Urine Sediment Guide

All images from the SediVue Dx® Urine Sediment Analyzer

Reference bar = 20 microns

Blood cells

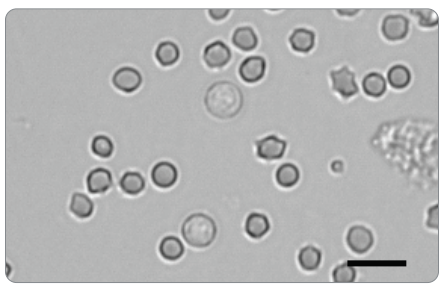

Figure 1. Red blood cells

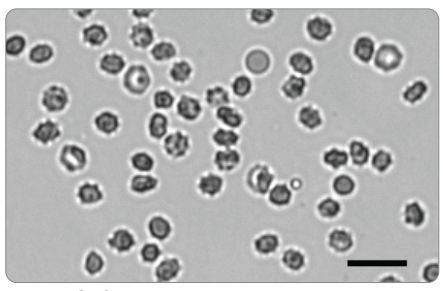

Figure 2. Crenated red blood cells

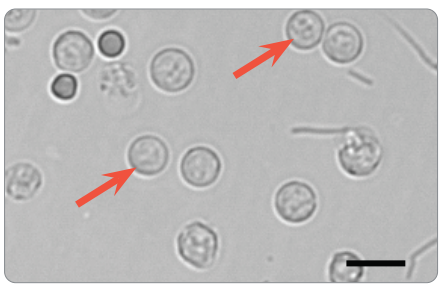

Figure 3. White blood cells

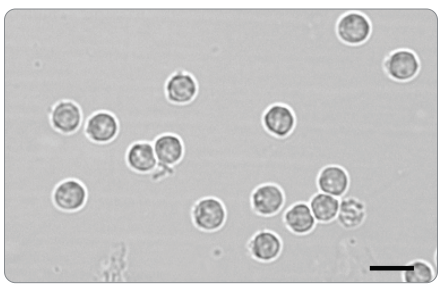

Figure 4. White blood cells

Epithelial cells

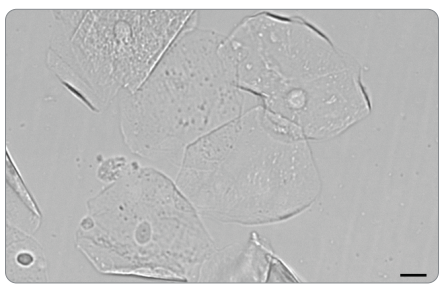

Figure 5. Squamous epithelial cells

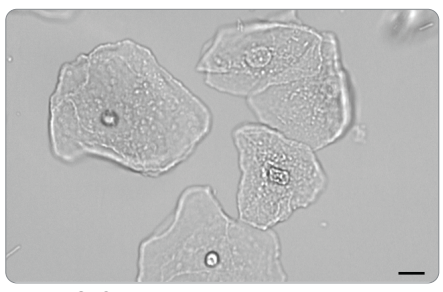

Figure 6. Squamous epithelial cells

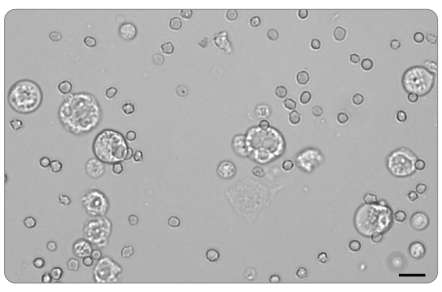

Figure 7. Numerous transitional (nonsquamous) epithelial cells with RBCs and WBCs

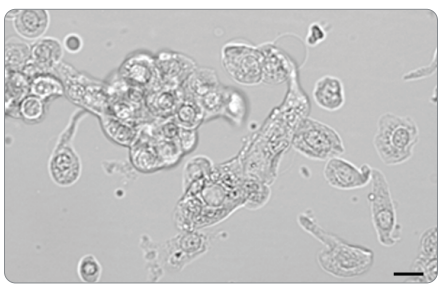

Figure 8. Numerous transitional (nonsquamous) epithelial cells (Possible transitional cell carcinoma. Confirm with dry-slide cytology.)

Bacteria

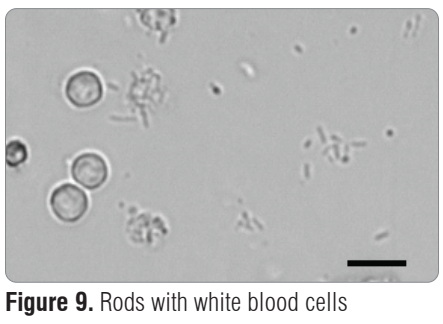

Figure 9. Rods with white blood cells

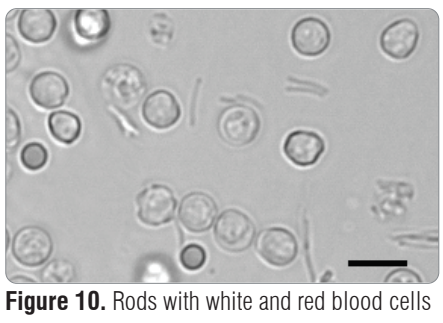

Figure 10. Rods with white and red blood cells

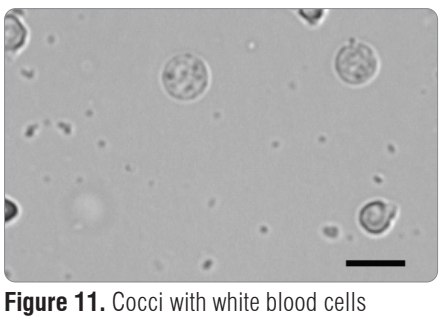

Figure 11. Cocci with white blood cells

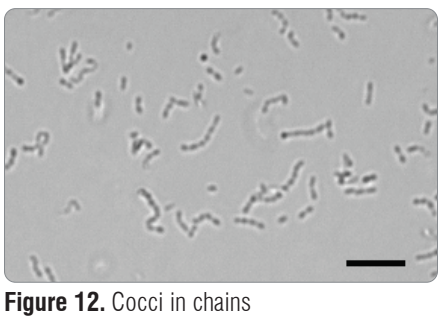

Figure 12. Cocci in chains

Casts

Figure 13. *Left and right*, hyaline cast

Figure 14. Cellular (nonhyaline) cast

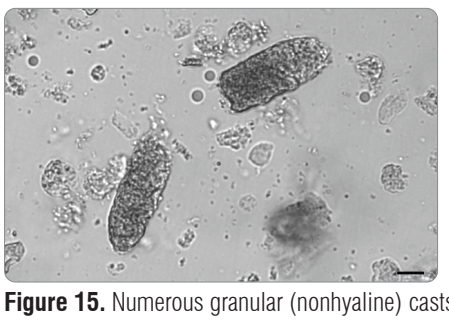

Figure 15. Numerous granular (nonhyaline) casts

Figure 16. Waxy (nonhyaline) cast

Crystals

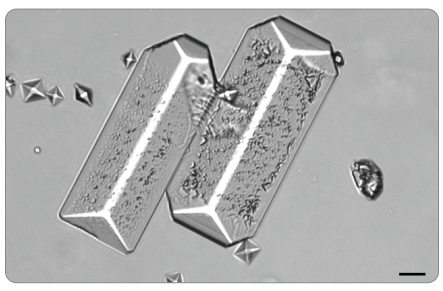

Figure 17. Large struvite crystals

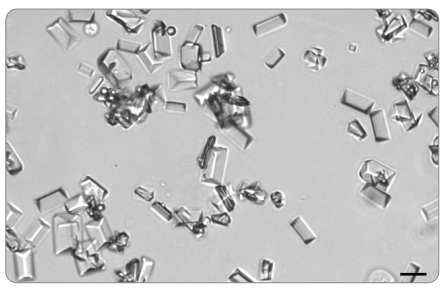

Figure 18. Numerous small struvite crystals

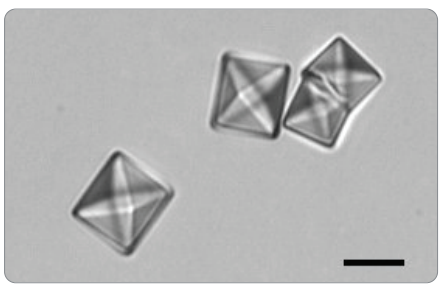

Figure 19. Large calcium oxalate dihydrate crystals

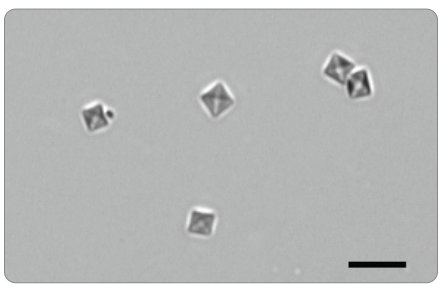

Figure 20. Numerous calcium oxalate dihydrate crystals

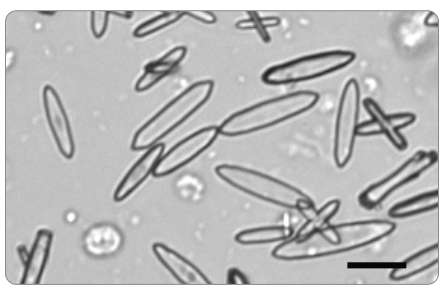

Figure 21. Calcium oxalate monohydrate (picket fence) crystals

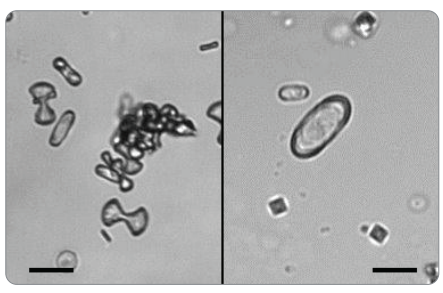

Figure 22. Calcium oxalate monohydrate crystals; *left*, dumbbells; *right*, hemp seed

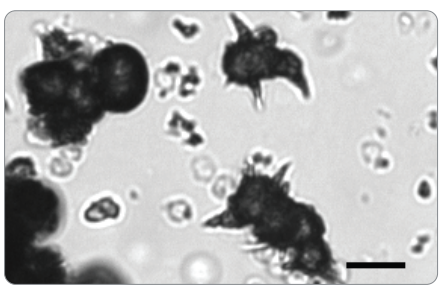

Figure 23. Ammonium biurate (thorn apple) crystals

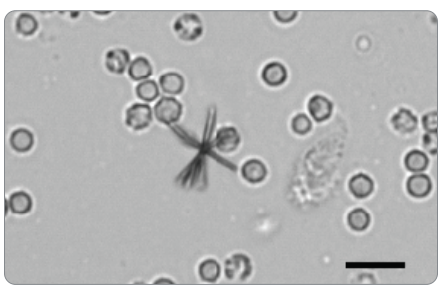

Figure 24. Bilirubin crystal with WBCs

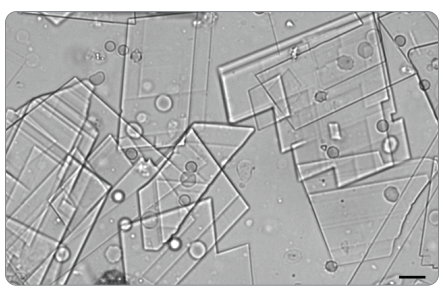

Figure 25. Cholesterol crystals

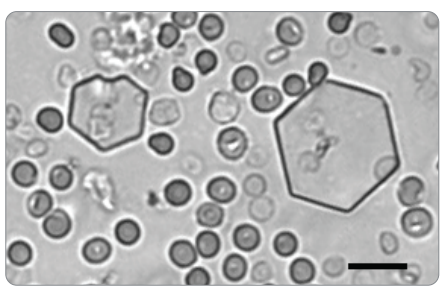

Figure 26. Cystine crystals with red blood cells

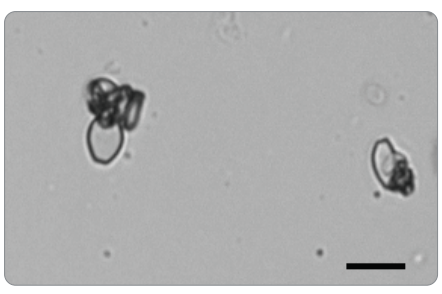

Figure 27. Uric acid crystals

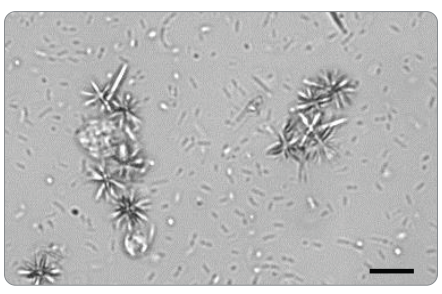

Figure 28. Likely drug-related crystals

Miscellaneous

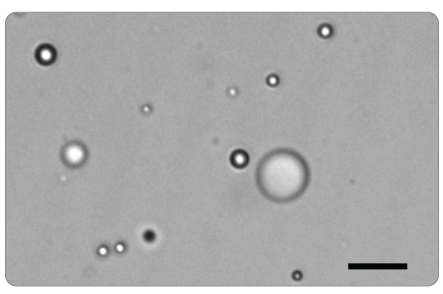

Figure 29. Lipids

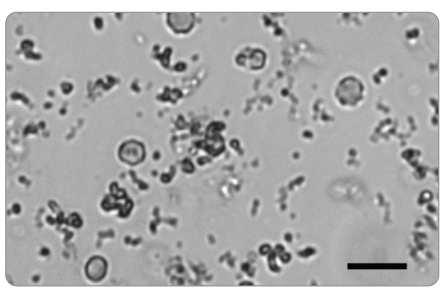

Figure 30. Amorphous crystalline debris

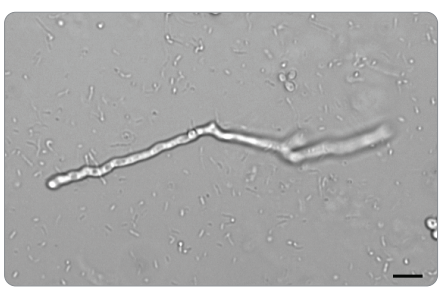

Figure 31. Hyphae

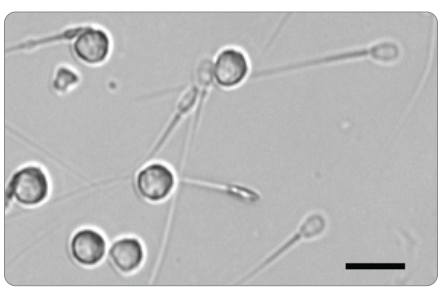

Figure 32. Sperm with white blood cells

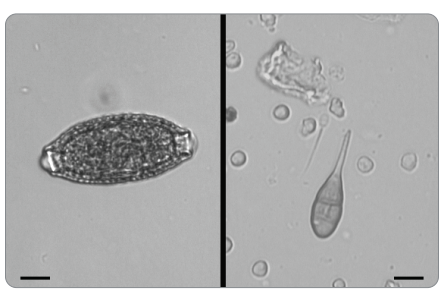

Figure 33. *Left*, *Pearsonema* spp. (*Capillaria* spp.) ova; *right,* macrocanidia

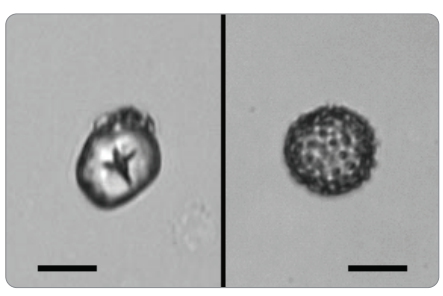

Figure 34. *Left*, glove powder; *right*, pollen

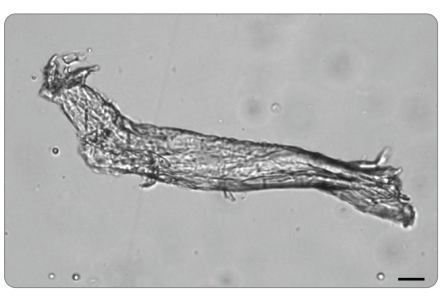

Figure 35. Fiber

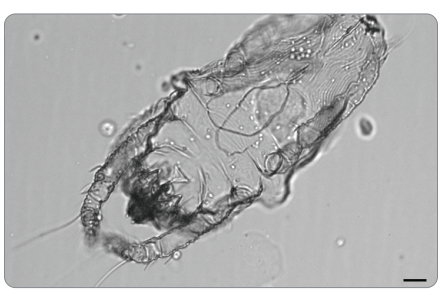

Figure 36. Dust mite

Conventional microscopy

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

Blood cells

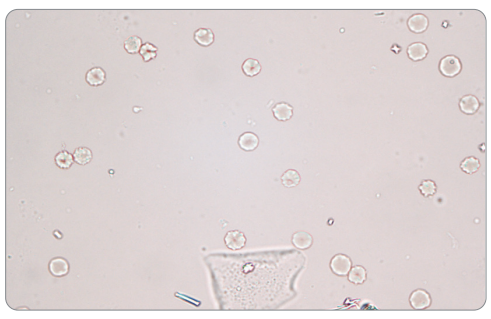

Figure 1. Erythrocytes and one squamous epithelial cell

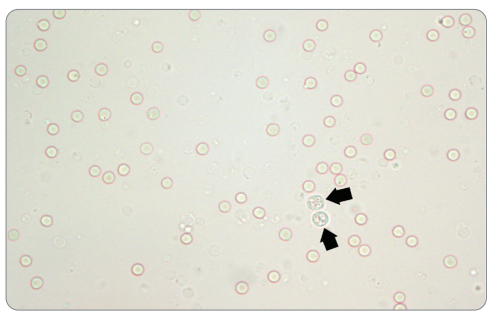

Figure 2. Erythrocytes and two leukocytes (black arrows)

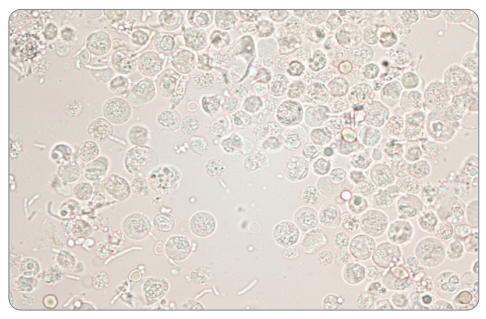

Figure 3. Numerous leukocytes and few rod-shaped bacteria

Epithelial cells

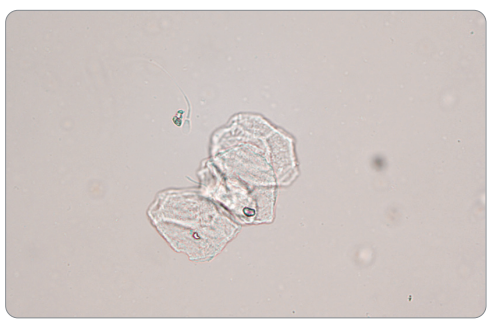

Figure 4. Squamous epithelial cells

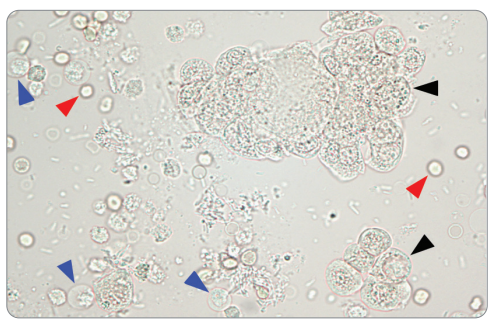

Figure 5. Epithelial cells (black arrows), RBC (red arrows) and WBC (blue arrows)

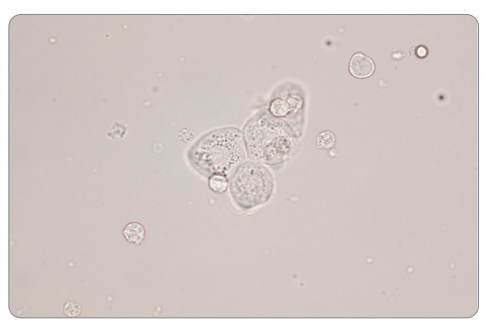

Figure 6. Transitional epithelial cells

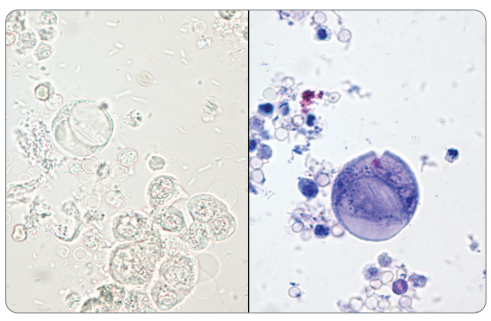

Figure 7. *Left,* Transitional cell carcinoma; *right,* NMB wet prep

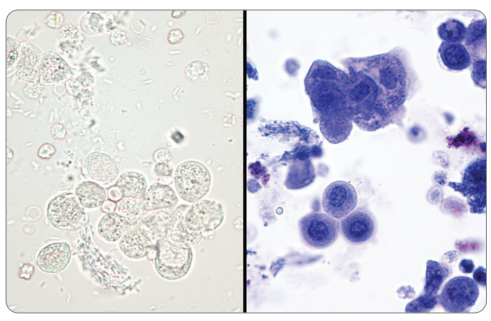

Figure 8. Transitional cell carcinoma (NMB wet prep on right)

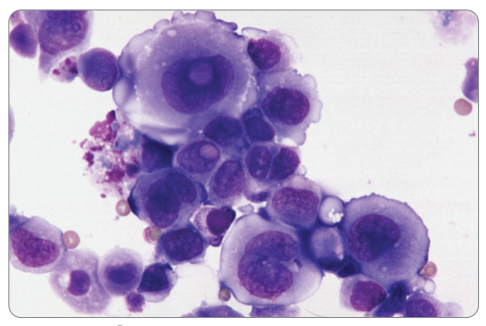

Figure 9. Transitional cell carcinoma, air-dried and Diff-Quik* stained

Bacteria

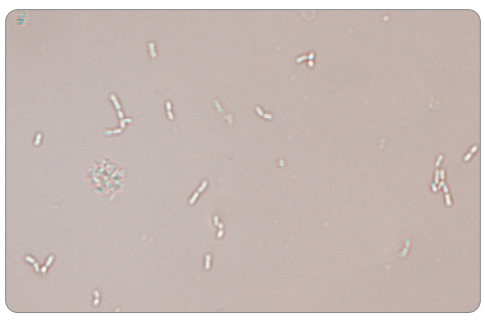

Figure 10. Many rod-shaped bacteria,100× objective field of view

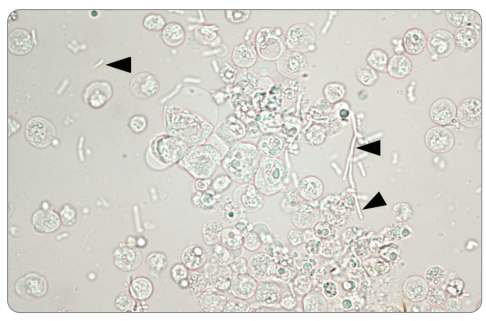

Figure 11. Many leukocytes and large rod-shaped bacteria (black arrows)

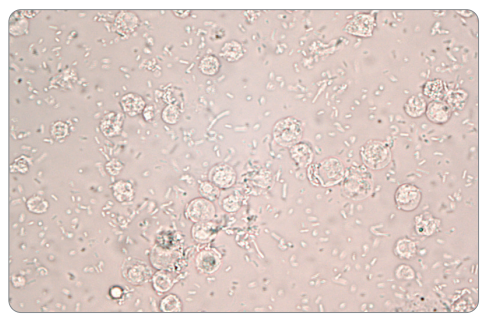

Figure 12. Numerous bacteria and leukocytes

Casts

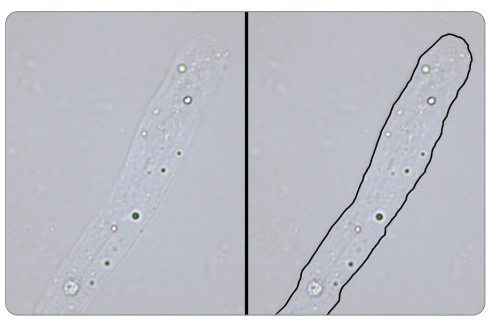

Figure 13. Hyaline cast (borders outlined)

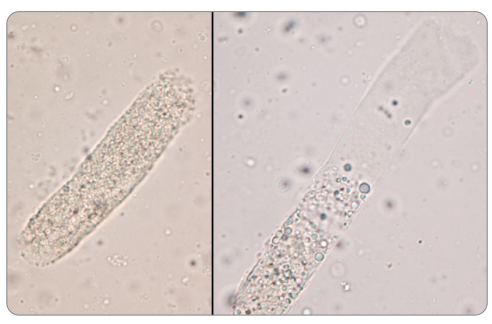

Figure 14 *Left*, granular cast; *right*, mixed waxy and granular cast

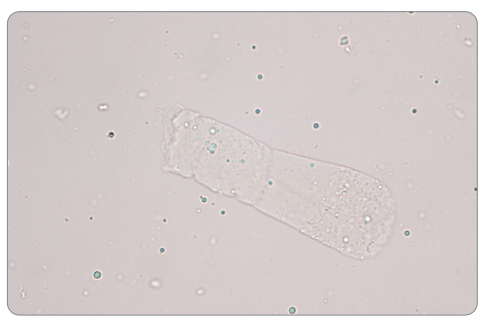

Figure 15. Waxy cast

Crystals

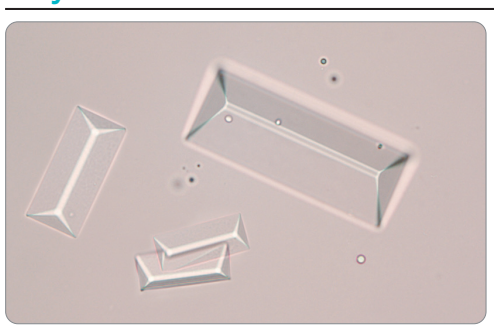

Figure 16. Struvite

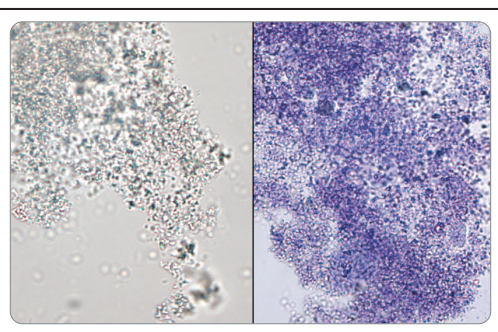

Figure 17. Amorphous (NMB wet prep on right)

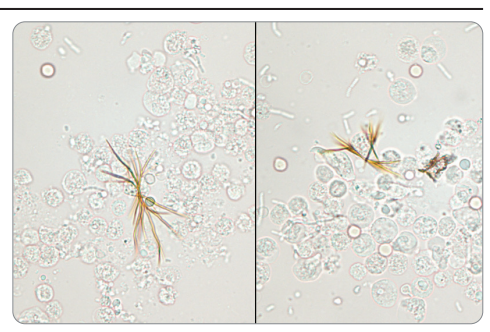

Figure 18. Bilirubin

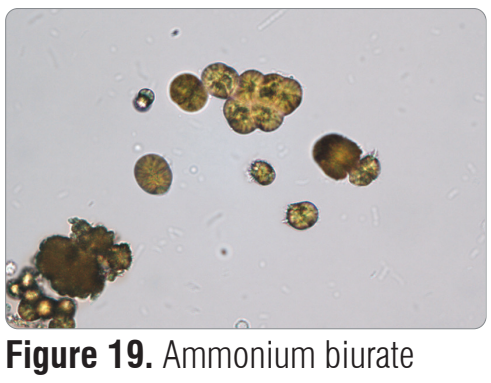

Figure 19. Ammonium biurate

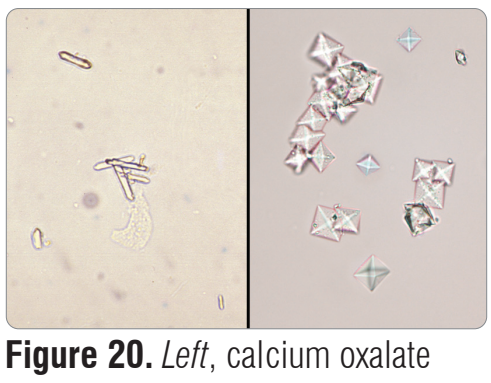

Figure 20. *Left*, calcium oxalate monohydrate; *right*, calcium oxalate dihydrate

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

Miscellaneous

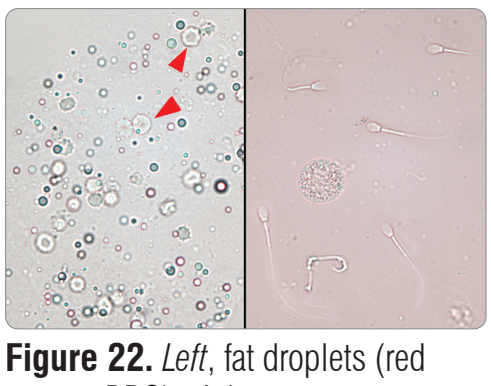

Figure 22. *Left*, fat droplets (red arrows, RBC); *right*, sperm

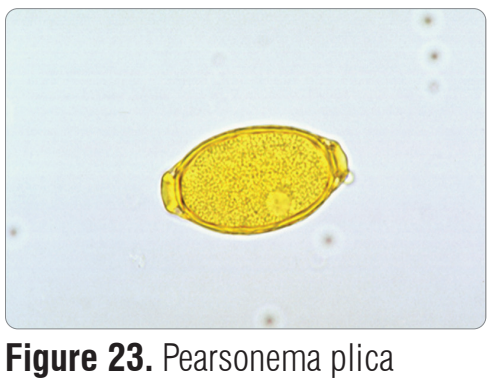

Figure 23. Pearsonema plica

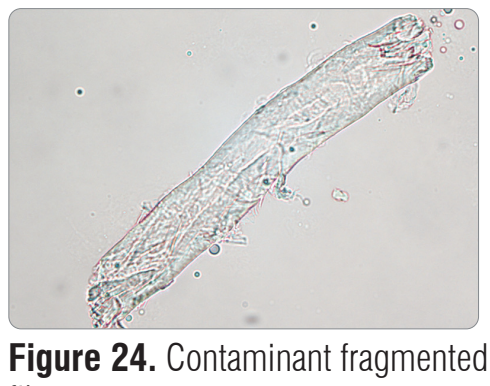

Figure 24. Contaminant fragmented fiber

Conventional images and information provided by Dennis B. DeNicola, DVM, PhD, DACVP; Rick L. Cowell, DVM, MS, MRCVS, DACVP; and Graham Bilbrough, MA, VetMB, CertVA, MRCVS.

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.