



# *Did You Know?*

## The Mysteries Surrounding Urine Bacteria

### Why are bacteria seen on urine sediment exam and the culture negative?

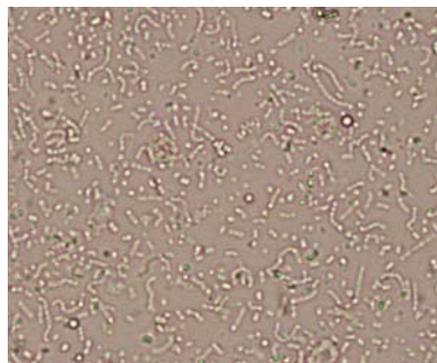
It can be easy to over-interpret bacteria on a urine sediment exam. At Phoenix, urine wet-mount preparations are reviewed unstained to avoid stain artifact. Technicians also review an air-dried urine sediment preparation stained with Wright Stain (clinics can use Diff-Quik) with every urinalysis. Examination of these slides significantly increases the sensitivity and specificity of sediment review for bacteria. Bacteria are simply easier to see and distinguish from imposters.

**Quiz yourself. Look at the pictures below and describe what you see. All reviewed at 40x. Are the structures bacteria? If not, what are they? Answers are on the back (page two).**

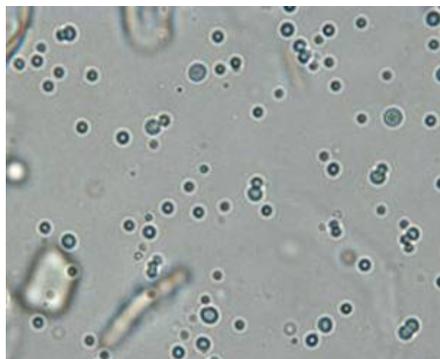
A.



B.



C.



D.





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### ANSWERS:

- A. Amorphous struvite crystals and RBCs. To verify that these are not bacteria, make an air-dried Wright Stain or Diff-Quik stained slide and review. Crystals will not stain.
- B. Cocci bacteria in chains, can occur in pairs but do not occur singly. Single round objects are not bacteria.
- C. Lipid droplets (very common finding, particularly in cat urine). Lipid droplets will also not stain on a stained air-dried slide.
- D. Rod bacteria, can occur singly, in pairs or chains.

Sometimes we see bacteria on a slide and the urine culture is negative. There can be several explanations: 1) The pet may be receiving or have recently received antibiotics. 2) Significant pyuria is present. Pyuria in a urine sample may kill the bacteria thus a good rule of thumb is always to culture urine as soon as possible. 3) Bacteria are fastidious. These bacteria require special nutrients to grow and often will not grow on standard urine culture media. Fastidious bacteria are generally considered contaminants and most often seen on free-catch samples. Bacteria commonly identified in urinary tract infectious, such as *E. coli* and *Staphylococcus spp*, are hearty and will grow on standard media. 4) Anaerobic bacteria are present. These may not grow in aerobic conditions. However, anaerobes are an uncommon cause of urinary tract infections. We do culture *Clostridium spp.*, anaerobic gram positive rod bacteria, from free catch samples. *Clostridium spp.* is not pathogenic but it may be confused for pathogenic rod bacteria on a urinalysis.

The results of urine culture should always be interpreted in light of the urinalysis. With each culture, Phoenix microbiology technicians review the urinalysis report when available. This enables them to work up the culture differently, including gram stains when necessary, depending on the urinalysis. If possible, clinics should submit results of their in-clinic urinalysis with their test request form for urine culture.

Urine culture is indicated in certain situations when bacteria are not seen. These situations include any disease condition resulting in dilute urine such as diabetes, hyperadrenocorticism, chronic steroid administration and renal failure; urolithiasis; dysuria and incontinence; fever of unknown origin (FU), and suspect pyelonephritis. Urine culture is indicated when the urinalysis reveals increased WBCs, increased RBCs, and/or proteinuria.

SW

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