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Augmentin (amoxicillin/clavulanate) in the treatment of community-acquired respiratory tract infection: a review of the continuing development of an innovative antimicrobial agent.

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Abstract

Amoxicillin/clavulanate (Augmentin) is a broad-spectrum antibacterial that has been available for clinical use in a wide range of indications for over 20 years and is now used primarily in the treatment of community-acquired respiratory tract infections. Amoxicillin/clavulanate was developed to provide a potent broad spectrum of antibacterial activity, coverage of beta-lactamase-producing pathogens and a favourable pharmacokinetic/pharmacodynamic (PK/PD) profile. These factors have contributed to the high bacteriological and clinical efficacy of amoxicillin/clavulanate in respiratory tract infection over more than 20 years. This is against a background of increasing prevalence of antimicrobial resistance, notably the continued spread of beta-lactamase-mediated resistance in *Haemophilus influenzae* and *Moraxella catarrhalis*, and penicillin, macrolide and quinolone resistance in *Streptococcus pneumoniae*. The low propensity of amoxicillin/clavulanate to select resistance mutations as well as a favourable PK/PD profile predictive of high bacteriological efficacy may account for the longevity of this combination in clinical use. However, in certain defined geographical areas, the emergence of *S. pneumoniae* strains with elevated penicillin MICs has been observed. In order to meet the need to treat drug-resistant *S. pneumoniae*, two new high-dose amoxicillin/clavulanate formulations have been developed. A pharmacokinetically enhanced tablet dosage form of amoxicillin/clavulanate 2000/125 mg twice daily (available as Augmentin XR in the USA), has been developed for use in adult respiratory tract infection due to drug-resistant pathogens, such as *S. pneumoniae* with reduced susceptibility to penicillin, as well as beta-lactamase-producing *H. influenzae* and *M. catarrhalis*. Amoxicillin/clavulanate 90/6.4 mg/kg/day in two divided doses (Augmentin ES-600) is for paediatric use in persistent or recurrent acute otitis media where there are risk factors for the involvement of beta-lactamase-producing strains or *S. pneumoniae* with reduced penicillin susceptibility. In addition to high efficacy, amoxicillin/clavulanate has a well known safety and tolerance profile of the two new high-dose formulations are not significantly different from those of conventional formulations. Amoxicillin/clavulanate is included in guidelines and recommendations for the treatment of bacterial sinusitis, acute otitis media, community-acquired pneumonia and acute exacerbations of chronic bronchitis. Amoxicillin/clavulanate continues to be an important agent in the treatment of community-acquired respiratory tract infections, both now and in the future.

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