

Hospital Peer Review

September 2009

Hospital Peer Review is a monthly newsletter sponsored by the Rural Healthcare Quality Network to alert Critical Access Hospitals regarding findings from the Peer Review Program. Summarized are a few of the key findings and best practices that would be helpful for other critical access hospitals to be knowledgeable about. This newsletter is edited by Myron Bloom, Medical Director and he can be reached at drmbloom@msn.com.

Doctor, I want some antibiotics for my sinusitis, conjunctivitis, or bronchitis?

But “Sometime you find you get what you need” — R. Stones

Current evidence suggests that about a third of patients who present with upper respiratory infections are diagnosed with acute rhinosinusitis. Bacterial rhinosinusitis is difficult to differentiate from viral on clinical grounds, and most cases of acute rhinosinusitis are viral upper respiratory tract infections and resolve without antibiotics. Nevertheless, more than $\frac{2}{3}$ historically have received antibiotics. The clinical diagnosis of acute bacterial rhinosinusitis should be reserved for patients with symptoms lasting 7 days or more who have maxillary pain or tenderness in the face or teeth (especially unilateral) and purulent nasal secretions (X-rays are not routinely recommended to confirm the diagnosis). So, what is the evidence supporting watchful waiting and not prescribing antibiotics?

In a meta-analysis of data mined from nine randomized (antibiotics or placebo) trials involving 2,547 immunocompetent adult patients (excluding those who had signs and symptoms suggestive of serious complications such as high fever, periorbital swelling, erythema, or intense facial pain), the odds ratio for “cure” in the antibiotic group was a bit higher at 1.37. However, the number needed to treat (NNT) with antibiotics to achieve 1 additional clinical cure was 15 and consistent across all trials. The number needed to harm (mainly vomiting, diarrhea, and gastrointestinal pain) ranged from 12 to 78.

Symptom severity, symptom duration, and age did not predict benefit from antibiotic treatment. Older patients, who reported longer symptom duration or more severe symptoms, took longer to cure - but they were not more likely to benefit from antibiotics. Patients with purulent pharyngeal discharge derived somewhat greater benefit from antibiotics than did other patients, but the NNT for patients in this group was still 8. A Cochrane review of 57 studies reported in the April 16, 2009 issue of the Cochrane Database Systematic Review, showed a small treatment effect in primary care patients with uncomplicated acute sinusitis who had symptoms for more than 7 days, finding 80% of those who did not receive antibiotics and 90% of the antibiotic group were improved within 2 weeks.

Young J, Sutter, AD, Merenstein D, et al. Antibiotics for adults with clinically diagnosed acute rhinosinusitis: a meta-analysis of individual patient data. *The Lancet*. March 15, 2008; 371(9616):908-914

Hickner J, Bartlett J, Besser R, et al. Principles of appropriate antibiotic use for acute rhinosinusitis in Adults. *Annals of Internal Medicine*. March 20, 2001; 134(6):498-505

Investigators performed a meta-analysis of 17 randomized, controlled trials comparing placebo or oral antibiotics in 2,915 adults and 376 children with a clinical, laboratory, bacteriologic and/or radiographic diagnosis of acute sinusitis. Clinical cure or improvement at 7-15 days was more common (77% vs. 68%) with antibiotic treatment than with placebo; but adverse effects were also more frequent (30% vs. 22%, most often diarrhea or other gastrointestinal disturbance). There were no statistical intergroup differences in complications due to sinusitis or recurrence of sinusitis.

Falagas ME, Giannopoulou KP, Vardakas KZ, et al. Comparison of antibiotics with placebo for treatment of acute sinusitis: a meta-analysis of randomized controlled trials. *The Lancet Infectious Diseases*. September 2008; 8(9):543-552

So what about Conjunctivitis?

Topical antibiotics are commonly prescribed for acute conjunctivitis, but are they really necessary? Researchers randomized a convenience sample of 307 patients aged 1 year or older from 30 general practices to receive one of three treatments: immediate antibiotics (chloramphenicol drops), delayed antibiotics (prescription for chloramphenicol drops provided after 3 days), or no antibiotics. Antibiotics were actually used by 99% of the immediate-antibiotic group, 53% of the delayed-antibiotic group, and 30% of the controls. Severity of symptoms 1 to 3 days after presentation was similar among the three treatment groups. Patients in the immediate-antibiotic group were more likely than controls to believe that antibiotics were effective and to state that they would seek antibiotics again for a new episode.

Everitt HA, Little PS, Smith PWF. A randomized controlled trial of management strategies for acute infective conjunctivitis in general practice. *BMJ*. August 12, 2006; 333:321-324

British authors using the UK General Practice Research Database (1991 - 2001) examined data from 162 practices to evaluate the relationship between prescription of antibiotics and the development of serious complications within one month after for more than 3 million patient presentations for a URI (pneumonia), sore throat (quinsy or peritonsillar abscess), otitis media (mastoiditis), or “chest infection” (pneumonia). The use of antibiotics appeared to be associated with a lower rate of such complications after URI, otitis media, and sore throat; but the **overall risk of such complications was extremely low and the NNT with antibiotics to prevent one complication exceeded 4,000**. The risk of a diagnosis of pneumonia after a “chest infection” was higher, with an NNT to prevent a case of pneumonia after a “chest infection” of only 39 in elderly patients, and ranged between 96 and 119 in other age groups.

Petersen I, Johnson AM, Islam A., et. al. Protective effect of antibiotics against serious complications of common respiratory tract infections: retrospective cohort study with the UK General Practice Research Database. *BMJ*. November 10, 2007; 335:982

So what about bronchitis and chest complications?

Most clinicians, while understanding concerns about the overuse of antibiotics, lack effective strategies for outpatient management of common infections. Several small studies have shown that offering an antibiotic prescription to use later if symptoms do not improve (delayed therapy) can decrease antibiotic use without apparent adverse effects.

In a multicenter, six-arm, controlled trial, researchers in the U.K. investigated this strategy in 640 patients aged ≥ 3 years with acute lower respiratory tract infection. All presented with cough

plus sputum production, chest pain, dyspnea, or wheezing, while none had pneumonia, asthma, or other chronic or acute lung diseases. Subjects were randomized to receive brief patient education — oral instructions alone or together with an informational pamphlet — in conjunction with no antibiotics, immediate treatment with amoxicillin (250 mg [125 mg for children \leq 10 years old] 3 times daily) or erythromycin (250 mg 4 times daily) for 10 days, or a prescription for antibiotics that could be filled if symptoms had not improved at 14 days.

Cough rated as "a slight problem" or worse had a mean duration of 11.7 days; immediate antibiotics shortened the duration of "moderately bad" symptoms by 1 day. One patient in the no-antibiotics group developed pneumonia, but no other serious adverse events occurred. Only 20% of patients in the delayed-antibiotics arm took antibiotics, versus 96% assigned to immediate therapy. Most patients in all three groups were "very satisfied" with their treatment (86%, 77%, and 72% for immediate, delayed, and no antibiotic therapy, respectively). No effect was noted for the informational pamphlet. As has been seen in previous studies, delayed therapy markedly decreased antibiotic use, with very acceptable patient outcomes.

Little P, Rumsby K, Kelly J, et. al. Information leaflet and antibiotic prescribing strategies for acute lower respiratory tract infection: a randomized controlled trial. *JAMA*. June 2005; 293(24):3029-3035

So, studies have reported no significant beneficial effect of antibiotic treatment in healthy patients with acute bronchitis; but how about socio-economically challenged and HIV- infected patients? In a placebo- controlled trial from Nairobi, Kenya, 660 adults with 20% in both groups HIV-positive (mean age 31, 56% female) and acute bronchitis were randomized to a seven-day course of amoxicillin (500mg three times daily) or placebo with follow-up performed at 3, 7, and 14 days. There was no difference between the amoxicillin and control groups in the interval to a reduction in the clinical severity score by at least 75%, or in rates of clinical cure by 14 days (82% and 84%, respectively). In the HIV-infected patients, clinical cure rates were 77.2% in the amoxicillin group and 83.8% in controls. They found that a seven-day course of amoxicillin was not more effective than placebo for the treatment of acute bronchitis, irrespective of HIV status.

Nduba VN, Mwachari CW, Magaret AS, et. al. Placebo found equivalent to amoxicillin for treatment of acute bronchitis in Nairobi, Kenya: a triple blind, randomized, equivalence trial. *Thorax*. November 2008; 63(11):999-1005