Bacteriology-2013

OMICS Group Conferences
Accelerating Scientific Discovery

International Congress on
Bacteriology & Infectious Diseases

November 20-22, 2013 DoubleTree by Hilton Baltimore-BWI Airport, USA

Appraisal of the current methicillin resistant *Staphylococcus aureus* (MRSA) treatment: Pharmacokinetic and pharmacodynamic approach

Ayman M. Noreddin

Hampton University, USA

Abstract

Background: Appropriate initial treatment choices for methicillin resistant Staphylococcus aureus (MRSA) infections are very critical especially in the intensive care units (ICU) settings. The aim of this study was to compare the ability of ceftobiprole, dalbavancin, daptomycin, tigecycline, linezolid and vancomycin to achieve their requisite pharmacokinetic/pharmacodynamic (PK/PD) targets against MRSA isolates collected from ICU settings.

Methods: Monte Carlo Simulations were performed to simulate the PK/PD indices of the investigated antimicrobials. Probability of target attainment (PTA) was estimated at MIC values ranging from 0.03-32 µg/ml to define the PK/PD susceptibility breakpoints. Cumulative fraction of response (CFR) was computed using MIC data from the Canadian National Intensive Care Unit (CAN-ICU) study.

Results: Analysis of the simulation results suggested the breakpoints of 8 µg/ml for ceftobiprole, 0.12 µg/ml for dalbavancin, daptomycin and tigecycline, and 1 µg/ml for linezolid and vancomycin. The estimated CFR were 100, 100, 70.8, 87.6, 88.7, 82.4, 89.4, 98.3 % for ceftobiprole, dalbavancin, daptomycin (4mg/kg/day), daptomycin (6mg/kg/day), linezolid, tigecycline, vancomycin (1gm BID) and vancomycin (1.5gm BID), respectively.

Conclusions: Ceftobiprole and dalbavancin have the highest probability of achieving favorable outcome against MRSA infections in the ICU. The susceptibility results suggested a further reduction of the vancomycin breakpoint to 1 µg/ml.

Biography

Noreddin received his Ph.D. University of the Pacific and research training at the Department of Medicine, Stanford University, CA. He had postdoctoral fellowship, University of Manitoba followed by an American College of Clinical Pharmacy fellowship. His research interest includes Pharmacoklinetic/Pharmacodynamic modeling of anti-infective therapy, clinical simulation and bacterial resistance in biofilm studies.

He has outstanding records of scientific and academic accomplishments with multiple research funding, numerous publications in highly prestigious journals and various presentations in both national and international conferences. He served as a scientific reviewer for the NIH as well as other national and international research institutions.