Resistance Evolution in Respiratory Tract Pathogens During Hospitalization (P1052)

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Recommendations for empirical antibiotic therapy of hospital-acquired pneumonia are currently based on local susceptibility patterns of commonly detected pathogens, patient characteristics and length of hospital stay. However, the influence of length of stay on antimicrobial resistance has not been systematically studied.

Using data from the Swiss Antibiotic Resistance Surveillance System (anresis.ch), antimicrobial resistance testing results from patients hospitalized between 2008-2014 were compiled and stratified for length of stay, sampling method, environmental (ward type, type of referral center, linguistic region) and host factors (age, sex). General additive and general linear models were applied to illustrate resistance odds.

The current concept of early versus late hospital-acquired pneumonia implies that antimicrobial resistance develops in a biphasic manner and assumes length of stay is a crucial predictor. Our findings suggest a more complicated picture: Overall resistance development is i) the result of a shift towards more resistant species, ii) an overlap of distinct resistance evolution patterns for individual species (monophasic or biphasic), and iii) dependent on sampling methods, environmental and host factors. As increasing resistance was not observed for all antibiotics, length of stay appears not to be the primary contributor. These findings question the current clinical classification as a guide for choosing empirical antibiotics for hospital-acquired pneumonia.

Abbreviation: TMPSX, Trimethoprim / Sulfamethoxazol; BIU, Beta Lactamase Inhibitor; Gen Ceph, Generation Cephalosporine

Disclosures: none