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**Paper Poster Session**

**Antimicrobial consumption in the hospital**

**Antimicrobial resistance rates do not drive antibiotic consumption in Europe**

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**Background:** Surveillance data are considered an essential pillar of empiric antibiotic prescription and antibiotic stewardship. The main objective of the study was to analyse the impact of changing epidemiological scenario on antibiotic usage in European hospitals.

**Material/methods:** To test the hypothesis, glycopeptides' usage and bloodstream infections (BSI) due to *Staphylococcus aureus*, coagulase negative *Staphylococci* (CoNS) and *Enterococci* were selected as indicators. Primary outcomes were the Daily Defined Dosages of glycopeptides per 1000 inhabitant-days (DID) and the yearly prevalence of BSI due to methicillin-resistant *S. aureus* (MRSA), MR-CoNS and vancomycin susceptible enterococci (VSE) in hospitalized patients in all European (EU) countries between 2005 and 2013. Databases from ECDC, national surveillance systems, EU financed projects and cohort studies (for MR-CoNS and VSE) were searched. The time trends and the association between glycopeptides consumption and MRSA prevalence were studied using mixed effects models and logistic regression providing regression coefficients (RC). To account for the flow of information through the surveillance reports and assuming a year's gap in the publication of the annual reports plus one more year for the national figures to reach the medical community, a 2-year lag in the prevalence was applied.

**Results:** The time trend analysis showed that DID for glycopeptides significantly increased ( $p < 0.001$ ) in European countries while prevalence of BSI due to MRSA had a significant decreasing trend ( $p < 0.001$ ) and MR-CoNS and VSE BSI remained stable all over the study period. The variation in glycopeptides consumption was not associated with the variation in MRSA prevalence with a 2-year time lag (RC = 0.002,  $p = 0.82$ ) even after correcting for time trend (RC = 0.006,  $p = 0.1$ ). A subgroup analysis, stratifying countries according to the trend in MRSA prevalence ( $> 1\%$  increase;  $< 1\%$  variation;  $> 5\%$  decrease), did not show any association between glycopeptides-DID and MRSA prevalence ( $p > 0.2$ ). There were 108/247 (56%) instances where MRSA prevalence saw a negative change from the previous year and similarly 43/151 (29%) instances where glycopeptides consumption had reduced from the previous year. A logistic regression confirmed that the reduction in MRSA prevalence was not found to be reflected in the change in glycopeptides consumption two years later (OR = 0.95; 95%CI 0.47-1.94). Lack of association was also confirmed between the prevalence of BSI due to VSE ( $p = 0.26$ ) and MR-CoNS ( $p = 0.35$ ) and glycopeptides DID.

**Conclusions:** Our findings show that availability of data on resistance rate does not have impact on antibiotic prescription for BSI in European hospitals. This information is of pivotal importance to

redefine role and structure of antimicrobial surveillance and stewardship programs in Europe. Studies to explore correlations and association between antibiotics and resistance in Gram negative bacteria are urgently needed.