

Tear 'N Share



Diagnosis and Staging of Cats with Chronic Kidney Disease

By Stacie Summers, DVM, PhD, DACVIM

More information on diagnosis and staging of CKD in cats, with a focus on early-stage disease, is provided in the RACE Feature on page 33 of the Fall 2023 Issue of *The Feline Practitioner*.

Diagnosis of CKD

Non-azotemic CKD (Stage 1 and early-Stage 2, see below) are diagnosed after documentation of one or more of the following diagnostic findings:

- Renal imaging showing abnormalities consistent with chronic degenerative disease;
- Creatinine and SDMA increasing within or above the reference interval over time, and with no apparent cause for pre- or post-renal azotemia;
- Persistent elevation in urine protein-to-creatinine (UPC) ratio (>0.4), with exclusion of pre- and post-renal proteinuria;
- Finding of dilute urine (urine specific gravity [USG] <1.035) on repeat sampling without other identifying cause, after exclusion of nonrenal causes.

Cats that go on to be staged as late Stage 2, Stage 3, or Stage 4 CKD are diagnosed after documentation of persistent and stable azotemia (elevated creatinine, symmetric dimethylarginine [SDMA], or both) and inappropriately concentrated urine (USG <1.035).

Staging of CKD

Staging of CKD occurs *after* diagnosis in a stable cat using a fasted blood creatinine or SDMA concentration assessed on at least two occasions.

	Stage 1 <i>No azotemia</i>	Stage 2 <i>No azotemia to mildly elevated renal values</i>	Stage 3 <i>Moderate azotemia</i>	Stage 4 <i>Severe azotemia</i>
Creatinine	<1.6 mg/dl (<140 μmol/l)	1.6–2.8 mg/dl (140–250 μmol/l)	2.9–5.0 mg/dl (251–440 μmol/l)	>5.0 mg/dl (>440 μmol/l)
SDMA	<18 ug/dl	18–25 ug/dl	26–38 ug/dl	>38 ug/dl

Substaging

Substaging of CKD is based on an average systolic blood pressure measurement and UPC ratio, and is independent of the stage. Substaging in a stable cat should ideally be based on at least two urine samples and two separate sets of six blood pressure readings collected over a period of at least 2 weeks. If proteinuria is documented, exclusion of pre- and post-renal causes provides supportive evidence that proteinuria is renal in origin.

Substage	UPC Ratio
Nonproteinuric	<0.2
Borderline proteinuric	0.2–0.4
Proteinuric	>0.4

Substage	Systolic Blood Pressure
Normotensive	<140 mmHg
Prehypertensive	140–159 mmHg
Hypertensive	160–179 mmHg
Severely hypertensive	≥180 mmHg





Tear 'N Share

Diagnosis and Staging of Cats with Chronic Kidney Disease



Phosphorus Management in Cats with CKD

Cats with CKD can benefit from monitoring of a fasted blood phosphorus concentration and maintaining the concentration within the target range recommended by the International Renal Interest Society (IRIS).

Measurement of fibroblast growth factor 23 (FGF23) when the fasted blood phosphorus concentration of cats with CKD is within the IRIS target range can be beneficial to decide whether dietary phosphorus restriction is needed.

Stage	IRIS Target Range for Phosphorus	
	mg/dl	mmol/l
Stage 1	2.7–4.5	0.9–1.4
Stage 2	2.7–4.5	0.9–1.4
Stage 3	2.7–5.0	0.9–1.6
Stage 4	2.7–6.0	0.9–1.9

Helpful Resources

For Veterinary Professionals

- AAFP Hypertension Educational Toolkit
catvets.com/hypertension

For Caregivers

- AAFP's Cat Friendly Homes Website
catfriendly.com/hypertension

Total Phosphorus within Target Range for Stage of Disease

