

The Indicators of Early Kidney Disease in Dogs and Cats



Health
Educational
Propaganda

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**AmiShield**
Veterinary Chemistry Analyzer

Kidney disease is one of the common diseases in dogs and cats. Its prevalence and mortality rate are very high. There is a high chance that after being diagnosed with kidney disease, one must monitor their diet and take medications for life. Therefore, it is important for dogs and cats to get early health check-up in order to prevent kidney disease.



Proteinuria is one of the most significant symptoms in dogs and cats with kidney disease. With the severity of kidney disease, the protein concentration in the urine will also increase; therefore, urine protein test strips are generally chosen as an early test in veterinary clinics.

Another tool for screening for kidney disease is the detection of microalbumin in urine. However, compared with the quantitative method, the sensitivity and specificity of urine protein test strips in both dogs and cats are around 50%, which may cause misjudgment of test results. Therefore, urine protein test strips are not suitable for screening early kidney disease; generally speaking, when the urine protein test paper shows a positive reaction, the concentration of microalbumin in the urine has exceeded 50 mg/dL. At this time, the kidney disease has developed into an irreversible disease and must be treated for life.



Cystocentesis

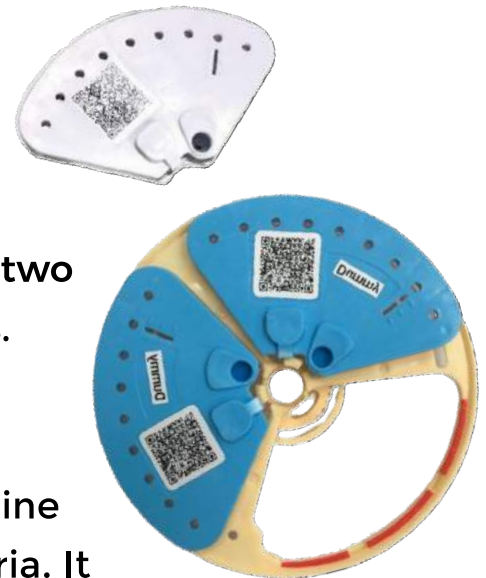
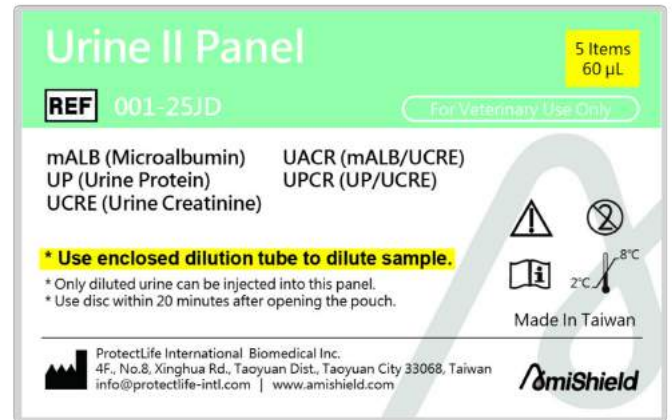


Urine Protein Test Strips

※It is suggested collecting the urine directly, such as cystocentesis, catheterized, natural voiding (free catch), etc.

The URINE II Panel uses a chemical and immunoassay method to quantify micro-albumin (mALB), urine protein (UP) concentrations in urine and has a sensitivity and specificity of more than 90%. In addition, in order to eliminate the error in estimating mALB caused by urine volume, this panel is added to detect creatinine in urine (UCRE). The divided UACR (mALB/UCRE) and UPCR (UP/UCRE) are very suitable for screening early kidney disease and has now become a gold standard in the human medical community.

Ideally staging of CKD should be done based on at least two urine samples collected over a period of at least 2 weeks. Dog and cat patients that are persistently borderline proteinuria should be re-tested within 2 months and re-classified appropriately. The non-proteinuria and borderline proteinuria range may be categorized as microalbuminuria. It is important to monitor microalbumin levels in urine to check renal health persistently.








When to use

1. Screen for early kidney disease in dogs and cats.
2. Recommended health check-up items for elderly dogs and cats (even if blood biochemistry and urine routine test strips are normal).
3. Diabetes/kidney disease tracking project.
4. Renal function screening before anesthesia.



Kidney disease grade

Stage of Renal Failure				
	No azotemia (Normal creatinine)	Mild azotemia (Normal or mildly elevated creatinine)	Moderate azotemia	Severe azotemia
				
Residual Renal Function	100 - 33%	33 - 25%	25 - 10%	< 10%
Blood Creatinine (mg/dL)	(Dog) < 1.4 (Cat) < 1.6	(Dog) 1.4 - 2.8 (Cat) 1.6 - 2.8	2.9 - 5.0	> 5.0
UPCR	(Dog) Non-proteinuria <0.2 Borderline proteinuria 0.2 - 0.5 Proteinuria >0.5 (Cat) Non-proteinuria <0.2 Borderline proteinuria 0.2 - 0.4 Proteinuria >0.4			
Systolic blood pressure (mmHg)	Normotensive <140 Hypertensive 160-179		Prehypertensive 140-159 Severely hypertensive >=180	

Reference range

Parameter	Dog / Cat	Unit
mALB	< 2.5	mg/dL
UP	< 20	mg/dL
UCRE	4.0 - 400.0	mg/dL
UACR (mALB / UCRE)	< 30.0	mg/g
UPCR (UP / UCRE)	< 0.2	-

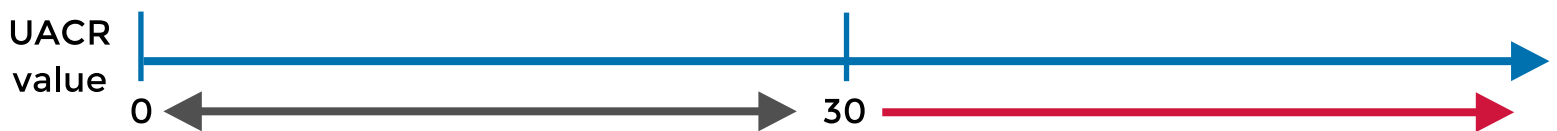


Effects of blood pressure

The systolic blood pressure level is correlated to the risk of organ damage or complications. In the absence of evidence of existing organ damage, persistently monitoring blood pressure is important for renal health checks.

For most dogs and all cats, the IRIS blood pressure substages are as follows:

Systolic Blood Pressure (mmHg)	Blood Pressure Substage	Risk of Future Target Organ Damage
< 140	Normotensive	Minimal
140 - 159	Prehypertensive	Low
160 - 179	Hypertensive	Moderate
>= 180	Severely hypertensive	High



UACR < 30 indicates that dogs and cats are in healthy status, and normal metabolism.

UACR > 30 indicates that dogs and cats may have mild or severe kidney disease, and clinical signs and other examination items need to be used to determine whether it is kidney disease.



If you're interested in how to run the Urine Test on AmiShield, please scan the QRcode below to watch the operation video on ProtectLife YouTube Channel.



Other inspection items:

- (1) Blood biochemistry test, urine routine (e.g. urine specific gravity)
- (2) CBC detection
- (3) Urinary system ultrasound
- (4) Blood pressure, dehydration
- (5) Urine bacterial culture to evaluate for infection
- (6) Cats need to rule out hyperthyroidism

◆ **Reference**

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