

Diagnosing, Staging, and Treating Chronic Kidney Disease in Dogs

Chronic kidney disease (CKD) is diagnosed based on evaluation of all available clinical and diagnostic information in a stable patient. The IRIS Board continues to recommend using creatinine, a widely available and well understood test, to diagnose and stage CKD. Symmetric dimethylarginine (SDMA), a new marker of kidney function, may be a useful adjunct for both diagnosis and staging of CKD.

Clinical presentation

Consider age, sex, breed predispositions, and relevant historical information, including medication history, toxin exposure, and diet.

Can be asymptomatic in early CKD. Signs may include polyuria, polydipsia, weight loss, decreased appetite, lethargy, dehydration, vomiting, and bad breath.

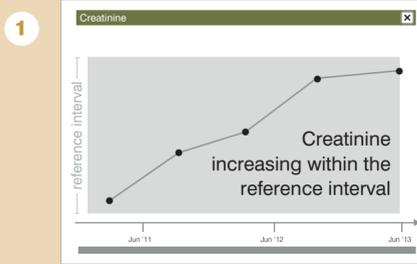
Physical examination findings

Can be normal in early CKD. Findings may include palpable kidney abnormalities, evidence of weight loss, dehydration, pale mucous membranes, uremic ulcers, evidence of hypertension, i.e., retinal hemorrhages/detachment.

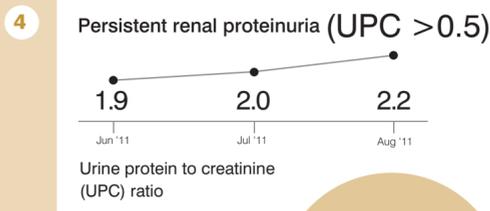
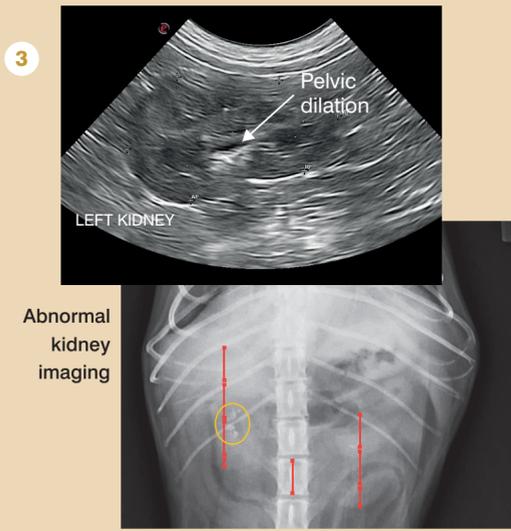
Clinical signs and physical examination findings worsen with increasing severity of kidney disease

Diagnostic findings:

One or more of the following findings

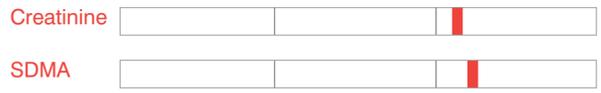


2  **Persistent increased SDMA >14 µg/dL**



Both of the following findings

Increased creatinine and SDMA concentrations



Results of both tests should be interpreted in light of patient's hydration status.

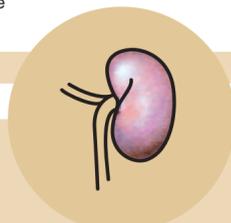
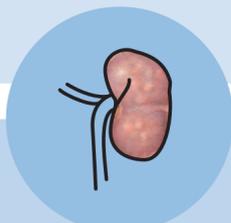
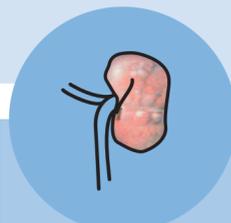
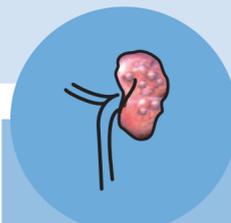
plus

Urine specific gravity <1.030



1.030

1.008

	 Stage 1 No azotemia	 Stage 2 Mild	 Stage 3 Moderate	 Stage 4 Severe
Creatinine in µmol/L <small>Stage based on stable creatinine</small>	< 125	125–180	180–440	> 440
 SDMA in µg/dL <small>Supporting SDMA results</small>	> 14	> 14 ≥ 25	Moderately increased ≥ 45	Markedly increased
UPC ratio <small>Substage based on proteinuria</small>		Nonproteinuric <0.2	Borderline proteinuric 0.2–0.5	Proteinuric >0.5
Systolic blood pressure in mm Hg <small>Substage based on blood pressure</small>		Normotensive <150	Borderline hypertensive 150–159	Hypertensive 160–179 Severely hypertensive ≥180

Treatment recommendations

Consider treatment of later stage. Creatinine may underestimate degree of kidney dysfunction in patients with poor muscle mass.

Investigate for and treat underlying disease

Treat hypertension if systolic blood pressure persistently > 160 or evidence of end-organ damage

Treat persistent proteinuria (UPC >0.5) with kidney therapeutic diet and medication

Keep phosphorus < 1.5 mmol/L
If required, use kidney diet +/- phosphate binder

Use with caution potentially nephrotoxic drugs

Correct prerenal and postrenal abnormalities

Fresh water available at all times

Same as Stage 1

Kidney therapeutic diet
Treat metabolic acidosis
If  SDMA ≥ 25, consider treatment for Stage 3

Same as Stage 2

Keep phosphorus < 1.6 mmol/L
Treat anemia if PCV < 25%
Treat vomiting/appetite/nausea

Consider subcutaneous and/or enteral fluids to maintain hydration
Consider calcitriol therapy

If  SDMA ≥ 45, consider treatment for Stage 4

Same as Stage 3

Keep phosphorus < 1.9 mmol/L
Consider feeding tube for nutritional and hydration support and for ease of medicating

 SDMA=IDEXX SDMA™ Test

See iris-kidney.com for more detailed staging, therapeutic, and management guidelines.