

Self-Monitoring of Blood Glucose (SMBG) Recommendation Tool for Healthcare Providers

Basic SMBG requirements (must be met)

The person with diabetes (or a family member/caregiver) must have the knowledge and skills to use a home blood glucose monitor and to record the results in an organized fashion.

The person with diabetes and/or members of the healthcare team must be willing to review and act upon the SMBG results in addition to the A1C results.



A. REGULAR SMBG IS REQUIRED if the person with diabetes is:

SITUATION	SMBG RECOMMENDATION
Using multiple daily injections of insulin (≥ 4 times per day) ----- Using an insulin pump	SMBG ≥ 4 times per day (see page 2 – QID – [basal-bolus/MDI])
Using insulin < 4 times per day	SMBG at least as often as insulin is being given (see page 2 – premixed or basal insulin only)
Pregnant (or planning a pregnancy), whether using insulin or not ----- Hospitalized or acutely ill	SMBG individualized and may involve SMBG ≥ 4 times per day
Starting a new medication known to cause hyperglycemia (e.g. steroids) ----- Experiencing an illness known to cause hyperglycemia (e.g. infection)	SMBG individualized and may involve SMBG ≥ 2 times per day



B. INCREASED FREQUENCY OF SMBG MAY BE REQUIRED if the person with diabetes is:

SITUATION	SMBG RECOMMENDATION
Using drugs known to cause hypoglycemia (e.g. sulfonylureas, meglitinides)	SMBG at times when symptoms of hypoglycemia occur or at times when hypoglycemia has previously occurred
Has an occupation that requires strict avoidance of hypoglycemia	SMBG as often as is required by employer
Not meeting glycemic targets	SMBG ≥ 2 times per day, to assist in lifestyle and/or medication changes until such time as glycemic targets are met
Newly diagnosed with diabetes (< 6 months)	SMBG ≥ 1 time per day (at different times of day) to learn the effects of various meals, exercise and/or medications on blood glucose
Treated with lifestyle and oral agents AND is meeting glycemic targets	Some people with diabetes might benefit from very infrequent checking (SMBG once or twice per week) to ensure that glycemic targets are being met between A1C tests



C. DAILY SMBG IS NOT USUALLY REQUIRED if the person with diabetes:

Is treated only with lifestyle AND is meeting glycemic targets
Has pre-diabetes

Additional CDA resources

- Lows and highs: blood glucose levels
- Managing your blood glucose
- Monitoring Glycemic Control. Canadian Diabetes Association Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes 2013;37(suppl 1):S1-S212
- Self-Monitoring of Blood Glucose in People with Type 2 Diabetes: Canadian Diabetes Association Briefing Document for Healthcare Providers. Can J Diabetes.2011;35:317-319.

Suggested SMBG Patterns for Patients Using Insulin

Basal Insulin Only – NPH or long-acting insulin analog, 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 throughout the day.

	BREAKFAST		LUNCH		SUPPER		BEDTIME	NIGHT
	before	after	before	after	before	after		
Insulin							NPH/long (basal)	
SMBG pattern	SMBG test							
Adjustment	Basal insulin ▲ if BG high ▼ if BG low							

Premixed – 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.

	BREAKFAST		LUNCH		SUPPER		BEDTIME	NIGHT
	before	after	before	after	before	after		
Insulin	premixed				premixed			
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 high ▼ if BG low		Pre-breakfast insulin ▲ if BG high ▼ if BG low		Pre-breakfast Insulin ▲ if BG high ▼ if BG low		Pre-supper insulin ▲ if BG high ▼ if BG low	

QID (basal-bolus/MDI) – typically given as a rapid-acting analog or regular insulin (bolus) before each meal and NPH or long-acting analog (basal) typically given at bedtime. SMBG should be QID, pre-meal and bedtime, in order to assess previous dose and to adjust next dose. Some patients find that post-prandial checking can also be helpful.

	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: Stable, Focus on post-meal BG	SMBG test	SMBG test		SMBG test		SMBG test		
SMBG pattern 3: Intensive management	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test	SMBG test
Adjustment	Basal insulin ▲ if BG high ▼ if BG low	Pre-breakfast insulin ▲ if BG high ▼ if BG low		Pre-lunch insulin ▲ if BG high ▼ if BG low		Pre-supper insulin ▲ if BG high ▼ if BG low		Basal insulin ▼ if BG low

MDI = multiple daily injections

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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.



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Related articles: *Managing Your Blood Glucose and Lows and Highs: Blood Glucose Levels*

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