

Infectious Disease I

- Necrotizing fasciitis is a clinical diagnosis in a patient presenting with a soft tissue infection who displays signs of sepsis/septic shock. Although CT scan can be supportive, definitive diagnosis/treatment requires surgical exploration/debridement, which should not be delayed for radiographic imaging results.
- Toxic shock syndrome is a medical emergency resulting in rapidly progressive multisystem organ failure due to toxin production by staph aureus or group A streptococci.
 - While group A streptococcus toxic shock syndrome is usually associated with a necrotizing soft tissue infection, the only clue to the diagnosis of staph toxic shock syndrome might be a history of nasal packing after ENT surgery or tampon usage in women.
- Since treatment of osteomyelitis generally requires prolonged courses of antibiotics (4-8 weeks), whenever possible having a surgical biopsy and bone debridement procedure is the best way to achieve source control, confirm a pathologic diagnosis of osteomyelitis, and identify a microbiologic etiology and susceptibility testing results, all of which will increase the likelihood of cure and limit antibiotic toxicity or inappropriate antibiotic usage.
- Bacterial meningitis is a medical emergency that requires immediate antibiotic therapy. The pace of the illness (hours for bacterial meningitis versus days for viral) can be an aid in helping to distinguish them.
 - Empiric antibiotic therapy should not be delayed by diagnostic testing including lumbar puncture or head CT.
- Herpes encephalitis, due to HSV-1 presents with fever altered mental status (usually with bizarre behavior because of frontotemporal lobe involvement) and often focal neurologic findings (such as a seizure). MRI imaging will frequently show abnormalities of the frontotemporal lobe.
 - Empiric IV acyclovir is essential pending the results of CSF HSV PCR (or brain biopsy) to decrease the severe morbidity and mortality associated with untreated infection.

- For patients with suspected cellulitis or infected wounds who are not responding to antibiotic therapy as expected, it is important to consider alternative diagnoses.
 - These include pyoderma gangrenosum, which presents with ulcerative skin lesions, lipodermatosclerosis, which is panniculitis occurring in the setting of chronic venous insufficiency, venous stasis dermatitis, and others.
- In patients with suspected toxic shock syndrome (TSS), while desquamation is included in the CDC case definition, it typically occurs one to two weeks initial presentation - usually after the patient improves.
 - The diagnosis of TSS should be based on clinical manifestations present at the time and laboratory evidence of organ dysfunction, even in the absence of desquamation.
 - Corticosteroids are not used in the treatment of toxic shock.
- For patients with suspected West Nile neuroinvasive disease, cerebrospinal fluid (CSF) testing for immunoglobulin M (IgM) antibodies against the West Nile virus should be sent as the preferred test.
 - The IgM antibodies typically do not cross the blood brain barrier, therefore finding IgM in the CSF is indicative of neuroinvasive disease.
 - Testing for other arboviruses should also be considered in patients being tested for WN virus.

Infectious Disease II

- Before starting therapy for latent tuberculosis, it is important to review potential exposures/risks for tuberculosis, status of the patient's immune system, and any symptoms or radiographic findings which might be suggestive of active tuberculosis, since treatment courses are different.
- The presence of a zoster vesical on the tip of the nose should raise high concern for eye involvement (herpes zoster ophthalmicus) because the tip of the nose is inactivated by the nasocilliary branch of the trigeminal nerve which also supplies the eye and can lead to vision loss without prompt evaluation and treatment by an ophthalmologist.
- For the diagnosis of pneumonia, a chest CT is typically not necessary.
 - Treatment for CAP is 5 days in outpatients.
- Neither the TB skin test (TST) nor the interferon- γ release assay (IGRA) can distinguish between latent and active tuberculosis.
 - For patients with active or latent TB, it is important to also check for HIV infection.

- HSV 1 or 2 antibody test positivity only indicates previous infection (some of which may have been asymptomatic) and is not useful for diagnosis.

Infectious Disease III

- For patients receiving pre-exposure prophylaxis for HIV infection (PrEP) HIV testing should be performed every 2-3 months, depending upon which therapy is utilized.
 - This is essential to prevent the development of viral resistance should HIV transmission occur.
 - Patients need to be made aware of the signs and symptoms of acute HIV infection (acute retroviral infection) and to seek immediate testing (HIV 1 RNA PCR quantitative, viral load) should that occur.
- For patients at risk for sexually transmitted infections routine periodic testing, even without symptoms, is important because many sexually transmitted infections are asymptomatic.
- Although urinary catheters are risk factors for UTI, the presence of bacteria in the urine in the setting of an indwelling catheter is not sufficient for a diagnosis of urinary tract infection.
 - Diagnosis of urinary tract infection requires symptoms. The only groups who receive treatment for asymptomatic bacteriuria are pregnant women and those undergoing invasive urologic procedures.
- Pre-Exposure Prophylaxis (PrEP) for prevention of HIV is indicated for persons who are at risk of HIV from injection drug use (particularly those who share equipment or have an injection partner with HIV) in addition to those with sexual risk factors (sex partner with HIV, bacterial STI within 6 months, or inconsistent condom use).
- Although most commonly *Neisseria gonorrhoeae* causes symptoms which localize to the genitourinary system it can cause systemic infection and cause symptoms including migratory polyarthralgia, skin lesions, and even septic arthritis.
 - It is important to obtain samples for evaluation from any suspected involved sites as genitourinary testing does not reliably determine presence or absence of gonorrhea infection at extra-genital sites.

Infectious Disease IV

- Evaluation of fever in a returning traveler requires knowledge of the pre-travel vaccinations and preventative measures/medications taken, as well as the itinerary/potential exposures and pace of the illness. While many of the illnesses require only supportive care, it is critical to identify and empirically treat life-threatening infections like *falciparum* malaria and typhoid fever while awaiting test results.

- Individuals with anatomic or functional asplenia are at increased risk for infection with encapsulated organisms; therefore, in addition to the standard recommended vaccinations for adults, these patients are specifically indicated to receive immunizations against pneumococcus, Meningitis (ACWY), Meningitis B, and Hib.
- Patients who develop signs or symptoms of pneumonia while in the hospital are at higher risk for infection with a healthcare associated pathogen which can be more resistant to antibiotics.
 - Empiric treatment for HAP and VAP should include antibiotics effective against MRSA and Pseudomonas and other gram-negative organisms. Cultures should also always be sought to help guide appropriate therapy.
- In the setting where there are symptoms concerning for botulism, it is important to consider wounds as a potential source of the toxin.
 - In addition to occurring after inhalation or ingestion of the botulinum toxin, botulism can also occur as a complication of wounds if the wound is contaminated with Clostridium botulinum which can then produce the toxin.