Top Pediatric Medications

How to Use Them Safely
Elizabeth VandeWaa, PhD
Lecturer/Consultant
Barkley and Associates
Professor
University of South Alabama

Common Pediatric Conditions
- Asthma
- Attention-deficit hyperactivity disorder (ADHD)
- Infections
- Pain/fever
- Allergies
- Gastrointestinal (GI) complaints

Conditions of Interest
- Hyperlipidemia
- Psychosis
- Autism
- Depression

Factors Unique to Pediatric Pharmacology
- Babies
- Underdeveloped metabolic and excretory processes:
  - Conjugation reactions are not developed until one year of age. Hence, many drugs cannot be used in neonates, newborns, and infants up to one year of age.
  - Excretory processes are not at adult levels until 1 year of age.

Factors Unique to Pediatric Pharmacology
- Children one to 12 years of age.
- Metabolism:
  - Is generally faster than normal adult levels until age 2, then slowly declines until puberty, and finally drops to normal adult levels.
  - This may mean increased dosage or dosing frequency for drugs eliminated by hepatic metabolism.

Drug Dosing in Children
- Doses are often extrapolated from adult doses:
  - Based on body surface area.
  - Approximation.
- Future dosing should be done based on clinical outcome to maximize therapeutic benefit and minimize adverse effects.
Top Twenty Drugs Prescribed in Pediatric Medicine
- Amoxicillin
- Ceterizine (Zyrtec)
- Albuterol for inhalation
- Azithromycin (Zithromax)
- Children’s Motrin
- Cefdinir (Omnicef)
- Mometasone (Nasonex)
- Montelukast (Singulair)
- Hydroxyzine (Atarax)
- Ciprofloxacin/dexamethasone (Ciprodex Otic)
- Amoxicillin/clavulanate (Augmentin)
- Budesonide (Pulmicort)
- Mupirocin (Bactroban Topical)
- Prednisolone (Orapred Oral Liquid)
- TMP/sulfa (Bactrim Pediatric)
- Triamcinolone (Kenalog)

Top Twenty Drugs Prescribed in Pediatric Medicine
- Infants’ Tylenol
- Nystatin Topical
- Loratadine (Claritin)
- Polyethylene glycol (MiraLax)

Drugs by Classification
- Infection
  - Amoxicillin
  - Zithromax
  - Omnicef
  - Ciprodex
  - Augmentin
  - Pulmicort
  - Claritin
  - Orapred
  - Kenalog
- Asthma/Allergy
  - Zyrtec
  - Albuterol Inhalation
  - Nasonex
  - Singulair
  - Pulmicort
  - Claritin
  - Orapred
  - Kenalog

Acute Otitis Media (AOM)
- AOM is one of the most common childhood infections.
- 30 to 35 million cases per year.
- Initial peak age of incidence occurs between six to 12 months of age.
- Second peak age of incidence occurs between four and five years of age.
- Accounts for 3% of all visits.
- Is the #1 reason for a prescription.
AOM with Effusion

Three signs and symptoms must be present:
- Acute onset of signs and symptoms.
  - Fever, pain.
- Middle-ear effusion
  - Often difficult to confirm.
- Middle-ear inflammation
  - Erythema and/or otalgia.

AOM: To Treat, or Not to Treat?

- Pain medications are always indicated, as are relief measures.
- More than 80% of AOM cases resolve spontaneously within a week.
  - Treating with antibiotics means unnecessary costs, risk of SE, and increases the chance for emergence of resistance.
- Observation for 48 to 72 hours is most often warranted.
  - Delaying treatment does not increase risk of mastoiditis.

AOM: When to Treat

- Less than 6 months old:
  - Treat with antibiotics.
- Six months to two years of age:
  - Antibiotics if diagnosis is certain or disease is severe; otherwise, observe patient.
- Two years and older:
  - Antibiotics if illness is severe; observation if not severe even with a certain diagnosis. If diagnosis is uncertain, observe patient.

AOM Drugs of Choice

- Amoxicillin 40 to 45 mg/kg twice a day.
  - Cefdinir (Omnicef): For non-type 1 allergy, 14 mg/kg/day in one or two doses.
  - Azithromycin: For type 1 allergy, 10 mg/kg day one and 5 mg/kg on days two through five.
- For persistent symptoms after 48 to 72 hours:
  - Augmentin ES-600 twice a day.
  - Ceftriaxone: Non-type 1 allergy, 50 mg/kg.
  - Clindamycin: Type 1 allergy, 30 to 40 mg/kg/day in three divided doses.

Bugs That Cause AOM and Resistance

- *Haemophilus influenzae* and *Moraxella catarrhalis* are most likely to be resistant to beta-lactam antibiotics.
- *Streptococcus pneumoniae* is resistant to erythromycin, beta-lactams, and TMP-Sulfa.
- Vaccination against influenza and treatment with oseltamivir are associated with a decreased incidence of AOM during flu season.
- Vaccination against *S. pneumoniae* is associated with a decreased incidence of AOM.
Resistance and Recurrence

- Resistance is best treated with high-dose amoxicillin/clavulanic acid (Augmentin ES-600).
  - Alternatively, parenteral ceftriaxone.
- Recurrence is defined as three or more episodes in six months, or four or more in 12 months.
  - Prophylaxis has not been shown to be effective.
  - Use only during cold and flu season.
  - Select amoxicillin.

Otitis Externa

- Treated easily, and inexpensively, with either a 2% solution of acetic acid, or a solution of alcohol plus acetic acid.
- If either of the above do not work, Ciprodex may be used.
  - Consider cost.
  - Consider promotion of resistance.

Treatment of Asthma

- Epidemiology of asthma
  - Process and triggers
- Drugs for asthma
  - Delivery methods
  - Recommendations
- Monitoring drug efficacy
- Other strategies for the patient with asthma.
- Summary