Fluid treatment for kids

Yan Yu, 2017 (www.yanyu.ca)

Sick kid who needs fluids

If shock/severe dehydration:

Need to get large volumes of fluids into body ASAP ("Resuscitation fluids")

No time/No need to worry about body needing energy; no need to use dextrose-containing (D5) fluids

→ **Normal Saline (0.9% NaCl)**

A LOT of fluid needs to enter body at FAST rate:

→ **Total volume = 20mL/kg**

Rate = Bolus (+/- squeeze bag)

Large-bore, 14/16G IV; or IO if IV can't be done

If NPO (pre-surgery, etc), or constantly vomiting:

Child needs to be kept hydrated + cells need energy for longer periods of time ("Maintenance fluids")

Need to use a fluid that contains glucose (Or something metabolized into glucose, like dextrose)

- **D5W:** 5% dextrose in water
- **D5NS:** 5% dextrose in Normal Saline (can be 0.9% or 0.45%)

→ **Glucose can cause insulin release, which in turn drives K+ influx into cells → may leave blood hypo-kalemic!**

→ **Give 20mmol/L KCl along with the D5**

Fluid needs to enter body at a balanced rate, one that will not cause hypo- or hyper-volemia

Rate = 4:2:1 rule: ***delivery fluids at a rate dependent on body weight***

FIRST 10kg: 4ml/kg/hr +
SECOND 10kg: 2ml/kg/hr +
Any more kg's: 1ml/kg/hr

Total Volume: less important, depends on duration of fluid tx. Fluid usually given in 1L bags.

Be careful with fluid boluses! Kids get cerebral edema more easily. If you don't need to bolus fluids, don't – can simply give at 2x maintenance rate

Note: if using 0.45% NS, and the child becomes hypo-natremic, do NOT give more fluids, be it 0.9% or hyper-osmolar fluids! Simply fluid restriction will do!