1.0 PURPOSE AND INTENT

1.1 To describe use of corticosteroids (hydrocortisone) for the treatment of refractory hypotension in the newborn infant. Treatment of relative adrenal insufficiency (RAI) is common in hypotensive critically ill infants in the first week of life. Corticosteroid treatment (hydrocortisone) is used to increase in blood pressure and reduce the duration of inotrope support in this population but may not improve outcomes.

2.0 PRACTICE OUTCOME

2.1 Prevention of adverse neurodevelopmental outcomes potentially associated with hypotension.

Note: All recommendations are approximate guidelines only and practitioners must take into account individual patient characteristics and situation. Concerns regarding appropriate treatment must be discussed with the attending neonatologist.

3.0 DEFINITIONS

3.1 Refractory hypotension: Hypotension with evidence of poor tissue perfusion or oliguria, which persists after other causes of hypotension have been corrected and which does not respond to administration of inotropes (at least 10 micrograms/kg/minute of dopamine).

3.2 Relative adrenal insufficiency (RAI): An inadequate production of adrenal hormones in response to a physiologic stress.

4.0 GUIDELINES

4.1 Determination of RAI:
Prior to start of corticosteroid therapy obtain a random serum cortisol. If serum cortisol is > 420 nanomoles/L (nM) then RAI is unlikely. Since RAI is common in critically ill infants, measuring serum cortisol before the infant develops refractory hypotension may be considered.

4.2 Treat other causes of hypotension before treatment with corticosteroids. Ensure there is
• Adequate circulating volume.
• No mechanical problems with ventilation that may impede venous return [too high mean airway pressure (MAP) or positive end expiratory pressure (PEEP)].
• No excessive sedative and/or analgesic administration.

4.3 Initial Treatment:
A loading dose of 1 mg/kg/dose of hydrocortisone may be considered.

4.4 Maintenance Dosing:
A written order by the physician/nurse practitioner is required for maintenance dosing, which is based on patient weight.

<table>
<thead>
<tr>
<th>Patient Weight</th>
<th>Usual Dose</th>
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<tbody>
<tr>
<td>≤1500 grams</td>
<td>1 mg/kg/day every 12 hours</td>
</tr>
<tr>
<td>&gt;1500 grams</td>
<td>1.5 mg/kg/day every 8 hours</td>
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4.5 If serum cortisol is > 420 nM then RAI is unlikely, hydrocortisone is not continued and other reasons for hypotension sought.
4.6 **Weaning of Hydrocortisone:** Wean hydrocortisone rapidly once inotropic agents have been stopped. For infants with RAI who require inotropic support and who develop steroid related side effects (hyperglycemia), reduce hydrocortisone dose as ordered by the physician/nurse practitioner order rather than discontinue hydrocortisone.

4.7 **Monitoring:** If hydrocortisone is continued for more than 1 day consider measuring serum cortisol. If serum cortisol is >1100 nM then decrease the hydrocortisone dose according to the physician’s order.

4.8 **Cautions:**
1. Concomitant use of steroids and indomethacin is associated with an increased risk of gastrointestinal perforation.
2. Any use of corticosteroids may increase risk of adverse neurodevelopmental outcomes

5.0 **PRIMARY AUTHORS**

5.1 John Baier MD, Assistant Medical Director NICU, Health Sciences Centre
5.2 Ruben Alvaro MD, Medical Director NICU, St. Boniface General Hospital

6.0 **REFERENCES**


