Expected sensitivity to antibiotics in bacterial infections

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Editor

Antibiotic resistance is a common concern for infectious diseases practitioners worldwide. Given the high and increasing rate of antibiotic use, the varied mechanisms of resistance transmission between bacteria and the decreasing trend in antibiotic research, WHO cautions that we are on the verge of returning to the pre-antibiotic era.

A time span of major interest to clinicians is the window for selective pressure, described as the interval below the MIC (minimum inhibitory concentration) and above the MAC (minimum active concentration).

Suboptimal therapy may select resistant strains and overtreatment poses a high risk for disrupting human microbiota. Therefore, when waiting for culture results is not an option, it is extremely important to start antimicrobial therapy with the right drug in the right dose for the right duration of therapy, with de-escalation when culture results become available (Joseph et al., 2008). At times, clinical decision making prior to culture results relies on an educated guess and it is up to each physician to choose the sources of information and the necessary tools.

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 doi: 10.1159/germs.2013.1030

To aid clinicians in making correct decisions for each patient, a simplified approach classifies infections into community-acquired, healthcare-associated and hospital-acquired. Valuable research in the field points towards a number of factors which may predict the risk of antibiotic resistance in a particular patient. The Carmeli score, increasingly used in clinical practice in the National Institute for Infectious Diseases "Prof.Dr. Matei Balș", is calculated based on key facts of the patient's medical history and can be used as a readily-available instrument for assessing the expected sensitivity to antibiotics in bacterial infections.

This can be achieved in a matter of minutes, by computing data on previous contact with the medical system, previous use of antibiotics and concomitant diseases. A new study (BREAST-MF) presented in this issue of the Journal is currently underway and one of its objectives is to assess the correlation between the Carmeli score and the antibiotic sensitivity profile of the human microbiota while documenting the existence or non-existence of a resident flora of the human breast.

Several studies on this topic are currently underway or have already started reporting data, as is the case with SATURN (Impact of Specific Antibiotic Therapies on the Prevalence of hUman Host ResistaNt Bacteria - <http://www.saturn-project.eu/>) or SMART (Study for Monitoring Antimicrobial Resistance Trends - www.globalSMARTsite.com/).

Read through this issue of the Journal for more information on antibiotics, HIV, varicella, *Mycobacterium tuberculosis* and DNA vaccines.