



Update on Antibiotics/Resistance

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Financial Disclosures

None

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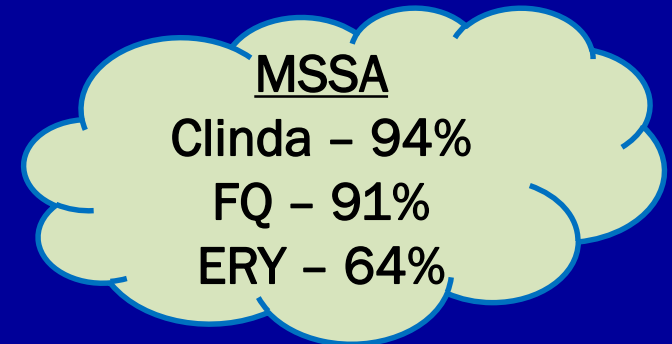
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Antibiotic Susceptibility Update

- Review of 2018 Piedmont Athens Regional Antibigram
 - 3 antibiograms are provided
 - ALL inpatients (excluding urine)
 - ALL inpatients – urine only
 - Outpatients – RLO locations (doctor's offices, urgent care centers, Landmark hospital)
 - Caveat – for 2018, we have data for only 7 months (EPIC started August 1; also new lab system - Beaker)

Antibiotic Susceptibility Update

- Review of 2018 Piedmont Athens Regional Antibiogram
 - Some observations
 - The percent of *S aureus* isolates that were MRSA has been stable for the last several years – ranging between 50-55%
 - Excluding urine isolates, MRSA data
 - Vancomycin 100% susceptible
 - Linezolid 100% susceptible
 - Tetracycline 94%
 - TMP/SMX 91%
 - Clindamycin 81%
 - LQ/Cipro 30%/25%
 - Erythromycin 15%



Antibiotic Susceptibility Update

- Review of 2018 Piedmont Athens Regional Antibigram
 - Some observations
 - *Streptococcus pneumoniae* (non-meningitis isolates)
 - Levofloxacin 100% susceptible
 - Amox/clavulanate 98%
 - Ceftriaxone/3rd generation CEPH 96% susceptible
 - Tetracycline 81%
 - Cefuroxime/2nd generation CEPH 77%
 - PCN 63%
 - Erythromycin 56%

Antibiotic Susceptibility Update

- Review of 2018 Piedmont Athens Regional Antibiogram
 - Some observations
 - *E coli* – all urine isolates
 - Trend of TMP/SMX and FQ resistance continues
 - Pip/tazobactam – 97%
 - Nitrofurantoin 97%
 - Cefazolin/1st generation CEPH 90%
 - Ceftriaxone/3rd generation CEPH 89%
 - Cefuroxime/2nd generation CEPH 87%
 - Amox/clavulanate 85%
 - Tetracycline 77%
 - LQ/Cipro 76%
 - TMP/SMX 74%

Antibiotic Susceptibility Update

- Review of 2018 Piedmont Athens Regional Antibiogram
 - Some observations
 - *E coli* – Non-urine isolates
 - Trend of TMP/SMX and FQ resistance continues
 - Pip/tazobactam – 98%
 - Cefazolin/1st generation CEPH 87%
 - Ceftriaxone/3rd generation CEPH 87%
 - Cefuroxime/2nd generation CEPH 84%
 - Amox/clavulanate 84%
 - TMP/SMX 73%
 - LQ/Cipro 72%/71%
 - Tetracycline 68%

Antibiotic Susceptibility Update

- Review of 2018 Piedmont Athens Regional Antibiogram
 - Some observations
 - *K pneumoniae* – all urine isolates
 - Pip/tazobactam – 98%
 - LQ/Cipro 95%/92%
 - Amox/clavulanate 92%
 - Ceftriaxone/3rd generation CEPH 91%
 - Cefazolin/1st generation CEPH 91%
 - Cefuroxime/2nd generation CEPH 86%
 - Tetracycline 82%
 - TMP/SMX 82%
 - Nitrofurantoin 66%

Antibiotic Susceptibility Update

- Review of 2018 Piedmont Athens Regional Antibiogram
 - Some observations
 - *Group A/Group B β-strept*
 - Still universally susceptible to PCN
 - Emerging resistance to clindamycin – up to 20% in some reports
 - LQ > Tetracycline
 - *H. influenzae*
 - All that is reported is absence/presence of β-lactamase
 - If present, no PCN VK, PCN G, Amoxicillin, Ampicillin
 - *P. aeruginosa*
 - Only oral option – FQs
 - Urine – 80%/82%
 - Excluding urine – 89%/88%
 - (significant improvement over previous year; decreased use noted)

Antibiotic Susceptibility Update

- Fluoroquinolone FDA warnings
 - Increased risk of ruptures/tears in the aorta
 - History/risks – blockages/aneurysms, high blood pressure, genetic pre-dispositions (Marfan's, Ehlers-Danlos), the elderly
 - Increased risk of mental health side effects (disturbances in attention, disorientation, agitation, nervousness, memory impairment, delirium)
 - Increased risk of hypoglycemia with coma; hyperglycemia also
 - Increased risk of tendonitis, joints, muscles
 - Avoid in "simple infections" – cystitis/uncomplicated UTI, acute bacterial sinusitis, acute exacerbation of chronic bronchitis
 - Use when "no other options available"

Antibiotic Susceptibility Update

- Implications for common out-patient infections
 - Cystitis/uncomplicated UTI
 - Asymptomatic bacteriuria
 - NO indication for treatment unless pregnant or having urologic procedure that is expected to cause mucosal bleeding
 - These are the only groups of patients who should be screened without symptoms
 - **NOT** – premenopausal, nonpregnant women; diabetic women; elderly living in the community; elderly institutionalized persons; SCI persons; catheterized patients while catheter remains in place

Antibiotic Susceptibility Update

- Implications for common out-patient infections
 - Cystitis/uncomplicated UTI
 - Cystitis – options – empiric treatment indicated; no culture needed unless dealing with a treatment failure
 - Nitrofurantoin 100 mg PO BID for 5 days
 - NOT if creatinine clearance < 60 ml/min
 - NOT if any possibility of upper tract infection
 - Cephalexin 500 mg PO BID for 7 days
 - Fosfomycin 3 grams mg PO once
 - Others – Augmentin, Cefdinir

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 - TMP/SMX 74%

Antibiotic Susceptibility Update

- Implications for common out-patient infections
 - Skin/Soft tissue Infections
 - Non-purulent cellulitis
 - Over 95% a β -strept is the cause
 - Purulent cellulitis
 - Over 95% MSSA or MRSA
 - Cellulitis with wound (DM foot infection, decubitus wound, venous stasis ulcer, arterial ulcer)
 - Polymicrobial – staph, strept, GNRs, anaerobes

Antibiotic Susceptibility Update

- Implications for common out-patient infections
 - Skin/Soft tissue Infections
 - Non-purulent cellulitis – really no change in abx options
 - Over 95% a β -strept is the cause
 - If not PCN allergic
 - PCN VK
 - Cephalexin/Cefdinir
 - Amox or Amox/clavulanate
 - If PCN allergic – more than rash reaction
 - Levaquin
 - Clindamycin – emerging resistance
 - Long acting IV infusions
 - Oritavancin; Dalbavancin

Antibiotic Susceptibility Update

- Implications for common out-patient infections
 - Skin/Soft tissue Infections
 - Purulent cellulitis
 - Over 95% MSSA/MRSA
 - Remember, over 50% of all *Staph aureus* is MRSA
 - Doxycycline
 - TMP/SMX
 - Clindamycin
 - Long acting IV infusions
 - Oritavancin;
 - Dalbavancin

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MSSA
Clinda - 94%
FQ - 91%
ERY - 64%

Antibiotic Susceptibility Update

- Implications for common out-patient infections
 - Skin/Soft tissue Infections
 - Cellulitis with wound (DM foot infection, decubitus wound, venous stasis ulcer, arterial ulcer)
 - Polymicrobial – staph, strept, GNRs, anaerobes
 - If not PCN allergic,
 - Amox/clav + Doxycycline (or TMP/SMX)
 - Amox + TMP/SMX (free at Publix)
 - Amox + Cipro (free at Publix)
 - If PCN allergic (more than rash),
 - Doxycycline + Flagyl
 - Levaquin + Flagyl
 - Doxycycline + Levaquin

Sinusitis

- Indications for antibiotic treatment
 - Initial evaluation – high fever ($>39^{\circ}\text{C}$), intense facial pain, purulent nasal discharge
 - If despite withholding antibiotics, patient is still symptomatic after 10 days
- Why are antibiotics often avoided?
 - High spontaneous resolution rate
 - Meta-analysis of 9 double-blinded trials found no clinical signs/symptoms that justify treatment – even after 7-10 days of treatment
 - Randomized placebo-controlled trial in adults – 10 day course of amoxicillin compared to placebo did not reduce symptoms at day 3 of therapy

Sinusitis

- Oral antibiotic options
 - Amoxicillin/clavulanate 2000/125 mg (two 1000/62.5 mg tablets) PO BID for 7 days
 - Cefdinir 300 mg BID for 7 days
 - Doxycycline 100 mg PO BID for 7 days
 - Cefuroxime axetil 500 mg BID for 7 days
 - PCN or Amoxicillin for 7 days
 - Azithromycin 500 mg PO once, then 250 mg daily for 4 more days
 - Good option for PCN allergic pregnant patients
 - Levofloxacin 500 mg PO daily for 7 days (last option)

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Otitis Media

- Oral antibiotic options
 - No antibiotics in the prior month
 - Amoxicillin 1000 mg PO TID for 10 days (free)
 - Amoxicillin/clavulanate 2000/125 mg (two 1000/62.5 mg tablets) PO BID for 10 days
 - Cefdinir 300 mg PO BID for 10 days
 - Azithromycin 500 mg PO once, then 250 mg daily for 4 more days
 - Has had antibiotics in the prior month
 - Amoxicillin/clavulanate 2000/125 mg (two 1000/62.5 mg tablets) PO BID for 10 days
 - Levofloxacin 750 mg daily for 5 days (if not able to take other options/fail other options)

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COPD Exacerbation

- Uncomplicated COPD exacerbation
 - Caused by a virus 20-50% of the time
 - Antibiotics indicated if 2 of the following 3 symptoms present – increased dyspnea, increased sputum volume, increased sputum purulence
 - Uncomplicated = age < 65, FEV1 > 50% predicted, < 3 exacerbations/year, no cardiac disease
 - Options
 - Doxycycline 100 mg PO BID for 7 days
 - Azithromycin 500 mg PO once, then 250 mg PO daily for 4 more days
 - Also – Amoxicillin for 7 days

COPD Exacerbation

- Complicated COPD exacerbation
 - Caused by a virus 20-50% of the time
 - Antibiotics indicated if 2 of the following 3 symptoms present – increased dyspnea, increased sputum volume, increased sputum purulence
 - Complicated = age > 65, FEV1 < 50% predicted, ≥ 3 exacerbations/year, presence of cardiac disease
 - Options
 - Amoxicillin/clavulanate 2000/125 mg (two 1000/62.5 mg tablets) PO BID for 7 days
 - Levofloxacin 500 mg PO daily for 7 days (2nd choice)

Community Acquired Pneumonia

- CAP – previously healthy; no antibiotics in last 3 months
 - Options
 - Azithromycin 500 mg PO once, then 250 mg PO daily for 4 more days
 - Doxycycline 100 mg PO BID for 7 days
 - Also - Augmentin
 - Previously healthy = no chronic heart/lung/liver/kidney disease; no DM, malignancy, alcoholism; intact spleen; no immunosuppressive diseases or drugs

Community Acquired Pneumonia

- CAP – underlying illness; recent antibiotics in last 3 months
 - Options
 - Azithromycin 500 mg PO once, then 250 mg PO daily for 4 more days + Amoxicillin/clavulanate 2000/125 mg (two 1000/62.5 mg tablets) PO BID for 7 days
 - Levofloxacin 750 mg PO daily for 5 days (2nd choice)
 - Underlying Illness = presence of chronic heart/lung/liver/kidney disease; DM, malignancy, alcoholism; spleen dysfunction; immunosuppressive diseases or drugs
 - CURB-65 (Confusion, BUN>19, RR>30, BP<90/60, Age>65)
 - Score 1 or less – out-patient therapy

Diverticulitis

- Oral antibiotic options
 - Cefdinir 300 mg PO BID + Metronidazole 500 mg PO TID for 10 days
 - Amoxicillin/clavulanate 875/125 mg PO BID for 10 days
 - Ciprofloxacin 500 mg PO BID/Levaquin 500 mg PO daily + Metronidazole 500 mg PO TID for 10 days
 - FQ regimen not preferred because of increased local/national *E coli* resistance (about 25% of isolates at ARMC)
 - Also association between severe *C difficile* infection and FQ therapy

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