

P0240 **Socioeconomic indicators, healthcare system, antimicrobial use and their impact on bacterial resistance in intensive care units**

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Background: Bacterial resistance affecting humans are due to complex interdependent factors. We aimed to investigate the impact of total antimicrobial use (community plus hospitals), socioeconomic factors, quality and access to the healthcare system on the incidence of bloodstream infections (BSI) in intensive care units

Materials/methods: ecological study that aggregates data from São Paulo State, Brazil. The outcomes were BSI caused by MDRO in ICUs defined phenotypically as carbapenem resistant *Acinetobacter* spp and *Pseudomonas aeruginosa*, third generation cephalosporin resistant *E. coli* and *K. pneumoniae*, Vancomycin resistant *Enterococci* and methicillin resistant *Staphylococcus aureus*. Independent variables were socioeconomic, access and quality to healthcare system and total antimicrobial use in the region. For regression analysis, we used a hierarchical model. For antimicrobial use, we adjusted models using the incidence of bloodstream infection as outcome, nested within the variables municipality and hospital. The outcome was measured once a year (2009-2011). In all models, the logarithm of the expected number of cases, calculated by indirect standardization, was used as “offset” to express the cases in terms of relative risk. All explanatory variables were centered by the means. Initially, we included socioeconomic variables. We added to this model hospital level variables (administrative category and number of ICU beds). Finally, we included antimicrobial use, maintaining the previous variables that remained significant.

Results: From 2008 to 2011, 14392 BSI caused by MDRO were reported to the São Paulo State Health Department. Incidences of BSI varied from 0.26 to 3.37 for different MDRO. The eleven most consumed antimicrobials were amoxicillin, cotrimoxazole, azithromycin, ciprofloxacin, cefalexin, levofloxacin, nitrofurantoin, moxifloxacin, doxycycline and cefadroxil. We did not observe any relation between socioeconomic, access, quality of the healthcare system, and antibiotic use with the outcome except for Gini index negatively associated to MRSA incidence. Public hospitals were consistently related to higher incidences of all MDRO except *E. coli*.

Conclusions: The fact that antimicrobial use is an important driver to MDRO is beyond dispute. Nevertheless, what happens in the community probably does not affect directly hospital MDRO incidences so tailored interventions should be implemented accordingly.