

**Cardiovascular Health Nova Scotia Guideline Update**

*Nova Scotia Guidelines for Acute Coronary Syndromes* (Updating the 2008 Diabetes sections of the Guidelines)

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**Non ST-elevation Acute Coronary Syndromes (NSTEMACS) Section: Diabetes Update (October 2014)**

2008 Recommendation		2014 Recommendation		Rationale for change
<b>Additional Immediate and Inpatient Treatment of Definite NSTEMACS</b>				
None	None	<b>18 a (New)</b>	<p>Blood glucose should be measured on admission and monitored throughout hospitalization [Grade D Consensus<sup>[1]</sup>]; all patients with acute coronary syndromes should be screened for diabetes prior to hospital discharge (fasting plasma glucose, random plasma glucose or *A1C).<sup>adapted from [1]</sup></p> <p><i>Note: *Caution in interpretation of A1C as a diagnostic tool in the elderly, certain ethnicities and with</i></p>	New Recommendation

2008 Recommendation		2014 Recommendation		Rationale for change
			<p>values between 6.5% -7.0%. [Consensus Nova Scotia 2014]</p> <p>[See Appendix A: <b>Diagnostic Criteria for Diabetes Mellitus</b> and Appendix B: <b>Prediabetes</b>]</p>	
None	None	<b>18b (New)</b>	All patients with diabetes and ACS should receive the same treatments that are recommended for patients with ACS without diabetes since they benefit equally [Grade D, Consensus <sup>[1]</sup> ]	New Recommendation
<b>18 a</b>	Tight glycemetic control is advised for all NSTEMI patients who present with hyperglycemia (random BG >11.0, or fasting BG >7.0 mmol/L). <sup>[2,3]</sup> [Consensus Nova Scotia 2006]	<b>18c (formerly 18 a)</b>	<p>Patients with acute myocardial infarction and blood glucose &gt;11.0 mmol/L on admission may receive glycemetic control in the range of 7.0 to 10.0 mmol/L**, followed by strategies to achieve recommended glucose targets long term [Grade C, Level 2<sup>[1]</sup>].</p> <p><i>Note: ** Caution should be applied to avoid over-management of the frail</i></p>	Modified Recommendation (text changed)

2008 Recommendation		2014 Recommendation		Rationale for change
			<i>elderly.</i> [Consensus Nova Scotia 2014]	
<b>18b</b>	During the first 48 hours there should be a low threshold for use of insulin to maintain a BG of 7.0-10.0 mmol/L. After 48 hours, standard diabetes management is recommended including oral antihyperglycemic agents and/or insulin as appropriate. <sup>[3]</sup> [Consensus Nova Scotia 2006]	<b>18 d (formerly 18b)</b>	Insulin therapy may be required to achieve targets (7-10 mmol/L) [Grade D Consensus <sup>[1]</sup> ]. A similar approach may be taken in those with diabetes and admission blood glucose $\leq$ 11.0 mmol/L [Grade D Consensus <sup>[1]</sup> ].	Modified Recommendation (text changed)
None	None	<b>18e (New)</b>	In hospital management of patients with NSTEMI and diabetes should include strategies to avoid both hypoglycemia and hyperglycemia. <sup>[1]</sup>  An appropriate protocol should be developed and staff trained to ensure the safe and effective implementation of this therapy and to minimize the likelihood of hypoglycemia [Grade D consensus <sup>[1]</sup> ].	New Recommendation

2008 Recommendation		2014 Recommendation		Rationale for change
<b>18c</b>	Caution is recommended in considering the use of thiazolidinediones in patients with cardiovascular disease. <sup>[4]</sup>	<b>18f</b> (formerly 18 c)	Thiazolidinediones (TZD) may induce edema and/or heart failure and are contraindicated in patients with known clinical heart failure or evidence of left ventricular diastolic dysfunction on echocardiogram or other heart imaging. <sup>[1]</sup> Higher rates of heart failure exist when combined with insulin <sup>[1]</sup> , and the combination of insulin and TZD is not approved in Canada. The safety of other oral hypoglycemic agents in patients at high cardiac risk is a rapidly evolving field, and for this reason consideration should be given to referring these patients to a physician with expertise in diabetes. [Consensus Nova Scotia 2014]	Modified Recommendation (updated text)
<b>18 d</b>	The long term therapy goals should conform to the current CDA guidelines <sup>[5]</sup> : fasting BG 4.0-7.0 mmol/L and A1C ≤ 7.0%, if achievable safely. [Consensus Nova Scotia 2006]	<i>Moved to secondary preventive therapy section</i>		

2008 Recommendation		2014 Recommendation		Rationale for change
<b>Non-pharmacologic Secondary Preventive Therapy</b>				
<b>24 Diabetes Education</b>		<b>24 Diabetes Education</b>		
		<b>24a (formerly 18d)</b>	<p>The long-term therapy goals should conform to the current Canadian Diabetes Association guidelines:<sup>[1]</sup> fasting BG 4.0–7.0 mmol/L, 2 hour post prandial 5-10 mmol/L and A1C ≤7.0%, if achievable safely. [Grade B Level 2<sup>[1]</sup> ].</p> <p><i>Note: Less stringent A1C targets (7.1%-8.5%) are recommended for those with limited life expectancy, multiple morbidities, risk of severe hypoglycemia/hypoglycemia unawareness, extensive cardiovascular disease, individual patient considerations, etc. <sup>[1]</sup></i></p>	
<b>24a</b>	NSTEACS patients with diabetes should be offered initial and ongoing needs-based diabetes education in a timely manner to enhance self-care practices and behaviours. <sup>[5]</sup>	<b>24b (formerly 24a)</b>	NSTEACS patients with diabetes should be offered initial and ongoing needs-based diabetes self-management education in a timely manner to enhance self-care practices and behaviours.	Modified Recommendation (changed text)

2008 Recommendation		2014 Recommendation		Rationale for change
			[Consensus Nova Scotia 2014]	
<b>24b</b>	Referral to a Diabetes Education Centre (DEC) for ongoing education and management of diabetes and cardiac risk factors is recommended. Visit <a href="http://www.diabetescareprogram.ns.ca">www.diabetescareprogram.ns.ca</a> for DEC locations in Nova Scotia.	<b>24c (formerly 24b)</b>	<p>Referral to a Diabetes Centre (DC) is also recommended for ongoing self-management education and the review/timely revision of an individualized care plan to address diabetes and cardiac risk factors.</p> <p>Visit <a href="http://diabetescare.nshealth.ca/">http://diabetescare.nshealth.ca/</a> for DC locations in Nova Scotia.</p> <p>Consideration should also be given to refer the patient to a physician with diabetes expertise to evaluate global cardiovascular risk reduction. [Consensus Nova Scotia 2014]</p>	Modified Recommendation (changed text)

## References

- 1 Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. *Can J Diabetes*. 2013; 37(suppl 1):S1-S212.
- 2 Cheung NW, Wong VW, McLean M. The Hyperglycemia: Intensive Insulin Infusion in Infarction (HI-5) Study: A randomized controlled trial of insulin therapy for myocardial infarction. *Diabetes Care*. 2006; 29(4):765-770.
- 3 Malmberg K. Prospective randomized study of intensive insulin treatment on long term survival after acute myocardial infarction in patients with diabetes mellitus. DIGAMI Study Group. *BMJ*. 1997; 314(7093):1512-1515.
- 4 New restrictions on the use of rosiglitazone products due to cardiac safety concerns (AVANDIA™ Avandamet™ and AVANDARYL™). (November 1, 2007). Drugs & Health Products, Health Canada website. Available at [http://www.hc-sc.ca/dhp-mps/medeff/advisories-avis/prof/2007/avandia\\_hpc-cps\\_5\\_e.html](http://www.hc-sc.ca/dhp-mps/medeff/advisories-avis/prof/2007/avandia_hpc-cps_5_e.html). Accessed March 15, 2008.
- 5 Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2003 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. *Can J Diabetes*. 2003; 279 (suppl 2):S1-152.

**Appendix A**

**DIAGNOSTIC CRITERIA FOR DIABETES MELLITUS IN THE NONPREGNANT ADULT:**

Screen Type	Diagnostic Value	Comments
Fasting Plasma Glucose <b>OR</b>	$\geq 7.0$ mmol/L	No caloric intake for at least 8 hours
Random plasma glucose <b>OR</b>	$\geq 11.1$ mmol/L	Any time of the day, without regard to time since last meal. Confirm with an alternate test.
2-hr sample of 75g OGTT <b>OR</b>	$\geq 11.1$ mmol/L	
A1C	$\geq 6.5\%$	A1C may be misleading in those with hemoglobinopathies, iron deficiency, hemolytic anaemias, severe hepatic, and renal disease. There are also variations in non-Caucasian ethnicities and the elderly.  [Note: A1C should not be used to diagnose children, adolescents, pregnant women or those suspected of Type 1 diabetes mellitus]
<b>For all of the above, in the absence of symptomatic hyperglycemia, a repeat confirmatory laboratory test must be done on another day.</b>		

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**Appendix B.**

**PREDIABETES-IMPAIRED FASTING GLUCOSE (IFG) & IMPAIRED GLUCOSE TOLERANCE (IGT)**

DIAGNOSIS	RESULT	COMMENTS
Impaired Fasting Glucose (IFG)	Fasting Plasma Glucose (FPG) of 6.1 – 6.9 mmol/L.	
Impaired Glucose Tolerance (IGT)	FPG of < 6.1 mmol/L and a 2-hr (post 75g glucose load) PG of 7.8 mmol/L - 11.0 mmol/L.	
IFG & IGT	FPG of 6.1 – 6.9 mmol/L and a 2-hr (post 75g glucose load) PG of 7.8 mmol/L - 11.0 mmol/L.	
PREDIABETES	A1C 6.0 - 6.4%	A1C may be misleading in those with hemoglobinopathies, iron deficiency, hemolytic anaemias, severe hepatic, and renal disease. There are also variations in non-Caucasian ethnicities and the elderly.
INTERVENTIONS: Lifestyle modifications; annual rescreening		

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