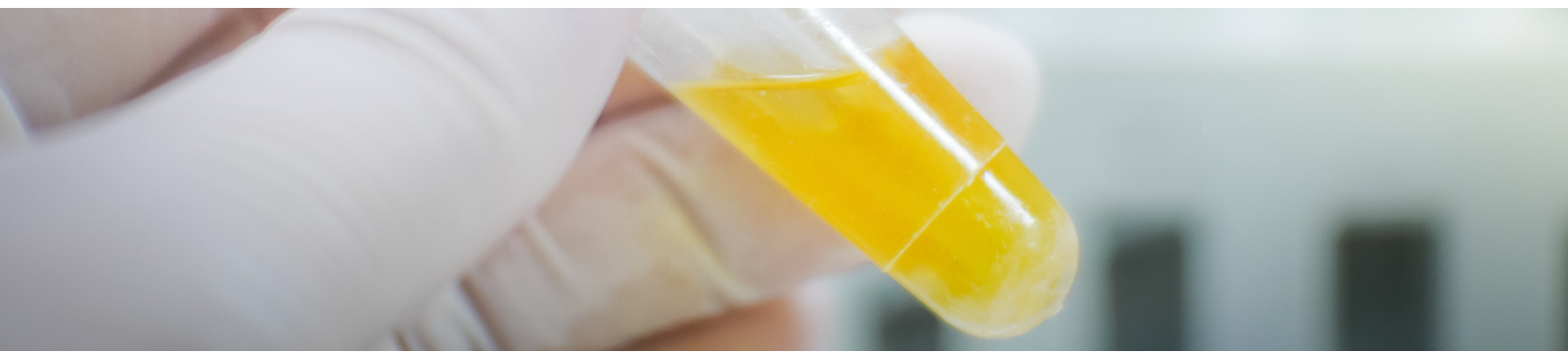


- We rely on the automated microbiology system (Vitek 2) to provide culture and sensitivity results for urine samples. This means we also rely on the availability of specific antibiotic dilution cards. For gram negative bacilli such as E.coli (order Enterobacterales), we have the necessary range of cards for assessing urinary tract infections (UTI).
- The current cards cannot meet the very low dilution criteria necessary to meet updated CSLI minimal inhibitory concentrations (MIC) guidelines for soft tissue infections.
- MICs are used to determine veterinary breakpoints for certain antibiotics. The breakpoint, (using a dilution system), is a defined antibiotic concentration that categorizes organisms as susceptible, intermediate or resistant.
- **Take this example, E. coli is susceptible to Amoxicillin in the urine when the MIC is less than or equal to 8 but only when the MIC is less than or equal to .25 in soft tissue.**
- This fact has implications when it comes to interpreting Enterobacterales positive urine cultures. First line antibiotic choices that are appropriate for a simple UTI (cystitis) are generally not expected to reach the necessary concentrations in the kidney nor can we accurately determine sensitivity patterns.
- You will now find a comment added to routine gram negative urine culture results to emphasize this point. Similarly, it is also **important to note that the vast majority of urinary tract infections are in fact cystitis cases** and one should treat accordingly based on your culture results and ISCAID guidelines.
- If you have a specific case where you know pyelonephritis is the working diagnosis please note that on your submission.



# Gram Negative Bacilli

## Urine Culture Comment

NOTE: The listed antibiotic susceptibilities are based on breakpoints for urine and therefore the treatment of cystitis. If the working diagnosis is pyelonephritis, amoxicillin and amoxicillin/clavulanic acid are not expected to achieve the necessary tissue concentrations to effectively treat Enterobacterales e.g., E. Coli at standard doses. Similarly the susceptibilities reported for first generation cephalosporins, cevofecin and doxycycline in urine will not apply to soft tissue infections.

References can be found on the website at [www.tnvd.ca/papers](http://www.tnvd.ca/papers).

### References:

1. Weese JS, et al. International Society for Companion Animal Infectious Diseases (ISCAID) guidelines for the diagnosis and management of bacterial urinary tract infections in dogs and cats. Vet J. 2019 May;247:8-25. doi: 10.1016/j.tvjl.2019.02.008. Epub 2019 Feb 26. PMID: 30971357.2.
2. CLSI. Understanding Susceptibility Test Data as a Component of Antimicrobial Stewardship in Veterinary Settings. 1st ed. CLSI report VET09. Wayne, PA: Clinical and Laboratory Standards Institute; 2019.
3. CLSI Performance standard for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated from Animals. 5th ed. CLSI supplement VET01S (ISBN 9780-1-68440-092-8 [Print];ISBN 978-1-68440-093-5[Electronic]). Clinical and Laboratory Standards Institute, USA, 2020
4. The Ontario Vet College's antibiotic prescribing application **First Line** provides clinical guidance on the treatment of urinary or kidney infections in addition to other diseases in dogs and cats. <https://firstline.org/ovc-cphaz/>

