PAEDIATRIC ACUTE CARE GUIDELINE	
Adrenal Insufficiency	
Scope (Staff):	All Emergency Department Clinicians
Scope (Area):	Emergency Department

This document should be read in conjunction with this DISCLAIMER
http://kidshealthwa.com/about/disclaimer/

Adrenal Insufficiency

Background

- Children with adrenal insufficiency may present critically unwell. Contact the Paediatric Endocrinologist if adrenal insufficiency is suspected

Possible Presentations

- The most common is the child with known adrenal insufficiency who has an intercurrent illness
- New presentation of adrenal insufficiency: consider this possibility with any critically ill child with unexplained severe dehydration or shock
- Neonatal “collapse” in male at 1-3 weeks of age (Congenital Adrenal Hyperplasia)

Causes

Primary adrenal diseases (↑ACTH levels) • Addison’s disease • Congenital adrenal hyperplasia (CAH) • Adrenal aplasia/hypoplasia • Adrenoleukodystrophy • Adrenal destruction
Secondary adrenal insufficiency (↓ACTH levels) • Pituitary disorders • Hypothalamic disorders
Withdrawal from pharmacological doses of corticosteroids

Assessment

Clinical features	
• Shock • Hypoglycaemia (confusion, coma) • Muscle weakness • Lethargy • Vomiting • Syncope	• Dizziness • Weight loss • Depression and anorexia • Increased pigmentation in creases • Dehydration, hypotension and shock

Biochemical features

- Hypoglycaemia
- Electrolyte disturbances (low Na^+, high K^+)
- Elevated serum urea and creatinine
- Low cortisol

Investigations

- Blood glucose level (bedside)
- Blood gas
- UEC and glucose (formal)

Where the **underlying diagnosis is not known, collect at least 2 mL of clotted blood for later analysis** (cortisol and 17 hydroxyprogesterone) and keep a specimen on ice for ACTH analysis

Management

1. Management of children with minor intercurrent illness who are able to tolerate oral medication (not vomiting)

- Children with adrenal insufficiency or at risk (i.e on steroids) **must be given** increased doses of replacement hydrocortisone during illness or stress
- Parents will often have these guidelines and may have tried these strategies prior to presenting to hospital:
  - If moderately unwell and/or temperature is 38º – 39ºC – give 3 times their usual dose of hydrocortisone
  - If more unwell and/or temperature > 39º C – give 4 times their usual dose of hydrocortisone
  - If vomiting or diarrhoea treat as below

2. Management of children with minor intercurrent illness who are not able to tolerate oral medication (vomiting)

• Susceptible patients who present with vomiting but are not otherwise unwell should be considered to have incipient adrenal crisis
• To attempt to prevent this from developing further:
  ◦ Administer IM or IV hydrocortisone 2 mg/kg
  ◦ Give trial of oral fluids, if tolerating observe for 4-6 hours before considering discharge
    ■ If tolerating oral fluids discuss with Emergency or Endocrine consultant before discharge
    ■ If not tolerating oral fluids IV fluids are required (see below)

3. For all other children

- **Give intravenous fluids**

Shock or severe dehydration	Moderate dehydration	Mild or no dehydration:
• 0.9% saline 20 mL/kg IV bolus • Repeat until circulation is restored • Give remaining deficit plus maintenance as 0.9% saline with 5% dextrose* over 24 hr • Check electrolytes and glucose hourly	• 0.9% saline 20 mL/kg IV bolus even if NOT clinically shocked • Give remaining deficit plus maintenance as 0.9% saline with 5% dextrose* over 24 hr	• No bolus • Give maintenance + % dehydrated fluid volume administered evenly over 24 hours
*Additional dextrose may be required to ensure euglycaemia		

- **Give hydrocortisone:**
  - Administer hydrocortisone intravenously
  - Cease Fludrocortisone whilst on IV Hydocortisone
  - If IV access is difficult, give IM while establishing intravenous line
  - Initial bolus dose given is according to age:

Age	Weight	Hydrocortisone Bolus Dose
< 6 months	< 7 kg	25mg
6 months – 2 years	8-12 kg	50mg
3-10 years	13-30kg	75mg
> 10 years	> 30kg	100mg
Approximately 2mg/kg		

This **must** be followed by regular hydrocortisone

- 1mg/kg IV 4 hourly until stable
- Note: calculations are not accurate for infants < 10kg
- If stable, discuss further management with Paediatric Endocrinologist

- **Treat hypoglycaemia**
    - Hypoglycaemia is common in infants and small children
    - Treat with **2mL/kg of 10% dextrose IV over 20 minutes**
    - Maintenance fluids should contain between 5 and 10% dextrose
- **Treat hyperkalaemia** – See ED Guideline: Hyperkalaemia
    - Hyperkalaemia usually normalises with fluid and electrolyte replacement
- **Identify and treat potential precipitating causes such as sepsis**
- **Admit to appropriate inpatient facility**

Nursing

- Baseline observations heart rate, respiratory rate, temperature, Sp02, capillary refill, BP and neurological observations
- At least hourly observations
- Hourly BGL (increase frequency if initial BGL was not within normal limits)
- ECG if clinically indicated and cardiac monitoring

References
External Review: Aris Siafarikas (Endocrinology and Diabetes Consultant): August 2015

This document can be made available in alternative formats on request for a person with a disability.

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