

**Renal & Urinary Disorders**

CHRONIC KIDNEY DISEASE (CKD) IN DOGS



Chronic kidney disease affects an estimated 0.5% to 1.5% of dogs. While CKD is usually a disease of older dogs, it can also be inherited, like polycystic kidney disease in Cairn terriers, or result from infections and adverse drug reactions.¹

Once diagnosed with CKD, dogs can be "staged" and treated or monitored according to guidelines developed by the International Renal Interest Society (IRIS). Staging is based initially on repeated values from fasting blood creatinine or symmetric dimethylarginine (SDMA) results in clinically stable patients. However, biomarkers such as fibroblast growth factor 23 (FGF23) and cystatin C (CysC) are also under study to improve early stage diagnosis.²⁻⁴ Earlier diagnosis could lead to earlier intervention.

Although CKD is progressive, nutritional modifications can have a positive impact on the health and lifespan of dogs with this disease. The goals of dietary management are to: maintain adequate nutrition; mitigate clinical consequences of CKD, including signs of uremia; address changes in homeostasis that result from inadequate kidney function; slow disease progression; and improve quality of life.¹

Key Messages

- Serial evaluations of nutritional status and patient-tailored nutritional plans are crucial.⁵
 - Assessing muscle mass is particularly important because creatinine may be misleadingly low in patients with reduced muscle mass.⁶
 - Loss of lean body mass is associated with increased mortality in CKD.⁷⁻⁹
- Ensure adequate calorie intake. If energy needs are not met, then catabolism of body tissues occurs. This can lead to loss of lean body mass and increased risk of morbidity and mortality in dogs with CKD.⁵
 - Make diet changes carefully to reduce the risk of food aversions leading to refusal of specific diets. When diet change is needed, do so slowly and while the dog is feeling well.

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DID YOU KNOW?

The prevalence of CKD in dogs is about half that estimated for cats.¹

Key Messages (continued)

- Therapeutic renal diets favor better clinical outcomes than adult maintenance diets for dogs with CKD.^{8,10,11}
 - Key nutritional modifications in therapeutic diets for dogs with CKD include reduced phosphorus, modified protein, added potassium, omega-3 fatty acids and alkalinizing buffers.
 - Phosphorus regulation is disrupted in CKD and hyperphosphatemia, as well as elevations in parathyroid hormone (PTH) or FGF23, contributes to ongoing damage in the face of existing kidney disease. Manage serum phosphate levels based on the IRIS stage with dietary phosphorus restriction and phosphate binders.¹
 - Dietary protein modifications in canine glomerular disease may reduce intraglomerular pressure, proteinuria and the rate at which uremic toxins are produced.¹² However, most studies do not support a role for protein restriction in progression of CKD.^{13,14}
 - Maintaining adequate potassium is critical to normal renal function, and low potassium can cause or worsen CKD.⁵
 - Omega-3 fatty acids from fish oil are recommended for dogs with CKD.¹⁵
 - CKD is associated with metabolic acidosis, which has multiple adverse effects including alterations in protein metabolism. Renal diets include alkalinizing agents to help address this.

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