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Infections

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Levofloxacin Still Effective in Treating Respiratory Tract Infections

Community-acquired respiratory tract infections (RTIs) are among the most prevalent infectious diseases in the developed world and constitute a substantial economic burden. The current therapy for RTIs is often empiric, usually involving administration of a beta-lactam or macrolide.

World-wide, RTIs account for a large proportion of antibiotic prescriptions and visits to the doctor each year. Pneumonia affects approximately 450m people a year. It is a major cause of death among all age groups with approximately 4m deaths occurring. The incidence is highest among persons at the extremes of the age range. Recent increases in the incidence of community-acquired pneumonia (CAP) have been associated with a dramatic rise in the rate of infection in the elderly and in patients with comorbidities. The prevalence of chronic bronchitis is between 3%-17% in most developed countries, with higher rates of 13%-27% in less developed areas of the world.

Pathogens responsible for lower RTIs

Streptococcus pneumoniae remains the most prevalent or frequently isolated etiological agent in cases of CAP. Other organisms, such as *Haemophilus influenzae* and *Moraxella catarrhalis*, as well as the more atypical pathogens such as *Chlamydia pneumoniae*, *Legionella pneumophila*, and *Mycoplasma pneumoniae*, are becoming more common.

Acute exacerbation of chronic bronchitis (AECB), a COPD condition, is also a significant and increasing community-acquired respiratory tract infection. The pre-eminent pathogens associated with AECB are *H influenzae*, *S pneumoniae*, and *M catarrhalis*, which when combined account for 85% to 95% of bacterial exacerbations. Other less common pathogens associated with AECB include *Staphylococcus aureus*

and *Pseudomonas aeruginosa*, along with opportunistic Gram-negative pathogens. Together, these pathogens account for 70% of all acute infectious AECB, with the remaining 30% being caused by viruses.

Fluoroquinolone's efficacy vs traditional and atypical pathogens

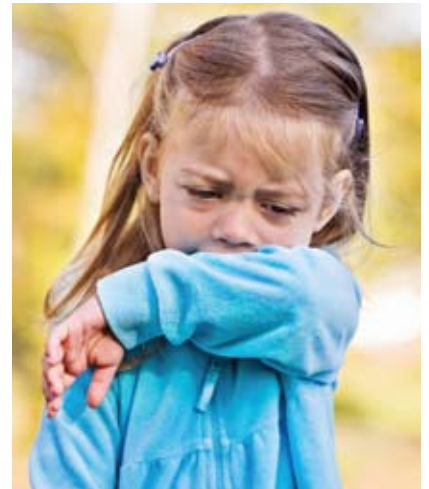
The increasing incidence of antibiotic resistance for respiratory pathogens complicates the use of empiric treatment with traditional agents. A growing body of evidence suggests that some fluoroquinolones are both bacteriologically and clinically effective against both traditional and atypical respiratory pathogens. Levofloxacin stands out as one of the most important fluoroquinolones.

Levofloxacin is a broad spectrum antibiotic that is active against both Gram-positive and Gram-negative bacteria.

Levofloxacin has been approved for the treatment of CAP, AECB, acute maxillary sinusitis, uncomplicated skin infections, acute pyelonephritis, and complicated urinary tract infections. It has proved to be an effective 'respiratory' fluoroquinolone in both upper and lower RTIs. The advent of a high drug dose strategy has proved to be effective and safe, allowing shorter durations of therapy to be administered. This has helped to reduce cost and development of resistance.

Advantages of levofloxacin

Levofloxacin has all the excellent features of its parent compound, ofloxacin, with the additional advantages of being



Pneumonia deaths are highest among persons at the extremes of the age range

more effective against a wider spectrum of bacteria at half the dose. The once daily dose and great safety profile have made it well accepted by most patients.

It has been observed that levofloxacin penetrates well into bronchiolar tissue and sputum which is significant when treating patients with RTI. Findings suggest that clinically effective concentrations of the drug are achieved at target respiratory sites, exceeding the minimum inhibitory concentrations for common respiratory pathogens.

Levofloxacin has two important advantages over many other fluoroquinolones with regard to reducing resistance. Firstly, it uses two mechanisms of action for bactericidal activity. One requires RNA protein synthesis and the second mechanism doesn't. Most fluoroquinolones only use one mechanism, so the risk of developing resistance is higher. The second advantage is its single once-daily dose. Other fluoroquinolones often must be taken more frequently. It demonstrates 100% bioavailability with a broad spectrum of activity, and produces comparatively fewer side effects making its use very favourable compared to other fluoroquinolones.