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Endocrine Emergencies

Thyroid storm, myxedema coma, adrenal crisis, and SIADH vs salt wasting vs DI

5 sources + more detail
erbasics.com/sheets/endocrine-emergencies.html
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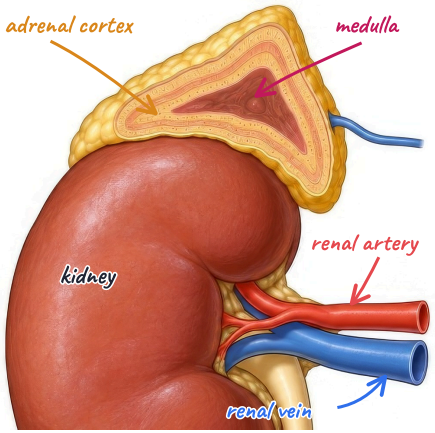
ADRENAL Adrenal crisis



1 Thyroid storm

Fever, tachycardia or AF, agitation or delirium, heart failure, GI upset; often after infection, surgery or stopping drugs.

- 1. Beta-blocker: propranolol (also slows T4-to-T3), or esmolol if unstable
- 2. Thionamide: PTU (blocks T4-to-T3 too) or methimazole
- 3. Iodine at least 1 h AFTER the thionamide, so it is not used to make new hormone
- 4. Hydrocortisone 100 mg IV every 8 h
- Cool with acetaminophen and blankets; no aspirin (frees thyroid hormone)

EXAM TIP Exam order: block (beta-blocker), stop synthesis (PTU), then iodine — never iodine first.

2 Myxedema coma

Hypothermia, bradycardia, hypotension, hyponatremia, hypoglycemia, hypoventilation with rising CO_2, altered mental status.

- Hydrocortisone with or before thyroid hormone, until adrenal insufficiency is excluded
- IV levothyroxine loading dose, then daily; lower doses in older or cardiac patients
- Passive rewarming (active warming can cause vasodilatory collapse)
- Ventilatory support for hypercapnia; cautious fluids for low sodium

3 Adrenal crisis

Shock that does not respond to fluids and pressors, plus low Na, high K (primary), low glucose, abdominal pain, vomiting. Triggers: infection, surgery, stopping long-term steroids.

- Hydrocortisone 100 mg IV at once; do not wait for test results (draw cortisol first only if it causes no delay)
- Then 200 mg/24 h (50 mg every 6 h or an infusion)
- Normal saline 1 L in the first hour; dextrose for hypoglycemia

SAFETY Patients on long-term steroids need stress dosing for surgery or serious illness.

4 SIADH vs cerebral salt wasting vs DI

	SIADH	SALT WASTING	DIABETES INSIPIDUS
Volume	Normal	Low	Low or normal
Serum Na	Low	Low	High
Urine	Concentrated, Na over 30	High Na, high volume	Large volume, dilute (SG under 1.005)
Typical setting	SAH, lung disease, drugs	SAH, brain injury	Head injury, pituitary surgery
Treat	Fluid restriction; 3% saline if severe	Replace salt and volume	Desmopressin (central); replace water

- Severe symptoms (seizures, coma): 150 mL 3% saline over 20 min, repeat to raise Na about 5 mmol/L
- Correct chronic low Na no faster than 8–10 mmol/L in 24 h to avoid osmotic demyelination

EXAM TIP The exam tell: SIADH and salt wasting look alike on labs; volume status separates them, and restricting fluid in salt wasting is harmful.

MORE Thyroid physiology, the HPT axis and nonthyroidal illness

Hypothalamic TRH drives pituitary TSH, and TSH drives the thyroid to secrete mostly T4. About 80% of circulating T3, the active hormone, comes from deiodination of T4 in liver, kidney and muscle, while type 3 deiodinase inactivates T4 to reverse T3. Over 99% of both is protein bound; only the free fraction acts. T4 lasts about 7 days and T3 about 1 day, so blocking T4-to-T3 conversion lowers T3 within a day, while TSH, which moves about 100-fold for a 2-fold change in free T4, lags by weeks.

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