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Paper Poster Session
MRSA - one health worldwide

Results of a Staphylococcus aureus surveillance scheme in the Yorkshire and Humber region of the UK provide reassurance at a time when antibiotic resistance is a threat to the treatment of infectious disease

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Background: There has been extensive research into staphylococcal disease and prevention of infection; however, important gaps remain in key knowledge areas. There is uncertainty about the susceptibility of *Staphylococcus aureus* to two main antimicrobials, mupirocin and chlorhexidine, that are key components of staphylococcal decolonisation regimens. In addition, there is uncertainty about the true prevalence of strains producing the Panton-Valentine leukocidin (PVL) toxin. Estimates of the prevalence of mupirocin and chlorhexidine resistance and the prevalence of PVL in staphylococcal isolates in Yorkshire and Humber (YH) would directly inform the public health control strategies in terms of appropriate responses and likely success, and contribute to national knowledge on this topic.

Material/methods: Each laboratory (n=14) within the YH region was assigned two consecutive days in July 2015 during which all clinical isolates of *S. aureus* were collected. A data sheet comprising age, sex, specimen type, culture type (pure or mixed) and location of the patient (community or hospital) was completed for each isolate. Duplicate isolates from the same patient were excluded. Isolates were sent to a central laboratory in Leeds for testing: antibiotic susceptibility testing by VITEK2 (bioMérieux, Marcy-l'Étoile, France), molecular detection of methicillin-resistance (*mec*A and homologue $mecA_{LGA251}$), genes encoding PVL (*luk*S-PV gene), and the chlorhexidine efflux gene (*qac*A). MIC values to chlorhexidine were determined by broth dilution method.

Results: A total of 520 isolates were included in the study. The majority of patients had samples sent from a community setting (57%) and the majority of *S. aureus* were isolated from wound swabs (79%). Non-invasive infections (defined as a pure culture of *S. aureus* isolated from a non-invasive sample type) were the most common (61%), whereas invasive infections (defined as *S. aureus* culture from blood, bone or tissue) were infrequent (3%). Six percent of isolates were methicillin-resistant *S. aureus* (MRSA) and 16% were considered multi-drug resistant (MDR) (resistant to ≥3 classes of antibiotic). Mupirocin resistance was low (0.8%, 95% CI 0.3-2.0) and only found in MRSA. A small number of isolates (3.7%, 95% CI 2.4-5.6) were positive for PVL; carriage was not associated with MRSA or MDR isolates. Genotypic resistance to chlorhexidine (carriage of *qac*A gene) was identified in 1.5% (95% CI 0.8-3.0) isolates and 4% isolates had a chlorhexidine MIC 4mg/L.

Conclusions: These data provide a reassuring picture of *S. aureus* within a single healthcare region of the UK. PVL-positive isolates remain low in prevalence and despite widespread use of mupirocin and chlorhexidine for decolonisation of MRSA, non-susceptibility to these agents remains low. These data suggest that the widespread use of staphylococcal decolonisation regimens over the past decade or more has not had an adverse impact on resistance rates.