

SGLT Use and Prevention of DKA in Type 1 Diabetes

STOP DKA Protocol



Symptomatic (e.g. lethargy, loss of appetite, nausea, abdominal pain) → **STOP** SGLTi

Test ketones* and glucose every 2-4 hours
(even if blood glucose is not elevated)

Oral ingestion of fluid and carbohydrates
(250–500 mL fluid every 2 hours and up to 30–60 g of carbohydrates every 2-4 hours)

Protocol instructions for supplemental insulin and carbohydrates
(see STOP DKA table)

*Ketosis/DKA may occur without an elevated blood glucose

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| <ul style="list-style-type: none">Recognize the symptoms of DKA<ul style="list-style-type: none">Nausea vomiting abdominal pain malaise worsening polyuria polydypsia shortness of breathAvoid very low carbohydrate and ketogenic dietsAvoid excess alcoholExert caution with extreme exerciseStop SGLT inhibitor at least 3 days prior to a major surgeryNever stop taking insulin | <ul style="list-style-type: none">Sick-day management<ul style="list-style-type: none">Stop SGLT inhibitorIf symptomatic, check blood ketones and glucoseConsult the STOP DKA table for supplemental bolus insulin and carbohydrate recommendations even if blood glucose is normalKeep hydrated during acute illness<ul style="list-style-type: none">Ingest at least 250–500 mL of sugar-free and/or carbohydrate-containing fluids every 2–4 hoursCheck insulin pump for potential delivery issue<ul style="list-style-type: none">Inject insulin subcutaneously if necessarySeek medical attention if<ul style="list-style-type: none">high levels of ketones persist despite extra insulin and/or increased carbohydrate intake over a 6–10 hours periodvomitingunable to keep down fluidsthere are persistent symptoms of DKA |
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STOP DKA Considerations for Bolus Insulin and Carbohydrates

(for moderate or higher ketones, consider increasing basal insulin by 20%–50% until ketones return to normal)

KETONE level (mmol/L) and category (check every 2–4 h)	BLOOD GLUCOSE* (check every 2–4 h)		
	4.0–8.0 mmol/L (70–150 mg/dL)	8.1–14.0 mmol/L (151–250 mg/dL)	>14 mmol/L (>250 mg/dL)
<1.0 Normal or Mild	<ul style="list-style-type: none"> No extra insulin Give usual bolus to cover carbohydrates plus usual correction 	<ul style="list-style-type: none"> No extra insulin Give usual bolus to cover carbohydrates plus usual correction 	<ul style="list-style-type: none"> 5–10% TDD supplemental insulin or usual correction bolus plus usual bolus to cover carbohydrates
1.0–1.4 Moderate	<ul style="list-style-type: none"> 5% TDD supplemental insulin plus usual bolus to cover carbohydrates 30–45 g carbohydrates every 2–4 h 	<ul style="list-style-type: none"> 10% TDD supplemental insulin or 1.5x correction bolus plus usual bolus to cover carbohydrates 30 g carbohydrates every 2–4 h 	<ul style="list-style-type: none"> 10% TDD supplemental insulin or 1.5x correction bolus plus usual bolus to cover carbohydrates every 2–4 h
1.5–2.9 High	<ul style="list-style-type: none"> 10% TDD supplemental insulin plus usual bolus to cover carbohydrates 30–45 g carbohydrates every 2–4 h 	<ul style="list-style-type: none"> 20% TDD supplemental insulin or 2x correction bolus plus usual bolus to cover carbohydrates 30–45 g carbohydrates every 2–4 h 	<ul style="list-style-type: none"> 20% TDD supplemental insulin or 2x correction bolus plus usual bolus to cover carbohydrates every 2–4 h
≥3.0 Extreme	<ul style="list-style-type: none"> 10% TDD supplemental insulin plus usual bolus to cover carbohydrates 45–60 g carbohydrates every 2–4 h 	<ul style="list-style-type: none"> 20% TDD supplemental insulin or 2x correction bolus plus usual bolus to cover carbohydrates 30–45 g carbohydrates every 2–4 h 	<ul style="list-style-type: none"> 20% TDD supplemental insulin or 2x correction bolus plus usual bolus to cover carbohydrates every 2–4 h

DKA is likely if ketones remain ≥3 mmol/L despite supplemental insulin



If symptoms are ongoing and/or you are unable to ingest fluids, go directly to the emergency department



*Glucose values in mg/dL are not exact conversions from those in mmol/L to allow for round numbers. TDD=total daily insulin dose; usual bolus=usual bolus using insulin:carbohydrate ratio without correction. If supplemental insulin is calculated by both TDD and correction bolus methods, administer the amount that provides the higher dose of insulin.

Sources of 15 g Simple Carbohydrates (Fluid)

- 150 mL (2/3 cup) regular soft drink
- 250 mL (1 cup) of sports drink
- 150 mL (~2/3 cup) of juice
- 125 mL (1/2 cup) of regular gelatin dessert
- 125 mL (1/2 cup) of apple sauce
- 75 mL (1 stick) of popsicle

Sources of Sugar-free Fluids

- Water
- Low or zero calorie drink mix
- Diet soft drink
- Tea
- Clear soup or broth