Dexamethasone Suppression Testing in 2016 | ACVIM Consensus Statement

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In 2012, the American College of Veterinary Internal Medicine (acvim.org) issued a consensus statement addressing the diagnosis of spontaneous canine hyperadrenocorticism (HAC), which provides a thorough review of the diagnostic approach to patients with HAC and addresses many common clinical concerns.

You can access this statement at:
onlinelibrary.wiley.com/doi/10.1111/jvim.12192/epdf

Diagnosis of Hyperadrenocorticism

Low Dose Dexamethasone Suppression Test (LDDS)

The LDDS demonstrates decreased pituitary sensitivity to negative feedback from glucocorticoids.

**Indications.** Most consider LDDS the screening test of choice for HAC unless the patient history suggests iatrogenic HAC, in which case ACTH stimulation is preferred.

**Sensitivity/Specificity.** In veterinary medicine, the reported sensitivity and specificity of the LDDST range from 85 to 100% and from 44 to 73%, respectively.
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Test Results. Blood samples are obtained (1) before, (2) 4 hours after, and (3) 8 hours after dexamethasone administration (0.01 mg/kg IV; the dose is calculated using the parent compound). Diagnosis of HAC is based on lack of suppression of cortisol concentration 8 hours after dexamethasone administration.

Principles Behind Dexamethasone Suppression Testing in Differentiating Pituitary Dependent Hyperadrenocorticism (PDH) from Functional Adrenal Tumors (AT):

Patients with an AT:
A) Dexamethasone at any dose does not suppress cortisol secretion

Dogs with PDH:
A) Dexamethasone does not appropriately suppress ACTH secretion (therefore does not suppress cortisol) when a low dose (0.01 mg/kg) is administered
B) In 75% of dogs with PDH, ACTH and cortisol concentrations decrease when a high dose (0.1 mg/kg) is administered
C) In 25% of dogs with PDH, suppression of ACTH and cortisol does not occur even after administration of higher dosages; in these patients, a large pituitary tumor or tumor developing from the pars intermedia is more likely.

The largest study evaluating both suppression tests—LDDS and HDDS—included dogs with PDH (n = 181) and ATs (n = 35). With LDDS, criteria for identifying dogs with PDH included:

A) 4-hour post LDDS cortisol concentrations below laboratory cutoff or < 50% of basal cortisol concentration.
B) 8-hour post LDDS cortisol concentrations < 50% of the basal cortisol concentration and greater than the laboratory cutoff.

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With HDDS, criteria for cortisol suppression were a 4- and/or 8-hour cortisol concentration below the laboratory cutoff or < 50% of the basal cortisol concentration.

Approximately 75% of dogs with PDH met at least one criterion for suppression on either LDDS or HDDS. Of those with PDH, 88% suppressed with the LDDS and 12% demonstrated suppression with HDDS.

Dexamethasone resistance (i.e., no criteria were met) occurred in all dogs with AT and the remainder (25%) of the dogs with PDH. In another study of 41 dogs with AT, 28 LDDS and 30 HDDS tests were performed, with no suppression seen on any test.

In dogs demonstrating lack of suppression with LDDS, use of endogenous ACTH rather than HDDS is recommended to differentiate PDH from ADH. Since suppression in response to dexamethasone supports a diagnosis of PDH, while a dog with dexamethasone resistance can have either AT or PDH. ■
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References


Dr. Bruyette received his Doctor of Veterinary Medicine degree from the University of Missouri in 1984. He completed an internship at Purdue University and a residency program in internal medicine at the University of California Davis. He was a staff internist at the West Los Angeles Veterinary Medical Group, as well as a member of the Department of Comparative Medicine at Stanford University, an Assistant Professor and Head of Internal Medicine at Kansas State University, and Director of the Analytical Chemistry Laboratory at Kansas State.

In addition to his duties as Medical Director, Dr. Bruyette practices internal medicine and specializes in the hormonal system and its diseases. His interests also include adrenal disease, diabetes and thyroid disorders. Dr. Bruyette joined VCA West Los Angeles Animal Hospital in 1996.