This protocol applies to patients that have a known medical history of adrenal insufficiency who present with signs and or symptoms of acute adrenal crisis. Evidence of an adrenal insufficiency diagnosis may include medical alert tags, patient or family statement, notes or care description letter from a healthcare provider, possession of corticosteroids for self or family administration.

### ALL PROVIDER LEVELS

**Inclusion Criteria:**
- All patients with known medical history of adrenal insufficiency who exhibit signs and or symptoms of adrenal crisis.

**Exclusion Criteria:**
- Patient does not have a known history of adrenal insufficiency.
- Patient with known history of adrenal insufficiency but is NOT in adrenal crisis.

**Definitions:**

1. **Adrenal Insufficiency** is a potentially life-threatening condition in which the adrenal glands do not produce enough of the hormone’s cortisol and aldosterone. Adrenal insufficiency can be caused by several medical conditions:
   - Congenital or acquired disorders of the adrenal gland.
   - Congenital or acquired disorders of the pituitary gland or hypothalamus.
   - Long term use of high dose steroids (e.g., COPD, asthma, rheumatoid arthritis, and organ transplant recipients).

2. **Acute Adrenal Crisis** is a life-threatening condition in which someone with adrenal insufficiency fails to mount an adequate response to acute physiologic stress. (e.g., infection, trauma, etc.) Refractory shock or death can occur in patients on a daily maintenance dose of steroids (hydrocortisone sodium succinate or prednisone) that experience illness or injury and are not given supplemental “booster” doses of hydrocortisone.
   - Early symptoms: non-specific, may resemble viral illness or hypoglycemia
   - Late symptoms: altered mental status, hypotension, hypoglycemia, seizures, cardiac dysrhythmia, cardiopulmonary arrest

**Treatment and Interventions:**

1. Initiate [General Assessment and Universal Patient Care](#).

2. Support airway and provide supplemental oxygen per [Airway Maintenance and Supplemental Oxygen protocol](#).

3. Identify and treat the underlying condition causing acute adrenal crisis per the appropriate protocol.

Revision Date: July 1, 2021
4. Check blood glucose level. Treat per hypoglycemia or hyperglycemia protocol as clinically indicated.

**ADVANCED LIFE SUPPORT PROVIDERS**

1. Place patient on continuous EKG monitoring. If dysrhythmia is present, proceed to the appropriate protocol.

2. Obtain 12 lead EKG and evaluate for cardiac causes of acute adrenal crisis. Treat per appropriate protocol.
   - Dysrhythmia (e.g., bradycardia, heart block, ventricular tachycardia, etc.)
   - Myocardial ischemia (e.g., ST elevation MI)
   - Assess for findings of hyperkalemia (i.e., peaked T waves, loss of P wave, widening of the QRS complex)

3. Establish IV/IO access as indicated by the patient’s clinical presentation.

4. If the patient presents with signs and symptoms of hypovolemia or hypoperfusion, administer fluid bolus:

<table>
<thead>
<tr>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 ml as needed to maintain or restore perfusion. Maximum total of 2000 ml</td>
<td>20 ml/kg as needed to maintain or restore perfusion. Maximum of 3 boluses</td>
</tr>
</tbody>
</table>

5. ALS providers are directed to administer a “booster” dose of steroids to patients with adrenal insufficiency with the following illnesses or injuries:
   - Shock/hypoperfusion (any cause)
   - Severe traumatic injury
   - Hyperthermia or hypothermia
   - Fever > 100.4°F and ill appearing
   - Respiratory distress (any cause)
   - Myocardial infarction
   - Partial or full thickness burns > 5% BSA
   - Vomiting and diarrhea with signs/symptoms of dehydration
   - Medication facilitated intubation

6. If available, the patient’s personal Hydrocortisone Sodium Succinate (Solu-Cortef®) emergency kit may be administered.
Adrenal Crisis

<table>
<thead>
<tr>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocortisone Sodium Succinate (Solu-Cortef®)</td>
<td>Hydrocortisone Sodium Succinate (Solu-Cortef®)</td>
</tr>
<tr>
<td>100 mg IV/IO/IM</td>
<td>2 mg/kg IV/IO/IM</td>
</tr>
<tr>
<td>Maximum dose of 100mg</td>
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</tbody>
</table>

❖ Important Note: if the patient/family want to self-administer the patient’s personal Hydrocortisone Sodium Succinate (Solu-Cortef®) emergency kit, this is allowed. ALS providers should assist and supervise immediate administration.

7. If the patient’s personal Hydrocortisone Sodium Succinate (Solu-Cortef®) emergency kit is NOT readily available, immediately given methylprednisolone (Solu-Medrol®)

<table>
<thead>
<tr>
<th>Adult</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylprednisolone (Solu-Medrol®)</td>
<td>Methylprednisolone (Solu-Medrol®)</td>
</tr>
<tr>
<td>125 mg IV/IO/IM</td>
<td>2 mg/kg IV/IO/IM</td>
</tr>
<tr>
<td>Maximum dose of 125 mg</td>
<td></td>
</tr>
</tbody>
</table>

8. If patient experiences nausea and or vomiting, treat per Nausea and Vomiting Protocol.

9. If findings of hyperkalemia are present on EKG, treat per hyperkalemia protocol.

10. If still hypotensive for their age after a fluid bolus, consider vasopressor support to maintain age-appropriate goal blood pressure. See Push-Dose Epi Procedure.

MEDICAL CONTROL OPTIONS

1. Contact Medical Control for further orders when necessary

General Notes:
- Adrenal crisis is a life-threatening emergency, and treatment should not be delayed for laboratory testing. The treatment is emergency steroid replacement.
Your Emergency Solu-Cortef™ (hydrocortisone) Injection Kit

Your Emergency Injection Kit needs to contain:
- 1 x 2ml Solu-Cortef™ ACT-O-VIAL®
- 2 x Alcohol Swabs
- 1 x 3ml Single Use Syringe
- 1 x Vial Access Cannula or Drawing Up Needle
- 1 x Injection Needle
- 1 x Cotton Swab

Preparation:
- Wash your hands thoroughly before preparing the injection.
- Check the label to ensure you have Solu-Cortef™.
- Check the expiry date on the ACT-O-VIAL®.

Step 1
- Tap to ensure that powder is at base of vial and away from the central stopper.
- Put the ACT-O-VIAL® on a hard surface.
- Place the palm of your hand on the lid of the ACT-O-VIAL®.
- Press down firmly on the lid to force the liquid into the bottom chamber.

Step 2
- Gently mix the solution without shaking it.
- Rotate the ACT-O-VIAL® turning it upside down a number of times.
- DO NOT SHAKE.
- The solution is initially cloudy but will become clear.

Step 3
- Remove the plastic tab that covers the rubber stopper with your thumbnail.

Step 4
Adrenal Crisis

7.9

STEP 5
- Wipe the top of the ACT-O-VIAL® with an alcohol swab.

STEP 6
- Connect the 3 mL syringe and the vial access cannula or drawing up needle firmly together.

STEP 7
- Place the ACT-O-VIAL® on a firm surface, and insert the access cannula or drawing up needle through the center of the rubber stopper.

STEP 8
- With the access cannula or drawing up needle in the ACT-O-VIAL®, invert the bottle and withdraw the correct dose ordered by your doctor.

NOTE: If using a drawing up needle, keep the needle tip below the fluid level.

STEP 9
- Withdraw the syringe from the ACT-O-VIAL®.
- Remove the access cannula or drawing up needle and replace it with the injection needle. Use the needle size recommended by your clinic/nurse.
- Firm the syringe to remove any bubbles.
- Expel any excess air.

STEP 10
- Divide the thigh into 3 sections.
- Clear the leg area with an alcohol swab BEFORE injection.
- Give the injection in the outer middle third of the thigh.