Emergency Department Guideline
Adrenal Insufficiency

Purpose: To rapidly identify patients with an adrenal crisis, perform a sufficient diagnostic evaluation in unknown cases, and administer appropriate therapy.

Indications: Consider diagnostic and therapeutic intervention in patients with the following symptoms, physical exam signs, and preliminary laboratory findings:

1) Persistent vomiting and anorexia without diarrhea accompanied by weight loss
2) History of salt cravings or recent tanning of skin
3) Mental status changes
4) Presenting complaints of extreme fatigue, fainting, or light-headedness
5) Cardiovascular instability: Hypotension, tachycardia, and other signs of shock only minimally responsive to crystalloid or colloid fluid boluses.
6) Electrolyte Abnormalities: hyponatremia, hyperkalemia, hypoglycemia, normal anion gap metabolic acidosis
7) Eosinophilia

Special Populations: Maintain high clinical suspicion for an adrenal crisis in patients with:

1) An underlying disorder of the adrenal gland requiring hormone (glucocorticoids and/or mineralcorticoid) replacement including:
   i. Congenital Adrenal Hyperplasia (CAH), primary adrenal insufficiency (Addison’s disease), adrenoleukodystrophy, panhypopituitarism or other forms of central (ACTH deficiency) adrenal insufficiency.
2) An underlying disorder requiring chronic administration of glucocorticoids
3) Other known autoimmune diseases such as diabetes mellitus, hypothyroidism, or hypoparathyroidism.
4) Suspected meningococcemia
5) History of abdominal trauma and suspected adrenal hemorrhage

Diagnostic Evaluation/Intervention For Suspected Adrenal Crisis:

1) Assign Emergency Department nurse and room for patient, place patient on cardiac monitor.
2) Secure intravenous access with two peripheral lines
3) Administer Intravenous Fluids and obtain laboratory tests
   a. Normal Saline (0.9 NaCl) or Lactated Ringers Solution should be given in 20cc/kg bolus over 20 to 30 minutes as needed to support intravascular volume.
b. D10W can be administered 5cc/kg as necessary to correct hypoglycemia.
c. In patients without a previous history of adrenal disorders, the following laboratory tests should be obtained prior to initiation of hydrocortisone therapy (if possible):
   i. ACTH - purple top (EDTA) 3 ml (min 1.2 ml) ON ICE
   ii. Cortisol – red or gold top (gel) or red top (no gel) 1 ml
   iii. 17-Hydroxyprogesterone (if CAH suspected) – Red top (no gel) 1 ml
   iv. Plasma Renin Activity (if hyponatremic and hyperkalemic) – purple top (EDTA) 4 ml (min 1.4 ml)
   v. Aldosterone (if hyponatremic and hyperkalemic) – Red or gold (gel) or red top (no gel) 2 ml (min 1.2 ml)

4) Administer Glucocorticoids
   a. Hydrocortisone Succinate also has some mineralcorticoid activity
   b. Weight based dosing scheme:
      i. Give Hydrocortisone Succinate 25 mg IV for weight 4-10 kg
      ii. Give Hydrocortisone Succinate 50 mg IV for weight 11-34 kg
      iii. Give Hydrocortisone Succinate 100 mg IV for weight ≥ 35 kg

5) Maintenance Fluids:
   a. Patient should be placed on D5NS (No potassium) at 1.5X maintenance rate IV

6) Maintenance Glucocorticoids
   a. After initial IV bolus, hydrocortisone succinate should be continued at a dose of 50 mg/m²/day divided every 6 hours for 24 hours then decreased to 25 mg/m²/day divided every 6 hours.

7) Mineralcorticoids
   a. No mineralcorticoids need be given if hydrocortisone succinate is given at above stress doses and intravenous fluids consist of 0.9 NaCl.