Interpreting IDEXX SDMA® Results

SDMA is an important renal biomarker which correlates with changes in glomerular filtration rate (GFR). Consideration of pre-renal, renal and post-renal factors including hydration status is important when interpreting SDMA results.

Importantly SDMA results above the reference interval should never be ignored and IDEXX recommends to follow the Investigate, Manager and Monitor Algorithm below;

<table>
<thead>
<tr>
<th>When SDMA result is ≥ 20 µg/dL</th>
<th>When SDMA result is 15–19 µg/dL</th>
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</thead>
<tbody>
<tr>
<td><strong>Perform a complete urinalysis</strong></td>
<td><strong>Consider other evidence of kidney disease:</strong></td>
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<tr>
<td><strong>Other evidence of kidney disease?</strong></td>
<td>Enzyme-linked immunosorbent assay (ELISA)</td>
</tr>
<tr>
<td><strong>Yes</strong></td>
<td><strong>History of weight loss, decreased appetite, polydipsia, polyuria</strong></td>
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<tr>
<td><strong>No</strong></td>
<td><strong>Physical examination findings, such as palpable kidney abnormalities</strong></td>
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</tbody>
</table>

Kidney disease probable – act immediately

Recheck in 2–4 weeks if SDMA remains increased

Follow IMM protocol below

Investigate

- Urine culture and sensitivity
- Infectious disease testing (Leptospirosis, FeLV, FIV, FIP, toxoplasmosis)

Manage

- Underlying disease if identified
- Clinical dehydration
- Persistent hypertension
- Persistent proteinuria
- Hypothyroidism

- Provide kidney support
  - Feed kidney-supportive diet
  - Provide fresh, clean water sources
  - Discontinue all potentially nephrotoxic drugs if possible

- Adjust anesthesia protocols
  - Provide intravenous fluids, before, during, and upon recovery
  - Provide oxygen, before, during, and upon recovery
  - Maintain and monitor blood pressure and body temperature
  - If needed, use narcotic for pain management

Monitor

Underlying or confounding disease identified

- Monitor as indicated

SDMA returns to normal

- Kidney function has returned to normal
- Monitor confounding conditions and other underlying disease if present

SDMA remains increased but stable

- If SDMA and creatinine are stable, chronic kidney disease (CKD) is diagnosed
- Initiate appropriate treatment based on International Renal Interest Society (IRIS) CKD staging

SDMA continues to increase

- If SDMA and/or creatinine are increasing, consider ongoing, active kidney injury
- Perform additional diagnostics to determine cause and to guide treatment

Turn over for further information and an excerpt from the IRIS guidelines on the diagnosis and staging of CKD. Or contact an IDEXX Internal Medicine Consultant to discuss a specific case – 1300 44 33 99
Step 1: Diagnose CKD

Clinical signs and physical examination findings worsen with increasing severity of kidney disease

Clinical presentation
Consider age, sex, breed predispositions, and relevant historical information, including medication history, toxin exposure, and diet. Can be asymptomatic in early CKD. Signs may include polyuria, polydipsia, weight loss, decreased appetite, lethargy, dehydration, vomiting, and bad breath.

Physical examination findings
Can be normal in early CKD. Findings may include palpable kidney abnormalities, evidence of weight loss, dehydration, pale mucous membranes, uremic ulcers, evidence of hypertension, i.e., retinal hemorrhages/detachment.

To diagnose early CKD

One or more of these diagnostic findings

1. Creatinine increasing within the reference interval
2. Persistent increased SDMA >14 µg/dL
3. Abnormal kidney imaging
4. Persistent renal proteinuria
   UPC >0.5 in dogs; UPC >0.4 in cats

Results of both tests should be interpreted in light of patient's hydration status.

Increased creatinine and SDMA concentrations
- Creatinine
- SDMA

Urine specific gravity
- <1.030 Canine 1.008
- <1.035 Feline 1.008

Step 2: Stage CKD

Stage 1
No azotemia
- Creatinine in mg/dL
  - Canine <125
  - Feline <140
- SDMA in µg/dL
  - >14

Stage 2
Mild
- Creatinine in mg/dL
  - 125 - 180
- SDMA in µg/dL
  - >14

Stage 3
Moderate
- Creatinine in mg/dL
  - 180 - 440
- SDMA in µg/dL
  - ≥ 25

Stage 4
Severe
- Creatinine in mg/dL
  - >440
- SDMA in µg/dL
  - ≥ 45

Creatinine
- Substage based on stable creatinine
  - Nonproteinuric
  - Borderline proteinuric
  - Proteinuric

SDMA
- Substage based on proteinuria
  - Nonproteinuric
  - Borderline proteinuric
  - Proteinuric

UPC ratio
- Substage based on proteinuria
  - Nonproteinuric
  - Borderline proteinuric
  - Proteinuric

Systolic blood pressure
- Substage based on blood pressure
  - Normotensive
  - Borderline hypertensive
  - Hypertensive

sdma = IDEXX SDMA™ Test. See iris-kidney.com for more detailed staging, therapeutic, and management guidelines.