Urine Sediment Guide

All images from the SediVue Dx® Urine Sediment Analyzer

Reference bar = 20 microns

**Blood cells**

- Figure 1. Red blood cells
- Figure 2. Crenated red blood cells
- Figure 3. White blood cells
- Figure 4. White blood cells

**Epithelial cells**

- Figure 5. Squamous epithelial cells
- Figure 6. Squamous epithelial cells
- Figure 7. Numerous transitional (non-squamous) epithelial cells with RBCs and WBCs
- Figure 8. Numerous transitional (non-squamous) epithelial cells (Possible transitional cell carcinoma. Confirm with dry-slide cytology.)

**Bacteria**

- Figure 9. Rods with white blood cells
- Figure 10. Rods with white and red blood cells
- Figure 11. Coccici with white blood cells
- Figure 12. Coccici in chains

**Casts**

- Figure 13. Left and right, hyaline cast
- Figure 14. Cellular (non-hyaline) cast
- Figure 15. Numerous granular (non-hyaline) casts
- Figure 16. Waxy (non-hyaline) cast

**Crystals**

- Figure 17. Large struvite crystals
- Figure 18. Numerous small struvite crystals
- Figure 19. Large calcium oxalate monohydrate crystals
- Figure 20. Numerous calcium oxalate monohydrate crystals
- Figure 21. Calcium oxalate monohydrate (picket fence) crystals
- Figure 22. Calcium oxalate monohydrate crystals. Left, dumbbells; right, hemp seed
- Figure 23. Ammonium biurate (thorn apple) crystals
- Figure 24. Bilirubin crystal with WBCs
- Figure 25. Cholesterol crystals
- Figure 26. Cystine crystals with red blood cells
- Figure 27. Uric acid crystals
- Figure 28. Likely drug-related crystals

**Miscellaneous**

- Figure 29. Lipids
- Figure 30. Amorphous crystalline debris
- Figure 31. Hyphae
- Figure 32. Sperm with white blood cells
- Figure 33. Left, Plasmodium spp; (Capillaria spp.) ova, right, macrocanidia
- Figure 34. Left, glove powder; right, splinter
- Figure 35. Fiber
- Figure 36. Dust mite
Conventional microscopy

All images, unless otherwise indicated, are representative of a high power (40x objective) field of view.

### Blood cells

**Figure 1.** Erythrocytes and one squamous epithelial cell

**Figure 2.** Erythrocytes and two leukocytes (black arrows)

**Figure 3.** Numerous leukocytes and few rod-shaped bacteria

### Epithelial cells

**Figure 4.** Squamous epithelial cells

**Figure 5.** Epithelial cells (black arrows), RBC (red arrow) and WBC (blue arrows)

**Figure 6.** Transitional epithelial cells

**Figure 7.** Left, Transitional cell carcinoma; right, NMB wet prep

**Figure 8.** Transitional cell carcinoma (NMB wet prep on right)

**Figure 9.** Transitional cell carcinoma, air-dried and Diff-Quik* stained

### Bacteria

**Figure 10.** Many rod-shaped bacteria, 100× objective field of view

**Figure 11.** Many leukocytes and large rod-shaped bacteria (black arrows)

**Figure 12.** Numerous bacteria and leukocytes

### Casts

**Figure 13.** Hyaline cast (borders outlined)

**Figure 14.** Left, granular cast; right, mixed waxy and granular cast

**Figure 15.** Waxy cast

### Crystals

**Figure 16.** Struvite

**Figure 17.** Amorphous (NMB wet prep on right)

**Figure 18.** Bilirubin

**Figure 19.** Ammonium biurate

**Figure 20.** Left, calcium oxalate monohydrate; right, calcium oxalate dihydrate

**Figure 21.** Drug (Tribrissen*) crystals, 10× objective field of view

### Miscellaneous

**Figure 22.** Left, fat droplets (red arrows, RBC); right, sperm

**Figure 23.** Pearsonema plica

**Figure 24.** Contaminant fragmented fiber

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How to perform a dry prep/line smear

Performing a dry prep or line smear is an extremely cost-effective means of confirming the presence or absence of bacteria, of differentiating between cocci and short rods, and for characterizing various cellular elements in the urine sample.

1. Label your slides appropriately.
2. Fill a centrifuge tube with well-mixed, fresh urine taken from the bottom of the sample tube.
3. Centrifuge the sample (and a balance tube) on the Urine setting (or 400 g). 
   *Note:* If your centrifuge does not have a Urine setting, refer to its operator's manual for centrifugation settings and times.
4. After centrifugation, a concentrated pellet of formed elements should be visible at the bottom of the tube. Gently aspirate the supernatant down to the pellet, leaving an extremely small amount of urine to resuspend the pellet. 
   *Note:* If the sample is extremely hypocellular, it may be very difficult to see the pellet.
5. Lightly flick the bottom of the tube multiple times with your finger to gently resuspend the formed elements.
6. Using a new pipette, dispense a drop of sample on a glass slide, similar to preparing a blood film.
7. Place a clean glass spreader slide on your labeled slide, at approximately 30°–40°, in front of the drop of urine.
8. Back the spreader slide into the drop allowing the material to spread along the edge of the spreader slide.
9. Move the spreader slide toward the end of the specimen slide, keeping the two in contact with each other.
10. In the middle of the slide, abruptly stop spreading the urine sample and lift the spreader slide straight up to form a line of material.
11. Air dry thoroughly and then stain the slide using your routine hematology/cytology stain (e.g., Diff-Quik*).
12. Review microscopically.