

Region Specific Prophylactic Antibiotic Regimen: Reducing Post Traumatic Septic Mortality

Introduction The sequela of trauma are not only associated with acute organ damage but also with chronic secondary complications due to wound and surgical site infection which might lead to sepsis accounting for 19.5-23% post-traumatic mortality (1,2). Since timely administration of prophylactic antibiotics can prevent sepsis, it can be used to reduce delayed deaths in trauma patients decreasing the burden on healthcare systems.

Methods Scientific databases PubMed, Cochrane, ClinicalTrials.Gov, and Google Scholar were thoroughly searched to gather the necessary information to understand the problem and gather relevant scientific evidence. Clinical Microbiologists and Internal Medicine Physicians were consulted for a comprehensive discussion to formulate solutions to the problem.

Findings We found that in septic patients ICU (21.8 days) and hospital stay (34.1 days) was significantly prolonged as compared to non-septic (4.7 days; $p < .001$ and 7.0 days, $p < .001$) patients increasing the utilization of critical care resources as well as significantly increasing mortality (23.1% vs. 7.6%, $p < .001$). (1) Regional heterogeneity was observed in the prevalence and resistance patterns of causative organisms. For instance, in China, Malaysia, and Hong Kong the incidence of Klebsiella sepsis is higher exhibiting 47%, 37%, and 32% resistant to Cephalosporins, Gentamicin or both respectively while in India, 38.14% and 7-65% of MRSA and MBL producing organisms are most prevalent.

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Proposed Solutions We propose a comprehensive strategic plan, involving thorough epidemiological studies with biotyping and antimicrobial susceptibility testing of the prevalent organisms identified from post-trauma sepsis patients. Thereafter, formulation of region-specific antibiotic regimens is suggested whose efficiency must be analyzed through clinical trials.

Conclusion Post-traumatic sepsis needs strategic management with the involvement of all stakeholders. Devising effective region-specific regimens for prophylactic antibiotics based on geographical distribution and resistance patterns of organisms can help to decrease the mortality caused by sepsis in trauma patients.