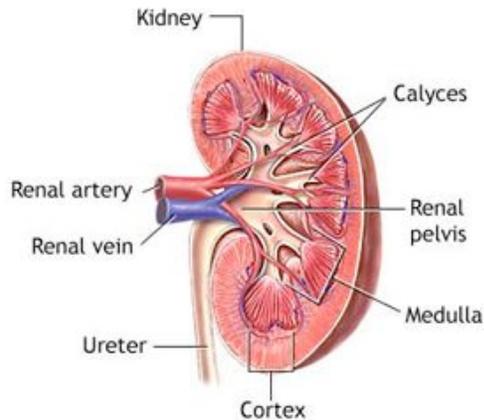


Renal Disease Survey

Bracco Italiano Club of America
Health Committee, November 2012



Kidney disease is currently one of the most pressing health issues for the Bracco Italiano breed, as the etiology is not fully understood and in many cases is fatal. The purpose of this survey is to identify and better understand the kidney issues the breed is faced with, and hopefully improve health testing for breeders and owners to prevent dogs from being affected in the future.

The questions we hope to answer are: What family(s) of renal disease most commonly affect the Bracco? Is there a hereditary link to this disease(s)? If so, is there a health screening available, similarly to OFA and PennHIP for hip dysplasia, to help breeders evaluate their dogs? What are the most common symptoms that owners need to be aware of, and what can be done to catch the disease early when it is still manageable?

I have attached a reference sheet which has definitions, lists normal values, and explains some of the common causes and diagnostic findings in kidney failure.

Please take your time to fill out this survey using your dog's medical records or the help of your veterinarian. Any information would be very much appreciated.

Currently, the Health Committee recommends the following:

-Acquire baseline blood values for your dog, because "normal" will vary in between dogs, and having a baseline will help you recognize changes if they occur. A basic blood chemistry will give you BUN and Creatinine values, which are the most important indicators of kidney function.

-If possible, perform **annual or biennial blood chemistries** to look at BUN and Creatinine, and note any changes.

-Also (in addition to, or in place of blood tests), have **annual or biennial urinalysis tests**. A simple "dipstick" test can tell you if blood or protein is present in the urine, and a specific gravity tells you if the kidneys are concentrating urine appropriately.

-Sometimes, urinalysis will reflect changes in kidney function before changes are seen in blood work.

Owner Information

Name:

State of Residence:

Telephone:

Email:

Dog Information

Registered Name:

Call Name:

Date of Birth:

Date of Death (if applicable):

Dog's Medical History

-Has this dog been diagnosed with kidney disease?

- At what age?

- What were the presenting symptoms?

-Was a suspected cause for the kidney injury given (ie: toxin, severe hypotension, congenital kidney malformation, etc)?

- Had a baseline BUN and Creatinine been established prior to the diagnosis? If so, what were they?

- At presentation, what were the dog's BUN and Creatinine values? If available, what were the Sodium, Potassium, and Phosphorus values?

- What other bloodwork was run, and were there any abnormalities?

- Was a urinalysis performed?

-What was the urine specific gravity?

-Were crystals seen?

-Was the dog proteinuric, hematuric?

-Was a urine Protein:Creatinine ratio attained? If so, what was it?

-Please note any other specific urinalysis findings.

- At the time of diagnosis, what was the dog's urine output?

-Normal

-Polyuric

-Oliguric

-Anuric

- Were fluids administered? How much, and how often? Which fluids were given?

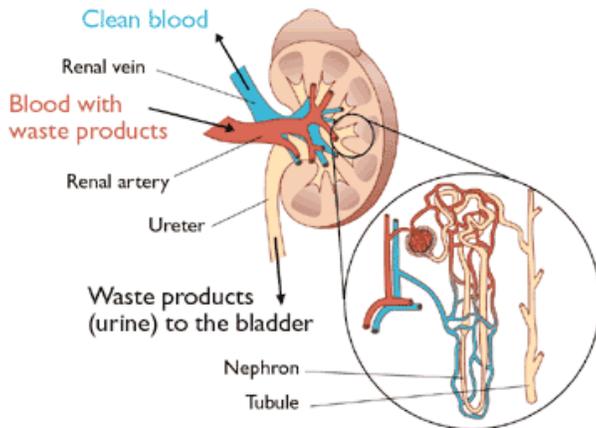
- Did the dog's renal values respond to fluid therapy?
- What were the BUN and Creatinine values after fluid therapy?
- How long did fluid therapy continue?
- Please give information on any other treatments (medications, hemodialysis, etc) that were performed.
- Was an ultrasound of the kidneys performed? If so, please describe the results.
- Was the diagnosis of kidney injury considered acute, chronic, or acute-on-chronic? Was the possibility of congenital kidney disease discussed?
- Does this dog have documented or suspected (by a veterinarian) exposure to any nephrotoxins (ie: antifreeze (ethylene glycol), raisins, etc)?
- Was a Congo Red Stain done to test for Amyloidosis? If so, what were the results.
- If the dog is deceased, please answer the following questions.
 - At what age did the dog pass away, and what was the final cause of death?
 - How long after the initial diagnosis did the dog pass away?
 - Was a necropsy done? If so, what were the results.
- Are any relatives of this dog that are also known to have kidney disease?
- Do you (or would you consider) perform yearly renal function tests?

Glossary and Further Information

Kidney disease can manifest in many different forms. Currently, in the Bracco Italiano breed Amyloidosis and Renal Dysplasia have been recorded, although there have been numerous other deaths attributed to kidney failure without a specific diagnosis. As aforementioned, kidney disease is often fatal, but if detected early enough it can be managed for quite a long time.

The kidney is composed of thousands of nephrons, which are the functional unit of the kidney. Each nephron is capable of producing and concentrating urine on its own. The

How the kidney works



nephron itself is made of a glomerulus, which is a bed of tiny capillaries that work as a filter, and a tubule. When blood enters the kidney, it carries the body's waste products through the glomeruli, which catches the waste products and sends clean blood back into circulation. Those waste products continue through the tubule, where fluid is added - eventually creating urine to be excreted. In many inherited kidney diseases, the glomeruli are affected and the kidney loses its ability to function.

The kidney receives approximately 20% of all the blood flowing through the body, and is a major component in cleansing the blood of toxic

waste products. The kidney also plays a huge role in regulating the balance of fluid, salt, potassium, and acid in the body. The kidney also produces hormones that control the production of red blood cells and blood pressure (thus, in renal disease common symptoms are anemia and high blood pressure). This organ is unique, though, because despite its integral role in so many body functions, kidney tissue does not regenerate once it has been destroyed. With appropriate therapy and management, "injured" kidneys can rebound and adapt, such as after an acute insult. However, in chronic kidney insufficiency, the kidneys adapt to lower function, however eventually too much of the tissue is gone and they go into full-blown kidney failure.

Chronic kidney disease is grouped into three stages, based on the severity of their azotemia. Each stage has different management options, although severe kidney disease results in vomiting, diarrhea, anemia, lethargy, and anorexia. With proper treatment, dogs can survive with as little as 5-8% functional kidney tissue remaining, however in the late stages of kidney failure the symptoms often lead owners to decide to euthanize their dogs.

Acute Kidney Disease: When a sudden, major injury or toxicity damages the kidneys. This can lead to chronic kidney disease.

Anuric: When the kidney stops producing urine completely.

Amyloidosis: The abnormal deposition of the insoluble amyloid protein in various tissues, especially in the kidney. Once a tissue is infiltrated by amyloid, it can no longer function. It's characterized by severe azotemia and loss of protein in the urine. It is an inherited disease in Shar Pei dogs and has been recorded in the Bracco Italiano.

Azotemia: Excess of nitrogen containing compounds in the blood (usually marked by increased BUN and Creatinine values).

Blood Chemistry: A test run by your veterinarian to look at kidney and liver function, as well as electrolyte levels.

BUN: Blood Urea Nitrogen. The urea concentration in the blood, and also an important indicator of renal function.

Chronic Kidney Disease: The progressive and irreversible loss of functional kidney tissue over a long period of time (3+ months). A dog with CKD may not show symptoms for months or years.

Congo Red Stain: A laboratory test used to diagnose Amyloidosis, because the Amyloid protein is stained a light-orange red with Congo Red.

Creatinine: A waste product from muscle metabolism that is excreted by the kidneys into the urine. High creatinine levels reflect poor kidney function.

Glomerulus: An integral part of the kidney. The glomeruli bring in blood (and the waste products it carries) and act like filters. Any disease of the glomeruli interferes with the kidney's basic function, and the body can't get rid of its toxic waste products.

Hematuria: Blood in the urine.

Ischemia (renal): When constriction or obstruction of a blood vessel cuts off proper blood supply to the kidney, and prolonged ischemia can lead to death from kidney failure.

Necropsy: Animal autopsy.

Nephron: The functional unit of the kidney, each nephron can produce and excrete urine on its own. The kidney consists of thousands of nephrons.

Oliguria: Reduced urine output. In a dog that has normal water intake, this is a sign of kidney insufficiency.

Pyelonephritis: Inflammation of the kidney.

Polycystic Kidneys: Having multiple cysts in the kidney, and the most common inherited kidney problem. Most cases do not cause symptoms because there is still enough functioning kidney to avoid renal failure. In some cases, it is diagnosed incidentally, and rarely both kidneys are severely involved and the animal dies at birth or soon afterwards. In some cases, there are signs of progressive renal failure, perhaps not until later in life.

Polydipsia: Excessive water drinking.

Polyuria: Excessive urination.

Proteinuria: Excess of proteins in the urine, and an important indicator of kidney disease. It is symptom in many kidney diseases, including amyloidosis.

Renal Dysplasia: Small, misshapen kidneys at birth. May be caused by an infection of the fetus by a virus, but numerous inherited renal dysplasias occur in dogs. They first show signs of chronic renal insufficiency (polyuria, polydipsia, poor growth, pale mucous membranes, and renal failure) from an early age.

Renal Pelvis: The ureter once it enters the kidney.

Uremia: Another term for azotemia and chronic kidney failure. Characterized by high BUN and Creatinine levels.

Urine Specific Gravity: A measure of the urine concentration. One of the kidney's primary functions is to concentrate urine, so the USG can give you information on how the kidneys are working. USG is very sensitive to your dog's hydration level, so it is often used in conjunction with other tests.

Common Nephrotoxins

- **Aminoglycoside Antibiotics** - This family of antibiotics damages kidney cells if they are allowed to accumulate to high enough concentrations.
- **Ethylene Glycol (antifreeze)** - EG is metabolized by the kidney and liver, producing toxic byproducts that cause acute renal failure within 72 hours of ingestion in dogs.
- **Grapes/raisins** - In some dogs, ingesting grapes or raisins can induce acute renal failure.
- **NSAIDs** - Non-Steroidal Anti-Inflammatory Drugs; disrupt blood flow through the kidney, especially when the dog is dehydrated.
- **Vitamin D3 (Cholecalciferol)** - An ingredient in some rat poisons (and if large amounts of vitamin supplements are ingested), it causes calcification of the kidneys.
- **Xylitol** - A common artificial sweetener in gum, it can cause severe acute renal failure if ingested.

Normal Blood Values in Dogs

Chloride (mEq/L)	99-110
Creatinine (mg/dL)	0.7 - 1.6
Phosphorus (mg/dL)	2.8 - 7.6
Sodium (mEq/L)	137 - 149
Urea Nitrogen (mg/dL)	7-21

Stages of Kidney Disease

Stage	I	II	III	IV
	Non-Azotemic Kidney Disease	Mild Renal Azotemia	Moderate Renal Azotemia	Severe Renal Azotemia
Creatinine (mg/dL)	<1.4	1.4 - 2.0	2.1 - 5.0	>5.0