P1471
Poster Session VI
Detection of MRSA and identification of staphylococci at species level

RAPID DIAGNOSTIC TESTING WITH GENEXPERT IMPROVES ENROLLMENT IN A RANDOMIZED CLINICAL TRIAL FOR DETECTION OF METHICILLIN-RESISTANT S. AUREUS IN ACUTE BACTERIAL SKIN AND SKIN STRUCTURE INFECTIONS

K. Claeys[1], A. Casapao[1], J. Pogue[2], S. Saely[2], C. Giuliano[1], W. Hafeez[3], K. Kaye[4], D. Levine[4], S. Davis[1], M. Rybak[1]

[1]Pharmacy Practice, Wayne State University, Detroit MI, USA ; [2]Pharmacy, Detroit Medical Center, Detroit MI, USA ; [3]Medicine Division of Infectious Disease, Detroit Medical Center, Detroit MI, USA ; [4]Medicine Division of Infectious Disease, Wayne State University, Detroit MI, USA

Objectives: Acute skin and skin structure infections (ABSSSIs) caused by *S. aureus* (SA) represent one of the most common infections encountered in emergency departments (EDs). Methicillin-resistant SA (MRSA) represents approximately 50% of cases. Rapid diagnostics (RD) allows for identification of these pathogens within hours instead of days offering the opportunity for earlier administration of organism-specific therapy. One novel application of this technology may be to facilitate enrollment in pathogen-targeted clinical trials. This study aims to demonstrate the value of rapid diagnostic testing in a clinical trial of ABSSSIs.

Methods: GeneXpert (Cepheid) was used to screen and aid in enrollment of patients as part of a prospective, open-label, multicentre, randomized trial for the treatment of ABSSSIs conducted in two acute care and three community hospitals in metropolitan Detroit. Patients admitted with ABSSSIs between April 2012 and December 2013 were evaluated for inclusion. The study population was enriched for MRSA by enrolling patients with known MRSA per rapid diagnostic testing or high suspicion for MRSA meeting criteria for vancomycin. Rapid diagnostic testing was completed by a co-investigator at the participating ED upon receipt of wound culture. Results were categorized as methicillin-sensitive SA (MSSA), MRSA or non-SA. Timing of results (1.5 hours) was compared descriptively to traditional clinical microbiology (CM) speciation and final susceptibilities.

Results: Between April 2012 and December 2013, 97 patients were consented, 58 met study inclusion criteria. Thirty-two patients had lesions that were amenable to culture. The median age was 46 and the most common lesion type was abscess (19 or 59.4%). In these patients lesion size was 7.5cm (range 3cm to 17cm) with surrounding induration. Cellulitis (6 or 18.8%) and wound infections (7 or 21.9%) comprised the remainder with median lesion size of 348.8cm^2 (range 77cm^2 to 1665cm^2). Compared to rapid diagnostic results after 1.5 hours, traditional CM returned speciation at a median of 24.5 hours (range 19.5 to 64.9) and final identification and susceptibility results at a median of 80.8 hours (range 52.0 to 106.0). Rapid diagnostics returned 12 MRSA-positive cultures, with a 100% correspondence to CM results. Six of nine (66.7%) cultures that returned MSSA-positive were determined to be polymicrobial and 3 (50%) did not grow MSSA. Results for susceptibility of MRSA isolates took a median of 75.4 hours (range 50 to 90.9) while MSSA isolate results were a median of 72.4 hours (range 67.5 to 95.9).

Conclusion: ABSSSIs are a common cause of patients seeking medical care in EDs. Within a prospective randomized trial of appropriate treatment for ABSSSIs rapid diagnostic testing was able to aid in pathogen identification as MRSA, MSSA, or not-SA 80 hours sooner. These results have the potential to impact future clinical trials and treatment at point of care.