

November 2016

## Sick Days Management of Diabetes



Flu season raises a question about how to manage drug therapy in patients (with diabetes) who suddenly fall ill. In fact, stress from any acute illness, such as UTI, pneumonia etc., may cause hyperglycemia. Thus, in cases where the person appears or states they're feeling unwell and hypoglycemia *IS* evident, follow the recommendations found in Table 1, immediately below.

**Table 1: Sick Day Management Plan**

TYPE 1 DIABETES	TYPE 2 DIABETES
<ul style="list-style-type: none"> <li>• Ketones present in urine</li> <li>• Blood glucose &gt;15mmol/L</li> </ul>	Blood glucose >15mmol/L on 2 consecutive readings within 8-12 hours

*Please note*

While the 15mmol/L cut-off reading is recommended within the **OLTCA Diabetes Protocol**, this guideline *may require individualization*.

**ALSO NOTE:** It is imperative to continue insulin and/or oral medications to help the patient maintain adequate glycemic control. However, if the patient is at risk of dehydration and hypoglycemia, some medications may have to be withheld.

Kidney function is also affected during periods of acute illness and can contribute to dehydration. Approximately 130-180 litres of fluid are filtered across the glomerular capillaries per day, and depending on fluid intake, 98-99 percent is reabsorbed by the renal tubules, leaving about 1-2 litres for urinary output. Therefore, even a small (1-2 percent) reduction in the reabsorption can result in a doubling of urinary output, resulting in volume depletion that can be exacerbated by certain medications. See *SADMANS mnemonic, to follow*.

# Managing your SICK resident

<p><b>S</b> is for Sugar testing</p>	<p><b>TEST BLOOD GLUCOSE OFTEN</b> As often as every 4 hours around the clock, at least 4 times per day (before meals and at bedtime).</p>
<p><b>I</b> is for Insulin</p>	<p><b>ALWAYS GIVE DIABETES MEDICATIONS. NEVER OMIT.</b></p> <ul style="list-style-type: none"> <li>When ill, the body may release its own stored glucose, causing a rise in blood glucose even if the patient is not eating as much. If on insulin, do not hold it; extra insulin (correctional insulin is usually needed)</li> <li>In those with type 2 diabetes with vomiting and diarrhea there is a risk of <b>dehydration</b>. Stop medications that increase risk for a decline in kidney function or have a reduced clearance and increased risk of adverse effects:</li> </ul> <p><b>S:</b> Sulfonylureas (glyceride, glyburide)  <b>A:</b> ACE-inhibitors (perindopril, ramipril)  <b>D:</b> Diuretics (hydrochlorothiazide, furosemide), direct renin inhibitors  <b>M:</b> Metformin  <b>A:</b> Angiotensin receptor blockers (telmisartan, valsartan)  <b>N:</b> Non-steroidal anti-inflammatory medication (diclofenac, ibuprofen)  <b>S :</b> Sodium Glucose Linked Transporter 2 Inhibitors (canagliflozin, dapagliflozin, empagliflozin)</p>
<p><b>C</b> is for Carbohydrates and fluids</p>	<p><b>DRINK PLENTY OF EXTRA FLUIDS AND CHECK VITALS OFTEN.</b> The body needs about 9 cups (2200 ml) of fluid daily to prevent dehydration so 125 - 250 ml every hour is suggested. <b>If your patient ...</b></p> <ul style="list-style-type: none"> <li>Cannot eat solid food, and blood glucose is under 15mmol/L, offer carbohydrate containing fluids (10-15 g every 1 to 2 hours). <i>See Table 2, to follow.</i></li> <li>Cannot eat solid food, and blood glucose is over 15 mmol/L, offer <b>sugar free fluids</b> to prevent dehydration. Choose caffeine free diet pop, water, broth, or sugar free Jello.</li> </ul>
<p><b>K</b> is for Ketones Testing</p>	<p><b>KETONES TESTING IS NEEDED</b> for those with blood glucose over 20mmol/L for 8-12 hours or longer, especially if the patient is on insulin or is frail. Test ketones as often as blood glucose is tested (if possible). Test ketones in patients with type 1 diabetes every 2-4 hours when blood glucose is over 15 mmol/L. Once blood glucose is under 15 mmol/L and ketones are zero to trace, there can be a reduction in the frequency of testing for ketones.</p> <ul style="list-style-type: none"> <li>If ketones present are moderate to large and blood glucose is over 15.0 mmol/L increase the basal insulin dose or implement a supplemental scale.</li> <li>If ketones present are moderate to large and blood glucose is under 15.0 mmol/L this means there is inadequate carbohydrate intake, and liquid or solid carbohydrate (sugar containing foods) foods are needed. <i>See Table 2, to follow.</i></li> </ul>

**Table 2: Suggested 15 gram servings of liquid carbohydrates (CHO=sugars)**

125ml (1/2 cup) juice	75ml (1/3 cup) sugar-sweetened Kool-Aid
125ml (1/2 cup) regular Jello	50ml (1/4 cup) pudding
174ml (3/4 cup) regular pop	1 popsicle
175ml (3/4 cup) sweetened yogurt	125ml (1/2 cup) Glucerna
125ml (1/2 cup) ice cream or sherbert	75ml (1/3 cup) non-diabetic Boost
250ml (1 cup) milk :avoid if vomiting or diarrhea	250ml (1 cup) Gatorade ( NOT G2)

### What is the importance of this for health care professionals?

- Use SADMANS in order to stay alert to medications and conditions that put a patient at risk of hypovolemia and how to manage the patient.
- Be aware of circumstances that require initiation of correctional insulin (for patients on Insulin) or acute illnesses that can lead to elevated blood glucose.
- Understand that patients will require hydration every 1-2 hours with liquid containing CHO or sugar free liquid depending on blood glucose level.
- Ensure basal insulin is continued when patient is sick but that the dose may need to be adjusted according to blood glucose.
- Remember that insulin sensitivity decreases during periods of acute illness and dose requirements may increase.

### For more information

Canadian Diabetes Association Clinical Practice Guidelines (<http://guidelines.diabetes.ca/fullguidelines>) and see Appendix 7 for the “Sick Day Medication List” that can be distributed to patients. OLTCA Diabetes Protocol (available upon request).

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Refer to Cornwall Community Hospital’s Sick Day Guidelines, Sept. 2015

Newsletters are available at: [medicalartsparmacy.ca](http://medicalartsparmacy.ca)

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