
TN
TRUE NORTH
VETERINARY DIAGNOSTICS

# February LabBrief

## Infections with Delayed Responses?

Sample, Disease, Drug, PK or Slime Factor?

## Are Microbiology Cartoons Funny?

You decide along with an <u>important</u> canine and feline MIC update.

# Why is my patient not responding?

Antimicrobial resistance is only one of many reasons you may see a decreased response to antibiotics. Here are key questions to ask yourself if you are not seeing an expected therapeutic response to antibiotics based on culture and sensitivity testing.

Was my sample representative?

Is it a disease effect?

Is it a pharmacokinetic (PK) effect?

Is it a local effect?

CLSI. *Understanding Susceptibility of Test Data as a Component of Antimicrobial Stewardship in Veterinary Setting*. 1st ed. CLSI report Vet09. Wayne, PA: Clinical and Laboratory Standards Institute; 2019.

# Was my sample representative?

When you suspect a bacterial infection you should review the necessary precollection requirements in advance of submitting a culture specimen. Your patient's sample should be submitted in a sterile, leakproof well labelled container.

Am I collecting my culture before antibiotic therapy? ✓

Am I obtaining an appropriate specimen ? Swab versus fluid versus surgical tissue sample? ✓

Am I using appropriate transport media? For e.g. different swabs are needed for anaerobic culture. ✓

Are appropriate storage conditions available prior to submission? ✓

# Should I be considering any disease effects?

Disease effects relate to the pathology caused by infectious agents. For e.g in canine, bovine or avian respiratory disease complex these are multifactorial diseases that can include viral components.

Specific diseases or disease chronicity may be associated with fibrosis. Fibrosis can persist after bacteria are eliminated and contribute to ongoing clinical signs.

Chronicity can trigger immunological processes which may contribute to ongoing clinical signs in the absence of bacteria.

Could there be a viral component? Is fungal or protozoal disease a consideration?

# Should I be considering any PK effects?

Although reviewing pharmacokinetics might sound cringe worthy what if we just reduced it to the "snazzy" term PK effects? What important PK effects should one consider?

Are there any tissue barriers affecting therapeutic drug choice such as brain, eye, prostate or mammary gland? Is the organism likely or possibly intracellular?

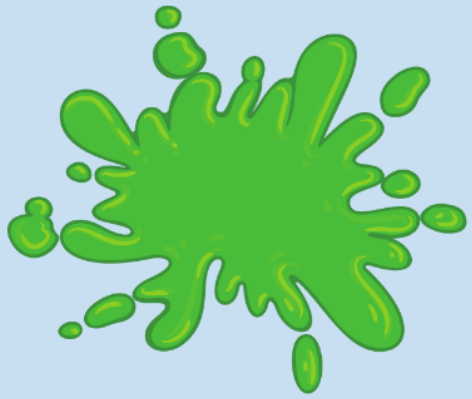
Is there reduced drug absorption in the presence of food or concurrent medication ?

Is the appropriate dose, route and dosing frequency being used? Any compliance issues? Is my drug formulation a concern? Are there species specific breakpoints?

Is there decreased tissue blood flow such as in abscesses or sequestered bone fragments?

# Should I be considering any local effects?

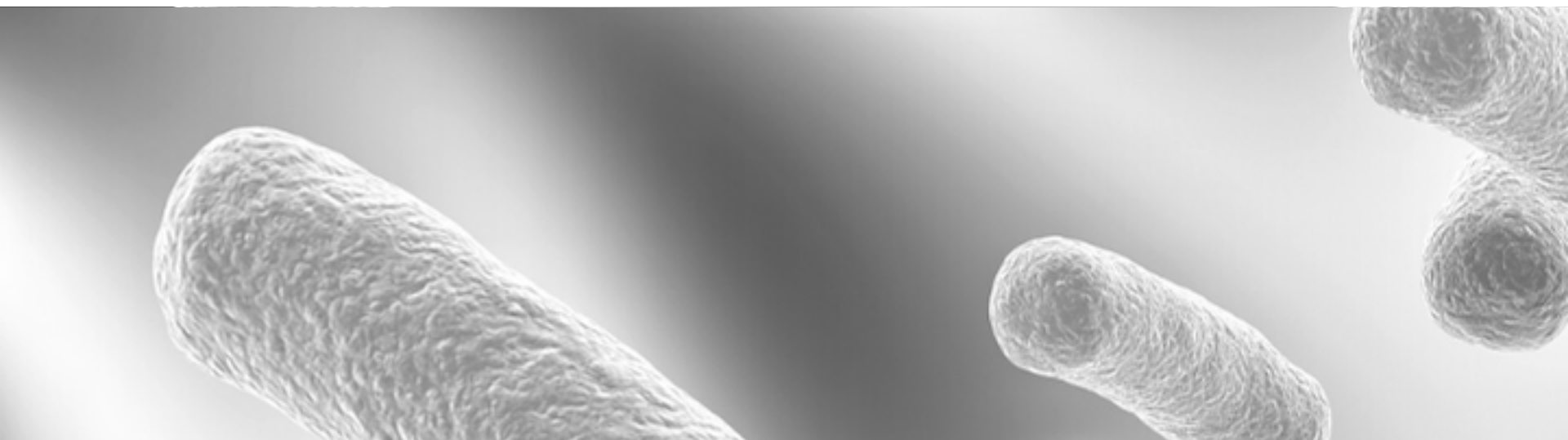
Think slime and mucus. Could there be a biofilm issue? Certain disease processes and certain bacteria are associated with the production of biofilms.  A biofilm protects bacteria from antibiotics and phagocytosis by white blood cells. Cases with chronic wounds, surgical implants, catheters, stents, foreign bodies, chronic otitis, cystitis or rhinosinusitis as well as possibly certain mastitis cases have been associated with biofilms.



# Is there a lot of pus and cellular debris?

Certain antibiotics will be inactivated in the presence of pus and necrotic debris. They have actually done experiments investing the super powers of small volumes of pus when it comes to inactivating aminoglycosides. Pus is the kryptonite of:

- Aminoglycosides such as Amikacin or Gentamicin
- Ampicillin and Pencillin G
- Polymyxin B

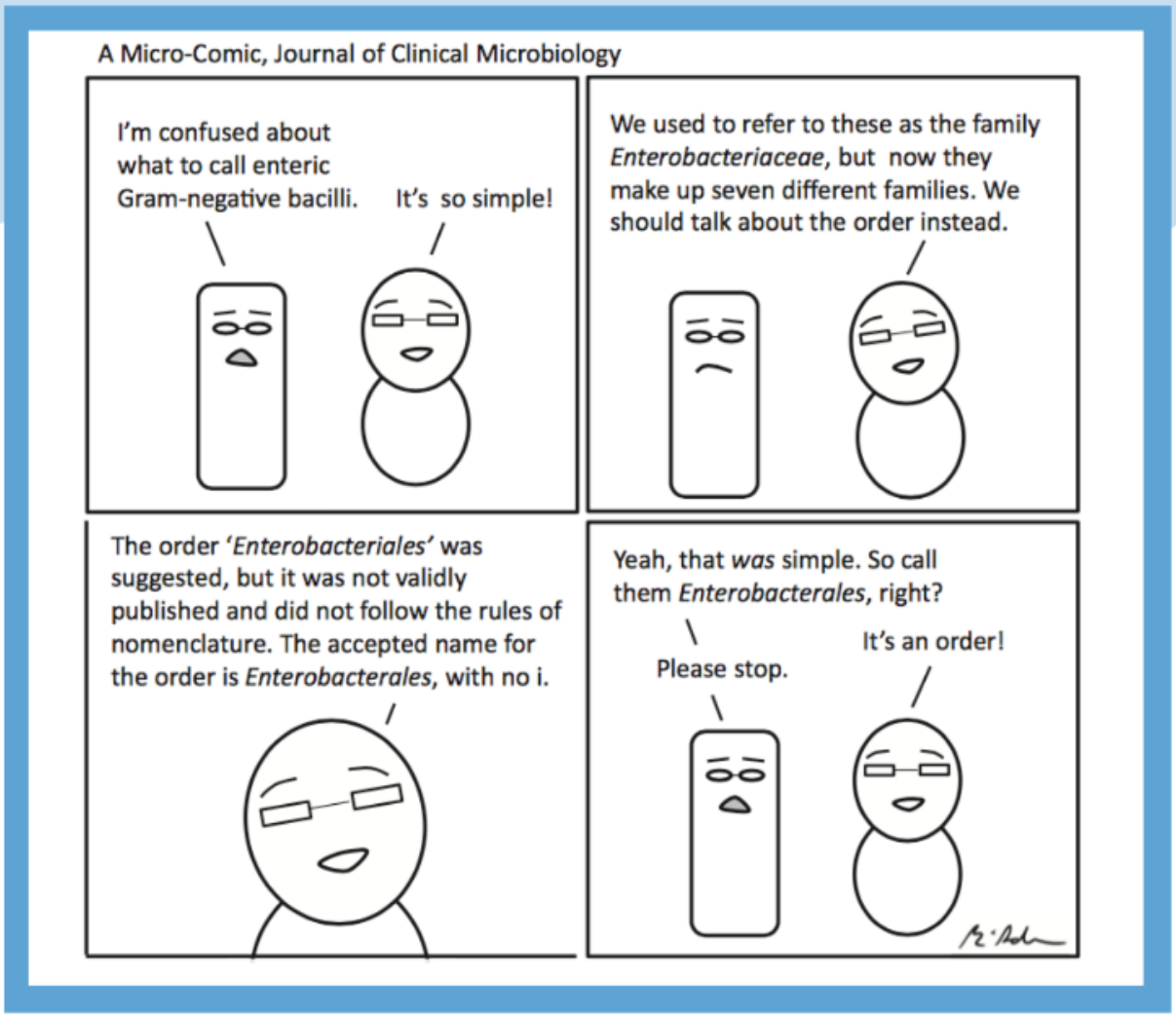


# Lab News

## Canine and Feline Bacteriology Update

Due to new 2020 veterinary breakpoints, we have been working with the automated MIC testing company and leading experts as updates are in process. As a result, you will notice a few changes to culture and sensitivity panels. Specific manual antibiotic testing may be needed until manufacturers complete the necessary updates.

- First, what is a bacteriology update without a name change! What do we now call enteric gram-negative bacilli?




McAdam AJ. 2020. Enterobacteriaceae?Enterobacterales? What should we call enteric Gram-negative bacilli? A micro-comic strip. J Clin Microbiol 58:e01888 19. https://doi.org/10.1128/ JCM.01888 19.

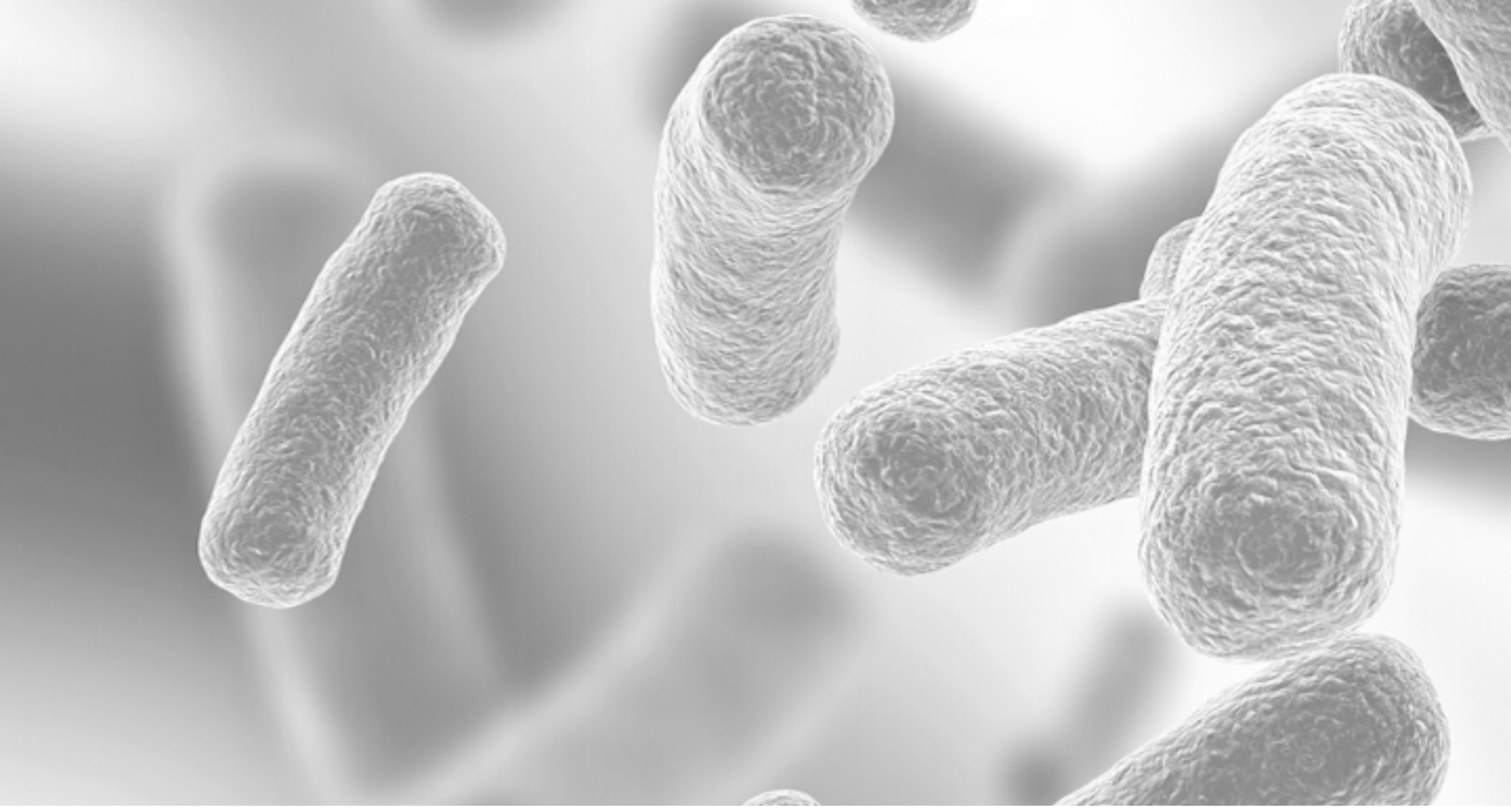
- The future software programs must be adjusted to the very low ranges needed to determine accurate Enterobacterales sensitivities. Using the new breakpoints it is unlikely that certain antibiotics will achieve adequate tissue concentration targets outside of the urinary tract.

**Until all the updates are implemented these are the new steps.**

- Skin and soft tissue infections involving E.coli and other Enterobacterales will be reported as "resistant" to amoxicillin, amoxicillin-clavulanate, first-generation cephalosporins, and tetracyclines (doxycycline).
- Skin and soft tissue infections involving staphylococcus species via automated testing are expected to be "resistant" to amoxicillin-clavulanate. To compensate for this, Oxacillin breakpoints will be used to determine amoxicillin-clavulanate sensitivity.
- Oxacillin breakpoints will continue to be an indication of methicillin resistant staphylococcus organisms.

**What changes from a practice stand point?**

  - If you have a skin or soft tissue site with an enterobacterales isolate, amoxicllin-clavulanate sensitivity can be determined by requesting a specific manual MIC test.
  - If you require a specific staphylococcus MIC for amoxicillin-clavulanate then a manual MIC method will be needed.
  - Manual MIC strip testing will be at an additional cost per strip.
  - A strip can be applied to one isolate only.
  - On the rare occasion of multiple isolates please note multiple strips will be needed.
  - Turn-around time is 24 hours for this add-on.
  - The updated 2020 breakpoints will be applied to the manual MIC testing method to provide accurate results for your patients.
    - If in doubt - give a shout!



**True North Veterinary Diagnostics Inc.**

**320-6325 204th Street.**

**Langley, BC V2Y 3B3**

**604-539-5550**

**1-877-539-5550**

**Fax: 1-888-336-9408**

labinfo@truenorthvet.ca

**Website -** www.tnvd.ca