Diagnosing Adrenal Insufficiency
As told by (someone who has never seen) Rocky

1. Types of AI
2. Critically ill inpatients
3. Much less ill outpatients
4. Patients on chronic steroids
5. Causes of AI
6. Highlights
PRIMARY Adrenal Insufficiency

Primary = Prize fighter

GET UP! RELEASE MORE CORTISOL!

I CAN’T! CORTISOL
CENTRAL Adrenal Insufficiency

Central = Coach

OKAY, I’LL CHILL OUT

CORTISOL

JUST RELAX

↓ ↓ ACTH

HYPOTHALAMUS

ANTERIOR PITUITARY
Types of Adrenal Insufficiency

**PRIMARY/Prize Fighter**
Destruction of adrenal glands

- ↑ ACTH
- ↓ CORTISOL
- ↓ Na
- ↑ K

**CENTRAL/Coach**
Loss of adrenal stimulus

- ↓ ACTH
- ↓ CORTISOL
- ↓ Na
- ↔ K
Suspected AI in Critically Ill Inpatients

- Hypotension = Stim test
- Cortisol should be high (>20)
- Check cortisol and ACTH FIRST, then treat immediately
- Hydrocortisone 100mg IV
Suspected AI in Outpatients

- Vague fatigue, nausea, orthostasis, weight loss
- 8am cortisol and ACTH
- If cortisol <15 proceed with STIM TEST
ACTH Stimulation Test

- 250 mcg Cosyntropin IM or IV
HUGE DOSE of synthetic ACTH

SHOW ME WHAT YOU CAN DO!
ACTH Stimulation Test

- Peak cortisol $\geq 18 = $ SUCCESS
- Peak cortisol $< 18 = $ FAILURE
Suspected AI in Patients on Chronic Steroids

- Chronic steroid use causes CENTRAL adrenal insufficiency
- If patient needs to stay on steroids:
  - **Don’t** need to test cortisol/ACTH-safe to assume central AI
  - **Do** need to give stress doses for surgery or acute illness
- If patient no longer requires steroid treatment:
  - **Do** taper steroids slowly to allow adrenals to recover
  - **Do** perform stim test at end of taper if concerned
Sources of Exogenous Steroids

- Ocular
- Oral
- Inhaled
- IV
- Topical
- Intra-articular

History is key
Ask once...
Ask twice...
Check EPIC!

Rule of thumb:
Steroid dose equivalent > Prednisone 5mg daily for >3 weeks raises risk of central AI
Causes of AI

C: congenital (CAH, etc)

H: hypothalamic (tumors, infiltration, radiation, etc)

A: adrenal (Addison’s, infection, hemorrhage, etc)

M: medications (steroids, opiates, megace, etc)

P: pituitary (adenoma, apoplexy, infarct, infiltration, etc)
Highlights

• ACTH and cortisol and stim test before steroids help us understand who is failing:
  • **Prize Fighter/Primary AI:** ↑ACTH ↓Cortisol ↓Na ↑K
  • **Coach/Central AI:** ↓ACTH ↓Cortisol ↔ Na & K
  • Hypotension is a stim test  
    Just check baseline cortisol & ACTH
  • Chronic steroids cause central AI  
    No need to check cortisol & ACTH
  • **C.H.A.M.P.:** underlying causes of AI
Diagnosing Adrenal Insufficiency
Made Ridiculously Simple

We hope this helped you feel like you can KNOCK OUT any diagnosis of adrenal insufficiency!

THANK YOU!