

Self-Monitoring Blood Glucose (SMBG) Frequency & Pattern Tool

<http://guidelines.diabetes.ca/self-management/smbg-tool>

Pattern Recommendation: Basal Insulin Only (To Target)

NPH or long-acting insulin analogue, typically given at bedtime.

SMBG at least as often as insulin is being given.

- Optional, less frequent SMBG can be done at other times of day to ensure glycemic stability through the day, or to detect hypoglycemia caused by secretagogue, if applicable.
- Basal insulin may be given in combination with secretagogue, non-secretagogue or injectable (GLP-1 analogue) medications.

	breakfast		lunch		supper		bedtime	night
	before	after	before	after	before	after		
Insulin							NPH / long (basal)	
SMBG pattern	SMBG test							
Adjustment	Basal insulin ↑ if BG hi ↓ if BG low							

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Pattern Recommendation: Basal Insulin Only (Not To Target)

NPH or long-acting insulin analogue, typically given at bedtime.

SMBG ≥ 2 times per day, to assist in lifestyle and/or medication changes until glycemic targets are met.

- Optional, less frequent SMBG can be done at other times of day to detect hypoglycemia caused by secretagogue, if applicable.
- If initiating basal insulin, focus should be mostly on the before breakfast SMBG test; the before supper and bedtime SMBG testing is less important / optional.
- If patient is on basal insulin, before breakfast SMBG test is to target but A1C is not to target, focus should be more on the before supper and bedtime SMBG testing.
- Basal insulin may be given in combination with secretagogue, non-secretagogue or injectable (GLP-1 analogue) medications.

	breakfast		lunch		supper		bedtime	night
	before	after	before	after	before	after		
Insulin							NPH / long (basal)	
SMBG pattern: Alternating daily	SMBG test				SMBG test			
	SMBG test						SMBG test	
Adjustment	Bedtime insulin ↑ if BG hi ↓ if BG low							



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Pattern Recommendation: Premixed Insulin (or NPH twice daily)

Insulin doses are typically given pre-breakfast and pre-supper.

SMBG at least as often as insulin is being given.

- SMBG QID until glycemic targets are met
- SMBG BID (alternating times) is usually sufficient once glycemic targets are met.
- Premixed insulin may be given in combination with non-secretagogue or injectable (GLP-1 analogue) medications.
- Premixed insulin would not typically be used in combination with secretagogue medications.

	breakfast		lunch		supper		bedtime	night
	before	after	before	after	before	after		
Insulin	Premix/ NPH				Premix/ NPH			
SMBG pattern 1: Starting	SMBG test		SMBG test		SMBG test		SMBG test	
SMBG pattern 2: Stable Alternating daily	SMBG test		SMBG test		SMBG test		SMBG test	
Adjustment	Pre-supper insulin ↑ if BG hi ↓ if BG low		Pre-breakfast insulin ↑ if BG hi ↓ if BG low		Pre-breakfast insulin ↑ if BG hi ↓ if BG low		Pre-supper insulin ↑ if BG hi ↓ if BG low	



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Pattern Recommendation: Basal Plus

Insulin doses are typically given as a rapid-acting analogue or regular insulin (bolus) before one meal plus NPH or long-acting insulin analogue given at bedtime.

SMBG at least as often as insulin is being given.

- In the example shown, the bolus insulin is given at supper but could be given at breakfast or lunch.
- The bolus insulin is typically given with the largest meal or the meal with the highest post-meal BG.
- Basal plus NPH or a long-acting insulin may be given in combination with secretagogue (at a different time than bolus insulin), non-secretagogue or injectable (GLP-1 analogue) medications.
- SMBG QID until glycemic targets are met.
- SMBG BID (alternating times) is usually sufficient once glycemic targets are met.

	breakfast		lunch		supper		bedtime	night
	before	after	before	after	before	after		
Insulin					Rapid/ regular (bolus)		NPH/long (basal)	
SMBG pattern 1: Starting	SMBG test				SMBG test	SMBG test	SMBG test	
SMBG pattern 2: Stable Alternating daily	SMBG test					SMBG test		SMBG test
Adjustment	Basal insulin ↑ if BG hi ↓ if BG low					Pre-supper bolus insulin ↑ if BG hi ↓ if BG low		



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Pattern Recommendation: QID (Basal-Bolus/Multiple Daily Injections [MDI])

Insulin doses are typically given as a rapid-acting analogue or regular insulin (bolus) before each meal, and NPH or long-acting analogue (basal) typically given at bedtime.

SMBG at least as often as insulin is being given.

- After meal testing is usually done 2 hours after the start of a meal.
- SMBG should be QID, pre-meal and bedtime, in order to assess previous dose, and to adjust next dose. Some patients find post-prandial checking can also be helpful.
- For people with type 2 diabetes, basal-bolus / MDI may be given in combination with non-secretagogue or injectable (GLP-1 analogue) medications.
- Basal-bolus / MDI would not typically be used in combination with secretagogue medications.

	breakfast		lunch		supper		bedtime	night
	before	after	before	after	before	after		
Insulin	Rapid/regular (bolus)		Rapid/regular (bolus)		Rapid/regular (bolus)		NPH/long (basal)	
SMBG pattern 1: Starting or Stable	SMBG test		SMBG test		SMBG test		SMBG test	
SMBG pattern 2: Intensive management	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test
Adjustment	Basal insulin ↑ if BG hi ↓ if BG low	Pre-breakfast bolus insulin ↑ if BG hi ↓ if BG low	Pre-lunch bolus insulin ↑ if BG hi ↓ if BG low	Pre-supper bolus insulin ↑ if BG hi ↓ if BG low	Basal insulin ↓ if BG low			



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Pattern Recommendation: Insulin pump

Typically given as a rapid-acting analogue (bolus) before each meal and a continuous rapid-acting insulin analogue throughout the day and night.

SMBG at least as often as insulin is being given.

- SMBG should be QID, pre-meal and bedtime in order to assess previous dose and to adjust next dose. Some patients find post-prandial checking can also be helpful.
- For people with type 2 diabetes, insulin pump therapy may be given in combination with non-secretagogue or injectable (GLP-1 analogue) medications.
- Insulin pump therapy would not typically be used in combination with secretagogue medications.

	breakfast		lunch		supper		bedtime	night
	before	after	before	after	before	after		
Insulin	Rapid (bolus)		Rapid (bolus)		Rapid (bolus)			
	Rapid (basal)							
SMBG pattern 1: Starting or Stable	SMBG test		SMBG test		SMBG test		SMBG test	
SMBG pattern 2: Intensive management	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test
Adjustment	Basal insulin (night) ↑ if BG hi ↓ if BG low	Pre-breakfast bolus insulin ↑ if BG hi ↓ if BG low	Pre-lunch bolus insulin ↑ if BG hi ↓ if BG low	Pre-supper bolus insulin ↑ if BG hi ↓ if BG low	Basal insulin (night) ↓ if BG low			
	Or adjust basal insulin (day)							