% Acute kidney injury (AKI) is a well-known comorbidity of acute pancreatitis (AP) and markers of early kidney impairment may be useful for a prompt diagnosis and treatment. Urinary Neutrophil Gelatinase-Associated Lipocalin (uNGAL) has been shown to be an early marker of AKI in both dogs and humans.

Objective
We hypothesized that uNGAL might be able to diagnose AKI in dogs with AP, thus the aim of the study was to compare uNGAL in AP dogs, AP dogs with AKI, and healthy dogs.

Materials & Methods

Animals:
- Retrospective analysis of frozen-stored urinary samples of hospitalized dogs with AP
- Students or staff-owned healthy dogs were recruited as control group

Procedures:
- AP diagnosis = compatible clinical and laboratory parameters + abnormal SNAP cPL + positive abdominal ultrasound within 48h from presentation
- Dogs with previous renal diseases, urinary tract infection and/or dogs managed by hemodialysis, and dogs which received potentially nephrotoxic drugs were excluded
- Dogs were divided into three study groups: AP dogs (AP), AP dogs with AKI (AP-AKI) and healthy dogs (healthy).
- AKI was diagnosed and classified using the current IRIS consensus
- uNGAL was measured using a commercial canine ELISA on urine supernatant stored at -80° and reported as uNGAL to urine creatinine ratio (uNGAL/uCr).

Statistical analysis:
Results were reported as median and range, and differences among the 3 groups (AP, AP-AKI and healthy) were evaluated using Kruskal-Wallis test, followed by Bonferroni's post-hoc comparisons. A P-value <0.05 was considered significant.

Results

Study population (n=45)

- AP dogs (n=23)
- AP-AKI dogs (n=7)
- Healthy dogs (n=15)

Figure 1. Flow diagram of study population groups. In particular, in AP-AKI group 3/7 dogs were classified as IRIS AKI grade 1, 2/7 dogs were AKI grade 2 and 2/7 dogs AKI grade 3.

Figure 2. uNGAL/uCr results were significantly different and increased among healthy, AP, and AP-AKI dogs (median 1.3 [0-11.8] healthy; 17110-3183.1] AP; 4639.5 [280.1-17956.5] AP-AKI)

Summary and Conclusions
Urinary NGAL was significantly increased in both in AP and AP-AKI dogs compared to healthy ones. In dogs with AP, uNGAL may be used as a marker of non-azotemic kidney injury.

References
2. Monari et al. Urine neutrophil gelatinase-associated lipocalin to diagnose and characterize acute kidney injury in dogs. JIVM, 2019