Supplemental Information

SUPPLEMENTAL INFORMATION 1

PDSA data collection survey

Patient demographics

Age in years (rounded down)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Age in months (rounded down)
1
2
3
4
5
6
7
8
9
10
11

Weight (in kg)

English as primary language
Yes
No
Unsure
Race
White
Black
Asian
Other
If other, what race?

Medical/health care history

Insurance carrier
Commercial
Public
Military
None
Unsure

Medication allergy
Yes
No
If yes, what allergy?
Other codiagnoses

Sought health care in the past week
Yes
No
Unsure

Duration of chief complaint (in days)

Complaint of fever
Yes
No
Unsure

If fever, maximum temperature of fever?
If fever, duration of fever?

Imaging performed
Yes
No
Unsure
If imaging, what type?
Chest x-ray
Abdominal x-ray
Extremity x-ray
Sinus/face/skull x-ray
Neck soft tissue x-ray
Other
If other, what imaging was performed?
Laboratory testing performed
Yes
No
Unsure
If laboratory testing performed, what type?
Rapid streptococcal
Rapid influenza
Rapid respiratory syncytial virus
Complete blood cell count (with or without differential)
Basic metabolic panel
Liver function
C-reactive protein
Erythrocyte sedimentation rate
Urinalysis (with or without microscope)
Blood culture
Urine culture
Other
If other, what laboratory test?
Day care/school attendee
Yes
No
Unsure
Oral antibiotic use in the past 30 days?
Yes
No
Unsure
If yes, what antibiotic?
Any antibiotic prescriptions given?
Yes
No
Unsure

Antibiotic name
Antibiotic dose (in milligrams)
Antibiotic frequency
Antibiotic duration

SUPPLEMENTAL INFORMATION 2

AOM, OME, and pharyngitis protocols

A. OME (nonsuppurative otitis media) protocol

1. No antibiotic given → appropriate
2. Any antibiotic given → inappropriate if no secondary diagnoses
   a. If secondary diagnoses → appropriate

B. AOM protocol

Patient factors

1. Determine comorbidity. If any of the following are checked, list as significant comorbidity:
    a. Chronic lung disease
    b. Clinically significant heart disease
    c. End-stage renal disease or renal malformation
    d. End-stage liver disease
    e. Intestinal failure or inflammatory bowel disease
    f. Metabolic disease
    g. Neuromuscular disease
    h. Immunosuppression
2. Define recurrent AOM if checked for recurrent AOM.
3. Determine if any codiagnoses. If checked, then yes.
4. Determine as high fever, if maximum temperature is ≥39°C or 102.2°F.
5. Determine if prolonged symptoms. If meets either criteria, classify as yes.
    a. If duration of symptoms of current illness ≥2 days
    b. If fever ≥2 days
6. Determine if severe symptoms. If checked, classify as yes. Does the patient have moderate/severe ear pain?
7. Determine if severe AOM, if meets any of the following criteria:
    a. If high fever, yes
    b. If prolonged symptoms, yes
    c. If severe symptoms, yes
8. Split by age into <2 years and ≥2 years

Antibiotic

1. Classify as received immediate antibiotics if antibiotic given:
    a. Prescribed
    b. During visit
2. Classify as received watch and wait if antibiotic given:
    a. Watch and wait prescription
    b. None
    c. Blank
3. Classify appropriate for immediate antibiotic if any of the following is yes:
    a. Significant comorbidity
    b. Severe AOM
    c. Oral antibiotic use in the past 30 days
    d. Age <2 years
4. Classify as appropriate for watch and wait if yes:
    a. Age ≥2 years
    b. Not severe AOM
    c. No oral antibiotic use in past 30 days
    d. No significant comorbidity
5. If tier 1 or 2 codiagnosis → appropriately treated
6. If appropriate for immediate antibiotic and received immediate antibiotic → appropriate
7. If appropriate for watch and wait and received watch and wait → appropriate
8. If appropriate for immediate antibiotic, but received watch and wait → inappropriate
9. If appropriate for watch and wait but received immediate antibiotic → inappropriate

Antibiotic selection

1. Prescribed azithromycin → inappropriate
2. Prescribed amoxicillin → appropriate
3. If penicillin allergic, prescribed cefdinir, ceftriaxone, cefuroxime, cefpodoxime, cefprozil, or clindamycin → appropriate
4. If prescribed amoxicillin/clavulanate, requires one of the following to be appropriate:
    a. Codiagnosis of conjunctivitis
    b. Recent amoxicillin use in past 30 days
5. Oral antibiotic use in past 30 days checked and amoxicillin listed, recurrent OM
6. If not penicillin allergic, prescribed cefuroxime, cefpodoxime, cefprozil, or cefdinir → inappropriate

Antibiotic duration

1. Prescribed ceftriaxone and duration 1 to 3 days → appropriate
2. If age <2 years and prescription duration 10 days → appropriate; if duration not equal 10 days → inappropriate
3. If age ≥2 years and prescription duration 5 or 7 days → appropriate
    a. If >7 days, prolonged duration → inappropriate
    b. If <5 days, shortened duration → inappropriate

C. Pharyngitis protocol

Tested for streptococcal infection (rapid streptococcal antigen or streptococcal polymerase chain reaction):

1. Age <3 years → inappropriate
2. Age >3 years and concurrent URI, bronchiolitis, conjunctivitis diagnosis → inappropriate

Streptococcal test positive and treated with:

1. Prescribed amoxicillin or penicillin → appropriate
2. If penicillin allergic:
    a. Prescribed clindamycin, cephalexin, or azithromycin → appropriate
    b. Prescribed antibiotic other than clindamycin, cephalexin, or azithromycin → inappropriate
    c. No penicillin allergy and no tier 1 or 2 codiagnosis, prescribed amoxicillin-clavulanate, cefdinir, or ceftriaxone → inappropriate

Streptococcal test negative and any antibiotic given → inappropriate

SUPPLEMENTAL TABLE 3 Intervention Choices to Implement During the Second and Third PDSA Cycles of the Study

Intervention Category	Specific Interventions From CDC MITIGATE Tool Kit[a]
Parent engagement	"Viral vs Bacterial Infections" poster
	"Watchful Waiting for Ear Infections (Acute Otitis Media)" handout
	Watch and wait toolkit
Patient engagement	Viral prescription pad
Provider education	CDC TRAIN
	Medscape AOM Module
	CDC pediatric treatment recommendations
	Safety Net Antibiotic Prescription mepronil with provider information/education
Communication training	"Dialogue Around Respiratory Illness Treatment (DART)" education module
Social media	Twitter and Facebook messages on antibiotic awareness
	CDC social media campaign
Delayed prescribing	CDC "Delayed Prescribing" prescription pad

[a] From https://qioprogram.org/sites/default/files/editors/141/MITIGATE_TOOLKIT_final_approved%281%29_508.pdf.