Common Antibiotic Questions

1. Can my child get an antibiotic for his cold? No. Most colds are caused by viruses.
2. But my child got better about a day after starting the antibiotic last time. Doesn’t that mean it was a bacterial infection? No. It was most likely the natural course of your viral illness.
3. Don’t some colds turn into bacterial infections? So why wait to start antibiotics? In most cases, bacterial infections do not follow viral infections. Furthermore, treating with antibiotics does not prevent the bacterial infection from developing. Treating with antibiotics can lead to resistant bacteria, diarrhea and other side effects.
Common Antibiotic Questions

4. Isn’t a nose draining yellow or green mucus a sign of a bacterial infection? During a common cold, it is normal for mucus to get thick and to change from clear to yellow or green. Symptoms often last 10-14 days. If a cold lasts longer than 10 days, or your child has thick yellow/green mucus AND a fever higher than 100.4°F for at least 3-4 days, this may be bacterial sinusitis.

5. Aren’t antibiotics supposed to treat ear infections? Not all ear infections are treated with antibiotics. At least 50% of all AOM go away without treatment. If the child is over 6 months old, is afebrile, and is without ear pain, observation may be ideal initially.

6. Aren’t antibiotics used to treat all sore throats? More than 80% of sore throats are caused by a virus. Antibiotics should only be used to treat strep throats.

7. Do antibiotics cause any side effects? Side effects occur in 10% of children taking antibiotics. Commonly include rashes, allergic reactions, nausea, diarrhea, and stomach pain.

8. How long does it take an antibiotic to work? Most infections improve within 48 to 72 hours of starting an antibiotic.

9. Can antibiotics lead to resistant bacteria? The repeated use and misuse of antibiotics can lead to resistant bacteria.

10. What are antiviral medicines? Most common is Tamiflu to help with influenza infections. Most other viruses causing cough and cold symptoms do not have antiviral medicines that work.

Upper Respiratory Infections

- Children under 6 average 6-8 colds per year, concentrated in September through April
- Each cold can last up to 14 days
  - Often child will develop a new cold as the old cold is resolving, making it seem as though the child is “constantly” sick
  - 20% of children with cold symptoms will develop acute otitis media – be suspicious of fever starting 3 or more days into symptoms
Upper Respiratory Infections

Treatment: Managing Expectations
- Supportive care such as fluids, nasal saline, bulb syringe (Nose Frida!), cool mist humidifier
- Acetaminophen 15mg/kg/dose every 4 hours
- Ibuprofen 10mg/kg/dose every 6 hours
- Diphenhydramine 1mg/kg/dose at bedtime
- Reassure infection expected to last 14 days, return to clinic for 5 days of fever, symptoms lasting longer than 14 days, or refusal to drink
- The first winter in a daycare/school setting will be the worst, no matter the age of the child

Acute Otitis Media

- Common pathogens: non-typeable H. influenzae, S. pneumoniae, M. catarrhalis
- Severe otitis media: Pain for 48 hours or more, fever greater than 102
- Non-severe otitis media: little or no pain, fever less than 102
- Treat all severe otitis media and bilateral non-severe otitis media with antibiotics
- Option to observe non-severe unilateral otitis media

Acute Otitis Media

First-line:
- Amoxicillin 90mg/kg/day, divided BID for 10 days
Second-line:
- Amoxicillin/clavulanate acid 80-90mg/kg/day, divided BID for 10 days
- Use 600mg/ml (Augmentin ES) formulation
- Ceftinir 14mg/kg/daily for 10 days
Third-line:
- Ceftriaxone IM 50 mg/kg/day daily x 5 days
- Azithromycin (40% of AOM are macrolide resistant)
- 10 mg/kg x 1 day, then 5 mg/kg x 4 days (NOT A Z-Pak)
- 10 mg/kg PO daily x 5 days
- 30 mg/kg PO once
Penicillin Allergic:
- Ceftinir or azithromycin
Acute Sinusitis

- Common pathogens: non-typeable *H. influenzae*, *S. pneumoniae*, *M. catarrhalis*
- Consider initiating antibiotics for:
  - Symptoms persistent more than 10-14 days
  - Severe symptoms, such as fever greater than 102 for three or more days
  - Symptoms that worsen after initial improvement

Acute Sinusitis

- First-line:
  - Amoxicillin 90 mg/kg/day PO divided BID x 10-14 days
- Second-line:
  - Augmentin 90 mg/kg/day PO divided BID x 10-14 days
  - Cefdinir 14 mg/kg/day PO daily x 10-14 days
- Penicillin-allergic:
  - Cefdinir or levofloxacin 10-20mg/kg/day divided BID x 10 days

Pneumonia

- Most pneumonias are viral in etiology
- Children less than 5 years, most common bacterial cause is *S. pneumoniae*
- Children 5 years or older, *Mycoplasma* is most likely pathogen
- If co-infected with influenza, consider *Staphylococcus aureus*
- When to consider pneumonia, in addition to cough and fever:
  - Ill-appearing patient with increased work of breathing
  - Crackles, decreased breath sounds, wheezing on auscultation
  - Upper respiratory symptoms that improved, then worsened again over 10-14 days
**Pneumonia**

- When to obtain a chest xray:
  - Ill-appearing child (respiratory distress, hypovolemia, poor feeding, hypoxemia)
  - Confirmation of unclear physical findings
  - Hospitalization
- Points to consider:
  - Chest xray findings usually lag behind clinical findings
  - May have a “normal” chest xray in a hypovolemic patient
  - Variation in interpretation of films
  - Obtaining an xray does not affect outcomes

**Pneumonia**

- First-line, less than 5 years:
  - amoxicillin 90mg/kg/day, divided BID for 10 days
- Second-line, less than 5 years:
  - amoxicillin/clavulanic acid 80-90mg/kg/day, divided BID for 10 days
  - Use 600mg/pod (Augmentin ES) formulation
  - cefdinir 14mg/kg daily for 10 days
  - If failing these treatments, consider adding azithromycin
- First-line, 5 years or older:
  - azithromycin 10 mg/kg x 1 day, then 5 mg/kg x 4 days
  - If failing these treatments, consider adding amoxicillin, amoxicillin/clavulanic acid, or cefdinir as above

**Bronchiolitis**

- 90% of children will be infected with RSV by 2 years of life, and 40% will develop bronchiolitis
- Viral lower respiratory tract infection – RSV, human metapneumovirus, rhinovirus, adenovirus, influenza, parainfluenza, coronavirus among others
- Symptoms include rhinorrhea, congestion, fever, **wheezing**, tachypnea, use of accessory muscles (retractions, belly breathing, tracheal tugging, nasal flaring)
Bronchiolitis

- Treatment
  - Supportive care
  - Do not use corticosteroids
  - Do not use antibiotics
  - Do not use albuterol
    - Exceptions: child with a previous history of wheezing, first-time wheezing in an older infant with a family history
    - Nebulized albuterol 2.5mg every 4 hours
  - Do not use epinephrine or nebulized hypertonic saline
  - Consider hospitalization if young infant (less than 2 months), significant work of breathing, pulse ox less than 92% on room air, poor oral intake, or comorbid conditions

- Managing expectations
  - Bronchiolitis typically peaks day 5 of symptoms
  - About half of children will develop AOM or OME during bronchiolitis – this can be treated with antibiotics
  - Children may develop secondary bacterial pneumonia – be suspicious of this if symptoms started 10-14 days prior, fever and other symptoms improved/resolved then returned again
  - Antibiotics will not prevent these complications from occurring

- Managing expectations
  - Children will cough and wheeze up to 4 weeks after bronchiolitis
  - Children will wheeze with every respiratory illness for about 2 years after an episode of bronchiolitis
    - These episodes are more likely to respond to albuterol and are not predictive of whether the child will develop asthma
Influenza

- Supportive care – no antibiotics indicated
- Tamiflu (oseltamivir)
  - Consider treatment for less than 2 years of age, chronic medical conditions such as asthma or cardiac issues, severe symptoms
  - Shortens symptoms by about 1 day, and has faster return to baseline, but be wary of side effects such as vomiting
  - Start within 48 hours of symptoms
- Dosing
  - Less than 1 year, 3.5mg/kg/dose BID, x5 days
- Tamiflu
  - Consider treatment for less than 2 years of age, chronic medical conditions such as asthma or cardiac issues, severe symptoms
  - Shortens symptoms by about 1 day, and has faster return to baseline, but be wary of side effects such as vomiting
  - Start within 48 hours of symptoms

Pharyngitis

- More than 80% of pharyngitis is viral. Only treat proven Group A strep with antibiotics
- Treatment
  - Amoxicillin 50 mg/kg/day PO div BID x 10 days
  - Penicillin V 50-75 mg/kg/day PO div BID x 10 days
  - Benzathine PCN
    - <27 kg 600,000U IM once
    - >27 kg Benzathine PCN 1.2 millionU IM once
  - PCN allergic
    - Azithromycin 12 mg/kg daily x 5 days
- DO NOT TEST FOR Group A Strep in children less than 2 years old (carriers of non-pathogenic strains)
UTI
Consider UTI in fever without source in children ages less than 3, especially
- Girls
- Uncircumcised boys less than 2 years
- Fever greater than 102 for more than 24 hours
- Ill-appearing
- History of renal abnormalities
- Older than 3 years, may have symptoms such as back pain, dysuria, frequency, fever and new-onset incontinence

UTI
Obtain a catheterized urine specimen if patient not toilet-trained
- 85% false positive rate for a bag specimen – useful only if completely negative
- Leukocyte esterase is suggestive of UTI
- If negative for nitrates, may be false negative
- Most common pathogen E. coli (80%)
  - 50% of these are resistant to amoxicillin
  - Other pathogens include Klebsiella, Enterococcus

UTI
Treatment
- First-line
  - Cefdinir 14mg/kg/day x 10 days
  - Cefixime 16mg/kg on first day, followed by 8mg/kg/day for 9 more days
  - TMP/SMX 8-10mg/kg/day (of TMP), divided BID
- Do not use amoxicillin alone as first-line
- Hospitalize if less than 2 months, vomiting, failed oral therapy, poor oral intake
UTI
- Imaging
  - Ultrasound
    - First febrile UTI if less than 2 years
    - Recurrent UTI of any age
    - Family history
    - Failure to respond as expected
  - VCUG
    - More than 2 febrile UTI
    - First febrile UTI AND abnormal renal ultrasound, pathogen other than E. coli, poor growth, or hypertension

Cellulitis
- Staph aureus (including MRSA) and Strep are most common pathogens
- cephalexin 50-100mg/kg/day, divided TID
- TMP/SMX 8-10mg/kg/day (of TMP), divided BID
- clindamycin 20-30mg/kg/day, divided TID
  - Mix with root beer or chocolate chaser