

HYPERNATRAEMIC DEHYDRATION • 1/4

DEFINITION

- Serum sodium >145 mmol/L
- mild: 146–149 mmol/L
- moderate: 150–160 mmol/L
- severe: >160 mmol/L

Most common cause is failure to establish adequate oral intake while attempting breastfeeding

AIM

To prevent/treat hypernatraemic dehydration while encouraging breastfeeding

Other causes of hypernatraemia

- Diarrhoea/vomiting
- Infection and poor feeding
- Renal dysplasia
- Obstructive uropathy
- Diuretic phase following acute kidney injury
- Osmotic diuresis
- Diabetes insipidus
- Idiopathic causes
- Sodium bicarbonate or sodium chloride administration
- Excessive insensible losses in extremely premature babies
- Improperly prepared formula

PREVENTION

Babies at high risk

- Preterm <37 weeks
- Born to primiparous women
- Maternal prolonged second stage of labour >1 hr
- Use of labour medications
- Caesarean section with delayed initiation of feeding
- Cleft lip and/or palate
- Maternal breast abnormalities (flat, inverted nipples)/surgery
- Maternal illness, haemorrhage
- Maternal obesity
- Maternal diabetes
- Polycystic ovary syndrome
- Skin conditions that increase insensible water loss

Action

- Identify babies at risk
- Immediate skin-to-skin contact at birth and breastfeed within 1 hr of life
- Offer breastfeeding assistance within 6 hr of life
- Assess baby to ensure feeding adequate
- Ensure baby feeds ≥6 times within 24 hr
- If baby reluctant to feed, express breast milk (see [Breast milk expression guideline](#)) and offer by cup or syringe
- Calculate required volume of feeds (see [Nutrition and enteral feeding guideline](#))
- Avoid bottle feeding as far as possible and avoid dummies
- Assess feeding, number of wet nappies and stools using **Table**
- Avoid early discharge of at-risk babies
- Early reweighing of at-risk babies (at 72–96 hr) with breastfeeding support can reduce severity of hypernatremic dehydration

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Day	Wet nappies	Stool
1–2	≥2/day	>1/day
3–4	≥3/day	≥2/day, changing in colour and consistency
5–6	≥5/day	≥2/day, yellow in colour

- Weigh between 72 and 96 hr
- Refer all who have lost >10% weight
- $\text{weight loss \%} = \frac{\text{weight loss (g)}}{\text{birth weight (g)}} \times 100$

Symptoms and signs

- Irritability/high pitched cry: unsettled during breastfeeding
- Prolonged feeding >45 min
- Demanding <6 feeds in 24 hr
- Reduced urinary frequency
- Delayed change from meconium to transitional stools
- Weight loss
- Fever
- Jaundice
- Lethargy/altered level of consciousness
- Tremor
- Increased tone
- Doughy skin
- Seizures (usually during rehydration)
- Physical examination may be unremarkable
- Usual signs of dehydration (sunken fontanelle, dry mucous membrane and reduced skin turgor) may be absent

Complications

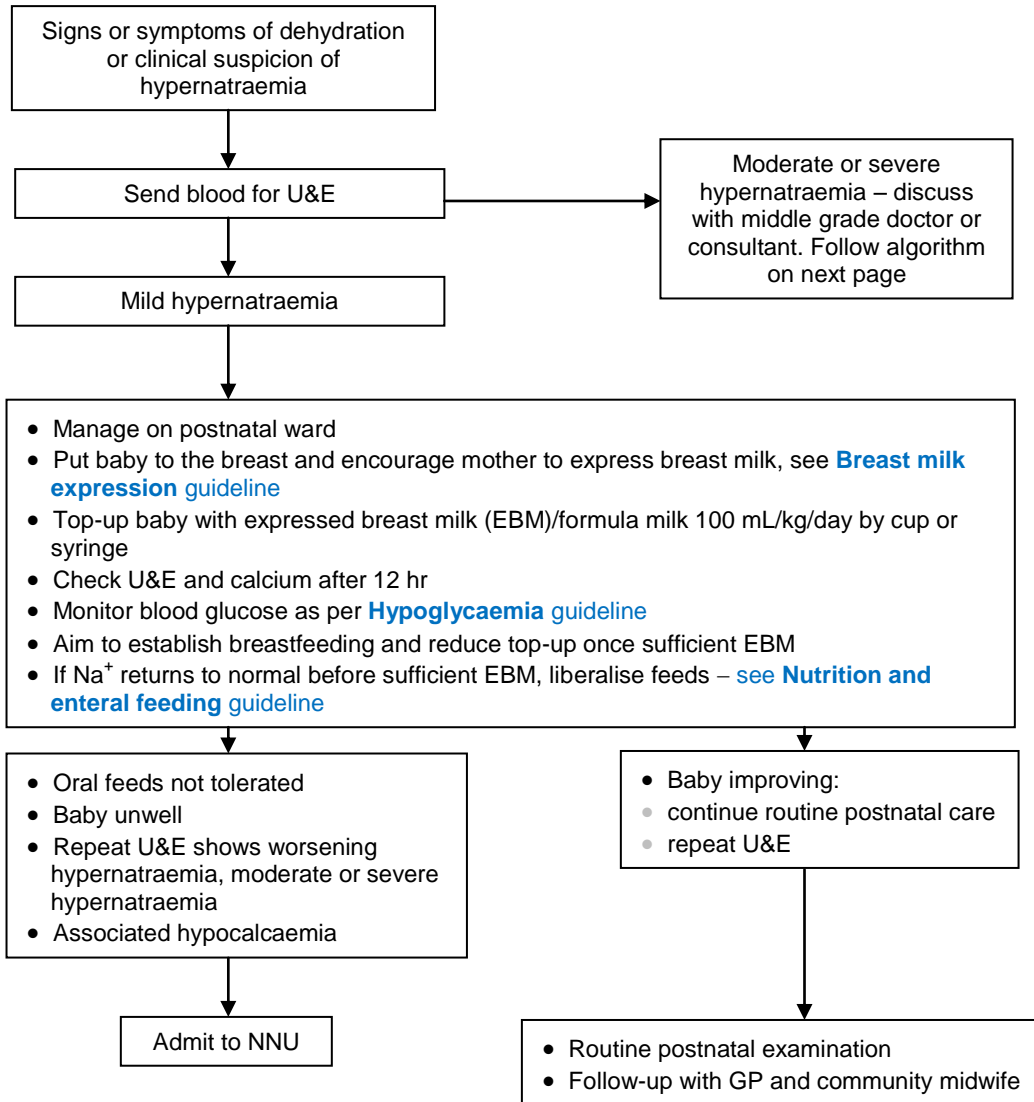
- Venous and arterial thrombosis
- Subdural and cerebral haemorrhage
- Cerebral oedema (especially during rehydration)
- Seizures (especially following rehydration)
- Apnoea and bradycardia
- Cognitive and motor deficits
- Hearing impairment – may be transient
- Hypertension
- Cerebral infarction
- Renal failure
- Death
- Long-term developmental delay

Investigations

- U&E
- Calcium
- Total bilirubin
- Blood glucose
- CRP
- Blood culture
- Paired urinary electrolytes
- If severe, cranial ultrasound

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MANAGEMENT



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