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WVC ANNUAL CONFERENCE
MARCH 2 - 5, 2025 | LAS VEGAS, NV

Addison's disease: Don't make a crisis out of diagnosis and management.

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IDEXX

Financial Disclosure

Patty Lathan

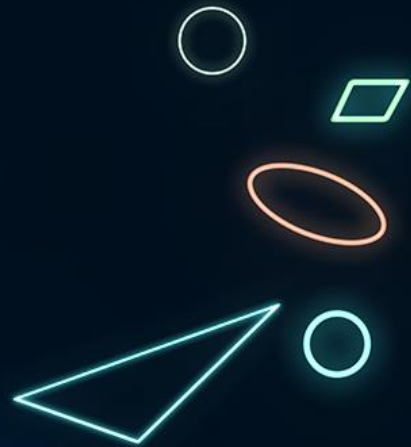
I have financial interest, arrangement or affiliation with:

Idexx, Boehringer Ingelheim, Scout Bio: **Consultant, honoraria**

Merck Animal Health, Dechra Pharmaceuticals: **Honoraria**

Bill Saxon

Full-time IDEXX Employee



Hypoadrenocorticism FAQs



- Do we *have* to do an ACTH stim test to diagnose?
- How long do I have to stop glucocorticoids before ACTH stim test?
- ACTH stim results 'borderline' – now what?
- Is every dog an atypical Addisonian?
- What fluid should I use in an adrenal crisis?
- What dose of DOCP should I use?
- Does an addisonian with normal electrolytes need DOCP?
- Is hypoadrenocorticism a thing in cats?





A disease by another name...



ALIVE: Agreeing Language In Veterinary Endocrinology



Then and now...



Addison's disease

Atypical Addison's disease

Addisonian crisis

Relative adrenal insufficiency

Primary hypoadrenocorticism

Eunatremic, eukalemic hypoadrenocorticism (EEH)

Adrenal crisis

Critical illness-related corticosteroid insufficiency (CIRCI)

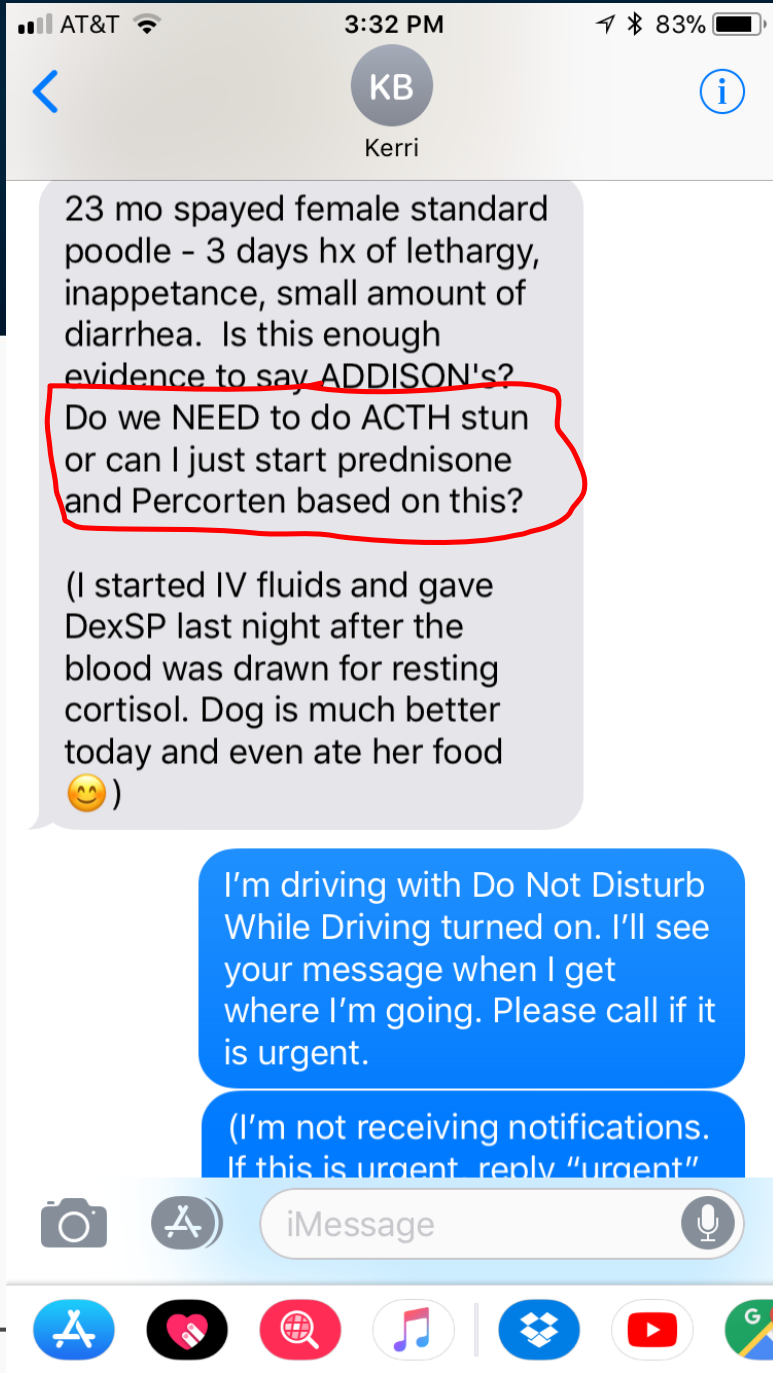


Do we have to do an ACTH stim to diagnose?



YES.





Millie



Baseline cortisol can rule *out* Addison's



Baseline Cortisol

> 2 $\mu\text{g/dL}$ *excludes* hypoadrenocorticism

< 1 $\mu\text{g/dL}$ increases suspicion significantly

< 3 $\mu\text{g/dL}$ not uncommon with GI disease



C. Bovens, K. Tennant, J. Reeve, and K.F. Murphy

-
- Basal Cortisol Values ($\mu\text{g/dl}$)
- Hypoadrenocorticism
- Non-adrenal illness
- 1
- 2

Number of Dogs with Hypoadrenocorticism	Basal Cortisol μg/dL (nmol/L)	Cortisol after ACTH μg/dL (nmol/L)
12	<1 (<28)	<1 (<28)
1	1.33 (37)	1.84 (51)
1	1.80 (50)	1.87 (52)
Reference interval	1.80–9.0 (50–250)	5.40–19.80 (150–550)

- **≤2 μg/dL rules out HOC**
 - 165 NAI dogs were ≤2 ug/dL

- **Baseline ≤ 2 μg/dL**
 - Sensitivity: 100%
 - Specificity: 63.3%
 - **Prevalence 3%**
 - PPV 7.8%
 - **MANY FALSE POSITIVES**
 - **Prevalence 15%**
 - PPV 32%



How long do I have to discontinue glucocorticoids before ACTH stim test?



If you're confused you're not alone...







Interference of GCs with ACTH stimulation test



- **Cross-reactivity with cortisol assay**
 - Prednisone, prednisolone, methylpred, etc.
 - NOT dexamethasone
 - *except at higher doses with in-house IDEXX cortisol assay!
- **Suppression of HPA Axis**



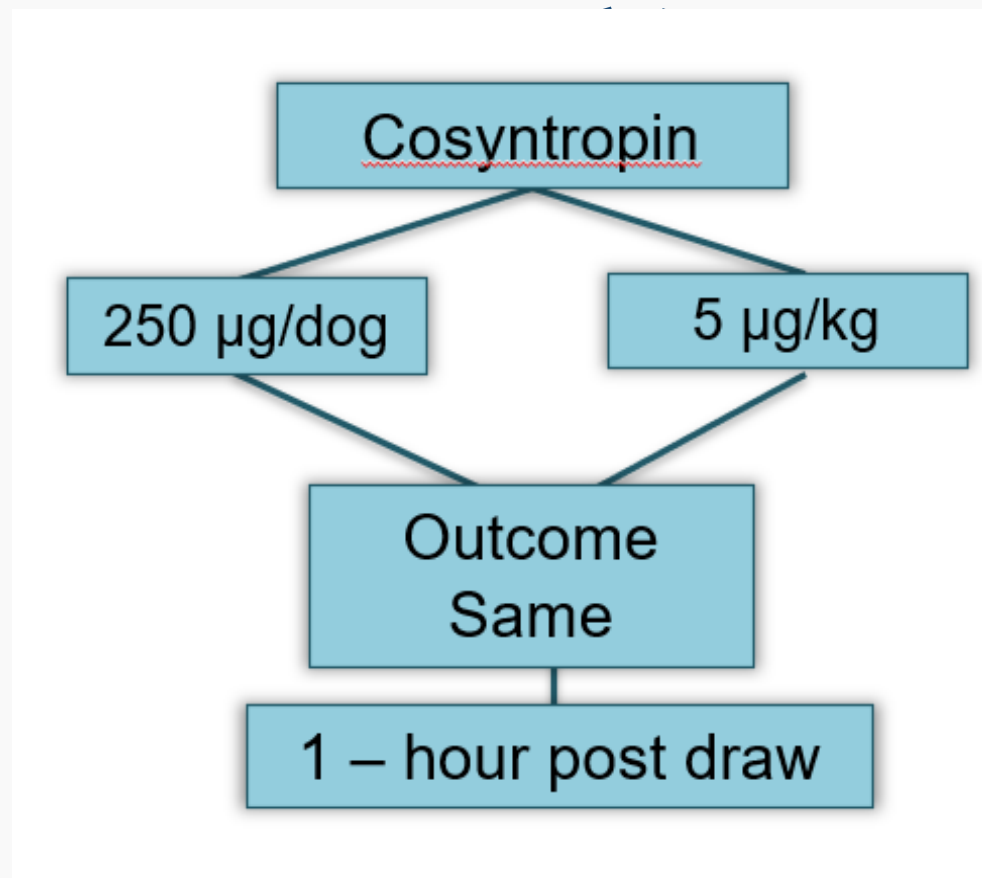
Hypothalamic-pituitary-adrenal axis recovery after intermediate-acting glucocorticoid treatment in client-owned dogs

Francesca Del Baldo¹  | Andrea Corsini²  | Antonio Maria Tardo¹  |
Alessandro Tirolo¹ | Ada Sapignoli¹ | Michele Tumbarello¹ |
Kateryna Vasylyeva¹ | Federico Fracassi¹ 

- Treated with intermediate acting steroids for ≥ 7 days
- ACTH stim, eACTH 2-6d after d/c then q2 weeks until recover (post-stim cortisol >6 ug/dL)
- Median time to recovery: 3 days
 - 11/20 at 2-6 d
 - 6/20 at 2 weeks
 - 2/20 required >8 weeks
 - 1 dog at 4, 10, and 18 weeks!




ACTH stimulation test



STANDARD ARTICLE

Low-dose ACTH stimulation testing in dogs suspected of hypoadrenocorticism

Annabel Botsford^{1,4} | Ellen N. Behrend¹  | Robert J. Kemppainen² | Philippe R. Gaillard³ | Frank Oprandy³ | Hollie P. Lee¹

- 1 µg/kg (µg/kg) cosyntropin, IV
 - NOT FOR CUSHING'S DIAGNOSIS!!!
 - (Can use up to 250 µg/dog)
- Reconstitute with 1 mL sterile saline
 - 250 µg/mL
- To make 10 µg/mL
 - Add 24 mL saline to 1 mL of 250 µg/mL
- 50 µg/mL
 - Add 4 mL saline to 1 mL of 250 µg/mL
- Store at -20° C (-4° F) for up to 6 months



What do I do with borderline stim results?

Post ACTH cortisol 3-5ish...



Call Dr. Lathan



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A retrospective study of dogs with atypical hypoadrenocorticism: a diagnostic cut-off or continuum?

J. A. WAKAYAMA¹, E. FURROW, L. K. MERKEL AND P. J. ARMSTRONG

- 9 dogs with stim results $> 2 \mu\text{g/dL}$ (3.4 – 8.1 $\mu\text{g/dL}$)
 - “Equivocal”
 - Follow-up median 24 months (10-77 months)
 - 2 dogs lost to follow-up
 - 3 dogs were clinically well after d/c’d pred
 - 4 dogs—no improvement with pred
 - **THESE DOGS DIDN’T HAVE ADDISON’S!!!**



Is every dog a possible Atypical Addisonian?






Hmmm...

Aka glucocorticoid deficient hypoadrenocorticism and eunatremic eukalemic hypoadrenocorticism



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Prevalence and characterization of hypoadrenocorticism in dogs with signs of chronic gastrointestinal disease: A multicenter study

Christina Hauck¹  | Silke S. Schmitz²  | Iwan A. Burgener³  | Astrid Wehner¹ |
Reto Neiger⁴ | Barbara Kohn⁵ | Thomas Rieker⁶ | Sven Reese⁷ | Stefan Unterer¹

- Basal cortisol <2 µg/dL
 - 42/151 (28%) total dogs
 - 6/151 (6%) had Addison's
- Less common in another study (next slide)
- UNCOMMON but life changing





STANDARD ARTICLE

Journal of Veterinary Internal Medicine

Open Access



Evaluation of resting cortisol concentration testing in dogs with chronic gastrointestinal signs

Ana Fernandez Gallego  | Adam G. Gow | Alisdair M. Boag 

- Basal cortisol $<2 \mu\text{g/dL}$
 - 79/282 (28%) total dogs
 - 1/282 had final diagnosis of Addison's
- Repeat basal cortisol $>2\mu\text{g/dL}$ in 19/28
- Consider repeat basal cortisol testing prior to ACTH stim?



Suspect eunatremic, eukalemic hypoadrenocorticism when: (30-40%)



- **Gastrointestinal signs**
 - Megaesophagus?
- **Albumin:globulin <1.08**
 - Over 1/3 hyperglobulinemic
 - Hypoalbuminemia more common w EEH
- **Low cholesterol (<133 mg/dL)**
- **Lack of stress leukogram in sick animal**
 - Lymphocyte count >1500-1750cells/ μ L
 - Eosinophil count >500 cells/ μ L
- **Reticulocytosis without anemia**
- **Increasing Ca, decreasing BG, regurgitation...**



**Formerly known as
Atypical Addison's**

What fluid do we use in an adrenal crisis?



Good old LRS.

(or PhyLyte...)



Adrenal crisis: rethinking initial fluid choice



- **LRS advantages**
 - Contains buffer
 - Na^+ concentration lower than 0.9% NaCl
 - Trivial K^+ and Ca^{++} concentration
- **0.9% NaCl concerns**
 - Higher Na^+ concentration may raise serum Na too fast
 - Osmotic demyelination syndrome
 - Acidifying
 - Renal vasoconstriction due to high Cl^- concentration



Emergency treatment



- **IV fluids**
 - 10-15 ml/kg bolus over 15-30 min, reassess, repeat prn
- **IV dexamethasone**
 - 0.1-0.2 mg/kg IV then 0.05 mg/kg q12h for 24-72 h
 - No prednis(ol)one or hydrocortisone until ACTH stim completed
 - No advantage to hydrocortisone CRI v dexamethasone injections
- **Dextrose if hypoglycemic**
 - 1 gm/kg 50% dextrose diluted 1:4 then add 2.5-5.0% to fluids
- **Blood products if severe anemia (GI bleed)**
- **(Don't forget to check for whips!)**



What dose of DOCP do I use?



Half of the traditional dose.



Maintenance treatment



- Prednisone
 - 0.1-0.2 mg/kg/day
 - **OFTEN LOWER**
 - 2-10X dose during stress or illness
- DOCP (deoxycorticosterone pivalate)
 - **1.1 mg/kg SQ/IM q28 days**
 - DOCP has no glucocorticoid activity – never sole treatment
- Monitor
 - Electrolytes at 14 days, then 28 days, eventually q3-6 months
 - CBC, biochemical panel, urinalysis at least yearly once stable
 - Lifelong



Does an Addisonian with normal lytes need DOCP?



Possibly.



Evaluation of Aldosterone Concentrations in Dogs with Hypoadrenocorticism

M.E. Baumstark, N.S. Sieber-Ruckstuhl, C. Müller, M. Wenger, F.S. Boretti, and C.E. Reusch

- 4/70 dogs with HA were “atypical”
 - 3/70: Na⁺ and K⁺ within reference range
 - 1/70: K⁺ decreased
 - ACTH-stimulated aldosterone undetectable in all
 - BUT do they need DOCP???
 - Measure aldosterone? Client/patient specific?
- 1 developed hyperkalemia 6 months later
- (Another study: Approx 10% will develop e-lyte abnormalities and require mineralocorticoid...)



Is hypoadrenocorticism a thing in cats?



Yes but rare, and it's in the news....



STANDARD ARTICLE

 Open Access



Clinical findings, treatment, and outcomes in cats with naturally occurring hypoadrenocorticism: 41 cases

Emma Roberts , Ian K. Ramsey, Ruth Gostelow, Anna Latysheva, Luca Battaglia, Paolo Silvestrini, Ghita Benchekroun, Karen Brenner, Bérénice Conversy, Riccardo Ferriani ... [See all authors](#) 

First published: 11 December 2024 | <https://doi.org/10.1111/jvim.17243>

Hypoadrenocorticism in cats: a 40-year update

Magdalena J Glebocka  and Alisdair Boag 

Journal of Feline Medicine and Surgery
1–7

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STANDARD ARTICLE



Journal of Veterinary Internal Medicine

Open Access



American College of
Veterinary Internal Medicine

Clinical features and long-term management of cats with primary hypoadrenocorticism using desoxycorticosterone pivalate and prednisolone

Nadja S. Sieber-Ruckstuhl¹  | Livia Harburger¹ | Natalie Hofer¹ |
Claudia Kümmerle¹ | Claudia Müller¹ | Barbara Riond² |
Regina Hofmann-Lehmann² | Claudia E. Reusch¹ | Felicitas S. Boretti¹ 

Hypoadrenocorticism cat style...



- Autoimmune, trauma, lymphoma, congenital (2 cats <12 mo)
- Clinical signs and lab findings like dogs (lack of stress leukogram)
- Hypercalcemia in 32% (iCa)
- EEH exists in cats (some zero aldosterone pre-, post stim)
- Low cobalamin, low TLI (EPI) in some
- ACTH stim 5 ug/kg, 125 mcg/cat IV, IM, 30 and 60 min post samples
- Treatment similar to dog but caution re volume overload
- DOCP dose 2.2 mg/kg (higher than dog)



Thank you!



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Thank you!



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Conflict of Interest Disclosure



I have financial interest, arrangement or affiliation with:

Idexx, Boehringer Ingelheim, Scout Bio: Consultant, honoraria

Merck Animal Health, Dechra Pharmaceuticals: Honoraria



Bill Saxon

Conflict of Interest Disclosure:

Full-time IDEXX Employee





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Yes.

Do we *have* to do an ACTH stimulation test to diagnose Addison's?



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glucocorticoids before ACTH stim test?

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Aka glucocorticoid deficient hypoadrenocorticism and eunatremic eukalemic hypoadrenocorticism



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