

**Practice Guidance for Judicious Use of Antibiotics**  
August 2013

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In the well-appearing patient, antibiotics are not the answer.

## Acute Otitis Media (AOM)

Diagnosis requires middle ear effusion (MEE) plus:

1. Moderate to severe bulging of the tympanic membrane (TM); *or*
2. New onset of otorrhea not due to otitis externa; *or*
3. Mild bulging of the TM and recent (< 48 hours) onset of ear pain or intense erythema of the TM

### Criteria for Treatment with Antibiotics

Antibiotic therapy is indicated for patients with:

1. Severe\* signs and symptoms of any age; *or*
2. Children < 2 yrs with milder symptoms but *bilateral* disease

Consider antibiotics or offer observation in the following situations, in consultation with parent/caretaker:

1. Children 6–23 months with mild symptoms and unilateral AOM;
2. Children > 2 years with mild symptoms, either unilateral or bilateral

All patients with AOM, whether treated with antibiotics or not, need an assessment for pain.

Oral medications are preferred due to longer duration of action.

\* Severe symptoms defined as severe otalgia for at least 48 hrs. or temperature > 39°C.

### Management

Amoxicillin (45 mg/kg/day po bid)

Use high-dose amoxicillin (90 mg/kg/day) if risk factor for penicillin-resistant pneumococcus present (local rates of resistance > 10%, age < 2 years, daycare exposure, recent hospitalization, immunocompromise or antibiotic use in past 3 months.)

For patients with conjunctivitis or who fail to improve after 48–72 hours, use antibiotic that provides coverage for beta-lactamase-producing organism, such as amoxicillin-clavulanate, cefixime, cefpodoxime, cefdinir or ceftriaxone.\*

Duration: 10 days if < 2 years, 5–7 days if older.

Mild penicillin allergy (no hives or anaphylaxis): cefixime, cefdinir or cefpodoxime.

If history of hives or anaphylaxis with penicillin or unresponsive to above regimens: clindamycin, consider levofloxacin, consider ENT consultation and tympanocentesis.

\* If used for persistent infection, may need 3 daily doses of ceftriaxone.

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## Pharyngitis in Children and Adults

### Signs and symptoms:

1. Tonsillar exudate
2. Tender anterior cervical lymph nodes
3. Absence of cough
4. Fever

2–4 CRITERIA PRESENT

< 2 CRITERIA PRESENT

OBTAIN RAPID STREPTOCOCCAL ANTIGEN TEST

DO NOT TEST

POSITIVE

NEGATIVE

### Group A Streptococcal Pharyngitis Management

Adults: single-dose benzathine penicillin 1.2 million units IM or penicillin V 500 mg po bid x 10 days.

Children < 12 years: single-dose benzathine penicillin 25,000 units/kg IM (max. dose 1.2 million units) or amoxicillin or penicillin V 50 mg/kg/day po divided bid or tid x 10 days.

Mild penicillin allergy: (no hives or anaphylaxis): cephalexin or cefadroxil.

Severe allergy: clindamycin

*Children with streptococcal pharyngitis should not return to school or child care during the first 24 hours after beginning antimicrobial therapy. Follow-up throat culture is not recommended.*

### Viral Pharyngitis Management

90% of pharyngitis is viral in origin.

Antibiotics benefit only the 10% of cases caused by Group A beta-hemolytic streptococcus.

Symptomatic treatments:

- Avoid cigarette smoke
- Gargle with dilute salt water
- Acetaminophen or ibuprofen as needed for fever or pain
- Throat lozenges (age-appropriate)
- Hydration—drink plenty of liquids
- Adequate rest

For children, a negative rapid antigen test should be confirmed with a throat culture. Due to the lower incidence of strep infection and acute rheumatic fever in adults, a negative rapid test alone is sufficient to rule out Group A strep infection in adults.\*

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\* According to Clinical Laboratory Improvement Amendments (CLIA) guidelines, throat culture should be performed if required by the manufacturer.

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## Acute Sinusitis / Rhinosinusitis – Adults

### Sinus congestion/pressure, nasal discharge

UPPER RESPIRATORY INFECTION WITH MILD TO MODERATE DISCHARGE LASTING < 10 DAYS

OR

SEVERE SYMPTOMS LASTING < 3 DAYS

PERSISTENT SYMPTOMS FOR > 10 DAYS WITHOUT IMPROVEMENT

OR

SEVERE SYMPTOMS AND PURULENT NASAL DISCHARGE OR FACIAL PAIN FOR >3 DAYS AT BEGINNING OF ILLNESS

OR

WORSENING OF SYMPTOMS (NEW FEVER, HEADACHE, NASAL DISCHARGE) AFTER HAVING INITIALLY IMPROVED AFTER 5 DAYS OF A TYPICAL UPPER RESPIRATORY INFECTION

Purulent nasal secretions or sputum do not predict bacterial infection.

The majority of case of acute rhinosinusitis seen as outpatients are caused by uncomplicated viral upper respiratory infection.

Treatment of viral infections with antibiotics does nothing to prevent complications or improve symptoms.

### Management

Nasal corticosteroid spray (particularly in patients with allergic rhinitis)

Sinus irrigation

Acetaminophen or ibuprofen as needed

Supportive care

### Management

Amoxicillin 1g po bid x 5–7 days (macrolides are not recommended due to high rates of resistance).

Use high dose amoxicillin (2g po bid) if risk factor for penicillin-resistant pneumococcus (PCN resistance  $\geq$  10%, severe infection, day care exposure, advanced age, immunocompromise, recent hospitalization or antibiotic use in past 3 months)

Treatment failure: High dose amoxicillin-clavulanate

If PCN allergic: Doxycycline

Consider Adjunctive Therapy:

- Nasal corticosteroid spray
- Sinus irrigation

If still no improvement after 72 hours, consider imaging or ENT consultation.

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### Management

Nasal corticosteroid spray (particularly in patients with allergic rhinitis)

Sinus irrigation

Acetaminophen or ibuprofen as needed

Supportive care

### Management

Amoxicillin (45 mg/kg/day bid x 7–10 days)

Use high dose amoxicillin (90 mg/kg/day bid) if risk factor for penicillin-resistant pneumococcus present (local rates of PCN resistance > 10%, age < 2 years, day care exposure, immunocompromise, recent hospitalization or antibiotic use in past 3 months)

Treatment failure: High dose amoxicillin-clavulanate

Mild penicillin allergy (no hives or anaphylaxis): cefixime, cefpodoxime or cefdinir

If history of hives or anaphylaxis with penicillin: levofloxacin or doxycycline (if age > 8 years)

If still no improvement after 72 hours, consider imaging or ENT consultation

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### Cough Illness / Bronchitis\* — Adults

Cough without evidence of pneumonia

#### ACUTE / < 3 WEEKS COUGH

Evaluation should focus on ruling out serious illness; normal vital signs and chest exam effectively rule out pneumonia. Cough illness/bronchitis is caused by viral pathogens in > 90% of cases.

Antibiotics are not effective in treating cough illness/bronchitis in patients without chronic lung disease.

Antibiotic treatment does not prevent bacterial complications such as pneumonia.

The presence of sputum and its characteristics are not helpful in distinguishing bacterial from viral infections.

#### Management

Do not use antibiotics for cough less than 21 days in a well-appearing adult without clinical evidence of pneumonia.

Therapeutic measures include: avoid cigarette smoke, consider bronchodilators, drink plenty of liquids, steam (e.g., from shower or bath) to loosen secretions, acetaminophen or ibuprofen as needed for fever or pain and adequate rest for symptom relief.

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#### CHRONIC / > 3 WEEKS COUGH

Adults with prolonged cough or recurrent episodes can be evaluated for:

- Post-nasal drip syndrome
- Asthma or reactive airway disease
- Gastroesophageal reflux disease (GERD)
- Post-infectious cough
- Smoking or second-hand smoke exposure
- ACE-inhibitor drug cough
- Chronic bronchitis
- Bronchiectasis
- Malignancy

Other infectious agents rarely causing prolonged cough include *B. pertussis*, *M. pneumoniae* or *C. pneumoniae*.

#### Management

Obtain CXR.

Treat COPD exacerbation (fever, leukocytosis and purulent sputum) with amoxicillin, TMP/SMX or doxycycline, and a short course (7–10 days) of oral corticosteroids.

Treat confirmed *B. pertussis*, *M. pneumoniae* or *C. pneumoniae* with azithromycin or clarithromycin.

For other etiologies, direct therapy to the specific underlying cause.

\* The term bronchitis triggers an expectation for antibiotics and should be avoided or carefully explained. Other terms, such as “chest cold,” may be preferable.

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### Cough Illness / Bronchitis\* — Children

Cough without evidence of pneumonia

#### ACUTE / < 4 WEEKS COUGH

Most cough illness in children is caused by viral pathogens.

Antibiotic treatment does not prevent bacterial complications such as pneumonia.

Rhinovirus often triggers a cough that lasts up to 3 weeks.

The presence of sputum and its characteristics are not helpful in distinguishing bacterial from viral infections.

#### Management

Do not use antibiotics for cough less than 4 weeks in a well-appearing child without clinical evidence of pneumonia.

Therapeutic measures include: avoid cigarette smoke, drink plenty of liquids, nasal saline washes, topical vapor rubs, acetaminophen or ibuprofen as needed for fever or pain, and adequate rest.

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#### CHRONIC / > 4 WEEKS COUGH

Consider pertussis in children with paroxysmal cough, inspiratory whoop, or history of exposure.

Obtain CXR and spirometry (> 3–6 years).

Non-infectious causes that need to be ruled out:

- Post-nasal drip
- Allergies
- Habit cough
- Sinusitis
- Cystic fibrosis
- Foreign body aspiration
- Reactive airway disease
- Second-hand smoke exposure
- Gastroesophageal reflux disease (GERD)
- Congenital malformation

#### Management

Treat confirmed *B. pertussis* with a macrolide (azithromycin or clarithromycin).

Treat *M. pneumoniae* or *C. pneumoniae* with a macrolide (azithromycin or clarithromycin), or, if > 8 years of age, doxycycline.

For other etiologies, direct therapy to the specific underlying cause.

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## Community-Acquired Pneumonia – Children

### CLINICAL CONSIDERATIONS

Unlike for adults, decisions about site of care should be based on clinical assessment of severity of illness.

Factors favoring hospitalization:

- Presence of respiratory distress (tachypnea, retractions, grunting, nasal flaring, apnea, altered mental status)
- Pulse oximetry measurement < 90%
- Age < 6 months

CXR and blood culture:

- Should be obtained from children treated as inpatients.
- Not necessary for nontoxic-appearing children who are fully vaccinated against SP and HI treated as outpatients.

Consider testing for viral agents (influenza, RSV) based on clinical symptoms and season.

### MANAGEMENT OF OUTPATIENTS

Children < 5 years:

- Do not routinely require antibiotics, since the majority of cases of CAP in this age group are of viral etiology.
- Amoxicillin or amoxicillin-clavulanate (45 mg/kg/day bid) for presumed bacterial pneumonia.
- Use high dose amoxicillin or amoxicillin-clavulanate (90 mg/kg/day bid) if risk factor for penicillin-resistant pneumococcus present (local rates of pneumococcus PCN resistance  $\geq$  10%, age < 2 years, day care exposure, immunocompromise, recent hospitalization, or antibiotic use in past 3 months.)

Children > 5 years:

- For presumed atypical pneumonia add coverage with azithromycin (10 mg/kg on day 1, followed by 5 mg/kg once a day on days 2–5) or clarithromycin (15 mg/kg/day bid) or doxycycline for children > 8 years of age unless etiology known.

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### Community-Acquired Pneumonia (CAP) – Adults

#### Outpatient treatment of adults not HIV-infected or immunocompromised

##### CLINICAL CONSIDERATIONS

CAP should be suspected in patients with newly-acquired lower respiratory tract symptoms (cough, sputum production, or dyspnea) especially if accompanied by fever, altered breath sounds, and rales. A CXR is required to make the diagnosis.

The initial site of care is the single most important decision made by clinicians during an episode of CAP. This decision involves 3 steps: 1) assessment of any preexisting conditions that compromise the safety of home care; 2) calculation of the CURB-65 (see page 35); and 3) clinical judgement.

A significant number of treatment failures have been documented for *Streptococcus pneumoniae* resistant to macrolides.

Fluoroquinolones should be used for outpatients only when the patient has failed first-line therapy, has known allergy to first-line agents, or where highly resistant pneumococcus (penicillin MIC > 4 mcg/ml) is prevalent.

##### MANAGEMENT OF OUTPATIENTS

Previously healthy, no recent (within 3 months) antibiotic therapy: 1) azithromycin, clarithromycin or doxycycline.

Antibiotics within past 3 months or comorbidities (COPD, diabetes, renal or congestive heart failure, malignancy): 1) azithromycin or clarithromycin, **plus** high dose amoxicillin, amoxicillin-clavulanate, cefdinir, cefpodoxime, cefprozil, or cefuroxime; 2) a respiratory fluoroquinolone alone.

Inpatients: 1) advanced macrolide plus a beta-lactam (cefotaxime, ceftriaxone, ampicillin, or ampicillin-sulbactam); 2) respiratory fluoroquinolone.

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### The Use of CURB-65 for Determining Site of Care in Adults

The most recent British Thoracic Society scoring system for determining risk of mortality has the acronym CURB-65. It gives one point for each of the following: confusion, urea (BUN > 7), respiratory rate > 30, low blood pressure (systolic < 90 or diastolic < 60), and age ≥ 65. Patients with a score of 0-1 have less than approximately 2% mortality and are likely safe to be treated as an outpatient. Patients with two or more points have greater than 9% mortality and should be admitted to the hospital for treatment. Patients with scores of 3 or more may benefit from intensive care treatment. Any scoring system is intended to be an aid to clinical judgment and should not override the clinical judgment of an experienced practitioner.

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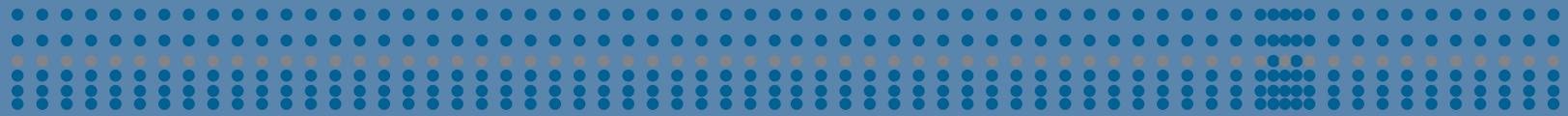
#### CURB-65: RISK OF MORTALITY AND SITE OF CARE

Total score	Mortality %	Suggested site of care
0	0.7	Outpatient
1	2.1	Outpatient
2	9.2	Inpatient
3	14.5	Inpatient/ICU
4 or 5	40	ICU

Assign one point for each factor that is present:

	Clinical Factor
C	Confusion
U	Urea
R	Respiratory rate > 30 breaths per minute
B	Blood Pressure (systolic < 90 or diastolic < 60)
S	Age > 65 years

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