

P & T News

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INSIDE INDEX

| | |
|--|----|
| P&T Subcommittee Actions | 32 |
| Sodium Phosphates Not for Bowel Cleansing | 32 |

PRUDENT ANTIBIOTIC USE: A STEP TOWARDS PREVENTING RESISTANCE

While there is a decreasing trend of overall outpatient antibiotic use, there is an increasing trend in the use of broad-spectrum antibiotics. Overexposure to antibiotics can cause increasing numbers of antibiotic-resistant microorganisms, thereby increasing the number of infections that are untreatable. Educating patients and/or parents about the appropriate use of antibiotics, prescribing antibiotics in ways that minimize the development of antibiotic resistance, and decreasing the spread of antibiotic-resistant microorganisms by using appropriate control measures are three ways healthcare professionals can decrease antibiotic resistance. Outlined below are steps that can be taken to prevent antibiotic resistance.¹

Educate patients/parents on the appropriate use of antibiotics:¹

- Help your patients/their parents understand when antibiotics are appropriate; many conditions do not require antibiotics.
- Explain the differences between bacterial and viral infections and explain that only bacterial infections require antibiotics.
- If antibiotics are prescribed, instruct the patient to complete the entire course of antibiotics, even if the patient is feeling better after a few days.
- If a patient or parent asks for antibiotics for a viral infection, explain to the patient/parent why using antibiotics may be harmful and contribute to resistance.
- Provide educational materials and explain when the risks of using antibiotics outweigh the benefits.²
- If a patient's infection is viral, develop an active plan to treat the symptoms (e.g., analgesics, decongestants). Do not dismiss the infection as "only a viral infection."²
- Discuss with the patient or parent when he/she can expect resolution of symptoms of a suspected viral infection. If symptoms do not resolve within that time frame, the infection may be bacterial and require antibiotics for treatment.

Prescribe antibiotics in ways that minimize the development of antibiotic resistance:¹

- Do not prescribe antibiotics for suspected viral infections, even if the patient requests them.
- Utilize appropriate diagnostic tests to target the pathogen.
- Choose the narrowest-spectrum antibiotic to treat the microorganism causing the infection.
- Consult infectious disease experts or clinical pharmacists for assistance with antimicrobial selection in complicated patients.

- Only treat true infections, not colonization or contamination.
- Stop antibiotic treatment when infection is unlikely, when cultures indicate no clinical need, or when the infection is cured.
- Do not treat "sore throats" with antibiotics without documenting presence of Group A Streptococcus.
- Do not treat asymptomatic middle ear effusion (serous otitis media).

Table 1 provides guidelines developed by the Centers for Disease Control and the American Academy of Pediatrics for the management of common upper respiratory infections.

Health care workers can decrease the spread of antibiotic-resistant microorganisms by using appropriate control measures:¹

- Wash your hands with antimicrobial soap and/or rub an alcohol-based hand rub on your hands until dry. Hand hygiene is the most effective procedure for preventing the spread of microorganisms that cause infection and should be done:
 - Before having direct contact with patients.
 - After contact with patients' skin.
 - When moving from a contaminated body site to a clean body site during patient care.
 - Before and after contact with inanimate objects in the immediate vicinity of the patient (e.g., telephone).
 - After removing gloves, because hands may be contaminated during or after glove removal.
- Use isolation or contact precautions for patients with infections.
- Disinfect commonly used inanimate objects that may increase the risk of infection (e.g., stethoscopes, electronic thermometers).
- Vaccinate children according to the recommended immunization schedule, and vaccinate adult patients when appropriate. Vaccinate health-care workers who have direct patient contact.
- Use antibiotic prophylaxis only when appropriate.

Summary:

Stemming antibiotic resistance is everyone's responsibility. For further information on preventing antibiotic resistance, visit the following websites:

Centers for Disease Control and Prevention's adult and pediatric treatment recommendations for upper respiratory tract infections: <http://www.cdc.gov/drugresistance/community/technical.htm>

U.S. Food and Drug Administration's (FDA) website on antibiotic resistance: http://www.fda.gov/oc/opacom/hottopics/anti_resist.html

An article written for patients explaining antibiotic resistance from FDA Consumer Magazine: http://www.fda.gov/fdac/features/2002/402_bugs.html

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References:

1. Iowa Antibiotic Resistance Task Force. Report of the Iowa Antibiotic Resistance Task Force: A Public Health Guide, 2nd Edition, Fall 2004.
2. Centers for Disease Control and Prevention, American Academy of Pediatrics. Careful Antibiotic Use—Stemming the tide of antibiotic resistance: Recommendations by the CDC/AAP to promote appropriate antibiotic use in children [resource on World Wide Web]. URL: <http://www.cdc.gov/drugresistance/community/files/ads/judi.pdf>. Available from Internet. Accessed 2006 Feb 8.

Table 1

SUMMARY OF APPROPRIATE TREATMENT OF COMMON UPPER RESPIRATORY TRACT INFECTIONS²

| DIAGNOSIS | CDC/AAP Principles of Appropriate Antibiotic Use |
|------------------------------|--|
| Otitis Media | <ol style="list-style-type: none"> 1. Classify episodes of OM as acute otitis media (AOM) or otitis media with effusion (OME). Only treat proven AOM. 2. Antibiotics are indicated for treatment of AOM, however, diagnosis requires: <ul style="list-style-type: none"> – documented middle ear infection – and, signs or symptoms of acute local or systemic illness. 3. Don't prescribe antibiotics for initial treatment of OME <ul style="list-style-type: none"> – treatment may be indicated if bilateral effusions persist for 3 months or more. |
| Rhinitis and Sinusitis | <p><i>Rhinitis:</i></p> <ol style="list-style-type: none"> 1. Antibiotics should not be given for viral rhinosinusitis. 2. Mucopurulent rhinitis (thick, opaque, or discolored nasal discharge) frequently accompanies viral rhinosinusitis. It is not an indication for antibiotic treatment unless it persists without improvement for more than 10-14 days. <p><i>Sinusitis:</i></p> <ol style="list-style-type: none"> 1. Diagnose as sinusitis only in the presence of: <ul style="list-style-type: none"> – prolonged, nonspecific upper respiratory signs and symptoms (e.g., rhinorrhea and cough without improvement for >7 days), or – more severe upper respiratory tract signs and symptoms (e.g., fever >39°C, facial swelling, facial pain). 2. Initial antibiotic treatment of acute sinusitis should be with the most narrow-spectrum agent which is active against the likely pathogens. |
| Pharyngitis | <ol style="list-style-type: none"> 1. Diagnose as group A streptococcal pharyngitis using a laboratory test in conjunction with clinical and epidemiologic findings. 2. Antibiotics should not be given to a patient with pharyngitis in the absence of diagnosed group A streptococcal infection. 3. A penicillin remains the drug of choice for treating group A streptococcal pharyngitis. |
| Cough illness and Bronchitis | <ol style="list-style-type: none"> 1. Cough illness/bronchitis rarely warrants antibiotic treatment. 2. Antibiotic treatment for prolonged cough (>10 days) may occasionally be warranted: <ul style="list-style-type: none"> – Pertussis should be treated according to established recommendations. – <i>Mycoplasma pneumoniae</i> infection may cause pneumonia and prolonged cough (usually in children older than 5 years); a macrolide agent (or tetracycline in children 8 years or older) may be used for treatment. – Children with underlying chronic pulmonary disease (not including asthma) may occasionally benefit from antibiotic therapy for acute exacerbations. |

PHARMACY AND THERAPEUTICS SUBCOMMITTEE ACTIONS

DRUGS ADDED TO STOCK

ENTECAVIR

Tablets: 0.5 mg, 1 mg
Entecavir (Baraclude® - BMS) is an antiviral agent indicated for the treatment of hepatitis B virus infection.

TRANEXAMIC ACID

Injection: 100 mg per ml
Tranexamic acid (Cyklokapron® - Pharmacia) is an inhibitor of plasminogen activation. It is indicated for use in hemophilia patients to reduce or prevent hemorrhage; it is also used to minimize blood loss and the need for transfusion during cardiac surgery.

ADDITIONAL ACTIONS

DULOXETINE (Cymbalta®)

Is now restricted to prescribing by the Pain Medicine Service due to reports of liver toxicity.

LAMOTRIGINE (Lamictal®)

A 5 mg chewable tablet was added to stock.

LOPINAVIR 200 mg with RITONAVIR 500 mg (Kaletra®)

ORAL TABLETS

This formulation replaces Kaletra® capsules. The usual dose is two tablets twice daily.

VITAMIN A

A 10,000 unit capsule was added to stock.

Sodium Phosphates Oral Solution Is Not Recommended for Bowel Cleansing

A regimen of two 45 ml doses of non-prescription (OTC) sodium phosphates oral solution (Fleet Phospho Soda®) has become a popular method of bowel cleansing prior to colonoscopy or bowel surgery. (Note: This dosing regimen is much higher than the doses used for phosphorous supplementation.) However, there have been a number of reports attributing the bowel cleansing regimen to hyperphosphatemia¹ and renal failure, and most recently to acute nephrocalcinosis.²⁻⁵ The nephrocalcinosis associated with sodium phosphates oral solution use is characterized by tubular calcium phosphate deposition and renal dysfunction that usually progresses slowly over several weeks to renal failure. Patients often present several weeks after receiving the sodium phosphates oral solution with nonspecific symptoms such as malaise, nausea, and vomiting. The diagnosis is confirmed by renal biopsy.

Based on the seriousness of these adverse effects and the availability of safer bowel cleansing regimens (e.g., polyethylene glycol preparations such as Golytely® or Miralax®), it is the recommendation of the Division of Gastroenterology and the Pharmacy and Therapeutics Subcommittee that **sodium phosphates oral solution no longer be used for bowel cleansing.**

1. Arch Intern Med 2003;163:803-8.
2. Hum Pathol 2004;35:675-84.
3. J Am Soc Nephrol 2005;16:3389-96.
4. N Engl J Med 2003;349:1006-7.
5. Arch Pathol Lab Med 2006;130:101-6.

