



Comprehensive Management of Feline CKD

Creating Collaborative Care Through Nutrition Conversations

A PANEL DISCUSSION

Chronic kidney disease (CKD) can occur in cats at any life stage. However, its prevalence increases with age. While a cure for CKD still has not been found, evidence-based management has been shown to significantly extend and improve the quality of life for affected cats.

In the following discussion¹ moderated by feline internal medicine specialist Dr. Andy Sparkes, internal medicine specialist Dr. Jessica Quimby and Board Certified Veterinary Nutritionist[®] Dr. Lindsey Bullen review diagnostic criteria, the importance of staging CKD, nutritional intervention, and how to communicate and work with pet owners to improve their adherence to the veterinary healthcare practitioner's diagnostic and nutritional recommendations.

DEFINING AND DETECTING FELINE CHRONIC KIDNEY DISEASE



Andrew Sparkes, BVetMed, PhD,
Dipl. ECVIM, MANZCVS, MRCVS
(Chair/Moderator)

Dr. Andy Sparkes: How do you define chronic kidney disease in cats?

Dr. Jessica Quimby: CKD is abnormal kidney structure or function, or both, that has lasted for at least 3 months. To diagnose, we primarily look for persistent elevations in serum creatinine and inappropriate decreases in urine specific gravity (USG) (< 1.035) over time. As cats age, the first indicator of CKD we may see is a decrease in USG. We may also see abnormalities in symmetric dimethylarginine (SDMA).

Dr. Sparkes: Are you concerned about serum creatinine and SDMA values at the upper end of their reference ranges? How do you approach marginally elevated serum creatinine and/or SDMA, which we come across often in clinical practice? We may detect these on routine pre-anesthetic or senior blood work in a healthy-appearing cat.

Dr. Quimby: To determine whether high normal or marginally elevated values are normal variability or are indeed CKD, we typically repeat blood work and USG for confirmation.

Dr. Lindsey Bullen: For clinicians who see a pet throughout their lifespan, tracking the pet's renal values is warranted. Seeing a trend upwards in renal values and/or a trend downwards in USG, even when values are still within normal range, can help us detect kidney disease early.

Dr. Quimby: I agree. When you are trying to encourage owners to do regular lab work in a cat that appears healthy, it is those trends and baselines that are really helpful. It is common once I do have an overt diagnosis of CKD that we look back at the trends and we see, in fact, it is not a surprise that we are where we are now, in terms of a decreased



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Lindsey Bullen, DVM, DACVIM
(Nutrition)

USG and quite elevated serum creatinine.

Of course, we do not track just renal values and urine concentrating ability. Trends in blood pressure, body weight/condition, and muscle mass are also valuable pieces of information.

Dr. Bullen: These cases illustrate why monitoring trends as well as obtaining a full dietary history² is so important. We also need to remember to ask questions of pet owners as they may not always volunteer relevant information.

Say for example that you have an obese cat that was successfully losing weight on a weight loss diet, but then due to development of (undiagnosed) CKD lost a great deal more weight in a short period of time. The cat presents to you for a routine follow-up on the weight loss, and the pet owner is pleased since the cat has lost weight.



“Trends in blood pressure, body weight/condition, and muscle mass are also valuable pieces of information.”
Jessica Quimby, DVM, PhD,
DACVIM

Without obtaining a dietary history and asking questions about how the weight loss occurred (i.e., has the cat gradually lost weight since the last veterinary visit, or was there gradual loss, then a plateau followed by sudden, more extreme weight loss?), you may not realize that unintentional weight loss has occurred. The consequence of that is the diagnosis of CKD, a contributing comorbidity, may be missed.

You should keep in mind that reference ranges do not always reflect normal (healthy) values. It is important when starting at a new practice or when using a new in-house analyzer to acquaint yourself with the analyzer's reference ranges. Verify that a value that the analyzer considers normal is actually normal.

Also be sure the cat is well hydrated so that you can rule out a prerenal cause of elevated serum creatinine.

Dr. Sparkes: When is imaging indicated?

Dr. Quimby: Imaging is needed to confirm a diagnosis of early CKD when you have a cat with renal values trending upwards but still within normal reference ranges. Finding shrunken kidneys or one large and one small kidney on radiographs or seeing loss of corticomedullary distinction or other abnormal renal architecture on ultrasound confirms a CKD diagnosis.

I strongly recommend imaging for a cat newly diagnosed with CKD or having their first acute-on-chronic episode. Imaging may help determine a cause. Is there stone disease, i.e., nephroliths or ureteroliths ± an obstruction? Is there pyelonephritis? Is there another complicating factor to be concerned about?

Simply taking a radiograph can be very useful in detecting abnormally sized or shaped kidneys or urolithiasis. An ultrasound may detect infarcts, cystic disease, stones, etc.

Especially in younger cats, CKD occurs commonly in association with urolithiasis.

Dr. Sparkes: How do you talk to an owner about the need for further diagnostics? You have a cat with possible kidney disease and then you are recommending radiography, ultrasonography. The owner may question the need for that expense.

Dr. Quimby: I share that this is information that can be powerful from the standpoint of understanding what the disease process might be. And if there is stone disease, that is really important to know. For example, for a cat with a history of stone disease presenting with an acute-on-chronic crisis, my first rule-out is an obstructive ureterolith. Knowing that there is stone disease also affects diet recommendations.

Dr. Bullen: I work in a specialty practice, and we have the same owner concerns as you do in academia. It is important for us to present all the viable options to our pet owners. Knowledge is power, and we can do so much more for these patients if we have more information.

When we know we have a combination of diseases, we can better tailor our nutritional approach.

Feline CKD IRIS Stage	Blood concentrations	
	Creatinine	SDMA
1	< 1.6 mg/dL < 140 µmol/L	< 18 µg/dl
2	1.6–2.8 mg/dL 140–250 µmol/L	18–25 µg/dl
3	2.9–5.0 mg/dL 251–440 µmol/L	26–38 µg/dl
4	> 5.0 mg/dL > 440 µmol/L	> 38 µg/dl

Urine protein-to-creatinine ratio	Proteinuria sub-stage
< 0.2	Non-proteinuric
0.2–0.4	Borderline proteinuric
> 0.4	Proteinuric

Systolic blood pressure (mm Hg)	Blood pressure sub-stage
< 140	Normotensive
140–159	Prehypertensive
160–179	Hypertensive
≥ 180	Severely hypertensive

STAGING CKD

Dr. Sparkes: What is next after making a CKD diagnosis?

Dr. Quimby: We stage the CKD using IRIS (International Renal Interest Society) guidelines.³ Staging occurs when the cat is stable and hydrated and uses creatinine and SDMA values measured at least twice. Again, staging is not done to diagnose CKD but is performed after confirming CKD. Sub-staging is based on the presence or absence of hypertension and proteinuria.

Staging and sub-staging CKD help guide management. A cat with stage 1 CKD would appear healthy but needs additional considerations for anesthesia and medications. We need to be aware that the kidneys might be less able to respond to insult. We want to try to prevent further harm to the kidneys. Staging and sub-staging also give us an idea of prognosis.

NUTRITIONAL INTERVENTION

Dr. Sparkes: What do we do in terms of dietary strategies for a cat with CKD?

Dr. Bullen: It is important to get a full dietary history from the pet owner. That along with the severity of disease and knowledge of any underlying or predisposing factors affects my dietary recommendations.

If I have a cat with early CKD that is currently eating an all life stage diet with higher levels of calcium and phosphorus, the cat may do very well switching to a diet that has less minerals, specifically phosphorus. There are many non-therapeutic diets that can be a reasonable first step. However, if a cat has more severe disease and is already eating a diet containing a more conservative level of phosphorus, I would recommend a therapeutic renal diet.

While avoiding excess, we want a diet with high-quality, highly bioavailable protein to help preserve lean muscle mass.

Whatever diet is chosen, one of the most important points is to reevaluate and reassess the patient. Make sure that the pet owners are in agreement. Whatever therapy, nutritional or medical (or both), monitor whether it is helping and is necessary. Monitor phosphorus levels.

Dr. Sparkes: In addition to monitoring phosphorus, is there anything else that you would use to determine dietary intervention?

Dr. Quimby: In a patient with serum phosphorus within IRIS target ranges, fibroblast growth factor 23 (FGF-23) can help determine whether additional phosphorus restriction is needed. If circulating FGF-23 is low, we do not think additional restriction is necessary. However, if levels are high, that would be a reason to move a patient to a diet with less phosphorus relative to the current diet. IRIS treatment recommendations include guidance on using FGF-23.⁴

Dr. Bullen: There are definitely cases where I am able to tell pet owners that we do not need to make any dietary changes now. However, as a veterinary nutritionist, I like to be proactive in terms of giving them options if the cat progresses a bit and they are not able to follow up with me immediately. I do not overload them with information but provide them with the next step diets that I would potentially consider.

I use FGF-23 all the time because it is a powerful tool. It helps me understand how a cat is handling their current dietary phosphorus and assess whether I need to add additional phosphorus restriction, i.e., feed a more restricted diet and/or use phosphate binders.

MAKING A DIET CHANGE

Dr. Sparkes: We know dietary intervention can make a big difference in helping delay progression of CKD. However, if you have a cat or owner that is reluctant to make a diet change, how do you manage that conversation with the owner and try to make the process easier for both the cat and the owner?

Dr. Bullen: Realizing the cat may not like the first option, I provide the pet owner with several options for a new diet. If we are recommending a cat that has always eaten dry food switch to a wet food, I will discuss with the owner the importance of hydration and how studies have shown that cats ingest more total water daily when fed a wet diet.

A gradual transition to a new diet is key for metabolic and gastrointestinal tolerance. To decrease the cat's stress, the owner should offer the current diet and the new diet in separate bowls. They should gradually increase the amount of new diet while decreasing the amount of the current diet. The change to a new diet should not occur faster than a week to 10 days and may take 4 weeks or longer depending on the cat.

I suggest ways to stimulate appetite when making a transition, e.g., toppers and palatants. These include probiotics, nutritional yeast, baby food, etc.

Working with the pet owner as a true partner, empowering them and educating them on how they can make a difference in their pet's health, can help convince a pet owner to make the necessary diet change.

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Dr. Bullen

Dr. Quimby: We need to remember that appetite dysregulation happens in kidney disease, which makes dietary transitions more challenging. Appetite stimulants can help manage this dysregulation.

I focus on counting calories in CKD patients. Are they eating what we would like, and are they eating enough? Unfortunately, the reality is that some cats have enough appetite dysregulation that they are not going to continue eating the same diet long term. Many healthy cats eat diets in rotation, and we can employ the same strategy in our cats with CKD. We provide the pet owners with appropriate options, and they rotate among them as needed.

I also ensure that I am managing any comorbidities as those may decrease appetite.

“We need to remember that appetite dysregulation happens in kidney disease, which makes dietary transitions more challenging.”

Dr. Quimby

CONSTIPATION AS A COMORBIDITY

Dr. Sparkes: Cats with CKD are at increased risk of having constipation. Why is that?

Dr. Bullen: We know that cats with CKD, especially cats in more advanced stages, are often polyuric and may be losing additional fluid through vomiting and diarrhea. A cat with CKD may have trouble keeping up with fluid losses, which may result in dehydration. In dehydrated cats, acid-base and electrolyte balance are impacted. Hypokalemia may contribute to constipation. A cat, especially an older cat, with CKD may have other comorbidities such as osteoarthritis, which can cause pain and affect a cat's ability to posture to defecate.

Dr. Sparkes: How do we manage constipation in our CKD patients?

Dr. Quimby: There are two categories: the emergency where a cat is obstipated and thus requires acute supportive care. Then there is subclinical constipation where a cat with CKD is defecating less frequently.

As Dr. Bullen just mentioned, the cause of constipation is likely multifactorial. Focusing on the subclinical cases of constipation in cats with CKD, I begin by addressing dehydration. I then look at whether dietary modulation such as fiber additives is also needed. Stool softeners may help. However, adding fiber to the diet or administering stool softeners may be less effective if hydration is not normal.

We also look at contributing factors, e.g., excess body weight, muscle wasting, osteoarthritis, and how we can manage those factors.

Owners can promote water intake at home by:

- Feeding a wet diet or adding water to a dry diet.
- Satisfying their cat's individual preferences as to water source, e.g.,
 - Still, free-falling, or circulating water.
 - Type of container, e.g., ceramic or stainless steel.
 - Room temperature, cool, or cold water.
- Providing water in multiple locations where it is easily accessible.
- Ensuring water is clean and fresh.
- Offering a hydration supplement.
 - Purina researchers found that healthy cats offered a specially formulated, nutrient-enriched, flavored water supplement consumed significantly more total liquid.⁵

Dr. Sparkes: What do you consider the primary take-home message from this discussion for practitioners?

Dr. Bullen: Perform or recommend referral for imaging whenever you can. Imaging can be a great asset to confirm CKD and to look for any contributing factors/comorbidities.

Dr. Quimby: Focus on the concept of the individualized patient. You cannot generalize management, nutritional strategy, etc., for cats with CKD. You need to look at the patient as an individual, be familiar with the variety of nutritional options available to them, and tailor a plan for that specific patient.

CHAIR/MODERATOR

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MANZCVS, MRCVS is an independent consultant. Previously, he served as Veterinary Director of International Cat Care and the International Society of Feline Medicine (ISFM). Dr. Sparkes has published widely and is the founding and current co-editor of the Journal of Feline Medicine and Surgery.

PANELISTS

Lindsey Bullen, DVM, DACVIM (Nutrition) created the Clinical Nutrition Service at the Veterinary Specialty Hospital of the Carolinas and currently works at the Clinical Nutrition Service at Friendship Hospital for Animals in the DC area, which she co-created in 2022. She is particularly interested in clinical nutrition application, specifically critical care, multi-disease state, and assisted feeding.

Jessica Quimby, DVM, PhD, DACVIM is currently Professor and Vice Chair of Research at The Ohio State University College of Veterinary Medicine and serves on the International Renal Interest Society Board. Her research focuses on CKD in cats. Current interests include the study of renal aging, telomere length and cellular senescence, novel treatment strategies, and evidence-based supportive care strategies.

FOOTNOTES

¹ Adapted from the live broadcast of Comprehensive Management of Feline CKD, a Purina Institute Creating Collaborative Care Through Nutrition Conversations webinar, which is available on demand at [Comprehensive Management of Feline CKD \(purinainstitute.com\)](https://www.purinainstitute.com/comprehensive-management-of-feline-ckd).

² See [Diet-history-screening-evaluation.pdf](#) from the Purina Institute.

³ IRIS staging guidelines are available at [IRIS Staging of CKD 2023 v2 \(iris-kidney.com\)](https://www.iris-kidney.com/iris-staging-of-ckd-2023-v2).

⁴ IRIS feline treatment recommendations can be found at [IRIS CAT Treatment Recommendations 2023 v2 \(iris-kidney.com\)](https://www.iris-kidney.com/iris-cat-treatment-recommendations-2023-v2).

⁵ Zanghi, B. M., Gerheart, L., & Gardner, C. L. (2018). Effects of a nutrient-enriched water on water intake and indices of hydration in healthy domestic cats fed a dry kibble diet. *American Journal of Veterinary Research*, 79(7), 733-744. doi: 10.2460/ajvr.79.7.733

Zanghi, B. M., Wils-Plotz, E., DeGeer, S., & Gardner, C. L. (2018). Effects of a nutrient-enriched water with and without poultry flavoring on water intake, urine specific gravity, and urine output in healthy domestic cats fed a dry kibble diet. *American Journal of Veterinary Research*, 79(11), 1150-1159. doi: 10.2460/ajvr.79.11.1150

For more information and a wealth of pet nutrition resources, visit [PurinaInstitute.com](https://www.purinainstitute.com) and sign up for scientific communications. By signing up, you'll receive updates on discoveries in nutritional science, free resources to support you in your nutrition conversations with clients, invitations to events, newsletters, and much more from the Purina Institute. [PurinaInstitute.com/Sign-Up](https://www.purinainstitute.com/sign-up)

