



# DEPARTMENT OF MICROBIOLOGY INFECTIOUS DISEASE BULLETIN

VOLUME 1 ISSUE 1

JANUARY 2022

## Snippets from History

### Louis Pasteur (1822- 1895)

A French chemist and microbiologist who was one of the most important founders of medical Microbiology. He disproved the theory of spontaneous generation and contributed to germ theory and the study of infectious diseases. Louis Pasteur is best known for inventing the process that bears his name, pasteurization. Using his germ theory of disease, he also developed vaccines for chicken cholera, anthrax, and rabies.



## Know your Bugs

### Community- acquired Vs. Health Care-associated MRSA

CA-MRSA contain Panton-Valentine leucocidin, a highly virulent, pore-forming exotoxin that causes dermal necrosis and has cytolytic activity against neutrophils and monocytes. P-VL-positive *S aureus* strains are more frequently associated with cellulitis and abscesses. In immunocompromised patients, the toxin may disseminate hematogenously and lead to generalized staphylococcal scalded skin syndrome and fatal necrotizing pneumonia. It is also described as being responsible for necrotizing fasciitis and bone and joint infections. Whereas HCA-MRSA is associated with risk factors such as recent hospitalization or surgery, residence in a nursing home, presence of indwelling device or catheter. It mostly causes hospital acquired pneumonia and bacteremia and is considered multi-resistant.

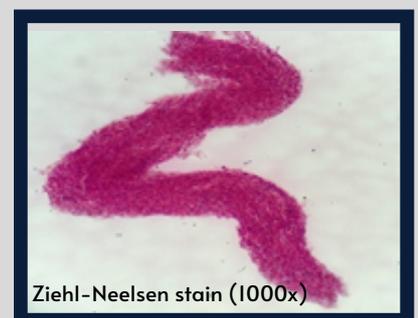
## Know your Drugs

### VANCOMYCIN

1. A glycopeptide antibiotic is cell wall inhibitor active against gram positive bacteria (*Staphylococcus*, *Streptococcus*, Variable- *Enterococci*) and no activity against gram negative bacteria
2. Oral vancomycin is absorbed very poorly, only indication for its use is treatment of *Clostridium difficile* infection.
3. Although vancomycin is very active against *Staphylococci*, it does not kill MSSA as quickly as beta-lactams do. Does your patient have MSSA? Use cloxacillin, dicloxacillin, cefazolin instead.
4. Vancomycin is a drug of choice for MRSA infections and empiric use when MRSA is a concern such as nosocomial pneumonia, suspected MRSA bloodstream infection
5. Adverse events include: Nephrotoxicity, Infusion related reaction-Red Man Syndrome- can be prevented by slowing infusion rate - Not a true allergy - Antihistamines can also ameliorate the reaction
6. Penetration of vancomycin into the CSF is minimal in the absence of meningeal inflammation - So, go for intrathecal route in ventriculitis cases
7. The dosing regimen for vancomycin should be followed accurately:
  - A. A loading dose (based on actual body weight) followed by
  - B. the maintenance dose – Dose intervals are either 12, 24 or 48 hours after loading dose
  - C. Measure the trough levels (Target = 10-20mg/L) – should be taken within 48 hours of starting treatment THEN at least every 3 hours if stable renal function

## PICTURE QUIZ

A young man with rheumatoid arthritis receiving methotrexate and a TNF inhibitor presented with non-healing lesions of the fingers since several months. The lesions initially occurred after an injury to the hand while in a pond. Shortly thereafter, he developed erythema and swelling. Despite multiple courses of cephalexin and clindamycin, the lesions did not improve. A small amount of purulent material was expressed from one of the lesions and was sent for bacterial and fungal smear and culture. The finding of ZN staining from positive broth culture is shown in picture.



Ziehl-Neelsen stain (1000x)

Answer on page 2



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## In the news

1. NeoCov: Wuhan Scientists Warn of New Coronavirus Strain with High Death, Infection Rate.  
<https://www.thehealthsite.com/news/neocov-wuhan-scientists-warn-of-new-coronavirus-strain-with-high-death-and-transmission-rate-861228/>
2. Scientists Find Cure for Diabetic Foot Ulcers  
<https://www.india.com/health/scientists-find-cure-for-diabetic-foot-ulcers-5191377/>
3. FDA approves new antibiotic Lefamulin to treat community-acquired bacterial pneumonia.  
<https://www.fda.gov/news-events/press-announcements/fda-approves-new-antibiotic-treat-community-acquired-bacterial-pneumonia>
4. Epstein-Barr Virus May Be Leading Cause of Multiple Sclerosis  
<https://www.hsph.harvard.edu/news/press-releases/epstein-barr-virus-may-be-leading-cause-of-multiple-sclerosis/>

## Covid Corner

### New 'stealth Omicron' raises concern: To steal your vacation plans once again

The coronavirus, like all viruses, changes over time as it looks for ways to avoid our defences. The latest added in the list is Omicron, first reported in South Africa in mid-November 2021. It is scientifically known as B.1.1.529 and has been declared as a Variant of Concern. It is considered more contagious but the cases are mild and does not require ICU care. Current vaccines are expected to protect against severe illness, hospitalizations, and deaths due to infection with the Omicron variant and a booster dose can trigger more antibody production.

A new sub-strain of the Omicron variant, dubbed as the "stealth Omicron" is growing rapidly in some European countries, has caused that more transmissible strains of the coronavirus can cause a larger Covid-19 wave next globally. It is called BA.2 - variant under investigation. Having lots of mutations and additional genetic changes makes it hidden from RT-PCR. Whole genome analysis can only confirm its presence.

It just may be as contagious or perhaps slightly more contagious than original Omicron. It is still not established that if someone who is already had Omicron infection can be sickened again by BA.2. But as they share similarity it's possible that there may be cross-protection.

In India - Reported from Hyderabad, Maharashtra, New-Delhi and Gujarat

## Answer to Picture quiz

*Mycobacterium marinum* is a slow growing nontuberculous mycobacterium often found in association with fresh or saltwater environments. Cutaneous infections can occur due to direct inoculation of a cut with the organism and subsequent exposure to contaminated water. The lesions can be nodular, pustular, or ulcerated and infection of the deeper tissues, joints, and bones can occur. Diagnosis is often made via culture. A ZN smear of the broth can reveal cord formation; a feature most commonly seen with the *Mycobacterium tuberculosis* complex; however, it has also been described with *M. marinum*. Formal identification can be made using MALDI-TOF.

There is currently no consensus on the optimal treatment of *M. marinum* infection. Monotherapy with minocycline or clarithromycin in superficial infections and combination therapy with clarithromycin plus rifampin and/or ethambutol, is preferred in severe forms. The duration is 3 months minimum for all regimens. Most authors recommend extended treatment for 1-2 months following clinical resolution, ranging from 2 to 12 months overall, given the absence of substantial dose-related and time-dependent side effects when using recommended drugs.

Source: Case #19001: A young man with non-healing finger lesions [Internet]. Partners Infectious Disease Images. Available from: <http://www.idimages.org/idreview/case/caseid=572>. Copyright Partners Healthcare System, Inc. All rights reserved

### Message from Executive Director

I heartily congratulate the Department of Microbiology for their initiative to release monthly newsletter in Infectious Disease.

My Best Wishes to the entire team.....

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Dr. (Col) C. D. S. Katoch

### Message from Professor & Head

This newsletter intends to raise awareness and provide information on latest news and trends in the field from reliable sources. I thank the entire team for their excellent work.

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Dr. (Col) Ashwini Agrawal

### Editor's corner

We hope you all will enjoy reading this piece of work

If you have any suggestions or ideas, please contact us anytime to let us know.

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Dr. Navneet Kaur