ABSTRACT

Multi-drug resistant (MDR) infections are a significant cause of morbidity, mortality, and excess cost in healthcare institutions, leading to the implementation of infection control barrier precautions geared to prevent transmission. Rapid diagnostic tests (RDT) provide prompt identification of microorganisms and resistance markers, offering a unique collaborative opportunity for both infection control and antimicrobial stewardship programs (ASPs). We evaluated the effect of RDT coupled with an ASP communication to time to placement of contact isolation in bacteremic patients with MDR organisms.

METHODS

RDT was performed using the Verigene® Gram Positive and Gram Negative Blood Culture System (Nanosphere, Northbrook, IL) for gram positive and gram negative microorganisms. Results were reported to the Infectious Diseases pharmacist and the corresponding practitioner caring for the patient, and an appropriate treatment regimen per protocol was selected. A retrospective chart review was performed to compare management of bacteremic patient with MDR organisms pre and post RDT program. The primary endpoint was time to initiation of barrier precautions. The design was a single centered and small sample population.

RESULTS

Fifty-seven patients with MDR bacteremia were included in our analysis; 25 in the pre-RDT group and 32 in the post-RDT group. The following MDR organisms were isolated from culture in the pre-RDT and post-RDT group: methicillin resistant Staphylococcus aureus (36% vs. 47%), Vancomycin resistant Enterococcus spp. (20% vs. 3%), Extended spectrum beta-lactamase-producing Enterobacteriaceae (38% vs 26%) and Carbapenem resistant Enterobacteriaceae (8% vs. 25%). After initiation of RDT, there was a decrease in time to initiation of barrier precautions (4:14 h:min [IQR: 1:48-12:16]).

The primary endpoint was time to initiation of barrier precautions. The results were reported to the Infectious Diseases pharmacist and the corresponding practitioner caring for the patient and an appropriate treatment regimen per protocol was selected. A retrospective chart review was performed to compare management of bacteremic patients with MDR organisms post RDT coupled with an ASP communication. The primary endpoint was time to initiation of barrier precautions.

DISCUSSION

Implementation of Verigene® led to a statistically significant reduction in time to placement of barrier precautions by about 24 hours. Equal distribution of MDR gram positive and gram negative pathogens noted at our institution, with increasing rate of carbapenem resistant pathogens.

Future efforts will explore if RDT can reduce the spread and transmission of healthcare MDR infections. Limitations to this study included retrospective design, single centered and small sample population.

CONCLUSION

RDT coupled with an ASP communication resulted in faster initiation of infection control barrier precautions, with potential implications for improved efforts to reduce the spread and transmission of healthcare associated MDR infections. Further studies are warranted to confirm these results.

REFERENCES