

Therapeutic challenge of multi-drug resistance Gram-Negative bacteria

Prof ADRIAN JOHN BRINK

Associate Professor Department of Clinical Microbiology and Infectious Diseases, University of Witwatersrand, Johannesburg

Head of Clinical Microbiology, Drs' du Buisson, Bruinette and partners (Ampath): Johannesburg

More lives have been saved by antibiotics than any other class of medical products but an increase in resistance to parenteral antibiotics used to treat particularly nosocomial infections has emerged as a serious problem and is increasing worldwide at an alarming rate. This includes the emergence of carbapenem and/or multi-drug resistant (MDR) Gram-negative pathogens like *Pseudomonas aeruginosa* and *Acinetobacter baumannii*. Reports of hospital outbreaks due to these strains is of great concern as limited therapeutic options threaten the successful management of these infections especially in critically ill patients; salvage therapy has included the use of old drugs like polymyxin. These developments reinforce concerns about the imminence of a post-antibiotic era.

Several controversies and trends exist concerning the management and prevention of such infections. Controversies include the use of selective decontamination of the digestive tract (SDD), avoidance of the use of certain antibiotics due to collateral damage by for example fluoroquinolones or carbapenems, antibiotic cycling and combination therapy to improve outcome and minimize the emergence of these MDR pathogens.

Resistance cannot be eradicated, but perhaps the lifespan of currently available antibiotics can be prolonged by implementing the following measures: de-escalation therapy, using local epidemiology to choose narrower spectrum cost-effective antibiotics as empirical choice, shortened duration of therapy, application of pharmacodynamic/pharmacokinetic principles, strategies to reduce nosocomial infections and above all, reinforcement of strict infection control practices.