

Gemifloxacin

A Viewpoint by Lionel A. Mandell

Division of Infectious Diseases, McMaster University, Hamilton, Ontario, Canada

Gemifloxacin is a fluoronaphthyridone agent with a pyrrolidine substituent at C7. These modifications have resulted in a compound with an improved spectrum of *in vitro* activity compared with many other fluoroquinolones, particularly against Gram-positive cocci. Gemifloxacin retains very good activity against most Gram-negative rods and exhibits excellent activity against atypical respiratory pathogens and streptococci. In particular, gemifloxacin is 30-fold more effective than ciprofloxacin against *Streptococcus pneumoniae*. It has variable to good activity against anaerobes and displays a postantibiotic effect against *S. pneumoniae*, *Staphylococcus aureus*, *Haemophilus influenzae*, *Moraxella catarrhalis*, *Escherichia coli*, *Klebsiella pneumoniae* and *Proteus vulgaris*.

In animal models of pneumococcal pneumonia and meningitis, gemifloxacin was more effective than ciprofloxacin and levofloxacin, and ceftriaxone, respectively. Its pharmacokinetic properties

allow once-daily dosing of oral and intravenous preparations and it is possible that absorption may be sufficiently good to allow oral treatment from the time of initiation of antibacterial therapy even in relatively serious cases of pneumonia. Given these characteristics, gemifloxacin appears to be an excellent candidate for the management of respiratory tract infections.

Preliminary results from clinical trials in acute exacerbations of chronic bronchitis, community-acquired pneumonia, urinary tract infection and sinusitis suggest that the drug is well tolerated and effective. It appears to have the same low propensity for phototoxicity as ciprofloxacin.

Gemifloxacin is an important addition to our antibiotic armamentarium. Its excellent antipneumococcal activity makes it the most potent of the various fluoroquinolones to date, and its role is likely to be important not only in respiratory infections but in urinary tract infections as well. It remains to be seen whether its activity against anaerobes will allow its use in intra-abdominal infections and in cases of macro-aspiration pneumonia where anti-anaerobe therapy is required. ▲