

Antibiotic Stewardship New Provider Orientation

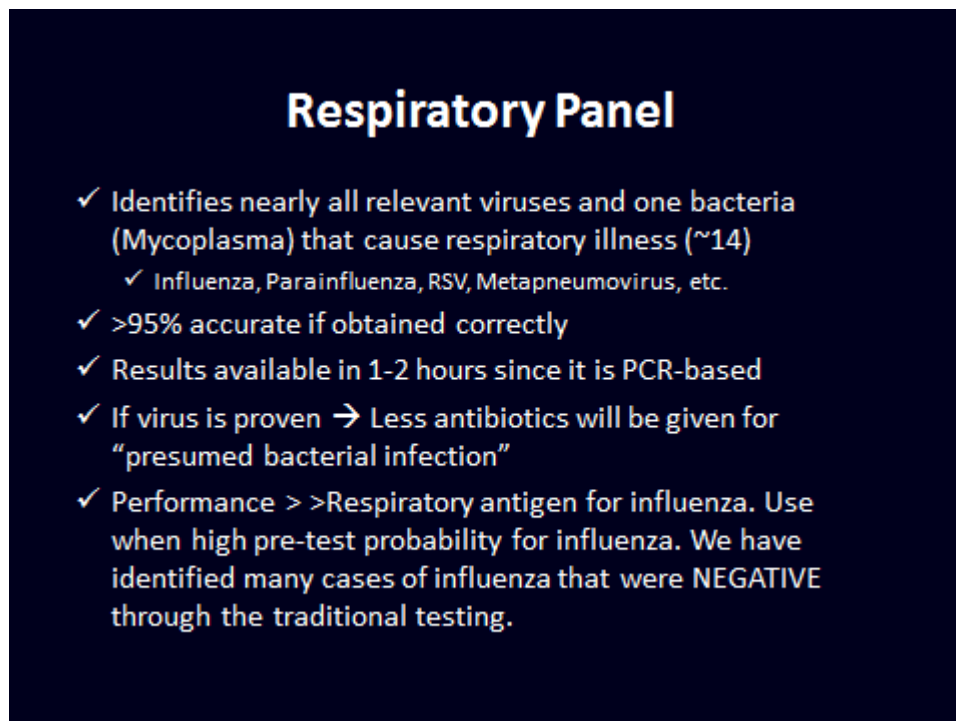
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Antibiotic stewardship program at MGMC

- National trend/soon a requirement by CMS and Joint Commission. MGMC was early adopter of a “real program” (as opposed to a program in paper, just to fulfill the requirement). Up and running since September 2015. Jill Bode, PharmD (pharmacist); Dr. Fulton (leader)
- Goals:
 - Reduce inappropriate antibiotic use.
 - Increase appropriate antibiotic use.
 - Reduce antibiotic-associated side effects including C. diff, WHICH HAS BEEN UNEXPECTEDLY HIGH SINCE 2013 AT MGMC – **Improved dramatically since 2016 after stewardship implemented!!!**
- Activities
 - Prospective review of all INPATIENT antibiotic orders (does not affect ER)
 - Implementation of more effective diagnostic techniques/allergy screening for infections (see below)
 - ID service available (Dr. Fulton/Dr. Rearigh) for phone consultation weekdays year-round or urgently on weekends.

Crash course on what you can do to use antibiotics judiciously at MGMC

Use RESPIRATORY PANEL if you are undecided if the patient has a viral or bacterial respiratory illness:



Respiratory Panel

- ✓ Identifies nearly all relevant viruses and one bacteria (Mycoplasma) that cause respiratory illness (~14)
 - ✓ Influenza, Parainfluenza, RSV, Metapneumovirus, etc.
- ✓ >95% accurate if obtained correctly
- ✓ Results available in 1-2 hours since it is PCR-based
- ✓ If virus is proven → Less antibiotics will be given for “presumed bacterial infection”
- ✓ Performance >>Respiratory antigen for influenza. Use when high pre-test probability for influenza. We have identified many cases of influenza that were NEGATIVE through the traditional testing.

- Caveats:
 - Ticket price of the test is >\$500. Use judiciously if you suspect the patient will be responsible for charges.
 - Use “ADULT RESPIRATORY PANEL” order. (6 main targets (Flu A & B, COVID-19, Rhino/Enterovirus, Metapneumovirus, M. pneumoniae + any other Positive target.)

- **If positive, this does not exclude bacterial pneumonia in addition to the virus identified, but it usually helps lowering down the suspicion of bacterial pneumonia, so the patient can receive no antibiotic or a narrower antibiotic.**

Meningitis panel :

- PCR-based. Similar turn over.
- Tests for most relevant viruses, bacteria and fungus causing meningitis.
- In the appropriate clinical context (taking in account other parameters of CSF) it may be used to stop antibiotics

GI panel:

- PCR-based. Similar turn over.
- Detects essentially all relevant pathogens in stool causing acute diarrhea, including C. diff and norovirus.
- Use when you consider a variety of causes of diarrhea.
- Do not use if you are only or primarily suspecting C. diff. Order of choice is **MGMC C. diff Complete**

C. diff Infection (CDI)

- Do not test all patients with loose water stools for CDI
 - CDI is responsible for <10% of nosocomial diarrhea
 - Consider other causes of diarrhea (e.g. tube feeds, oral contrast, bowel regimens, antibiotic side effects, etc.) unless symptoms strongly suggest CDI
 - Never test formed stool, asymptomatic patients, or perform a “test of cure”

3 Likely testing scenarios

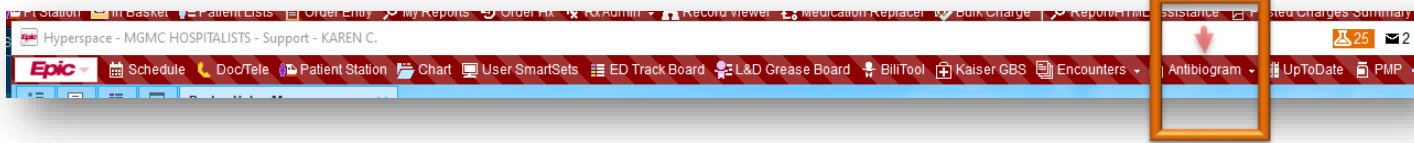
- GDH + and Toxin + → Positive
- GDH + Toxin - → Indeterminate → PCR testing
+ = positive test
- = negative test
- GDH - Toxin - → Negative

Rapid Diagnostics Blood Culture Identification Panel (BCID)

- PCR based. 1 hour turnaround time after culture flagged positive.
- Allows for early adjustment of antimicrobials to the most appropriate therapy.
- Final pathogen susceptibilities are usually available in 24-72 hours and should always be reviewed to determine if therapy adjustments should be made.

Antibiogram

- EPIC Header or embedded as a reference when ordering anti-infectives



levofloxacin (LEVAQUIN) 500 mg in dextrose 5% 100 ml IVPB premix

Order Inst: **DOSAGE ADJUSTMENT FOR RENAL IMPAIRMENT**
Creatinine Clearance > 50 ml/min: Normal Dose
Creatinine Clearance 20 to 49 ml/min: 250 mg every 24 hours
Creatinine Clearance 10 to 19 ml/min: 250 mg every 48 hours
HEMODIALYSIS/CAPD: 250 - 500 mg every 48 hours
COMPLICATED UTI / ACUTE PYELONEPHRITIS:
Creatinine Clearance >= 20 ml/min: No dosage adjustment required
Creatinine Clearance 10 to 19 ml/min: 250 mg every 48 hours

Reference Links: [1. Antibiogram: Non-Urine Isolates](#) [2. Antibiogram: Urine Isolates](#) [3. Drug information](#)


Incorporate into your assessment a good allergy history, in particular when penicillin allergy is reported.

Cefazolin (Ancef) can be used in penicillin allergic patients (< 0.3% cross-reactivity due to low side chain similarity)

“The Penicillin Allergy Curse”

The preferred antibiotics for most common infections are penicillin or related to penicillin (aka cephalosporins)	Alternatives are: Less effective and/or More toxic and/or More expensive
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Patients with penicillin allergy end up having worse outcomes



Only 10% of people who claim a penicillin allergy truly have one!

- ✓ Out of 10 people who claim a penicillin allergy, 1 tests positive through the standard penicillin testing (which is very accurate)



Why?

- ✓ Recollection bias
- ✓ Allergies can be outgrown. The furthest away, the less likely to still have them.

Out of those 10% confirmed penicillin allergic patients, only 4% will have an allergy to cephalosporins

