Infectious Diseases for the Non-Specialist

To receive MOC credit, attendees of this course were asked to provide a brief reflection on what they learned for each talk they attended. This document collects all of those reflections. To find the reflections for a specific talk search for the talk title, or use the bookmarks to navigate.

Antibiotics: New Drugs - How You'll See Them and How They Should be Used

- First, in general the duration of therapy for antibiotics has been reduced to 5-7 days for most conditions. Second, with antibiotics we basically ignore indications and treat based on susceptibilities. Third, dalbavancin is the one of the few new drugs that we will see in use.
- There are very few new antibiotics in the pipeline, and most are tweaks on previous molecules, therefore should be careful with what we have now.
- Up to date on the role of resistant antibiotics. Avoid Colistine, also, most importantly the use of short term antibiotic treatment. Keep treatment from 5 to 10 days.
- Clindamycin is not as helpful as we used to think. There is more resistance than I knew. It will not be a go-to for cellulitis anymore.
- Nitrofurantoin RUNS -- doesn't walk, but RUNS -- out of the blood and into the urine....and YOU BETTER NOT USE MORE THAN 5 DAYS of antibiotics for pneumonia
- Pseudomonas think carbapenem resistant Clinda not that great for Gram + organisms avoid UTI-nitrofurantoin, then Bactrim, be safe w choosing Quinolones. Sinusitis- viral convince pts as much as possible
- Proper usage of Clindamycin. Recognizing the proper antibiotic spectrum and what antibiotics to use and also learning that a shorter duration of antibiotics may be used
- The new medication Dalvance though more expensive and not necessarily having better bacterial coverage for soft tissue infections can save time and be appropriate for some patients to avoid a Picc line
- Shorter duration of antibiotics is better in most cases! Newer antibiotics are not necessarily the best. Also think about cost.
- I will be more confident in using nitrofurantoin in elderly patients. I will get a Sanford guide and assure that I'm using antibiotics for minimum days.
- Omadacycline and eravacycline potential uses not to worry about drug indications - look at what drug is good for. 3 top priority pathogens needs more new drugs for gram negative
- Many of the new abc being developed are not geared towards clinical needs pertaining to resistance and are very expensive and not necessarily more convenient to administer.
- Unfortunately, some of the "new" drugs fill niches that are already taken, and are mostly effective against Gram positive organisms, for which we largely have effective treatments. One important exception is ceftazidime-avibactam, which can treat CRE. Unfortunately, it is not effective against resistant Pseudomonas.
- Dalbavancin and oritavancin could be used to eliminate the need for PICC line in long treatment courses in IVDA for example, and might be cost-effective.
- It was useful to know that the residents in OHSU still use zosyn a lot. Also that 5 days of antibiotics is sufficient for treatment of most infections.
- 1. Empiric Rx of uncomplicated UTi with nitrofurantoin is the way to go. Avoiding fluoroquinolones even more. 2. IV fosfomycin high in salt. Careful with chf patients. 3. Have not seen Dalbavancin being used at our hospital ever. Good to know about it and would be really great for those who can’t have picc line. 4. Have used antibiogram more often this week.

- I will use the term "antibacterial chemotherapy" when referring to antibiotics from now on to patients and other providers to more accurately reflect the impact of antibiotics on an individual level
- Nitrofurantoin is old but still a great drug, cheaper by a bunch than fosfomycin but changes may be coming with the IV version for treatment of pyelo.
- Most effective use of newer modalities of treatment. How best to use them, the different clinical scenarios, and when to avoid them. Side effect profiles

Osteomyelitis

- Ideally, we would I&D everyone in order to get culture and susceptibilities, and ideally this would be from a surgical culture. However, the best we can sometimes get in the clinic is a soft tissue swab which will not necessarily be accurate (so keep this in mind).
- That osteomyelitis of the spine may present as back pain only, without fever or other systemic symptomatology, and that CRP is a better marker than ESR for following progress.
- Good reminder of the diagnostic tools and which one to select, such as MRI. Also, need for early referral for debridement and need to cover MRSA.
- We should think about vertebral osteomyelitis in cases of back pain that don't respond to conservative measures including physical therapy. Also, oral antibiotics may be as good as IV in some cases.
- For a DFI, there is no rush to start antibiotics; it's better to wait for the culture...and even better to just call the surgeon....And trust your clinical judgement.
- Culture the bone prior to treating mild usually gram positive cocci moderate gram negative rods severe anaerobes pseudomonas in tropical environments after a while polymicrobial
- I learned when to think about osteomyelitis when to refer patients. I learned what antibiotics should be used and the importance of surgical consult in dealing with osteomyelitis
- If a suspected osteomyelitis has an associated cellulitis antibiotics should be started before waiting for the culture results. Otherwise it is better to wait for the culture results to choose the appropriate antibiotic.
- Often not an emergency and it may be best to wait for cultures from debridement in order to guide antibiotic therapy more effectively. MRI is still gold standard
- For diabetic infections, I won't feel so inclined to start antibiotics empirically and instead wait for cultures obtained during surgery. MRI is still gold standard imaging
- Vertebral osteomyelitis is harder to diagnose early. Common ways to diagnose osteomyelitis including MRI. Swab cultures are not good. Debridement important and getting good cultures
- I was challenged to medicine wisely and appropriately after estimating solid diagnosis Also to wisely use medical resources that will give me actionable data that is cost effective and available
- MRI is the best imaging modality for diagnosing osteomyelitis. CT scan is the next best. Dalbavancin can be considered for treatment of osteomyelitis, having the benefit of once weekly dosing.
- Obtaining a bone culture (preferably before giving antibiotics) is critical to successful treatment of osteomyelitis, as surface swabs may miss up to 50% of pathogens.
- Dr. Makadia's emphasis on waiting to start antibiotics in stable osteo without significant cellulitis until culture data is available was helpful. Also that ESR is not really necessary.
- It was useful to see that there are often oral medications that can be used to treat osteomyelitis as well. Diagnostic imaging recommendations useful as well.

- 1. Wound swab is not very useful (44% match surgical biopsy) and should not guide therapy. Aim for bone biopsy If able. 2. Blood cultures for all with osteomyelitis, even stable patients without signs of systemic infection as it might save pt bone biopsy of positive. 3. Bone remodeling was an interesting concept. 4. Will share Oviva trial results. 5. Hyperbaric oxygen treatment is not something I see at the hospital and was not familiar with data. Will read more about it. We do refer patients to wound care, patients with osteo s/p debridement.
- Dalbavancin for outpatient treatment of osteomyelitis without a PICC line is going to be very helpful. Also reinforced that bone culture before antibiotics is best assuming stable.
- The data from England comparing oral therapy to IV therapy was impressive and could result in a much lower hassle manner of treatment with comparable assuming patient compliance with taking their medication orally versus know IV injection.
- Imaging modalities and treatment. Use of newer med - dalbavancin; when not to treat osteomyeliti; use of rifampin based on timing; timing of joint replacement

When There is Balance in the Force - ID MD and ID PharmD Perspectives on Common ID Topics in Primary Care

- Know your local hospital antibiotigram. Urine is not sterile! In general, shorter duration of treatment is as effective as prior accepted longer durations. Macrobid is excellent for UTI but not for soft tissue penetration.
- That the trend in antimicrobial chemotherapy, i.e. antibiotic use, is shorter and shorter duration of therapy, and that clindamycin is far less effective than most of us think.
- Most important pearl was the decision when we need to drain an abscess vs treating with antibiotics. 5 cm is the cut off. Also, to learn the limited use of Clindamycin.
- Shorten courses of antibiotics in many cases. Community acquired pneumonia can get as little as five days of antibiotics with most agents. Strep still needs to be 6-10 days because of rheumatic fever.
- "Clindamycin is rapidly falling apart for gram positive aerobes," "clinda is toast for Group B strep," "urine is NOT sterile, people," the history of the word "curbside," the useful way of presenting the differences between impetigo/cellulitis/erysipelas/nec fasciitis....
- Treat influenza in high risk groups without waiting for testing. Think of Influenza if it's the right time of the year even if they have been vaccinated. Think of biphasic curves in flu season-possible trend
- The importance of antibiotics and incision and drainage as well as how to categorize skin and soft tissue infections which will then lead to proper treatment
- Due to resistance patterns of skin infections clindamycin is not a good choice at this point. Also immunizations do not work as well for patients whose BMI is over 40%.
- If you have a high clinical suspicion for influenza, then consider not even testing for the flu but rather treat empirically. Treat as soon as possible. Flu tests can have a high false negative rate.
- Management of purulent vs. non-purulent infections. Reminding of all the black box warnings for FQ's. Remembering to having a high clinical suspicion for Influenza and start treatment with suspicion high
- I was challenged to medicine wisely and appropriately after estimating solid diagnosis Also to wisely use medical resources that will give me actionable data that is cost effective and available
- Don't use nitrofurantoin for pyelonephritis. Seven days of Cipro is effective even if patient is bacteremic. Don't use Cipro as first choice for uncomplicated UTI. Bactrim increases the risk of hyperkalemia. Abx for CAP total of 5 days includes IV inpatient and po outpatient.
- Most infections can be treated with much shorter courses of antibiotics than many of us were taught, i.e. 5-7 days is adequate for CAP, 7 days for pyelonephritis.
- High % of Strep milleri in IVDA abscesses. Clinda is pretty bad for MRSA; high rates of resistance. Also not great for GBS. NTF is much preferred to cipro.
- Was helpful to hear the general information about antibiotic use and pharmaceutical incentives for production and pricing influencing the industry.

- 1. Shorter duration of therapy!!! Pneumonia 5-7 days. I have already been practicing it this week and shared with my colleagues. 2. MRSA nasal culture to guide dc of vancomycin if negative. 3. Gram neg bacteremia - shorter course of antibiotics.
- That graph that shows the fever spike and duration of symptoms with viral uri is one that I can quickly draw to show patients what to expect which will be helpful
- There is still value in the flu vaccine annually and it should be encouraged. Tamiflu is effective in reducing morbidity and it should be used whenever possible especially in high risk individuals

Questions from the Coffee Line

- Undetectable equals untransmittable for HIV. Updates in Tb screening. Importance of vaccination for measles, and updates in measles outbreaks (all imported as of now). Also, that S aureus bacteremia does require treatment for 2-6 weeks with IV antibiotics.
- Basic lab work up such as cbc ua and chest radiographs are useful tools in determining who should receive ongoing treatment, and feel free to stop when results are back.
- Several pearls but the most important was reassured that HIV undetectable is untransmittable. Reinforced the information about measles. We can show parents data which hopefully will help increase vaccination rate.
- People who have an undetectable HIV load cannot transmit virus through sexual activity, so if the infected partner maintains treatment and remains undetectable, partner does not need PrEP. But consider PrEP for higher risk individuals.
- "Staph aureus bacteremia gets 14 days of antibiotics because that is a very sticky bug." Also, the opioids/nafcillin connection was very interesting. The vaccination information was a good reminder of our public health responsibilities too.
- Staph aureus bacteremia has to be treated IV ABxs 6 wks MSSA- Nafcillin but decreases opioid absorption so must increase dosing or avoid in patients that use this medication
- Treatment of urinary tract infections, sinus infections, and appropriate treatment for acute otitis media. I will share with my colleagues on the importance of age in applying the standards for observation
- If a staphylococcal bacteria is found in the urine that is not a primary source for staph to be found and a blood culture and further work-up should be done.
- I learned that undetectable HIV virus means that it is not transmittable to partners. Likely yearly TB screening for health care providers is not needed.
- I learned that in HIV, an undetectable viral load equals untransmittable. I also learned that annual TB screening is likely not necessary in certain populations
- I was challenged to medicine wisely and appropriately after estimating solid diagnosis Also to wisely use medical resources that will give me actionable data that is cost effective and available
- Staph aureus bacteremia should be treated for a minimum of 14 days and as long as 6 weeks. HIV undetectable means untransmissable. Erysipelas has a heaped up border or well demarcated border as opposed to cellulitis which is more diffuse and appears hazy.
- When treating S. aureus bacteremia, cefazolin may not be as effective as oxacillin or nafcillin when the inoculum is high. May want to start with nafcillin or oxacillin until source control has been achieved.
- Nafcillin increases methadone metabolism. HCP may not need annual TB screening. Measles can stay airborne up to 25 hours! Herd immunity required 94.5% vaccination rate.
- Stay attached to your pharmacist - we have limited involvement with the pharmacist except when patient has reconciliation of meds after leaving the hospital and returning home

- I particularly learned from the use of antibiotics in urinary tract infections being recurrent and also that prophylactic antibiotics are not recommended in recurrent infections.
- We likely don't need annual TB testing. Also the effectiveness of cefazolin for Methicillin sensitive staph aureus really depends on the inoculum size with impact on mortality
- HIV transmission can now be completely prevented with an HIV positive individual taking daily suppressive medication that reduces them to an undetectable viral load regardless of the manner of sex being performed.

Skin and Soft Tissue

- Need combination of amoxicillin and doxycycline OR cephalexin and doxycycline for treatment of non-purulent SSTI. Erysipelas may benefit from prophylaxis. Treat any cat bite and any hand bite with antibiotics.
- The sun shall not set on pus remains true, that incision and drainage can greatly reduce antibiotic usage, and only add meds if surrounding cellulitis.
- The use of soap and water for impetigo. Reminder that antibiotics are not always indicate. Also, useful algorithm for diagnosis and treatment of Cellulitis vs necrotizing fasciitis
- We can decrease duration of treatment for skin infections to five days in most cases. Even though clindamycin has a lot of resistance, there are some other advantages to it.
- I'd never heard erysipelas explained quite that way and it was very helpful.
- Erysipelas- think strep, goes into the epidermis Cellulitis- think staph and strep and dermis think GAS s/p varicella-shingles post op think GAS systemic symptoms needs IV ABXs.
- The role of bacteria in each layer of the skin and appropriate antibiotic prescribing. I also will discuss with my clinic on the duration of antibiotics
- Hand bites, cat bites, joint bites are particularly concerning for bacterial infection and need to be started on antibiotics. Also Bactrim does cover strep and one does not have to be concerned that they are missing that organism by using it for soft tissue infections
- If patient has a penicillin allergy (not prophylactic) safe to use a cephalosporin. Always keep necrotizing fasciitis on your differential when rapidly progressive skin infection.
- To remember that non-healing wounds may not be from an infectious cause. Also I was reminded that necrotizing fasciitis should be on differential in a rapidly spreading infection especially in immunocompromised patients
- I was challenged to medicine wisely and appropriately after estimating solid diagnosis Also to wisely use medical resources that will give me actionable data that is cost effective and available
- Deciding between tetanus toxoid vs reimmunization for cat bite depends on the number of previous immunizations and how recent. Pyoderma gangrenous has a heaped up purple border.
- The preferred empiric therapy for non-purulent SSTI in eligible patients is amoxicillin plus doxycycline OR TMP-SMZ, as cephalexin does not have the best MSSA coverage. In recurrent Strep cellulitis, consider suppressive therapy with PCN.
- "Purulent" abscess really means fluid collection not just drainage per se. GAS is common post-shingles. Cat bites need treatment no matter what. Clinda in nec fasc is proven to reduce toxin production in GAS and clostridium but not necessarily in Staph.
- Think of the infected extremities correlating with the depth of infection. Anatomically bilateral involvement of legs makes bilateral infection unlikely and more likely related in venous stasis
- The use of keflex being favored for coverage of both MRSA and strep was helpful. Also that clindamycin is not a good drug for skin infections first line.

- 1. Interesting point on Augmentin TID instead of BID dosing. Will talk to pharmacist at our institution. 2. Purulent STI - 60% MRSA but with IVDU only 43%. 3. Good reminder that Nafcillin increases opioid metabolism and to watch for worsening pain, dose adjustment. 4. Erysipelas- (GAS), well demarcated, Rx with penicillin. Look for lymphedema. 5. Periorbital cellulitis - cover both staph and strep.
- Eryepilas has a very high recurrence rate within 1 year and antibiotic prophylaxis is effective but should try to change the modifiable risk factors first and then only consider if still having more than 3 episodes per year (if always in same spot investigate for possible underlying osteo)
- Bats still remain the most commonly recognized carriers of rabies in Oregon with presence documented fox and goats and coyotes but interestingly not in raccoons as is noted in many other states.

Update on HIV

- New USPSTF guidelines regarding screening for HIV including all adolescents and adults ages 15-65 years. There are a lot of new treatment options for HIV but need to be aware of potential interactions (like with PPIs).
- Pre exposure prophylaxis is effective and cost effective in reducing the transmission of the disease, but still we need to encourage basic safe sex techniques.
- I have very few patient with HIV however, the most valuable information was the interaction with other medication such as PPI. Also, prophylactive treatment and after exposure treatment
- We have to remember the effects of HIV on other organ systems besides the immune system. Remember that HIV accelerates aging. Be aware of drug-drug interactions, especially PPIs reducing the absorption of HIV medications.
- People living with HIV still have a lower life expectancy due to increased risk for non-AIDs-defining health challenges. I guess I mostly knew that, but had focused so much on the good news lately (U=U, PrEP, etc) that I'd perhaps not remembered that people living with HIV remain a vulnerable group in need of increased surveillance.
- p 24 antigen will be + 14-20 days status post infection; will be positive prior to HIV AB. Having hx. of STI increases risk of STI. Lots of drug interactions with antivirals: anticonvulsants, BCP's, warfarin, Flonase and antacids
- The importance of recognizing the other aspects of treating HIV patients, the mortality still associated with HIV. I will share with my partners about when to use PREP
- When prescribing medications for someone who is on HIV medications one consideration is that some of the medications need stomach acidity to work and therefore a proton pump inhibitor would decrease the effectiveness.
- Offer PREP to my patients that are high risk for getting HIV. People with HIV should get all vaccines except for live vaccines. It is now treated more like a chronic illness and remember that they can have common diseases such as diabetes and heart disease.
- Cervical cancer screening is different in HIV infected individuals. HIV infected patients should get most vaccines. I learned about PrEP and that this treatment should be offered to partners of HIV + person
- I was challenged to medicine wisely and appropriately after estimating solid diagnosis Also to wisely use medical resources that will give me actionable data that is cost effective and available
- Baseline testing before starting pre-exposure prophylaxis (Truvada) includes HIV test, Hep B, STD screening and pregnancy test. STD screen should include oral and rectal if relevant.
- #1 Tell patients that we test for STIs "from the rooting to the tooting." "If you use it, we test it--throat, urine, and rectal swabs may be appropriate. #2 Many commonly used medications, like PPIs, can affect the effectiveness of HAART, and there are many potential drug interactions.
- Life expectancy is still shorter even if HIV well-controlled. Starting ARV early is indicated in almost everyone. Suppressed viral load is better than PrEP so that should be the goal.

- To know HIV now is the equivalent of knowing syphilis in the past with the complexity of the presentations and the systemic involvement over time
- Making sure patients referred to HIV specialist. Office to follow up that they have actually gone. It is striking that a lot do not get care they need. U=U is a great reminder when counseling couples. Vaccination for Patients with HIV - influenza, hepatitis, pneumonia vaccine. Drug side effects. Tenofovir 60% Aki
- Although treatments have dramatically improved for HIV the life expectancy of those infected is still significantly reduced from non-infected counterparts. The time and CD4 count/severity of illness at time of starting treatment has a big effect on this.