

Antibiotic Stewardship - An Overview

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Editorial

Volume 2 Issue 1

Received Date: March 24, 2017

Published Date: April 03, 2017

Editorial

Antimicrobial stewardship program (ASP) was formally defined in 2007 by the Infectious Diseases Society of America as "a cluster of interventions targeted towards the improvement and monitoring of appropriate antimicrobial use by selecting the most optimal drug regimen including the type of drug used, the dose, the duration of therapy and the route of administration[1]. Antibiotic stewardship is a quality analysis to prevent emergence of antimicrobial resistance, judicious use of existing drugs. The primary goal is to identify which child needs antibiotic therapy using local antibiograms, reserving higher broad spectrum antibiotics only for risk patients, a readiness to stop antibiotics when cultures are negative and prevent emergence of multi drug resistant organisms. Neonatal intensive care units should develop interdisciplinary antimicrobial stewardship teams with the support of their institutions. Prescriber audit and feedback as well as preauthorization and formulary restriction of selected antibiotics are recommended antimicrobial stewardship interventions. Ancillary strategies include education and computerized decision support. Metrics to evaluate antimicrobial stewardship programs should include measurements of patient safety and quality, such as rates of adverse drug events, and appropriate dosing and timing of perioperative prophylaxis [2].

There is a direct relationship with diagnostic stewardship and antimicrobial stewardship, which is necessary to ensure that new rapid diagnostic technologies conserve rather than consume additional healthcare resources and optimally affect patient care. The Diagnosis and treatment supported by the clinical

team in an infection using antibiotic stewardship with the principles of right interpretation, right antimicrobial, right timing and appropriate dosing. This in turn is achieved by clinical evaluation using diagnostic stewardship with ordering the right test on the right patient, and at the right time, using the rapid diagnostic test based on risk stratification, so as to get the results quickly to reassess the effectiveness of the antibiotics. The decision to step up or step down should be quick and orderly. This process or flow chart will definitely bring down the emergence of multidrug resistance organisms in the neonatal and pediatric patients.

Increasing use of inappropriate antibiotics and improper dosing of antibiotics in neonates is emerging issue in neonatology. Neonatal antibiotic exposure is associated with risk of NEC, nosocomial infection, increased mortality and increased risk of asthma in later life. Broad spectrum antibiotic exposure for unproven infection has led to emergence of multi-drug resistant organism and invasive candidiasis. Increasing rate of infection with MDR organisms give us fewer pharmacological treatment options and increase health care costs. Treating newborns with multi drug resistant organisms in tertiary level NICU became an important source of outbreaks to other newborns. Thorough assessment of antibiotic consumption in a neonatal intensive care unit can inform high-yield stewardship targets tailored to the individual centre [3].

Selection of antibiotics should be based on local antibiograms and common organisms isolated from cultures. Every NICU should have culture positive reports

recorded .Outbreak with certain organisms should be treated with specific drugs and clinician should be willing to stop the drugs started empirically. There is evidence of increasing toxicity profile with use of multiple drugs in neonates. Failure to narrow and discontinue antibiotics was rated as the most common reasons for inappropriate use of antibiotics. Nosocomial infections are a major problem and isolation is not practical in a busy popular hospital setting.

Antimicrobial stewardship team consists of a physician and clinical pharmacist microbiologist, hospital epidemiologist, and nursing in charge. Education is the most important intervention and the need to update the knowledge of antibiotics, pharmacokinetics and toxicity profile. Attitude of physicians and readiness to change according to the clinical situations and team decisions are inevitable in the success of antibiotic stewardship programs. The key strategies in dealing with Antimicrobial resistance by coordinated efforts using both antibiotic stewardship and right diagnostic stewardship is a complex problem that affects all of society and is driven by many interconnected factors. Single, isolated interventions have limited impact. International agencies must take action to minimize the emergence and spread of antimicrobial resistance which is the cause of the superbugs found in many outbreaks all over the world.

Antibiotic resistance is not only a major health threat but also may result in economic burden on the government in coming years. Longer duration of stay in hospital and higher antibiotics which are more expensive may certainly result in drain in finances. If this problem is not addressed immediately we may lose more patients to resistance than to disease itself. These issues needs to be tackled urgently on war footing basis by implementing strict measures to tackle the problem.

References

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