



Diagnostic approach and testing for adrenal insufficiency in adults

Who should be tested?

We recommend testing for adrenal insufficiency in patients with the following conditions in their profile or history, or with non-specific symptoms severe enough to interfere with daily function.

Patient profile/history PAI

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Autoimmune disorders.
Genetic diseases, Congenital adrenal hyperplasia, Neonatal and X-linked adrenoleukodystrophy, Familial glucocorticoid deficiency. Infections, Tuberculosis, HIV, Histoplasmosis, Cytomegalovirus, Cryptococcus, and fungal infections.
Adrenal hemorrhage or thrombosis.
Infiltrative disorders, Amyloidosis, Sarcoidosis, Hemochromatosis, and Metastatic disease.
Drugs-etomidate, ketoconazole, fluconazole, metyrapone, suramin, phenytoin, barbiturates, mitotane, and rifampin.

Clinical indications PAI

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Weakness, fatigue, hyperpigmentation, vitiligo, weight loss, nausea, abdominal pain, vomiting, hypotension, amenorrhea, volume depletion, musculoskeletal complaints, salt craving, sleep disturbance, diarrhea, visual disturbance, depression/anxiety.

Patient profile/history SAI/TAI

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Glucocorticoid treatment.
Traumatic Brain Injury, (TBI).
Pituitary irradiation/surgery.
Brain/pituitary tumors.
Pituitary necrosis or bleeding, postpartum pituitary necrosis (Sheehan's syndrome)
Infiltrative disorders of the pituitary or hypothalamus, Sarcoidosis, Amyloidosis, Hemosiderosis, Metastatic cancer, and Lymphoma.
Genetic cause, mutations in the POMC gene, TPIT gene mutations, and Familial cortisol-binding globulin (CBG, transcortin) deficiency.
Isolated ACTH deficiency
Drugs-high dose progestins or chronic administration of opiates.
Correction of hypercortisolism (Cushing's syndrome)
Prader-Willi syndrome.

Clinical indications SAI/TAI

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Weakness, fatigue, pale complexion, weight gain/loss, cold intolerance, nausea/abdominal pain, pain under ribs/mid-back, hypertension/hypotension, amenorrhea/infertility, musculoskeletal complaints, apathy, sleep disturbance, diarrhea/constipation, headaches/visual disturbance, depression/anxiety.

Pre-testing considerations. Page 5

Samples drawn between 8 and 9am.

The following may interfere with accurate test results.

Glucocorticoids or corticosteroids, including topical, inhaled, injected, and oral tablets/capsules.

Birth control or other estrogens, including soybean food products and menopause formulas.

Drugs-etomidate, ketoconazole, fluconazole, metyrapone, suramin, phenytoin, barbiturates, mitotane, and rifampin.

High dose progestins or chronic administration of opiates.

Abnormalities of cortisol-binding globulin (CBG) or albumin, from cirrhosis of nephrotic syndrome, or in patients taking oral estrogens, can lead to incorrect diagnosis.

Initial Tests

Drawn simultaneously

Morning serum cortisol

Pages 6, 7

Drawn between 8 and 9am

Fasting

*To demonstrate inappropriately low cortisol secretion.

Baseline ACTH

Pages 6, 7

*To determine if the cortisol deficiency is dependent on or independent of corticotropin (ACTH) deficiency.

Comprehensive metabolic

panel (CMP)

Pages 6, 7

*To evaluate organ function, electrolytes, hydration, and blood glucose levels.

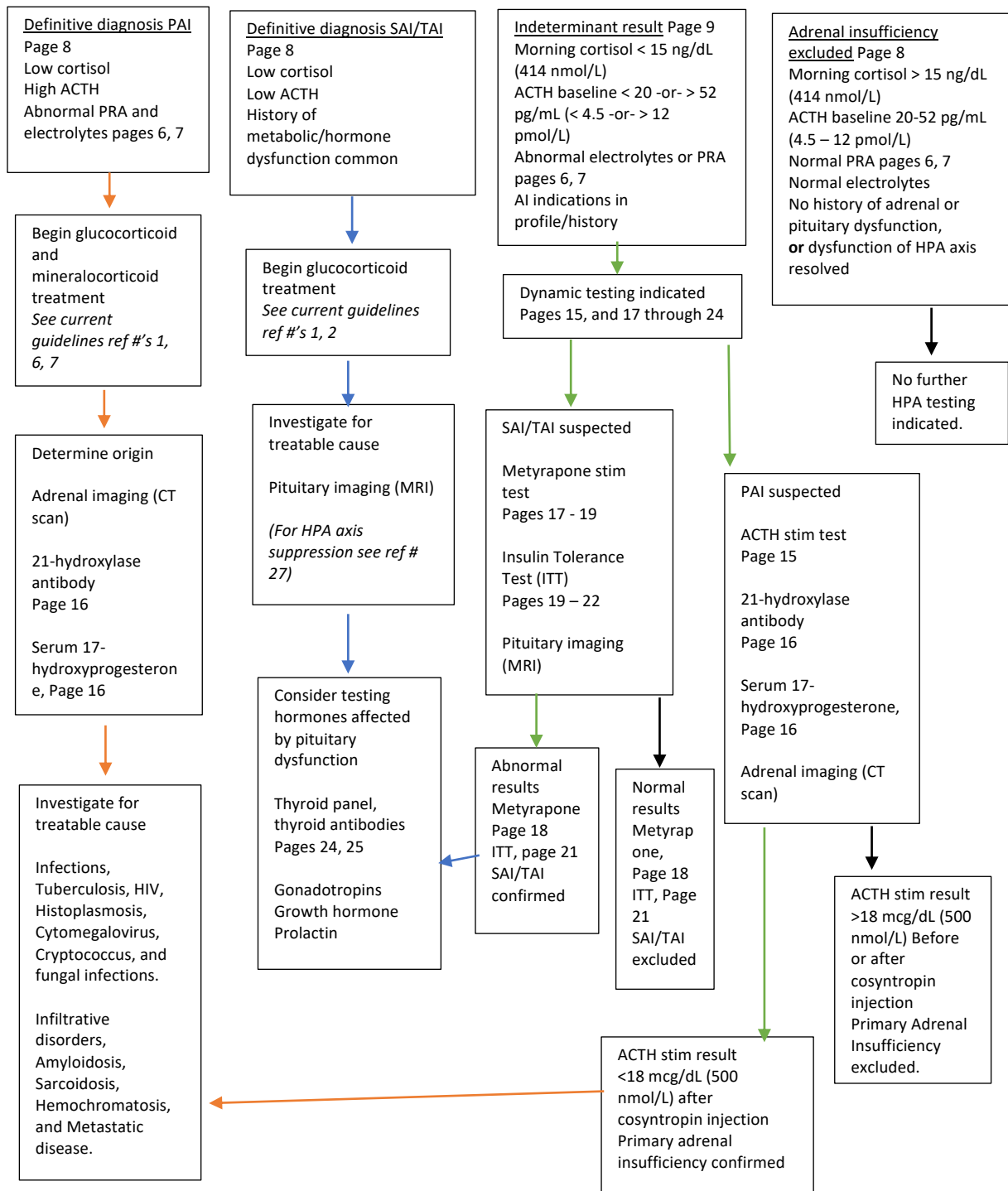
Aldosterone/plasma

renin activity (PRA)

Pages 6, 7

*To evaluate mineralocorticoid secretion.

Interpretation and further testing



Patients diagnosed with AI should be educated about the need for stress and illness dosing, (17) (23) medical alert jewelry, and an emergency intramuscular injection in the case of adrenal crisis. (18) Physicians and patients need to create an adrenal crisis plan in the event the patient needs to go to the emergency room (ER). A brief letter with detailed instructions, signed by the physician, can eliminate confusion in the ER. {Please see emergency information at adrenalinsufficiency.org}