

## Diabetic Ketoacidosis – Formula Sheet

This is a supplementary formula sheet to a podcast from Pedscases.com on "**Diabetic Ketoacidosis**." These podcasts are designed to give medical students an overview of key topics in pediatrics. The audio versions are accessible on iTunes or at <u>www.pedcases.com/podcasts</u>.

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Developed by Dr. Carly Rumley and Dr. Jessica Foulds for PedsCases.com. December 23, 2018.

## **Formulas**

Examples using Stollery Children's Hospital Guidelines

NPO record weight in kg

## Management of Fluids:

Decompensated shock: 0.9% NS 10 mL/kg IV rapidly, reassess after each bolus Moderate to severe dehydration: 0.9% NS 10 mL/kg IV over 1 hour, reassess

Maintenance rate: 4-2-1 rule ex. Katie is 8 years old, 27 kg (4 mL x 10 kg) + (2 mL x 10 kg) + (1 mL x 7 kg) = hourly rate = 67 mL/hr

Moderate dehydration = 6% total fluid deficit = 6% of 27 kg = 1.62 kg = 1620 mL

Volume already given = 10 mL/kg x 27 kg for mod-severe dehydration = 270 mL

Deficit replacement rate = (total fluid deficit - volume already given) / 48 hours = (1620 mL - 270 mL) / 48 hrs = 1350 mL / 48 hours = 28 mL/ hr

Total hourly rate = maintenance rate + deficit rate = 67 mL/hr + 28 mL/hr = 95 mL/hr

**Total hourly fluid rate** = Bag A (Saline) + Bag B (Dextrose) Add KCI 40 mmol/ L to Saline Bag A when serum K < 5 mmol/ L and patient is voiding. Use Bag B (Dextrose) when patient's blood glucose has improved to ~15 mmol/ L

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Initial Insulin Infusion rate = 0.1 units/kg/hr

= (0.1 Units/kg/hr x 27 kg) = 2.7 Units/hr

Corrected Na = (measured Na + [0.36 x (plasma glucose - 5.6)]=131 + [0.36 x (20 - 5.6)]=136

Note: Please refer to local hospital protocol for management of a patient with Diabetic Ketoacidosis. The calculations above are for illustrative purposes and should not be used to inform patient care decisions.