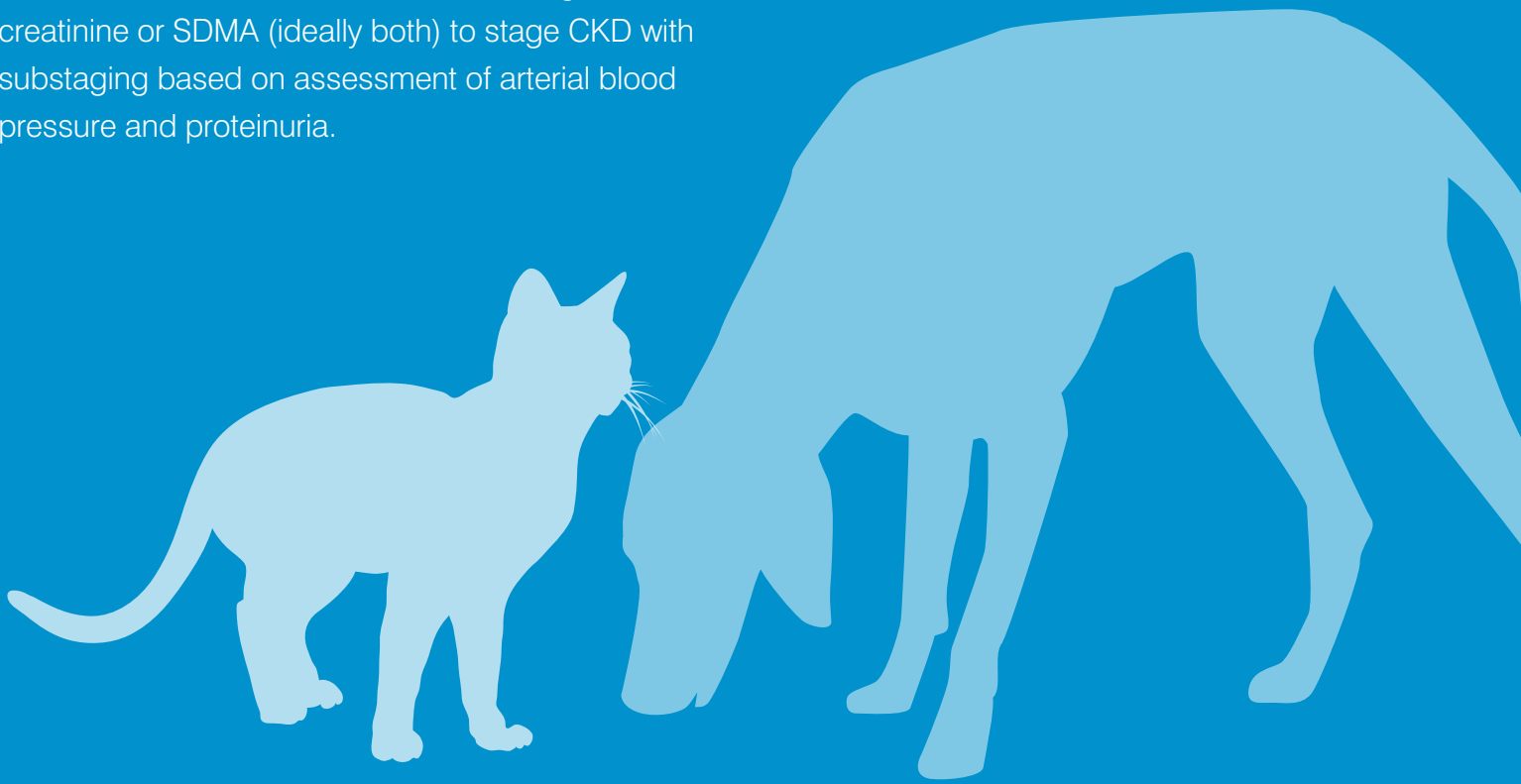
IRIS International Renal Interest Society

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.

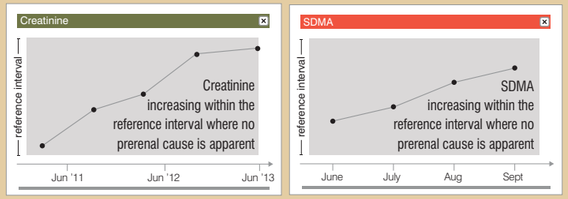
Physical examination findings

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

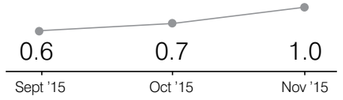


2 **Persistent increased SDMA* >14 µg/dL**

3 **Abnormal kidney imaging**

4 **Persistent renal proteinuria**

UPC >0.5 in dogs; UPC >0.4 in cats



Urine protein to creatinine (UPC) ratio

OR

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

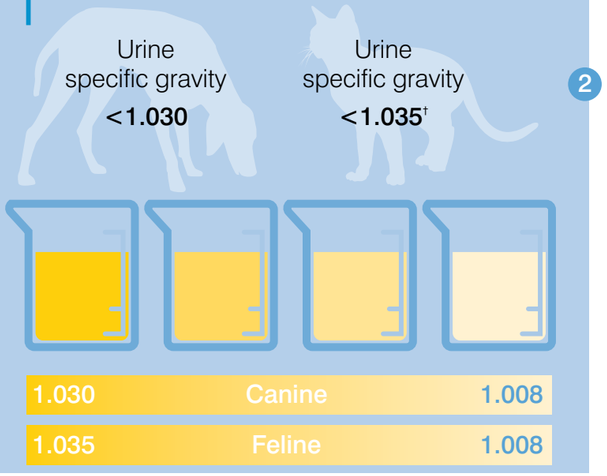
Both of these diagnostic findings:

1 Increased creatinine and SDMA concentrations

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

plus

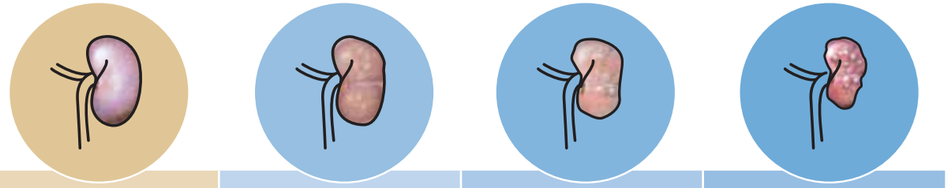
2



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



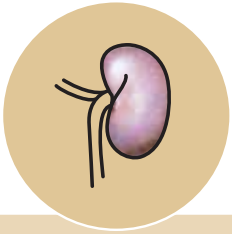
	Stage 1 No azotemia (Normal creatinine)	Stage 2 Mild azotemia (Normal or mildly elevated creatinine)	Stage 3 Moderate azotemia	Stage 4 Severe azotemia
Creatinine in mg/dL Stage based on stable creatinine — Canine	Less than 1.4 (125 µmol/L)	1.4–2.8 (125–250 µmol/L)	2.9–5.0 (251–440 µmol/L)	Greater than 5.0 (440 µmol/L)
Stage based on stable creatinine — Feline	Less than 1.6 (140 µmol/L)	1.6–2.8 (140–250 µmol/L)	2.9–5.0 (251–440 µmol/L)	Greater than 5.0 (440 µmol/L)
SDMA* in µg/dL Stage based on stable SDMA — Canine	Less than 18	18–35	36–54	Greater than 54
Stage based on stable SDMA — 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**	
Substage based on proteinuria — 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 **≥180**

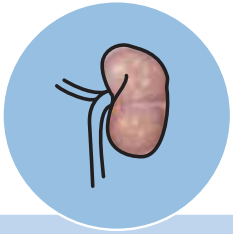
Note: In the case of staging discrepancy between creatinine and SDMA, consider patient muscle mass and retesting both in 2–4 weeks. If values are persistently discordant, consider assigning the patient to the higher stage.

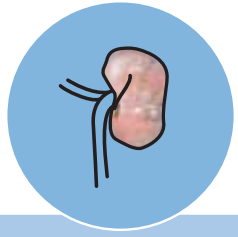
*SDMA = IDEXX SDMA® Test

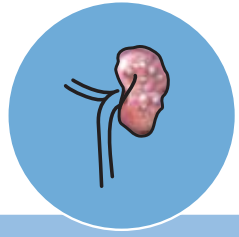
See www.iris-kidney.com for more detailed staging, therapeutic, and management guidelines.

Step 3: Treat CKD









Treatment recommendations	Stage 1	Stage 2	Stage 3	Stage 4
	Use nephrotoxic drugs with caution	Same as Stage 1	Same as Stage 2	Same as Stage 3
	Correct prerenal and postrenal abnormalities	Renal therapeutic diet	Keep phosphorus <5.0 mg/dL (<1.6 mmol/L)	Keep phosphorus <6.0 mg/dL (<1.9 mmol/L)
	Fresh water available at all times	Treat hypokalemia in cats	Treat metabolic acidosis	Consider feeding tube for nutritional and hydration support and ease of medicating
	Monitor trends in creatinine and SDMA to document stability or progression	**Treat inappetence and nausea if present**	Consider treatment of anemia	
	Investigate for and treat underlying disease and/or complications		Treat vomiting, inappetence, and nausea	
	Treat hypertension if systolic blood pressure persistently >160 or evidence of end-organ damage		Increased enteral or subcutaneous fluids may be required to maintain hydration	
	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			

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