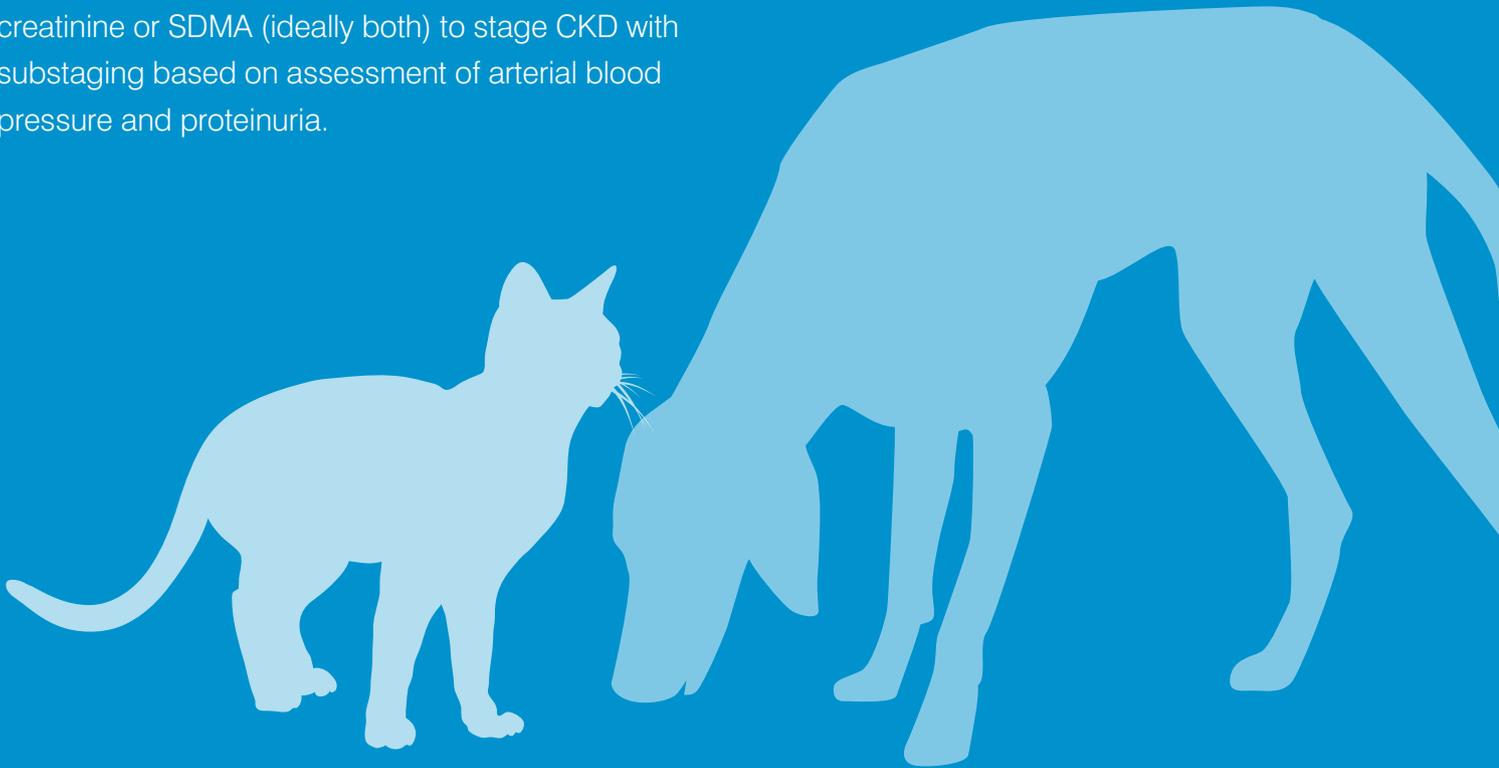


Diagnosing, Staging, and Treating Chronic Kidney Disease in Dogs and Cats

Chronic kidney disease (CKD) is diagnosed based on evaluation of all available clinical and diagnostic information in a stable patient. Following diagnosis of CKD, the IRIS Board recommends using serum creatinine or SDMA (ideally both) to stage CKD with substaging based on assessment of arterial blood pressure and proteinuria.



Step 1: Diagnose CKD

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

Clinical presentation

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

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

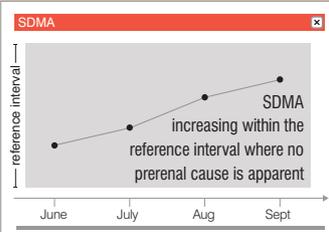
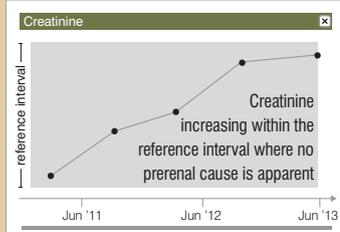
Physical examination findings

Can be normal in early stage 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.

To diagnose Stage 1 and early Stage 2 CKD

One or more of these diagnostic findings:

1



2 Persistent increased SDMA* > 14 µg/dL

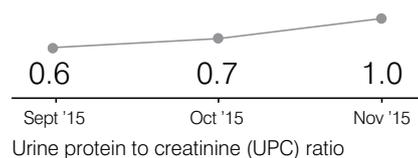
3 Abnormal kidney imaging



4

Persistent renal proteinuria

UPC > 0.5 in dogs; UPC > 0.4 in cats

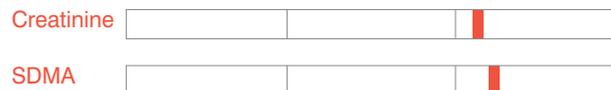


OR

To diagnose more advanced CKD (late Stage 2–4)

Both of these diagnostic findings:

Increased creatinine and SDMA concentrations

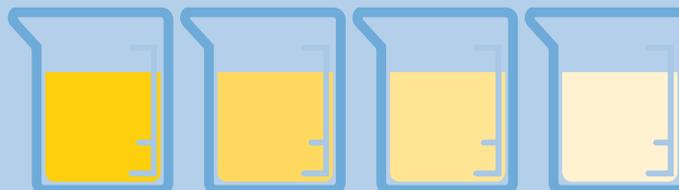


Results of both tests should be interpreted in light of patient's hydration status.

plus

Urine specific gravity < 1.030

Urine specific gravity < 1.035[†]



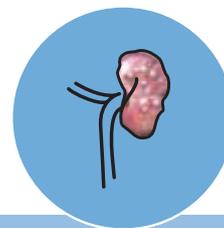
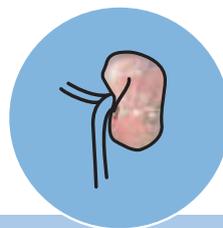
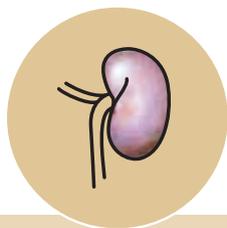
1.030 Canine 1.008

1.035 Feline 1.008

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

[†]Note that some cats can produce hypersthenuric urine in the face of renal azotemia.

Step 2: Stage CKD



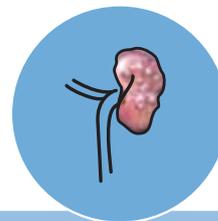
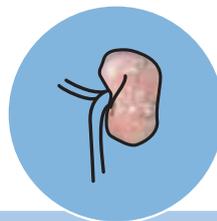
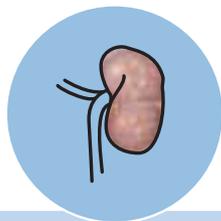
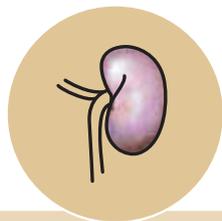
		Stage 1 No azotemia (Normal creatinine)	Stage 2 Mild azotemia (Normal or mildly elevated creatinine)	Stage 3 Moderate azotemia	Stage 4 Severe azotemia
Creatinine in $\mu\text{mol/L}$ Stage based on stable creatinine	Canine	Less than 125 (1.4 mg/dL)	125–250 (1.4–2.8 mg/dL)	251–440 (2.9–5.0 mg/dL)	Greater than 440 (5.0 mg/dL)
	Feline	Less than 140 (1.6 mg/dL)	140–250 (1.6–2.8 mg/dL)	251–440 (2.9–5.0 mg/dL)	Greater than 440 (5.0 mg/dL)
SDMA* in $\mu\text{g/dL}$ Stage based on stable SDMA	Canine	Less than 18	18–35	36–54	Greater than 54
	Feline	Less than 18	18–25	26–38	Greater than 38
UPC ratio Substage based on proteinuria	Canine	Nonproteinuric <0.2 Borderline proteinuric 0.2–0.5 Proteinuric >0.5			
	Feline	Nonproteinuric <0.2 Borderline proteinuric 0.2–0.4 Proteinuric >0.4			
Systolic blood pressure in mm Hg Substage based on blood pressure		Normotensive <140 Prehypertensive 140–159 Hypertensive 160–179 Severely hypertensive \geq 180			

Note: In the case of staging discrepancy between creatinine and SDMA, consider patient muscle mass and retesting both in 2–4 weeks. If values are persistently discordant, consider assigning the patient to the higher stage.

*SDMA = IDEXX SDMA® Test

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

Step 3: Treat CKD



Stage 1

Stage 2

Stage 3

Stage 4

Treatment recommendations

Use nephrotoxic drugs with caution

Correct prerenal and postrenal abnormalities

Fresh water available at all times

Monitor trends in creatinine and SDMA to document stability or progression

Investigate for and treat underlying disease and/or complications

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

Treat persistent proteinuria with renal therapeutic diet and medication (UPC >0.5 in dogs; UPC >0.4 in cats)

Keep phosphorus <4.6 mg/dL (<1.5 mmol/L)

If required, use renal therapeutic diet plus phosphate binder

Same as Stage 1

Renal therapeutic diet

Treat hypokalemia in cats

Same as Stage 2

Keep phosphorus <5.0 mg/dL (<1.6 mmol/L)

Treat metabolic acidosis

Consider treatment of anemia

Treat vomiting, inappetence, and nausea

Increased enteral or subcutaneous fluids may be required to maintain hydration

Consider calcitriol therapy in dogs

Same as Stage 3

Keep phosphorus <6.0 mg/dL (<1.9 mmol/L)

Consider feeding tube for nutritional and hydration support and ease of medicating



International Renal Interest Society

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