**Stenotrophomonas maltophilia**

**The organism**

*Stenotrophomonas maltophilia* is a ubiquitous environmental organism. In patients it is most often associated with colonization, but is an occasional cause of infection, particularly in immunocompromised patients and patients with cystic fibrosis.

**Antimicrobial resistance**

Intrinsic antimicrobial resistance of this organism is a major problem, particularly to aminoglycosides and carbapenems. Multiple efflux pumps and modifications to outer membrane proteins confer variable resistance to a wide range of agents. Chromosomal genes for beta-lactamases affect all beta-lactams including carbapenems. Aminoglycoside acetyl transferase and SmQnr genes (conferring reduced susceptibility to fluoroquinolones) are almost always present (3). In addition, acquired genes may be present conferring resistance to a wide range of agents, including trimethoprim-sulfamethoxazole (co-trimoxazole) (17). Moreover, the formation of biofilms reduces antimicrobial effectiveness.

**Treatment**

The agent with best documented clinical activity is trimethoprim-sulfamethoxazole and this is the only agent for which EUCAST breakpoints are currently available (susceptible ≤4 mg/L; resistant >4 mg/L).

In patients where trimethoprim-sulfamethoxazole is not a suitable agent for treatment because of resistance of the isolate or, more commonly, sulphonamide intolerance of the patient, selection of therapy is problematic. Antimicrobials that have been used in varying combinations include ticarcillin-clavulanate, minocycline, tigecycline, colistin, chloramphenicol, and cephalosporins (5).

Data from published case reports suggest that fluoroquinolones have good clinical activity (81.4% success in 43 patients receiving therapy including a fluoroquinolone for a systemic *S. maltophilia* infection compared to 81.7% of 60 patients receiving trimethoprim-sulfamethoxazole). In vitro, levofloxacin and moxifloxacin are more active than ciprofloxacin. In vitro, synergy has been observed with a number of beta-lactams, and may be seen at ciprofloxacin MIC ≤16 mg/L (10,14,15,18).

There is theoretical reason and in vitro data to suggest that aztreonam in combination with a preparation containing clavulanate (ie amoxicillin-clavulanate or ticarcillin-clavulanate) should be active (7,11). However, clinical data to support these in vitro observations are extremely limited (4,6).

**Antimicrobial susceptibility testing**

Antimicrobial susceptibility testing of *S. maltophilia* is difficult as results are markedly affected by incubation temperature, culture medium and technique (agar dilution, broth microdilution, disk diffusion, gradient MIC tests) (1,2,8,9,12,13,16,19). Susceptibility test results for agents other than trimethoprim-sulfamethoxazole should be treated with caution as there are no data to support a relationship between susceptibility testing results and clinical outcome with *S. maltophilia* infection.

Susceptibility testing of trimethoprim-sulfamethoxazole is more reproducible than for other agents and can be undertaken using gradient or disk diffusion methods, (8,12,13,16) but
care should be taken to read zone edges at 80% inhibition as this agent gives trailing endpoints.
References