Session: EP076 Surveillance of HAI and AMR

Category: 8d. Nosocomial infection surveillance & epidemiology

23 April 2017, 13:42 - 13:47
EP0409

World Health Organization period prevalence survey on multidrug-resistant microorganisms in healthcare

Benedetta Allegranzi*[1], Nizam Damani[2], Angèle Gayet-Ageron[3], Andrew Stewardson[4], Stephen Wallace[5], Didier Pittet[6]

[1]*World Health Organization; Lead, Clean Care Is Safer Care and Infection Prevention and Control Programme*

[2]*World Health Organization*

[3]*University of Geneva Hospitals; Infection Control Program*

[4]*Hand Hygiene Australia; Infectious Diseases*

[5]*Southern Trust*

[6]*Infection Control Programme and Who Collaborating Centre on Patient Safety, University of Geneva Hospitals and Faculty of Medicine*

Background: Antimicrobial resistance (AMR) represents a significant threat to human health. To date, there is a paucity of AMR data at the global level. Moreover, developing countries are under-represented in existing reports despite the likely higher AMR burden in such countries when compared to high-income countries. We conducted a global survey on the prevalence of multidrug-resistant organisms (MDROs) in clinical blood and urinary specimens routinely submitted for inpatients in a diverse range of healthcare facilities worldwide, while also evaluating laboratory microbiology capacity.

Material/methods: We conducted a laboratory-based period-prevalence survey of AMR. Facilities registered for the World Health Organization SAVE LIVES: Clean Your Hands global campaign (about 16000) were invited to participate by submitting an online data collection form available in English, French and Spanish. Laboratories processing both blood and urine cultures for hospital inpatients provided data on microbiology methods and prevalence of detection of five selected MDROs during seven consecutive days in the period March–June 2014: methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), extended-spectrum β-lactamase producing Enterobacteriaceae (ESBL-PE), carbapenem-resistant Enterobacteriaceae (CRE), and multi-resistant *Acinetobacter* species (MRAB). Minimum quality laboratory criteria for bacterial identification and susceptibility testing were established *a priori.*

Results: Four hundred and twenty laboratories in 67 countries responded. Minimum quality criteria for both identification and antimicrobial susceptibility testing (AST) were met by 380 (90.5%), 359 (85.5%) and 368 (87.6%) of the 420 laboratories for *S. aureus*, Enterococci and Gram-negative bacilli respectively. Capacity was lowest in Africa, particularly for AST. Enterobacteriaceae were the most common organisms (1,721 blood and 12,763 urine strains), and had lowest proportion of MDRO: ESBL-PE representing 13.9% (95% CI, 12.3–15.7) and 10.2% (9.7–10.7) and CRE representing 2.3% (1.7–3.2) and 1.0% (0.8–1.2) of strains from blood and urine, respectively. *S. aureus* was the next most frequent organism from blood cultures (n=409), with 38.1% (32.8–42.3) MRSA. MDRO prevalence tended to be higher in low- and middle-income countries (Figure).

Figure. Prevalence of multidrug resistance among *S. aureus*, Enterococci, Enterobacteriaceae, and *Acinetobacter baumannii* isolated from clinical blood and urine specimens, stratified by World Bank economy.
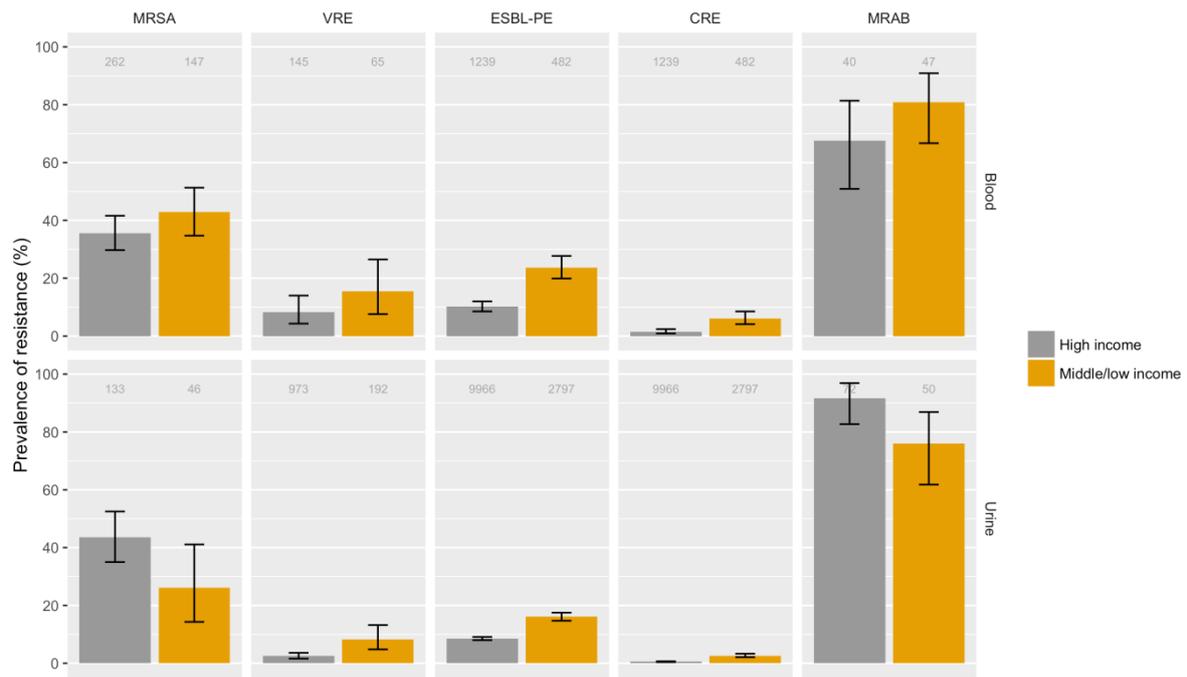
Error bars indicate 95% confidence intervals for the proportion of strains that are resistant. Numbers in grey indicate the total number of positive culture results (susceptible or resistant) for each group.

Conclusions: This survey demonstrates the feasibility of a global study of MDRO prevalence, and highlights the need for improved laboratory capacity in Africa. The estimated of prevalence of MDROs among important pathogens in this survey provides a useful addition to the existing evidence, and suggests one possible means for ongoing large scale surveillance. Repeated surveys may be useful to monitor global trends in AMR.