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World Cancer 2018: Compliance with guideline based empiric anti-microbial therapies for febrile neutropenia in adult filipino patients and their effect on conclusion- Frederic Ivan L. Ting- Torre Memorial Hospital

Frederic Ivan L. Ting
Torre Memorial Hospital, Philippines

Introduction: Infections caused by microorganisms have threatened human life since time immemorial. During the pre-antibiotic era, these have been a major concern for the high morbidity and mortality in humans. Some of the virulent organisms with the potential to spread infection from one infected person to another at a very rapid rate may cause worldwide pandemics, epidemics or outbreaks. With the discovery of the first antibiotic, "the magic bullet" Penicillin in the year 1943, patients could be effectively cured of many life-threatening infections. Ultimately, such resistant bacteria multiply abundantly and entirely replace the susceptible bacterial population. This results in treatment failure or ineffective management of such infected patients. Antimicrobial resistance has been observed and reported with practically all the newly discovered antimicrobial molecules till date. Antimicrobial resistance makes the treatment of patients difficult, costly and sometimes impossible. Emergence of antimicrobial resistance in pathogens has become a matter of great public health concern. Antimicrobial resistance is well recognized as a global threat to human health. Infections caused by antimicrobial-resistant micro-organisms in hospitals are associated with increased morbidity, mortality and healthcare costs. Resistance has emerged even to newer and more potent antimicrobial agents like carbapenems. Selection and spread of resistant microorganisms in the presence of antimicrobials is facilitated by:

- Irrational use of drugs
- Self-medication
- Misuse of drugs

Antimicrobial resistance is closely linked to inappropriate antimicrobial use. It is estimated that 50% or more of hospital antimicrobial use is inappropriate. There is a need for increased education and awareness about antimicrobial resistance among the public and health-care professionals. One needs to develop and improve the surveillance system for antimicrobial resistance and infectious diseases in general, particularly through improved linkage of data. Nothing will work unless we improve diagnostic testing to ensure more tailored interventions and respond to the opportunities afforded by advances in genomic technologies and point of care testing. Since 'post antibiotic era' is reported to be "discovery void"; antimicrobial resistance is considered to be the most serious health threats especially for the common infections like sepsis, diarrhea, pneumonia, urinary tract infection, gonorrhea, malaria, tuberculosis, HIV, influenza.

Presently, carbapenem resistance is reported worldwide in more than 50% of strains of *Klebsiella pneumoniae* causing health care associated infections like pneumonia, blood stream infections, infections in the newborn and intensive care units. More than 50% of Escherichia coli strains causing urinary tract infections are reported worldwide to be resistant to fluoroquinolones. Similarly, patients suffering from gonorrhea are reported to be resistant to the last resort of antibiotics - third generation cephalosporins. High mortality (64%) was seen among patients infected with Methicillin resistant Staphylococcus aureus (MRSA). Over all, the antimicrobial resistance is associated with higher mortality rate, longer hospital stay, delayed recuperation and long term disability. Similar observations on the emergence of antimicrobial resistance in gram-negative and gram-positive bacteria are reported also from India. The resistance range varies widely depending on the type of health care setting and the geographical location, availability of antimicrobials in hospitals and over the counter, prescribing habits of treating clinicians coming from different streams of medicine like allopathy, homeopathy, ayurvedic or quacks. The drug resistance has been reported to develop in a microbial population to an antibiotic molecule following its improper and irrational use. To combat the problem of ineffective management of infections and their complications caused by drug resistant microorganisms, it is imperative to report such problems and generate national data at all levels of healthcare settings thus leading to a better tracking and monitoring system in the country

Background: Febrile neutropenia (FN) is a common complication of immune compromised patients –whether due to infection, cancer, drug-induced, or other bone marrow failure states. With the incidence of patients with immune compromised states on the rise, this life threatening complication is also increasing. The importance of initiating the appropriate empiric antibiotic therapy can prove to be life-saving, thus we examined how the initial choice of antibiotics influenced patient outcomes.

Objective: This study aimed to determine the effect of adherence to guideline-based antimicrobial therapy for adult febrile neutropenia patients in terms of patient outcomes.

Methods: This is a 10-year cross-sectional analytical study which was conducted by doing a retrospective chart review involving adult patients with FN from 2007 to 2016. We determined use of guideline-based antibiotics, examined the

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factors that influenced adherence, and investigated the effect of initial treatment on patient outcome.

Results: Among the 257 adult patients with FN included in the study, guideline-based antibiotics were administered to 65%. On multivariate analysis, the most powerful predictor of adherence to guideline-based antibiotics was the type of risk (p=0.000), with high risk patients thrice more likely to be given guideline-based antibiotics. Other predictors were physician specialty (p= 0.036) and hematologic malignancy (p=0.045). This study showed that among low risk patients with FN, a trend towards patient discharge was observed (OR 1.18, CI = 0.16 – 8.63). However overall, adherence to guideline-based empiric antibiotic in treating adult FN patients did not correlate to patient discharge (p=0.134, OR 0.557, 95% CI = 0.260-1.205).

Conclusions: In summary, our data suggest that adherence to guideline-based antibiotics in managing adult Filipino patients with febrile neutropenia does not correlate to better outcomes such as patient discharge. Significant factors associated with adherence to guideline-based antibiotics are physician specialty, hematologic malignancy, and type of risk.