

## **The Ups and Downs of Fluoroquinolones for the Treatment of Ocular Bacterial Infections**

R. Kowalski

*Medicine, Ophthalmology, University of Pittsburgh, Pittsburgh, USA*

Fluoroquinolone (FQ) anti-infectives have found great favor in the treatment of ophthalmic infections and as prophylactic agents. The ophthalmic arsenal consists of 2<sup>nd</sup> (ciprofloxacin, ofloxacin), 3<sup>rd</sup> (levofloxacin), and 4<sup>th</sup> (moxifloxacin, gatifloxacin) generation FQs with one (besifloxacin) and possibly more in development. The decision on the choice for use is numerous but differences do occur in regards to potency, resistance induction, tissue penetration, etc. *In vitro* susceptibility testing indicates a gradual rise in FQ resistance, but based on the serum standards alone, resistance may be over reported. In assessing FQ resistance and averting the possibility of resistance, other targets such as bacteria, tissue penetration, and treatment regimens should be carefully considered. Rabbit modeling indicates that FQs reach high levels in ocular tissues to be effective in treating bacterial keratitis and preventing endophthalmitis as prophylactic agents. In the situations where other novel FQs may be developed for ophthalmic use, means to assess and validate *in vitro* and *in vivo* susceptibility should be implemented to monitor resistance. Fortunately, there are more ups than downs in using FQs in the treatment of ocular bacterial infections.