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Emerging Superbugs: Are ESBLs and CREs the new MRSA?

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Abstract

Antimicrobial resistance has become a medical nightmare, with greatly increased healthcare costs and mortality. We have been battling methicillin-resistant *Staphylococcus aureus* (MRSA) for the last 50 years, and are not seemingly any closer to winning that war. Now, the gram negative bacteria, the Enterobacteriaceae in particular, have seriously decided to join the antimicrobial resistance movement. The first great weapon among the gram negative warriors were the extended-spectrum beta-lactamases (ESBLs) which conferred resistance to most of the penicillin-related drugs including the cephalosporins. Now there are other weaponed warriors emerging, the carbapenem-resistant Enterobacteriaceae (CREs). Most of these gram negative warriors are armed with a multidrug resistance that seems guaranteed to make them invincible. The development of new antimicrobial agents is so far behind that it seems inevitable that the bugs will take over. What are the military secrets of the bacteria? How do they manage to defeat our arsenal of drugs so easily? Their acquisition of the latest antimicrobial weapons comes not just from other bacteria, but they also have innate super powers that they are able to utilize. Is there any hope for mankind?

Biography

Wanda C. Reygaert is an Associate Professor of Microbiology and Immunology in the Biomedical Sciences Department at Oakland University William Beaumont School of Medicine. Dr. Reygaert earned her B.S. in Biology/Medical Technology from Indiana University, an M.S. in Biology/Microbiology from Purdue University, and a Ph.D. in Molecular Biology from the University of Illinois at Chicago. She has been a member of the American Society for Clinical Pathology (ASCP) since 1993, and a member of the American Society for Microbiology (ASM) since 1999. Dr. Reygaert joined the OUWBSOM as a founding faculty member in the Fall of 2009.