

Glucose Infusion Rate - Neonatal Fluids

Normal neonatal Glucose Infusion Rate (GIR) is 4-8mg/kg/min, however VLBW/IUGR babies often may only tolerate 4-6 mg/kg/min especially in the first few days. Hyperglycaemia should be avoided by carefully maintaining the GIR, avoiding sudden increases and using 5% dextrose instead of increasing PN infusion to maintain GIR limits. Use insulin infusion according to guidelines when necessary. The table below shows the common GIR rates.

Parenteral Nutrition (All types)*				5% Dextrose			
60 ml/kg/day	90 ml/kg/day	120 ml/kg/day	150 ml/kg/day	20 ml/kg/day	30 ml/kg/day	40 ml/kg/day	50 ml/kg/day
3.7 mg/kg/min	5.56 mg/kg/min	7.3 mg/kg/min	9.2 mg/kg/min	0.7 mg/kg/min	1.04 mg/kg/min	1.4 mg/kg/min	1.74 mg/kg/min
Milk feeds (Breast milk**)							
20 ml/kg/day		30 ml/kg/day		40 ml/kg/day		50 ml/kg/day	
1 mg/kg/min		1.5 mg/kg/min		2 mg/kg/min		2.5 mg/kg/min	

For precise calculation of GIR for IV fluids:

$$\text{GIR (mg/kg/min)} = \frac{\text{rate (ml/kg/day)} \times \% \text{ dextrose}}{144}$$

Calculation of GIR from oral feeds (approximate value~):

$$\frac{\text{Sugar content of milk* (g/dl)} \times \text{rate (ml/kg/day)}}{144}$$

* Note that whilst PN is made up of 10% glucose, a prescription at a given daily rate will deliver less glucose due to 12% of the rate being SMOF. Any reduction in SMOF will increase the glucose delivery accordingly.

**Amount of lactose/glucose in milk : Breast milk = 7.1 g/dL, Term formula = 7.1g/dL, Preterm formula = 8.5 g/dL

~ Studies on breast milk (term, preterm, donor) show large variations in sugar content (5.5-9.6 g/dL)