PubMed The Role of Topical Moxifloxacin, a New Antibact

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The role of topical moxifloxacin, a new antibacterial in Europe, in the treatment of bacterial conjunctivitis.

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Abstract

This article discusses current practice in the **treatment** of **conjunctivitis** and how the use of **topical moxifloxacin** can increase therapeutic effectiveness, reduce **treatment** failures and, consequently, be cost effective and reduce the societal burden of the disorder. Current practice and effectiveness data were derived from the literature. Data on healthcare utilization as a result of **treatment** failure were collected by survey and the cost of **treatment** was defined using national costings. A decision-analytic model to assess cost effectiveness was developed and the impact on the healthcare budget was calculated to define the health economic impact. **Bacterial conjunctivitis** represents a significant health problem and accounts for an estimated 1-1.5% of primary-care consultations. The disorder is highly contagious and causes a substantial healthcare and societal burden. **Bacterial conjunctivitis** is generally self-limiting, resolving within 1-2 weeks. However, the use of antibacterials significantly improves clinical and microbiological remission, shortens symptom duration, and enables more effective use of healthcare resources, compared with placebo. From a health economic perspective this benefits the healthcare system and society, since fewer healthcare resources are needed and the adult affected, or the parent/caregiver of the child affected, can return to full work capacity sooner, reducing loss of productivity. **Treatment** strategies vary significantly between countries. Most patients are first seen in primary care, where 'wait-and-see', lubrification and antiseptic or **antibacterial treatment** is provided. In **Europe**, when antibacterials are prescribed most general practitioners (GPs) prescribe a broad-spectrum **topical antibacterial**. The most commonly used drugs are chloramphenicol and fusidic acid, with fluoroquinolones rarely reported as first-line **treatment** by GPs. At the specialist (ophthalmologist) level, or for second-line **treatment** at the GP level, **topical** antibacterials are frequently used. However, in most countries, **topical** fluoroquinolones, particularly those recently approved by the European

Medicines Agency, such as **topical** levofloxacin and **topical moxifloxacin**, are rarely used and instead are reserved for use as a last resort. In other parts of the world **topical** lomefloxacin, gatifloxacin and/or besifloxacin are also available. The strategy of using novel **topical** fluoroquinolones as a last resort reflects a belief that the use of **topical** fluoroquinolones may enhance the development of resistance, jeopardizing future availability of **antibacterial treatment** for ocular infections. In fact, most cases of **bacterial** resistance arise as a result of systemic **treatment**. Thus, this concern should not be extrapolated to **topical** use of fluoroquinolones, which results in **antibacterial** concentrations at the ocular surface that can significantly exceed mutant prevention concentrations. In addition, with products such as **topical moxifloxacin**, a dual-step mutation is required for resistance to emerge. **Moxifloxacin** restricts the selection of resistant mutants, meaning that emergence of resistance is unlikely. The strategy of not using the most effective fluoroquinolones such as **topical moxifloxacin** may lead to more patients with no improvement or worsening of symptoms, requiring re-intervention, additional examination and **new treatment**; these outcomes are defined as '**treatment** failures'. **Treatment** failures cause an extra societal burden and increased costs due to the extra healthcare resources required (additional GP/specialist visits, laboratory tests, additional **treatment**, etc.). Compared with non-fluoroquinolones, **topical moxifloxacin** has a higher potency and faster in vitro 'speed-to-kill'. It has also been shown that, within the fluoroquinolone class, **topical moxifloxacin** and besifloxacin achieve the highest mean concentrations in conjunctival tissue, have the longest residence times and display favourable area under the concentration-time curve from time zero to 24 hours (AUC (24))/minimum inhibitory concentration ratio required to inhibit the growth of 90% of organisms (MIC(90)) and thus favourable pharmacokinetic/pharmacodynamic characteristics. This can result in reduced time-to-cure and a lower number of **treatment** failures, leading to better disease management and a healthcare-economic benefit arising from the associated reduction in utilization of healthcare resources. The high potency and mean concentration in conjunctival tissue combined with the long residence time of **topical moxifloxacin** enables a dosing strategy of three times daily for 5 days. **Topical moxifloxacin** is also the first ophthalmic **antibacterial** in **Europe** provided as a multidose, self-preserved, **topical** solution, thus avoiding the risk of benzalkonium chloride preservative-related allergic reactions and swelling. In addition, **topical moxifloxacin** has a near neutral pH (6.8) and is well tolerated by patients. Given the characteristics of the novel **topical** fluoroquinolones, a change in the healthcare **treatment** strategy for acute infectious **conjunctivitis** is to be recommended. **Topical** application of fluoroquinolones, such as **moxifloxacin** multidose self-preserved solution, should be considered earlier in the **treatment** path for **conjunctivitis**. Notwithstanding the premium price attached to this novel **topical antibacterial**, use of **topical moxifloxacin** for **bacterial conjunctivitis** can be cost

effective and even generate total healthcare budget savings by reducing both the costs of managing **treatment** failures and the use of clinicians' time to manage such failures.

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