2018

Impact of clinical pathways on antibiotic prescribing in the outpatient setting

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Impact of Clinical Pathways on Antibiotic Prescribing in the Outpatient Setting

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The speaker has no actual or potential conflict of interest in relation to this presentation.

Background

- An estimated 80% of all antibiotics prescribed are for outpatient use
- At least 30% of antibiotic prescriptions in the outpatient setting are unnecessary
- Overuse of antibiotics increases risk of:
  - Antimicrobial resistance
  - Unnecessary medication adverse reactions
  - Rising cost of care

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CDC. Measuring Outpatient Antibiotics Prescribing.
Fleming-Dutra K, et al.

Background - Parkview

- Clinical Integrated Network (CIN)
- Evaluating antibiotic prescribing rate for outpatient disease states in the walk-in clinics and emergency departments (ED)

Otitis Media	Sinusitis	Bronchitis

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CURRENT TREATMENT RECOMMENDATIONS

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Acute Otitis Media (AOM) - Management

Age	AOM with Otorrhea	Unilateral or Bilateral AOM with Severe Symptoms*	Bilateral AOM without Otorrhea	Unilateral AOM without Otorrhea
6 months to 2 years	Antibiotic Therapy	Antibiotic Therapy	Antibiotic Therapy	Observation or Antibiotic Therapy
≥ 2 years	Antibiotic Therapy	Antibiotic Therapy	Observation or Antibiotic Therapy	Observation or Antibiotic Therapy

*Severe symptoms include persistent otalgia > 48 hours, temperature ≥ 102.2ºF in the past 48 hours, child is toxic appearing, uncertain access to follow-up

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Chow AW, et al. *Clin Infect Dis.* 2012.
Wald ER, et al. *Pediatrics*. 2013.

Acute Otitis Media – Initial Therapy

First Line Therapy	*Alternate Therapy (if penicillin allergy)*
Amoxicillin 80 – 90 mg/kg/day divided every 12 hours OR Amoxicillin-clavulanate (90 mg/kg/day of amoxicillin; 6.4 mg/kg/day of clavulanate divided every 12 hours)	Cefdinir 14 mg/kg/day divided in 1 or 2 doses Cefuroxime 30 mg/kg/day divided every 12 hours Cefpodoxime 10 mg/kg/day divided every 12 hours Ceftriaxone 50 mg/kg IM or IV per day for 1 – 3 days

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Chow AW, et al. *Clin Infect Dis.* 2012.
Wald ER, et al. *Pediatrics*. 2013.

Acute Otitis Media - Failure of Initial Therapy

First Line Therapy	*Alternative Therapy*
Amoxicillin-clavulanate (90 mg/kg/day of amoxicillin; 6.4 mg/kg/day of clavulanate divided every 12 hours) OR Ceftriaxone 50 mg/kg IM or IV per day for 3 days	Clindamycin 30 – 40 mg/kg/day in 3 divided doses with or without a third-generation cephalosporin Failure of a second antibiotic: Clindamycin plus a third-generation cephalosporin (if not previously used) Tympanocentesis Consult specialist

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Chow AW, et al. *Clin Infect Dis.* 2012.
Wald ER, et al. *Pediatrics*. 2013.

Bronchitis

- Centers for Disease Control (CDC) and American College of Chest Physicians recommend against the use of antibiotics in the treatment of bronchitis
- > 90% cases are caused by viruses

Albert RH. *Am Family Physician.* 2010.
CDC. Antibiotic Prescribing and Use in Doctor's Office.
Irwin R, et al. *Chest.* 2012.

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Bronchitis – When to Consider Antimicrobials

- Evidence of pneumonia
- Concern for pertussis infection
- Concern for influenza

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Albert RH. *Am Family Physician.* 2010.
CDC. Antibiotic Prescribing and Use in Doctor's Office.
Irwin R, et al. *Chest.* 2012.

Sinusitis

- Bacterial versus viral sinusitis:
  - Persistent symptoms not improving ≥ 10 days
  - Severe symptoms for at least 3-4 consecutive days
    - High temperature (≥ 39ºC)
    - Purulent nasal discharge
    - Facial pain
  - Worsening symptoms following an initial improvement of initial disease course

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Chow AW, et al. *Clin Infect Dis*. 2012.
Wald ER, et al. *Pediatrics*. 2013.

Sinusitis - Management

Initial Empiric Therapy	Beta-Lactam Allergy	Failed Initial Therapy or Risk of Antibiotic Resistance
Adults		
Amoxicillin-clavulanate 500 mg/125 mg PO TID or 865 mg/125 mg PO BID	Doxycycline, Levofloxacin/moxifloxacin	Amoxicillin-clavulanate 2000 mg/125 mg PO BID
Children		
Amoxicillin-clavulanate 45 mg/kg/day divided every 12 hours	*Type I Hypersensitivity:* Levofloxacin *Type II Hypersensitivity:* clindamycin plus a third-generation cephalosporin	Amoxicillin-clavulanate 90 mg/kg/day divided every 12 hours Clindamycin plus a third-generation cephalosporin Levofloxacin

Chow AW, et al. *Clin Infect Dis*. 2012.
Wald ER, et al. *Pediatrics*. 2013.

Stewardship Initiative

CLINICAL PATHWAY DEVELOPMENT

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Purpose

The objective of this study is to evaluate the efficacy of clinical pathways on outpatient antibiotic prescribing rates for AOM, bronchitis, and sinusitis.

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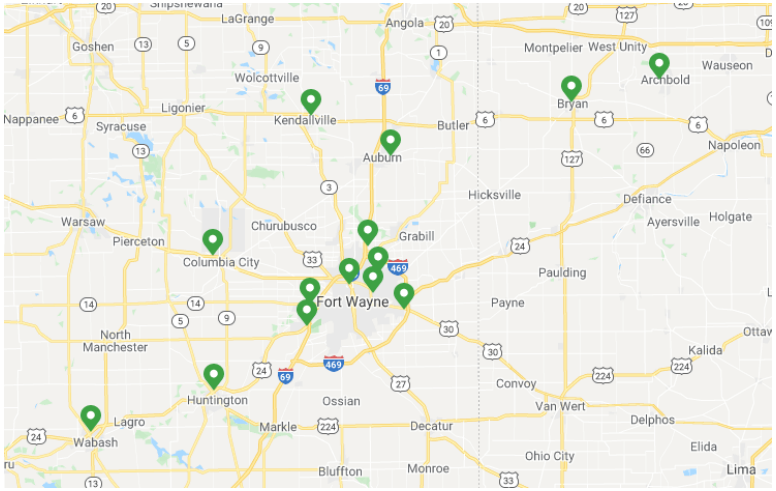
Setting

- Parkview Health System
  - Not-for-profit, community-owned organization
  - Northeast Indiana and northwest Ohio
  - 10 hospital health system
    - 9 emergency departments
    - 12 walk-in-clinics



Demographics

- Pediatric and adult patients from July 1, 2019 – June 30, 2020

	Walk-in-Clinics	Emergency Departments
Acute Otitis Media	11,341	1,511
Bronchitis	3,881	2,390
Sinusitis	11,155	694
Total Patients	26,377	4,595

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Pre-Intervention Prescribing Rate

Antibiotic Prescribing Rate		
	Emergency Departments (ED)	*Walk-in-Clinics*
Bronchitis n, (%)	594 (24.85%)	3126 (80.55%)
Sinusitis n, (%)	571 (82.28%)	10,810 (96.91%)
Acute Otitis Media n, (%)	1396 (90.60%)	10,702 (94.37%)

Pre-Intervention Dosing: Pediatrics

Percentage of Appropriate Dosing	67.7%

Antibiotics Prescribed	
Amoxicillin	65%
Cefdinir	20%
Amoxicillin-Clavulanate	8%
Azithromycin	6%
Other*	1%

*Cephalexin, sulfamethoxazole-trimethoprim, clindamycin, cefprozil, erythromycin, cefpodoxime, cefuroxime, doxycycline

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Clinical Pathways

- Set of treatment recommendations with the aim of providing optimal standard-of-care recommendations for patients

Efficacy	Toxicity	Affordability

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Clinical Pathways

- Ideal pathways include:
  1. Structured multidisciplinary plan of care
  2. Translation of guidelines or evidence into an algorithm
  3. Detailed steps within the pathway along a timeframe in a course of treatment care plan
  4. Standardized care for a specific population

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Clinical Pathways versus Guidelines

Guidelines offer what they ***could*** do

Pathways offer what they ***should*** do

Neither say what they ***must*** do

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Recommended Stewardship Initiatives

Proposed Dynamic Alerts

- Alerts when antibiotics are ordered for a disease state that likely does not need therapy
- Can be based on primary diagnosis code (i.e. bronchitis)
- Assist providers in reconsidering prescribing antibiotics or directing to recommended therapy

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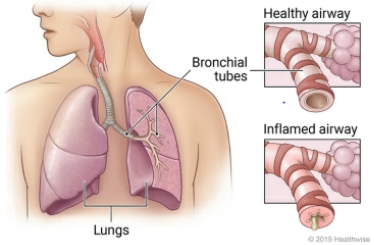
Recommended Stewardship Initiatives

Patient Education

- Attached to after visit summary (AVS)
- Explains disease state, appropriate therapies, and what to expect

Bronchitis: Care Instructions

Your Care Instructions



Bronchitis is inflammation of the bronchial tubes, which carry air to the lungs. The tubes swell and produce mucus, or phlegm. The mucus and inflamed bronchial tubes make you cough. You may have trouble breathing.

Most cases of bronchitis are caused by viruses like those that cause colds. Antibiotics usually do not help and they may be harmful.

Bronchitis usually develops rapidly and lasts about 2 to 3 weeks in otherwise healthy people.

Follow-up care is a key part of your treatment and safety. Be sure to make and go to all appointments, and call your doctor if you are having problems. It's also a good idea to know your test results and keep a list of the medicines you take.

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Recommended Stewardship Initiatives

Interventional modalities:

- Difficulty assessing clinical/subjective data for sinusitis and otitis media
  - Severity of symptoms
  - Duration of symptoms
- Will assist for future data pulls and assessment of appropriate antibiotic use

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Outcome Measurements

- Primary
  - Rate of antibiotic prescribing
- Secondary
  - Use of interventional modalities for subjective data documentation
  - Dosing and duration of antibiotics in pediatric patients

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Next Steps

Approval of clinical pathways by Medical Director of walk-in-clinics

Implement initiatives within walk-in-clinics

Obtain measurable data for analysis of stewardship initiatives

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Future Directions

- Implementation in ED setting
- Expand to Internal Medicine, Pediatrics, and Family Medicine offices
- Use of clinical pathways for other disease states

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Lessons Learned

- Ensure correct multi-disiplinary team members
- Set responsibility for specific tasks
- Plan meeting and discussion times
- Define clear feedback timelines
- Have a provider champion

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ASSESSMENT QUESTIONS

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Question #1

What is the purpose of a clinical pathway?

A. Limit providers to treatment recommendations they must make for a specific patient.

B. Walk providers through the various guideline recommendations for each specific disease state.

C. Guide providers to appropriate treatment recommendations based on guidelines and expert recommendations.

D. Explain how to diagnosis various infectious diseases in the outpatient setting.

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Question #1 - Answer

What is the purpose of a clinical pathway?

A. Limit providers to treatment recommendations they must make for a specific patient.

B. Walk providers through the various guideline recommendations for each specific disease state.

C. Guide providers to appropriate treatment recommendations based on guidelines and expert recommendations.

D. Explain how to diagnosis various infectious diseases in the outpatient setting.

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Question #2

What treatment choice would be most appropriate to include in a dynamic alert within the EMR for a 6-year-old child who has had a persistent cough for around two weeks, recently treated with amoxicillin for an ear infection, and is diagnosed with acute bronchitis?

A. Amoxicillin

B. Amoxicillin-Clavulanate

C. Ceftriaxone IM

D. No therapy needed

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Question #2 - Answer

What treatment choice would be most appropriate to include in a dynamic alert within the EMR for a 6-year-old child who has had a persistent cough for around two weeks, recently treated with amoxicillin for an ear infection, and is diagnosed with acute bronchitis?

A. Amoxicillin

B. Amoxicillin-Clavulanate

C. Ceftriaxone IM

D. No therapy needed

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References

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