Antibiotics in the trenches: An ER Doc’s Perspective

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Agenda

• Emergency Medicine

• Specific Disease Processes

• Next Steps
Happy May Day!

- Ancient pagan celebration of spring
- Haymarket Affair May 4, 1886
- International Workers’ Day 1889
- Labor Day in US 1894

https://www.britannica.com/topic/May-Day-international-observance
http://www.newenglandhistoricalsociety.com/monkey-infuriated-puritans/
https://hobt.org/mayday/

The problem

- 154 million prescriptions for antibiotics each year per CDC

- 30-50% of outpatient antibiotic prescriptions are inappropriate or unnecessary

- 39% in one ED

https://cdllib.org/mayday/
Emergency Department: The Opportunity

- CDC 2014:
  - 141 million ED visits
  - Reason for visit:
    - #1 Abdominal pain
    - #2 Chest pain
    - #3 Cough
    - #4 Fever (but #1 for <age 15)
  - Diagnosis
    - #2 URI @ 5.5 million visits
    - #6 Cellulitis & abscess @ 3.6 million
    - #9 URI @ 2.8 million
    - #13 Fever @ 2.3 million

What makes Emergency Medicine Unique?

- EM mentality/presumption of acuity
- Lack of relationship
- Lack of continuity
- Lack of information
- Regulatory and alert/initiative fatigue
- Reimbursement
- Patient preferences/education/satisfaction
- Time
- Communication
- Follow-up
- Liability
For worse and better

• Worse

• Better
  – Awareness & attention
  – EMR
  – Support

Pharmacist Stewardship Activities

• Consultation in real time
  – Selection: navigate resistance and allergies
  – Optimize dose, duration

• Patient education
• Culture review
• Order sets and clinical decision support
• Provider education
• Antibiograms
The Value of the Pharmacist

- Guidelines
- Data
- Physician/provider behavior change

EPPA's Stewardship Activities
Behavior Change

Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices: A Randomized Clinical Trial.

Veehre D1, Linder JA2, Fox CB1, Friedman LK1, Pisani SD1, Goldstein NJ1, Kopta TK1, Levy MM1, Doctor JM1

Disease Specific Topics
Urine

• Urinary Tract Infection
  – The curse of the urine sample
  – Blood can be taken, urine comes when nature calls

• Catheter associated urinary tract infection (CAUTI)
  – The catheter dilemma

CAUTI Prevention

• Case
  – 78 yo F with poor mobility being treated for routine CHF exacerbation
  – RN asks to insert catheter

• Case
  – 78 yo F with fall, hip pain, femoral neck fracture
  – RN asks to insert catheter
CAUTI Prevention

- Catheter Insertion
  - Acute urinary retention
  - Critical care
  - Immobilization/Trauma/fracture***
  - Surgery
  - Palliative care/End of life
  - Incontinence with sacral/perineal wounds
  - Neurogenic bladder

- Estimated as many as 50% of insertions are unwarranted

- 2015 at Southdale Hospital ED

- Intervention was clinician and nursing education

- Catheter reduction of 41%
CAUTI Treatment

• Positive test

• Relevant symptoms

UTI Diagnosis

• Case
  – 78 yo F with fall
  – No urinary symptoms
  – She has to urinate, RN sends urine
  – UA 10-25 WBCs, small LE
  – What to do?
Asymptomatic Bacteruria

<table>
<thead>
<tr>
<th>Population</th>
<th>Prevalence, %</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Healthy, premenopausal women</td>
<td>1.0–5.0</td>
<td>[31]</td>
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<tr>
<td>Pregnant women</td>
<td>1.3–9.5</td>
<td>[31]</td>
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<tr>
<td>Postmenopausal women aged 50–70 years</td>
<td>2.8–8.6</td>
<td>[31]</td>
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<tr>
<td>Diabetic patients</td>
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<tr>
<td>Women</td>
<td>9.0–27</td>
<td>[32]</td>
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<tr>
<td>Men</td>
<td>0.7–11</td>
<td>[32]</td>
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<td>Elderly persons in the community*</td>
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<tr>
<td>Women</td>
<td>10.8–18</td>
<td>[31]</td>
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<tr>
<td>Men</td>
<td>3.6–19</td>
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<td>Elderly persons in a long-term care facility</td>
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<tr>
<td>Women</td>
<td>25–50</td>
<td>[27]</td>
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<tr>
<td>Men</td>
<td>15–40</td>
<td>[27]</td>
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<td>Patients with spinal cord injuries</td>
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<tr>
<td>Intermittent catheter use</td>
<td>23–89</td>
<td>[33]</td>
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<tr>
<td>Sphincterotomy and condom catheter in place</td>
<td>57</td>
<td>[34]</td>
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<tr>
<td>Patients undergoing hemodialysis</td>
<td>28</td>
<td>[28]</td>
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<tr>
<td>Patients with indwelling catheter use</td>
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<td></td>
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<tr>
<td>Short-term</td>
<td>9–23</td>
<td>[20]</td>
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<tr>
<td>Long-term</td>
<td>100</td>
<td>[22]</td>
</tr>
</tbody>
</table>

* Age, ≥70 years.

Asymptomatic bacteruria

- **Who to treat?**
  - Pregnant
  - Urologic procedures
  - Renal transplant?
- **Who not to treat?**
  - Everybody else
UTI Treatment

• Case
  – 28 yo F with dysuria
  – UA shows large nitrite and 25-50 WBCs

• Treatment?

Uncomplicated Cystitis
Generally healthy, nonpregnant adult women
1st line – nitrofurantoin 100mg PO bid x 3d (age <65yr, Cat 3A)
Fosfomycin 3g PO (not for gram-negative isolation)
2nd line – ciprofloxacin 500mg PO bid x 7 d
3rd line – macrobid 1 tab 5/7 (150/500mg) PO bid x 3d, Cefixime

Fairview Antibiogram for E.coli
UTI Treatment

• Case
  – Same as above but with flank pain, fever, vomiting

• Case
  – 64 yo M with dysuria, lower abdominal pain

Stool

• Clostridium difficile
  – Prevention
    • Hygiene and isolation
    • Overall prescribing
    • Fluoroquinolone prescribing
Fluoroquinolones

Emergence of fluoroquinolones as the predominant risk factor for Clostridium difficile-associated diarrhea: a cohort study during an epidemic in Quebec.

FDA Drug Safety Communication: FDA updates warnings for oral and injectable fluoroquinolone antibiotics due to disabling side effects

Phlegm

- Bronchitis
  - No or controversial modification of symptom severity and duration
  - Increased adverse effects
- EPPA?
- EPPA sinusitis?
Phlegm

- [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4914667/pdf/zac4106.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4914667/pdf/zac4106.pdf)

Pus

- **Abscess**
  - Abx not recommended, probably

A Placebo-Controlled Trial of Antibiotics for Smaller Skin Abscesses.

[doi: 10.1016/j.jsil.2017.06.001](https://doi.org/10.1016/j.jsil.2017.06.001)

- Treatment is I&D

Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections: 2014 Update by the Infectious Diseases Society
Sepsis: A different stewardship

- Evolution
  - 1990’s early definitions of sepsis, SIRS
  - 2000’s Surviving Sepsis Campaign
  - Present CMS Sep-1 Quality Measure

- Early, aggressive, broad-spectrum antibiotic

What’s Next?

- Data

- Enhanced Diagnostics

- Education