AMERICAN SOCIETY FOR MICROBIOLOGY | Antimicrobial Agents and Chemotherapy

In Vitro Approach for Identification of the Most Effective Agents for Antimicrobial Lock Therapy in the Treatment of Intravascular Catheter-Related Infections Caused by *Staphylococcus aureus*

S. Hogan,[a] M. Zapotoczna,[a] N. T. Stevens,[a] H. Humphreys,[a,b] J. P. O'Gara,[c] E. O'Neill[a,d]

Department of Clinical Microbiology, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland[a]; Department of Microbiology, Beaumont Hospital, Dublin, Ireland[b]; Microbiology, School of Natural Sciences, National University of Ireland, Galway, Ireland[c]; Department of Microbiology, Connolly Hospital, Dublin, Ireland[d]

Infection of intravascular catheters by *Staphylococcus aureus* is a significant risk factor within the health care setting. To treat these infections and attempt salvage of an intravascular catheter, antimicrobial lock solutions (ALSs) are being increasingly used. However, the most effective ALSs against these biofilm-mediated infections have yet to be determined, and clinical practice varies greatly. The purpose of this study was to evaluate and compare the efficacies of antibiotics and antiseptics in current clinical use against biofilms produced by reference and clinical isolates of *S. aureus*. Static and flow biofilm assays were developed using newly described *in vivo*-relevant conditions to examine the effect of each agent on *S. aureus* within the biofilm matrix. The antibiotics daptomycin, tigecycline, and rifampin and the antiseptics ethanol and Taurolock inactivated established *S. aureus* biofilms, while other commonly used antistaphylococcal antibiotics and antiseptic agents were less effective. These findings were confirmed by live/dead staining of *S. aureus* biofilms formed and treated within a flow cell model. The results from this study demonstrate the most effective clinically used agents and their concentrations which should be used within an ALS to treat *S. aureus*-mediated intravascular catheter-related infections.

TauroLock™

You can access the complete study with your personal account at our digital library.

Registration is free-of-charge and only takes a few minutes.

TauroPharm GmbH . August-Bebel-Straße 51 . D-97297 Waldbüttelbrunn . E-mail: contact@tauropharm.de . Phone: +49 931 304 29 90 89