

Interpreting results when creatinine is elevated and IDEXX SDMA* is normal

What is SDMA?

Symmetric dimethylarginine (SDMA) is excreted by the kidneys and is closely correlated to glomerular filtration rate (GFR) in dogs and cats.^{1-3,6} SDMA is a sensitive indicator of kidney function that detects as little as 25% loss of function in both acute and chronic disease, often detecting damage earlier than other parameters.^{1-3,6} Creatinine often does not identify decline in kidney function until almost 75% of kidney function is lost.¹¹ SDMA is often more reliable than creatinine as an indicator of kidney function because it is not influenced by confounding conditions. It is less impacted than creatinine by extrarenal factors, including body condition, advanced age, and disease state.^{4,5,7,8,10} SDMA is also not affected by lean body mass, making it more reliable for assessing kidney function in animals with chronic kidney disease or other conditions that result in weight and muscle loss, such as hyperthyroidism.^{4,5,9,10}

In summary, SDMA is an essential element of the chemistry panel because it is a sensitive, reliable, and early indicator of impairment of GFR and decline in kidney function and can also indicate concurrent diseases that impact kidney function. Because of these features, SDMA often identifies kidney disease that otherwise goes undetected.¹⁻¹⁸

How can creatinine be elevated when SDMA is normal?

This pattern of results (CREA high; SDMA normal) is uncommon and can happen in-clinic, either on the Catalyst One* or Catalyst Dx* chemistry analyzers, or at IDEXX Reference Laboratories. There are several possible causes:

- IDEXX reference intervals describe the results for 95% of healthy animals—it is expected that a small proportion of normal patients will have results slightly above the reference interval.^{10,13}
- Because creatinine results are influenced by a patient's muscle mass, muscular dogs may have results above the reference interval.¹¹
- Recent (within a few hours) ingestion of food containing meat may cause a slight increase in the reported creatinine concentration.^{11,12}
- Both creatinine and SDMA have some biological variability, and there is assay variability as well.¹ When both results are near the upper limit of their respective reference intervals, a specific result may fall within the normal or elevated range due to this expected fluctuation.
- Cats or dogs with stable chronic kidney disease may fluctuate around the upper limit of the reference interval for both SDMA and creatinine. It is suggested that trending both values in most cases will lead to alignment of both biomarkers above the upper limit of the reference interval.
- Significant hemolysis can lower SDMA values for samples run at IDEXX Reference Laboratories.
- SDMA tests run on the Catalyst One or Catalyst Dx analyzers can be artificially lowered if sample was previously frozen.

References

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