

SediVue Dx[®] Urine Sediment Analyzer

A veterinarian's guide to evaluating results

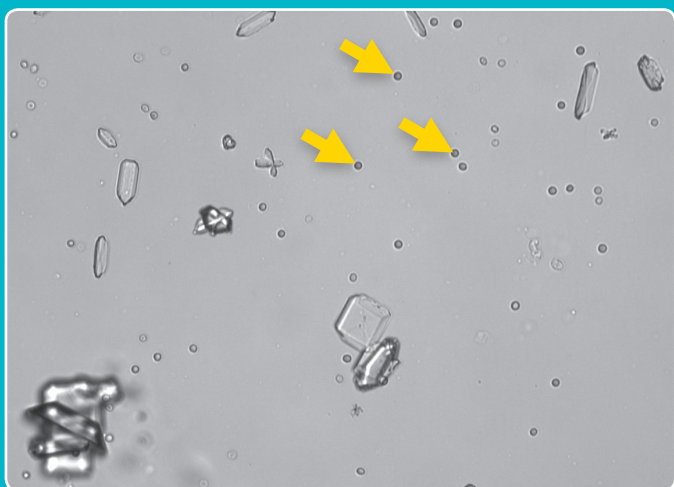
Use this guide to understand the quantitative and semiquantitative results for all parameters. You will also find definitions of specific messages that may accompany results.



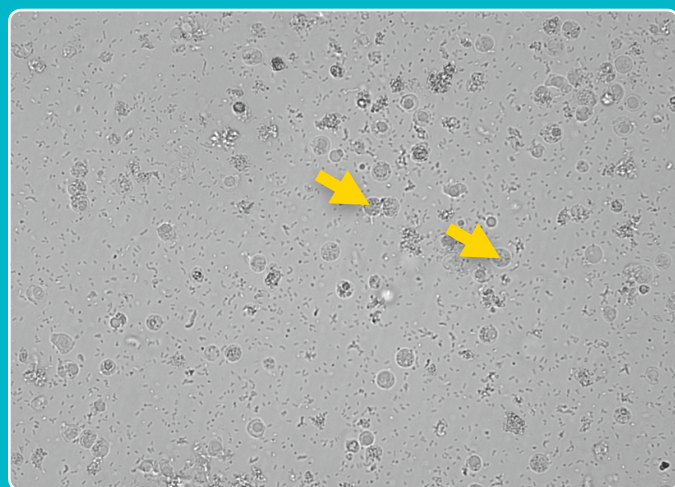
Element type: **Blood cells**

Parameter	Image tag	Results			
Red blood cells (RBCs)	RBC	None detected The element has not been detected or there are not enough recognizable features to classify.	<1/HPF Some rare features have been found in the sample; however, the quantity is below the clinical reporting threshold.	Quantitative numerical result/HPF	>50/HPF
White blood cells (WBCs)	WBC				

Red blood cells



White blood cells



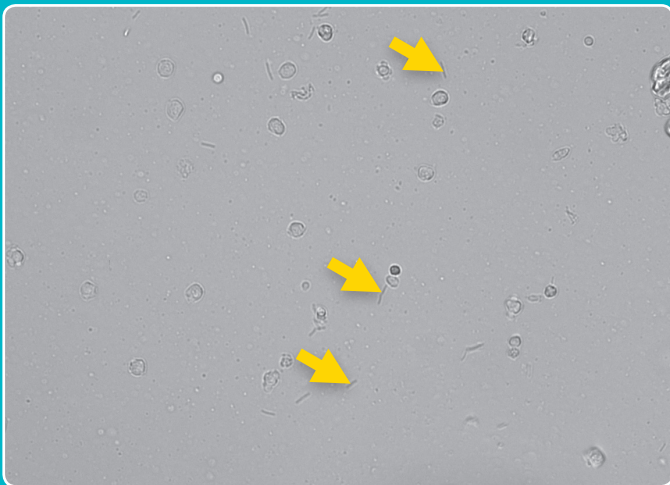
Element type: **Bacteria**

Parameter	Image tag	Results		
Rods	N/A*	None detected The element has not been detected or there are not enough recognizable features to classify.	Suspect presence Some recognizable features of an element (cocci, rods, casts) are present; however, the quantity and detail is insufficient to report as "present."	Present There is high confidence that bacteria are present in the sample.
Cocci				

*To avoid blocking your visual interpretation, the analyzer classifies and counts all bacteria without tagging them.

NOTE: Bacteria results may be confounded by other debris and artifacts in the sample (e.g., sperm, crystalline debris).

Rods



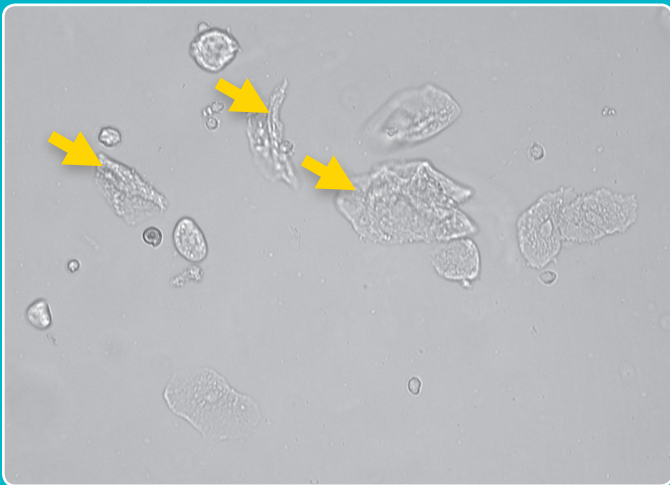
Cocci



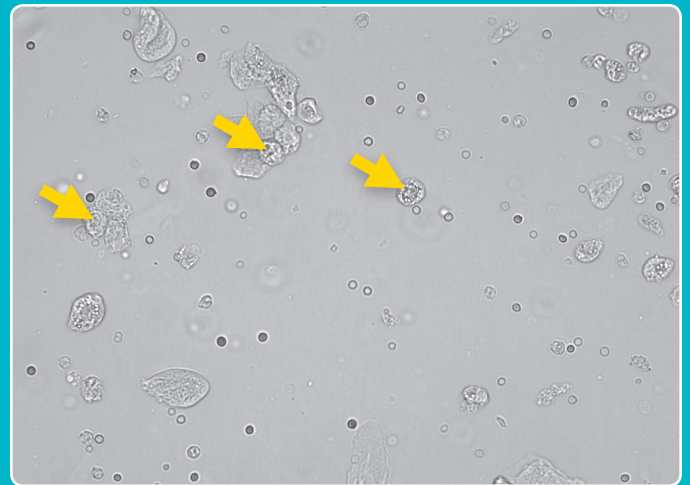
Element type: **Epithelial cells**

Parameter	Image tag	Results					
Squamous	sqEPI	None detected The element has not been detected or there are not enough recognizable features to classify.	<1/HPF Some rare features have been found in the sample; however, the quantity is below the clinical reporting threshold.	1-2/HPF	3-5/HPF	6-10/HPF	>10/HPF
Nonsquamous	nsEPI						

Squamous



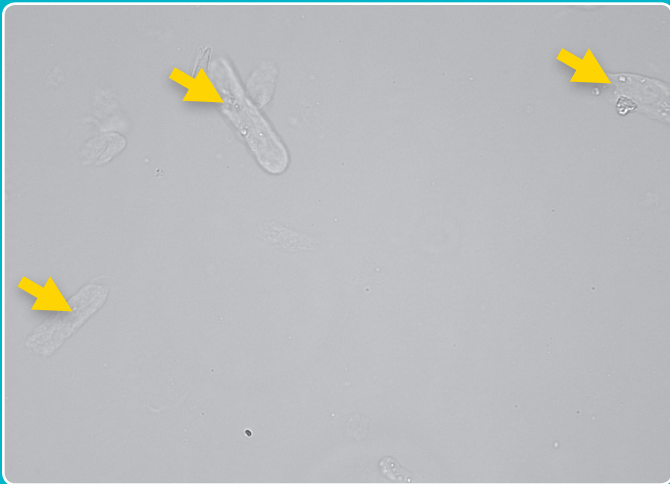
Nonsquamous



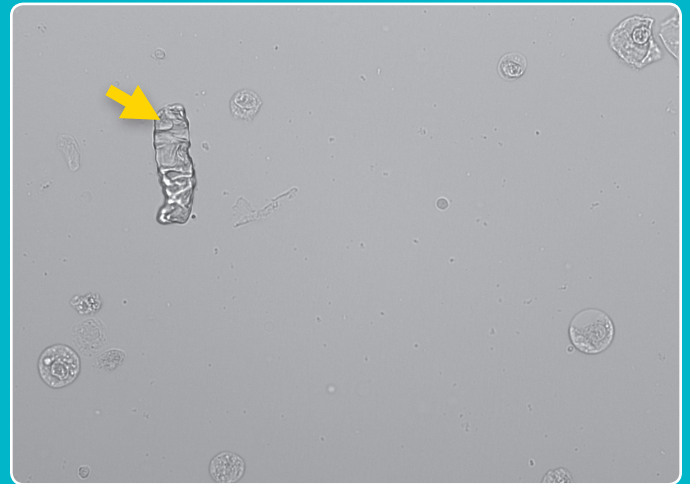
Element type: **Casts**

Parameter	Image tag	Results		
Hyaline	HYA	None detected The element has not been detected or there are not enough recognizable features to classify.	Suspect presence Some recognizable features of an element (cocci, rods, casts) are present; however, the quantity and detail is insufficient to report.	> 1/LPF
Nonhyaline (e.g., granular, waxy)	nhCST			

Hyaline



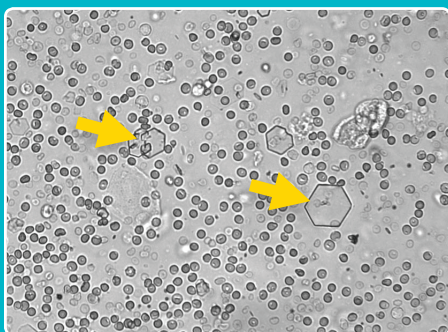
Nonhyaline



Element type: Crystals

Parameter	Image tag	Results					
Unclassified (all other crystals)	CRY	None detected The element has not been detected or there are not enough recognizable features to classify.	<1/HPF Some rare features have been found in the sample; however, the quantity is below the clinical reporting threshold.	1-5/HPF	6-20/HPF	21-50/HPF	>50/HPF
Calcium oxalate dihydrate	CaOxDi						
Struvites	STR						
Ammonium biurate	AmmBi						
Bilirubin	BILI						

Unclassified



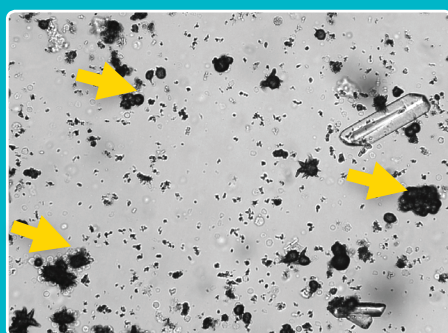
Calcium oxalate dihydrate



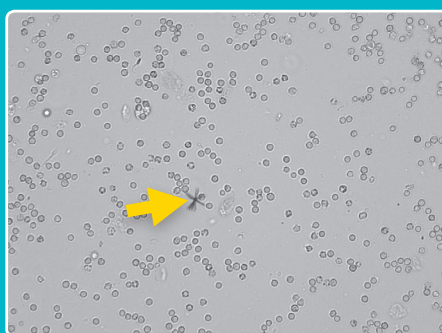
Struvite



Ammonium biurate



Bilirubin



Automated messages

based on specific results

Your SediVue Dx® Urine Sediment Analyzer may include sample messages in the patient report. These messages are generated based on numerical results and are intended to provide you with further insight and guide you with recommended next steps. Information about common messages is included in this guide. For a complete list, consult the *SediVue Dx Urine Sediment Analyzer Operator's Guide* at idexx.com/library.

When a bacteria result is “suspect presence”

Analyzer message	Confirm with one of the following: image review; air-dried, stained cytological preparation (“dry prep”); or urine culture.
Definition	Some recognizable features of an element (cocci, rods, casts) are present; however, the quantity or details are insufficient to report as “present.” Debris commonly found in canine and feline urine can be confused with bacteria.
Guidance	If images do not provide visual confirmation of bacteria, but patient has clinical signs or there are other clues present (white blood cells, etc.), it is recommended to perform a dry prep to confirm. If bacteria are obvious in the images or the result is “present,” a dry prep is not necessary, but you can follow up with a culture and sensitivity (MIC) test if you want to further classify the bacteria as well as test for sensitivity to certain antibiotics.

When samples are crowded

with overlapping elements

Analyzer message	Images crowded. Review images and follow the guidance below to determine next steps.
Definition	When a urine sample is crowded and the edges of the elements overlap, the SediVue Dx convolutional neural network may have difficulty discerning the elements from one another.
Guidance	When images provide clinical insight: No dilution needed, add comments to patient record. Moderate amount of cells or crystalline material: Dilute 1:5 with 0.9% normal saline and rerun. Marked amount of cells or crystalline material: Dilute 1:10 with 0.9% normal saline and rerun.

Note: You will only be charged for the first run from the same patient ID within a 24-hour period.

When image focus and quality

cannot be verified by the analyzer

Analyzer message	Review images to confirm results.
Definition	The convolutional neural network cannot verify the quality of focus in the images.
Guidance	The sample may have very little urine sediment (e.g., “normal”) or contain air bubbles, or the analyzer is dirty. If the expected results do not align with the image review, rerun the sample. If the message appears with several consecutive samples, the analyzer may require cleaning.

Note: You will only be charged for the first run from the same patient ID within a 24-hour period.

Crystals

Crystals can come in a variety of different shapes, sizes, and presentations. Urine pH, specific gravity, sample preparation and handling, and drugs can all play a part in crystal formation. Crystals in small numbers (e.g., struvites) may be normal for some dogs, but others (e.g., cystine) may signify disease processes. The following Smart Flags are designed to provide further clinical insight into the presence of crystalluria.

Analyzer message	Crystalline debris detected.
Definition	Crystalline debris can be abundant and variable in size and presentation in some samples. Due to background density, the presence of large amounts of crystalline debris can affect the identification of other formed elements in the sample. This flag is displayed when crystalline debris has been detected by the algorithm. The neural network algorithm has been trained to exclude crystalline debris from the unclassified crystal (CRY) category.
Guidance	When this flag is present, users will be notified so they can be more discerning about the bacteria result, as very small particles of debris can resemble bacteria.

Urine protein:creatinine (UPC) ratio

Analyzer message	Consider evaluation of urine protein:creatinine ratio.
Definition	When this message appears, the urine chemical results indicate the presence of protein. A UPC ratio can be used to quantify protein loss in the urine as it is unaffected by urine volume or concentration. It has been incorporated into the International Renal Interest Society (IRIS) Guidelines on Staging and Treatment of Chronic Kidney Disease (CKD) as an important monitoring tool at all stages.
Guidance	A UPC ratio should be performed after urinalysis with urine sediment examination. It is not recommended for use if there is an active urine sediment, as inflammatory conditions in the urinary tract will increase protein and negate the usefulness of the ratio.

Analyzer message	Recommend reevaluating proteinuria after resolution of active urine sediment.
Definition	When this message appears, the urine chemical results indicate the presence of protein in addition to an active urine sediment (RBCs and/or WBCs and possibly bacteria).
Guidance	First, resolve the infection. Once the urine sediment becomes inactive, consider running a UPC ratio to quantify protein loss.

Image tags

The SediVue Dx® Urine Sediment Analyzer **identifies, classifies, and counts all elements found in the sample and also applies an image tag**. Image tags are abbreviated labels for the reported parameters that appear on the formed elements in the reported sample images.

Image tags are not available:

- When the sample is flagged for dilution.
- When the sample is from an invalidated species or fluid.
- For all bacteria results.*

*Tagging of bacteria can be overwhelming and block the visual interpretation of the image. Image tags can be toggled on and off.

Guidance for reviewing images

Reviewing images will validate the numerical data provided and supplement the SediVue Dx analysis.

View one image at a time	<p>Tap on an image to make it full screen.</p> <p>Reverse the contrast to see details such as cell nuclei.</p> <p>Zoom in up to 200% to see smaller elements.</p> <p>Turn image tags on or off.</p> <p>Select an image to add to the patient record or print an area of interest.</p> <p>Use the large arrows to scroll through images.</p>
View the first 3–12 images first	<p>Seventy high-resolution images are taken for every sample run.</p> <p>Images have been prioritized based on the absence or presence of formed elements and the clinical significance of each element found.</p> <p>Highest scoring images are displayed first.</p> <p>Select View all images to easily scroll through all 70 images.</p>
Refer to image tags, when present	<p>Classified elements will be tagged (labeled). (Image tags are not available for “none detected” and bacteria results.) Image tags can be turned on or off on the image viewer.</p> <p>Whether a tag is present or not, all formed elements are classified by the analyzer and reflected in the result.</p>
Save images to the patient record	<p>For Cornerstone® Software users, three prioritized images are automatically saved to the patient record and transmitted to VetConnect® PLUS. You may select up to three additional images to save to the patient record and VetConnect PLUS.</p> <p>For all other practice management software, the first image will be included with the results PDF.</p>
Add comments to the patient record	<p>Include comments about findings you consider noteworthy.</p> <p>From the patient results screen, tap Add comments. Your comments will be automatically uploaded to VetConnect PLUS and, if applicable, your practice management software.</p>

Bacteria results

Bacteria result (rods/cocci)	Definition	Possible reason for validation	Recommended next steps
None detected	The element has not been detected or there are not enough recognizable features to classify.	Patient has clinical signs or a history of persistent urinary tract infections.	If visual review of images is negative and patient has no clinical signs or history, bacteriuria is unlikely. No further action is necessary.
Suspect presence	Some recognizable features of an element (cocci, rods, casts) are present; however, the quantity and detail is insufficient to report as "present."	Crystalline or amorphous debris is common in canine and feline samples (especially free catch).	<p>Differentiate bacteria from debris.</p> <p>Review visually; if confirmed, diagnose and manage based on your interpretation.</p> <ul style="list-style-type: none">• If, however, visual review is inconclusive and white blood cells, red blood cells, clinical signs, and/or history of urinary tract infection are present, confirm presence of bacteria with a dry prep.• If, however, visual review is inconclusive and there are no supporting clues present (e.g., active urine sediment, history), the presence of bacteria is unlikely.
Present	There is high confidence that bacteria are present in the sample.	Bacteria results may be confounded by other debris and artifacts in the sample (e.g., sperm, crystalline debris).	If visual review of images is confirmatory and/or the patient has clinical signs or history, bacteriuria is likely. No further action is necessary.

Urinalysis versus culture

Understanding possible discordant results

Bacteria result (rods/cocci)	Culture result	Causes for discordant results
Present	No growth	<p>Bacterial growth was inhibited or prevented by:</p> <ul style="list-style-type: none">• Antibiotic treatment at time of sample collection.• Exposure of sample to extreme temperatures.• Extremes of urine pH (≤ 4 or ≥ 9).• High quantity of white blood cells in urine. <p>Microscopy results misidentified amorphous or crystalline debris as bacteria.*</p> <p>False identification of cocci was due to random motion of small colloidal particles (Brownian motion).*</p> <p>Stain used on urine sample prior to in-house microscopy was contaminated by bacteria.</p> <p>Anaerobic bacteria were identified by the analyzer but cannot be grown in aerobic cultures (rare).</p> <p>*Particularly with unstained urine sediment examinations.</p>
None detected	Positive	<p>Bacteria colony counts are too low to be visualized on urine sediment analysis because of:</p> <ul style="list-style-type: none">• Very dilute urine.• Incomplete or unsuccessful antibiotic therapy.• Localized pyelonephritis. <p>In cases where clinical history is suggestive of urinary tract infection or an active urine sediment is present, urine culture should be considered even in the absence of bacteriuria on urinalysis.</p>

Dry prep basics

When?	<p>A dry prep should only be considered when you are unable to visually confirm absence or presence and:</p> <ul style="list-style-type: none">• The patient has clinical signs or previous history.• There are other supporting results in the sample (e.g., white blood cells, red blood cells).
Why?	<p>A dry prep (air-dried, stained cytological slide) is a quick, effective way to:</p> <ul style="list-style-type: none">• Validate the absence or presence of bacteria.• Distinguish bacteria from amorphous or crystalline debris.
How?	<p>You can do a dry prep in 5 minutes or less! Watch a short video to learn how.</p>



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