NEWBORN USE ONLY
GIVEN ON DOCTORS ORDER ONLY

INSULIN (ACTRAPID)   HYPERKALAEMIA PRETERM INFANTS

< 35 weeks gestation

DEFINITION
Serum Potassium (K⁺) ≥ 7 mmol/l obtained from venous or arterial line.

Hyperkalaemia > 5.5mmol/l is common in the newborn. Capillary blood samples are often haemolysed, therefore it is important to confirm high serum potassium with a non-haemolysed venous or arterial blood sample. In general, elevated potassium levels even above 7mmol/l are well-tolerated.

In premature infants serum potassium usually peaks at 24 hours of age and declines to normal values by 72 hours of age. ECG changes, such as peaked T waves and arrhythmias indicate severe hyperkalaemia and require urgent treatment. The most common complications are bradycardia and ventricular tachycardia which can be life-threatening.

RISK FACTORS FOR PREMATURE INFANTS

1. Extreme prematurity < 27 weeks – especially if no antenatal steroids given
2. Perinatal asphyxia
3. Hypotension
4. Oliguria - urine output <0.5-1ml/kg/hr
5. Rising creatinine levels - > 40mcg/l/24hrs
6. Sepsis
7. Severe bruising or haemorrhage may contribute to raised potassium levels

PREVENTION

1. Avoid potassium in all infusions in the first day of life, except for babies on TPN! Potassium can be given only if hypokalaemia confirmed and adequate renal function with good urine output present.
2. Infants < 27 weeks gestation should have serum potassium level 6 hourly from 12-48 hours of age. Blood gas analyser provides a reliable estimation of serum potassium.
3. Laboratory measurement should be performed at least 8-12 hourly for the first 48 hours.
4. If serum potassium level is > 6 mmol/l without ECG changes, monitor serum potassium 2 hourly using blood gas analyser. Babies in whom regular blood samples are being taken should have an arterial line.
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TREATMENT

1. **ABNORMAL ECG SHOULD BE TREATED IMMEDIATELY** with 10% calcium gluconate 0.5ml/kg IV infusion

2. **Insulin + 12.5%dextrose continuous IV infusion**
   
   *Insulin* 0.2 unit/kg/hr + 12.5%dextrose 5ml/kg/hr (0.5g/kg/hr)

   *Insulin + Dextrose infusion can be ordered at higher strength by **consultants only** as the insulin effect is dose related.*

3. Remove potassium from IV infusion.

4. Consider exchange transfusion or peritoneal dialysis as a last resort.

5. **Polystyrene Sulphonate Resins (Calcium Resonium, Sodium Resonium A)**
   
   *NOT recommended as they are ineffective and potentially dangerous* causing bowel perforation in the premature infant.\(^{10,11}\)

6. **Sodium Bicarbonate**
   
   *NOT recommended - underlying causes of acidosis should be treated*\(^1\).

7. **Salbutamol**
   
   *NOT recommended as there is a lack of data on safety and efficacy.*\(^13\)

MONITORING

1. Blood glucose level for hyperglycaemia and hypoglycaemia.

2. Blood sugar estimation initially ½ -1 hourly until stable and when weaning.

3. Cardio-respiratory monitoring.