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Renal Failure (RF) in dogs

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Pro bono animalium hominumque



Conflict of interest

- *Board member of the International Renal Interest Society (IRIS) - Novartis International*
- *Chairman of the Canine Leishmaniasis Working Group - HILL'S*






RF in dogs

- ✓ Examining evidence supporting or refuting a therapeutic approach is whether the evidence is clinically relevant
- ✓ Treatments are indicated when they provide important clinical benefits



RF in dogs

- ✓ It is important to provide evidence that the treatment influences outcomes that are important to pets and their owners
 - ✓ Increased activity or appetite
 - ✓ Decreased vomiting
 - ✓ Decreased incidence of uremic crises
 - ✓ Prolonged good-quality life-span
- 



RF in dogs

- ✓ Recommendation should ideally be based on Randomized Controlled Clinical Trials (RCCT)
- ✓ Many therapies are recommended based on
 - ✓ Clinical experience
 - ✓ Expert opinion
 - ✓ Pathophysiologic rationale
 - ✓ Studies performed in other species
 - ✓ Studies performed in dogs with artificial disease



RF in dogs

- ✓ Assign a score defining the strength and quality of the recommendation
 1. Grade 1 evidence
 2. Grade 2 evidence
 3. Grade 3 evidence
 4. Grade 4 evidence



RF in dogs

- ✓ Grade 1 evidence –at least one properly RCCT
- ✓ Grade 2 evidence – data from studies performed using animal models of the disease





RF in dogs

✓ Grade 3 evidence

1. At least one well-designed clinical trial without randomization
2. Cohort or case-controlled analytic studies
3. Accept laboratory models/simulation target species
4. Dramatic results in uncontrolled experiments



RF in dogs

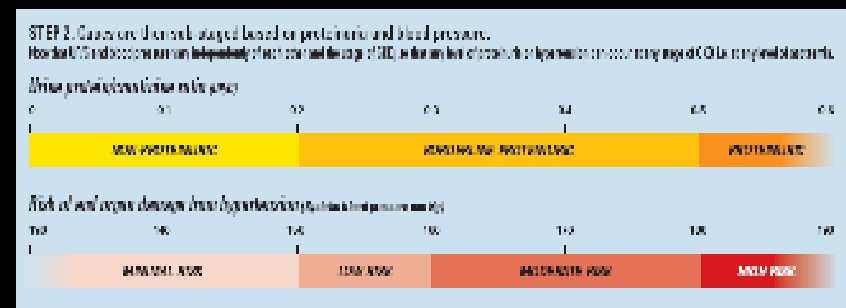
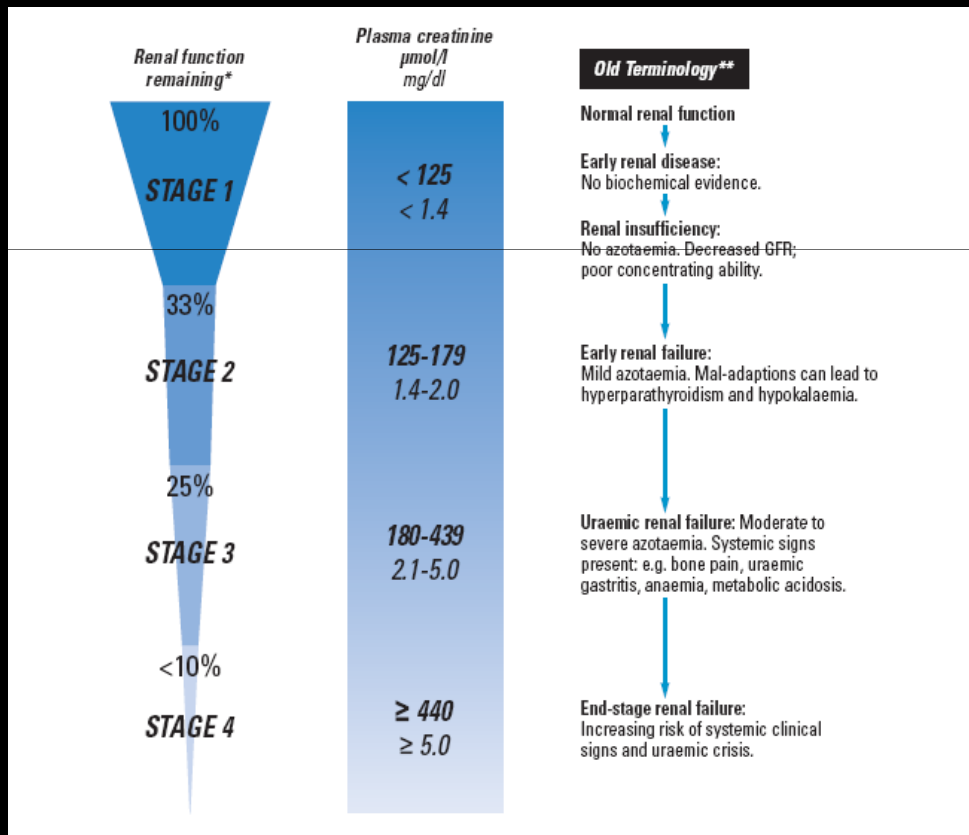
- ✓ Grade 4 evidence
 1. Opinions of respected authorities
 2. Descriptive studies
 3. Studies in other species
 4. Pathophysiological justification
 5. Reports of expert committees

RF in dogs

- ✓ Diet therapy and Phosphorus Restriction
- ✓ Hypertension
- ✓ Proteinuria



IRIS Staging System



There are some patients whom we cannot help,
but there are none that we cannot harm

A.L.Bloomfield

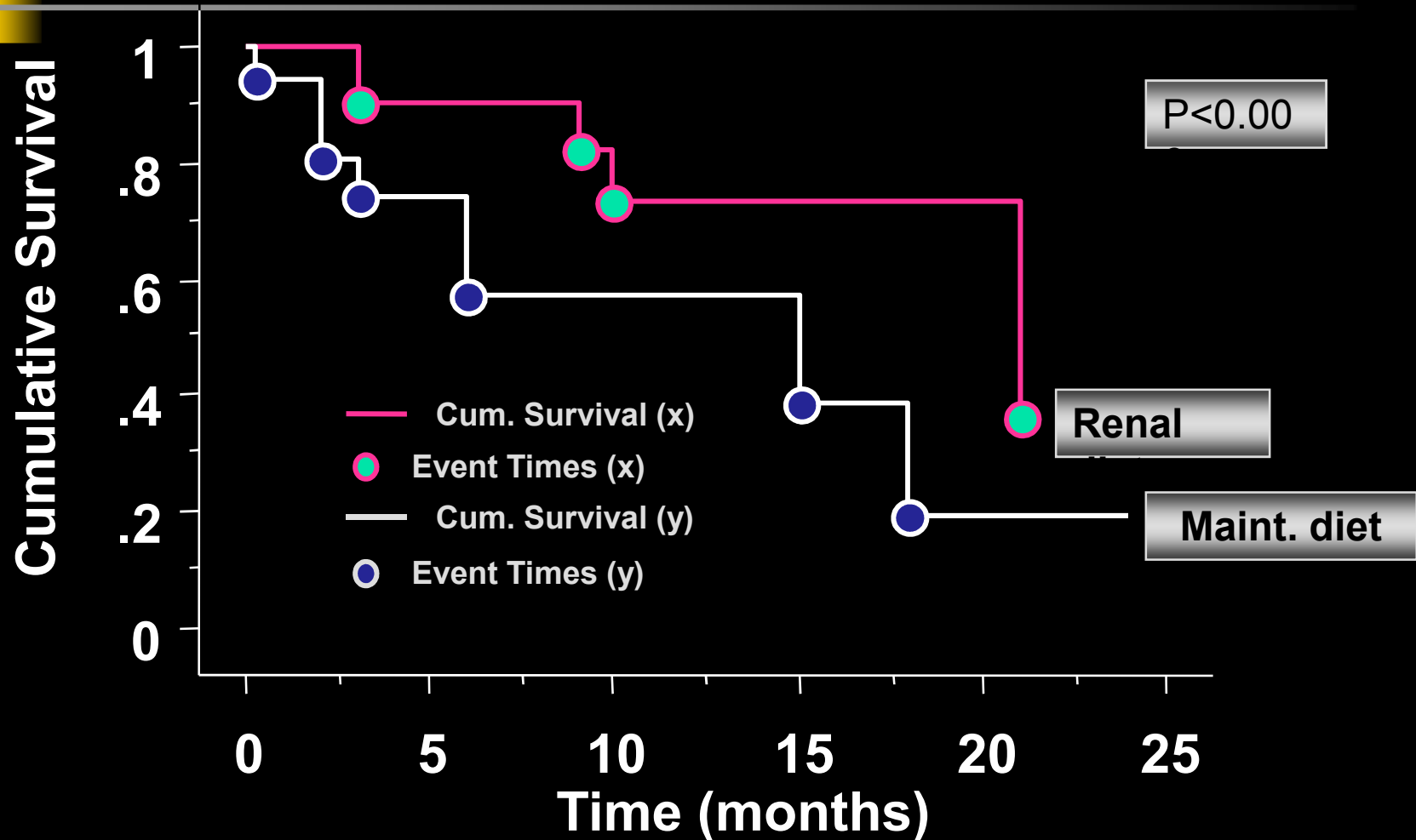


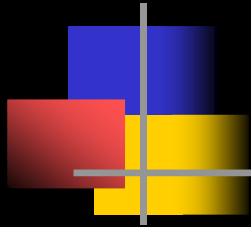


Diet therapy

- ✓ Probably the most common prescribed therapy
- ✓ Renal patients often have selective appetites
- ✓ Clinicians often challenged by decision
 - ❖ Renal diet
 - ❖ Continue current diet with the view that eating is better than reduce food intake

Diet/Renal Mortality





Diet therapy

Jacob F, et al. JAVMA 2002;220:1163-1170

- ✓ Feeding renal diet reduced incidences of uremic crises
- ✓ Feeding renal diet reduced renal related mortality
- ✓ Feeding renal diet induced more slowly decline of renal function compared with maintenance diet

RCCT – Evidence grade: 1



Phosphorus Restriction

Block G, et al. Am J Kidney Disease 1998;31:607-617

- ✓ Phosphate 6.6 to 7.8 mg/dl - 13% higher mortality than patients in reference range
- ✓ Phosphate 7.9 to 16.9 mg/dl - 34% higher mortality than patients in reference range
- ✓ Mild hyperphosphatemia (5.0 to 6.5 mg/dl) NOT associated with an elevated mortality risk

Evidence grade: 2

Circulation. 1996;94:116-118

90th Anniversary of the Development by Nikolai
S. Korotkoff of the Auscultatory Method of
Measuring Blood Pressure

Yury L. Shevchenko, MD; Joshua E. Tsitlik, PhD The Russian
Military Medical Academy (Y.L.S.), Saint Petersburg, Russia,
and Columbia-Presbyterian Medical Center (J.E.T.), New
York, NY.



Nikolai Sergeevich Korotkoff

Every day, all over the world, many thousands of physicians, nurses, and paramedics measure systemic arterial pressure by applying a cuff with an inflatable bladder around the patient's arm and using a stethoscope to listen to the sounds in the brachial artery. Many care providers know that they are listening to "Korotkoff sounds," but very few know that the method was introduced 90 years ago by a Russian doctor and scientist, Nikolai Sergeevich Korotkoff.



Hypertension

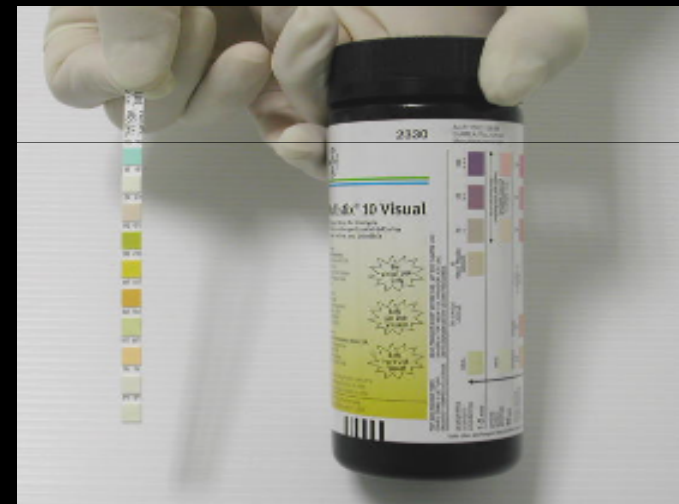
Jacob F, e al. JAVMA 2003;222:322-329

- ✓ Risk factor for shortened survival times in dogs with kidney disease
- ✓ Complications
 - ✓ Retinopathy with retinal detachment, hemorrhage, blindness
 - ✓ CNS disorders
 - ✓ Cardiac

Largely extrapolated from Human Medicine

Evidence grade: 4

Proteinuria





Proteinuria

Grauer G, et al. JVIM 2000;14:526-533

- ✓ Treat with Enalapril nonazotemic dogs with UPC ≥ 3
reduce proteinuria

RCCT – Evidence grade: 1

Brown SA, et al. AJVR 2003; 64:321-327

- ✓ Treat with Enalapril azotemic dogs with UPC ≥ 0.5
may have been of benefits in slowing progression CKD

Remnant Kidney – Evidence grade: 3

Proteinuria

ACVIM Consensus Statement

J Vet Intern Med 2005;19:1870-1887

Consensus Statements of the American College of Veterinary Internal Medicine (ACVIM) provide veterinarians with guidelines regarding the pathophysiology, diagnosis, or treatment of animal diseases. The foundation of the Consensus Statement is evidence-based medicine, but if such evidence is conflicting or lacking, the panel provides interpretive recommendations based on their collective expertise. The Consensus Statement is intended to be a guide for practitioners, but it is not a statement of standard of care or a substitute for clinical judgement. Topics of statements and panel members to draft the statements are selected by the Board of Regents with input from the general membership. A draft is prepared and input from Diplomates is solicited at the Forum and via the ACVIM Web site and incorporated in a final version. This Consensus Statement was approved by the Board of Regents of the ACVIM before publication.

Assessment and Management of Proteinuria in Dogs and Cats: 2004 ACVIM Forum Consensus Statement (Small Animal)

George E. Lees, Scott A. Brown, Jonathan Elliott, Gregory F. Grauer, and Shelly L. Naden

Emerging data indicate that more attention should be given to the detection, evaluation, monitoring, and treatment of dogs and cats with proteinuria. The purposes of this consensus statement are to describe an appropriate approach for accomplishing these tasks and to provide specific recommendations for assessing and managing dogs and cats with proteinuria based on data that are currently available. Because proteinuria and albuminuria have numerous possible causes, they must be assessed appropriately to determine their implications for the patient. This assessment involves identification of the origin of the proteinuria as well as determination of its persistence and magnitude. Because persistent renal proteinuria usually indicates presence of chronic kidney disease, which sometimes is a progressive disorder, it is often identified, diagnosed, and treated in the human medical risk for chronic kidney disease. Thus, urine testing that will detect proteinuria should be a component of the clinical evaluation of dogs and cats under all circumstances that permit their veterinarians to also perform comprehensive hematologic and serum biochemical evaluations. At a minimum, this testing should consist of a complete analysis that includes a statistically accurate semiquantitative test for protein, and positive reactions should be properly followed with further testing. The appropriate response to persistent renal proteinuria depends on the magnitude of proteinuria and the status of the patient. The recommended response generally involves continued monitoring, further investigation, and therapeutic intervention, which should be implemented as an evolving series of iterative, stepwise responses.

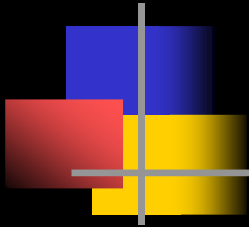
Key words: Albuminuria; Canine; Chronic kidney disease; Feline





Proteinuria

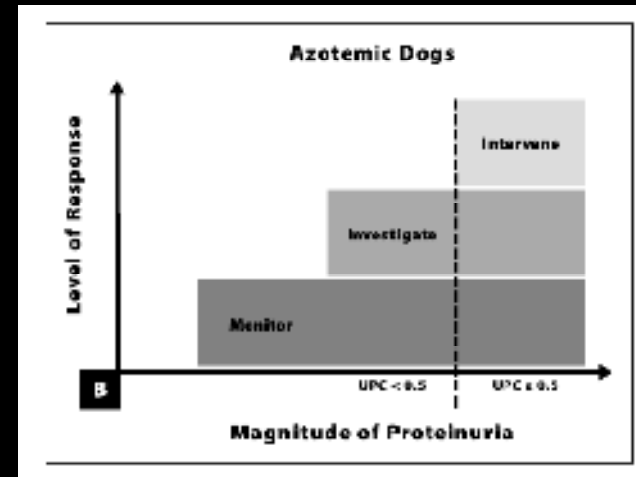
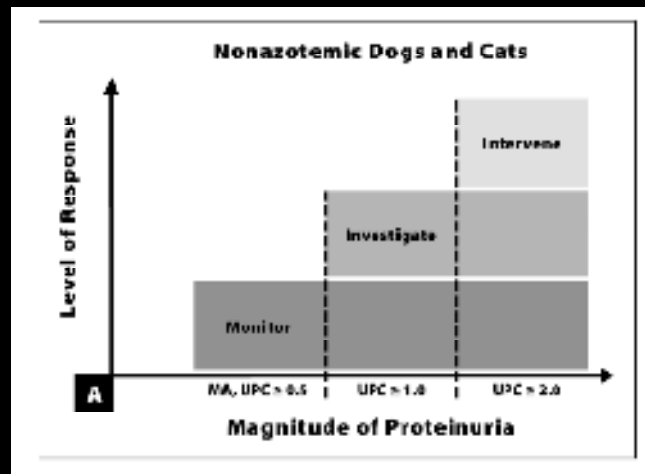
oprotective interventions. The value of proteinuria as a marker of clinically important events in the kidney arises because it can occur and subsequently vary in magnitude because of altered vascular permeability of glomerular capillary walls (possibly marking the presence of immune complexes, vascular inflammation, or intraglomerular hypertension) or impaired tubular handling of filtered proteins (possibly marking the presence of tubulointerstitial dysfunction) or both. For these reasons, we have a strong consensus that veterinarians should give more attention to the detection, evaluation, monitoring, and treatment of dogs and cats with proteinuria.



Proteinuria

ACVIM Consensus Statement.

Lees GE, et al. *JVIM* 2005;19:377-385



Evidence grade: 4



RF in dogs

- ✓ Diet therapy – EG: 1
- ✓ Phosphorus Restriction – EG: 2
- ✓ Hypertension – EG: 4
- ✓ Prot/ACE – Reduce proteinuria EG: 1 and 4
- ✓ RF/ACE - Slowing progression EG: 3

In medicina piu cresce il dogmatismo
piu aumenta l'ignoranza

