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Antibiotics Not Justified for Respiratory Tract Infections, Sore Throat, or Otitis Media CME

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October 19, 2007 — Although antibiotics are not justified to reduce the risk for serious complications for upper respiratory tract infection, sore throat, or otitis media, they do substantially decrease the risk for pneumonia after chest infection, particularly in elderly people in whom the risk is greatest, according to the results of a retrospective cohort study reported in the October 18 Online First issue of the *BMJ*.

"Most antibiotic prescribing is in primary care, and most of it is for respiratory tract infections," write I. Petersen, from University College London, United Kingdom, and colleagues. "Clinical guidelines advise against the routine use of antibiotics in patients with upper respiratory tract infection, sore throat, and otitis media. Guidelines divide chest infection into acute bronchitis, for which antibiotics are not recommended, and pneumonia, for which they are recommended."

Using a general practice research database of UK primary care practices, the authors evaluated outcomes in 3.36 million episodes of respiratory tract infection. Primary endpoints were risk for serious complications in treated and untreated patients in the month following diagnosis (mastoiditis after otitis media, quinsy after sore throat, and pneumonia after upper respiratory tract infection and chest infection). The number of patients needed to treat to prevent 1 complication was calculated.

Following upper respiratory tract infections, sore throat, and otitis media, serious complications were rare, and the number needed to treat was more than 4000.

However, the risk for pneumonia after chest infection was high, especially in the elderly. This risk was substantially reduced by antibiotic use, with a number needed to treat of 39 for individuals 65 years or older and 96 to 119 in younger age groups. The risks for pneumonia following chest infection and the number of antibiotic courses needed to prevent 1 case of pneumonia were not significantly different in smokers or in patients with chronic respiratory or cardiac disease.

"Antibiotics are not justified to reduce the risk of serious complications for upper respiratory tract infection, sore throat, or otitis media," the authors write." Antibiotics substantially reduce the risk of pneumonia after chest infection, particularly in elderly people in whom the risk is highest."

Study limitations include nonrandomized design, possible underestimation of the protective effect of antibiotics, reliance on codes that general practitioners have assigned to conditions, possible misclassification of chest infection and pneumonia, and possible biases leading to underestimation of the risk for pneumonia.

"It is now unlikely that randomised controlled trials that are sufficiently large to accurately measure the protective effect of antibiotics on serious complications of common respiratory tract infection will ever be conducted," the authors conclude. "For upper respiratory tract infection, sore throat, and otitis media, research should focus on effective interventions to reduce prescribing. For chest infection, research should focus on developing clinical algorithms and diagnostic technology that can be easily applied in primary care to enable confident distinction between acute bronchitis and early pneumonia and to identify those who are most likely to develop pneumonia."

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In an accompanying editorial, Samuel Coenen, MD, and Herman Goossens, MD, from the University of Antwerp in Belgium, note that most infections can be managed by watchful waiting. They point out a major confounding factor in this study, namely that sicker patients and those more likely to have adverse outcomes were offered antibiotics more often.

"The available evidence does not provide clinicians with the guidance they need to prescribe antibiotics effectively for common infections in primary care, except maybe for acute otitis media," Drs. Coenen and Goossens write. "For lower respiratory tract infections in particular, clinicians cannot be confident about identifying who will benefit from antibiotics and who will not. GRACE (genomics to combat resistance against antibiotics in community acquired lower respiratory tract infections in Europe; www.grace-lrti.org), a network funded by the European Commission, is currently undertaking research across Europe to provide answers to these questions."

Drs. Coenen and Goossens are members of the ESAC and the GRACE management teams.

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