hypoglycemia. Avoiding snacks, if possible, is good weight management strategy.</p>

Topic	Comments
9. Driving	
	<p>Prevention of hypoglycemia for all insulin-treated drivers</p> <ol style="list-style-type: none"> 1. Fitness of persons with diabetes to drive must be assessed on a case-by-case basis. 2. Drivers should measure their BG level immediately before and at least every 4 hours (more often in cases of hypoglycemia unawareness) during long drives. They should always carry BG monitoring equipment and supplies of rapidly absorbable carbohydrate within easy reach (e.g. attached to the visor). 3. Persons should not drive when their BG level is <4.0 mmol/L. They should not begin to drive without prophylactic carbohydrate treatment when their BG level is in the 4.0 – 5.0 mmol/L range. 4. Drivers should stop and treat themselves as soon as hypoglycemia and/or impaired driving is suspected. Persons should not drive until at least 45 – 60 minutes after effective treatment of mild to moderate hypoglycemia (BG level 2.5 – 4.0 mmol/L). <p>Prevention of hypoglycemia for insulin-treated commercial drivers</p> <p>BG level must be tested within 1 hour before driving and approximately every 4 hours while driving. Driving should be stopped if the BG level falls below 6.0 mmol/L and not resumed until the BG level has risen to >6.0 mmol/L after food ingestion.</p>
10. Instructions for oral medications	
	Advise patients in writing which oral medications to continue, which to discontinue or which to decrease in dose.
11. Follow up	
<ul style="list-style-type: none"> • Dose adjustments 	Follow-up should be done by the physician or a qualified diabetes educator competent in this area. Simple titration of insulin can be taught to the patient/family member with regular follow-up in person and the assistance by other means (i.e. e-mail, text).
<ul style="list-style-type: none"> • A1c every 3 months 	A1c every 3 months as per clinical practice guidelines to assess blood glucose management and need for further treatment adjustments.

NOTE for Syringe Insulin Starts: If teaching an insulin start with a syringe, refer to:

- Canadian Diabetes Association PERK patient education tools: Types of insulin helps your body use sugar for energy. Available: orders.diabetes.ca.
- To Teach, To Learn, To Live: The Complete Diabetes Education Guide for Health Care Professionals³

References:

1. Trimble LA, Sundberg S, Markham L, et al. Value of the Clock Drawing Test to Predict Problems with Insulin Skills in Older Adults. *Can J Diabetes*. 2005;29(2):102-104.
2. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. *Can J Diabetes*. 2008;32 (suppl 1):S1-S201
3. D. O’Grady. To Teach, To Learn, To Live: The Complete Diabetes Education Guide for Health Care Professionals, Second Edition (2006) Chapter 5, page 166.

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

