In this study, the efficacy of two swab systems to recover MRSA as low as present in very low quantity was assessed by direct swab plating using a conventional swab (M40 Transystem (M); Copan) compared to the ESwab (E)

METHODS

Using the CLSI-M40 Roll-Plate Method, swabs were seeded in triplicate with 100 µL aliquots of 21 MRSA strains, comprising a control strain (E. aerius ATCC 43300) and 20 clinical isolates, including 10 community-associated (CA-MRSA) and 10 hospital-associated (HA-MRSA) strains, which had been previously characterized for Panton-Valentine leukocidin (PVL). In this study, all of the CA-MRSA isolates were PVL positive and the HA-MRSA isolates were PVL negative.

Each isolate was suspended in sterile saline and the suspensions were diluted by 1.5 x 10^1 CFU/mL, 1.5 x 10^3 CFU/mL. Using CLSI-M40 Roll-Plate Method, the seeded E and M swabs were stored at 25-29 °C, and plated on blood agar (BA) at 0, 12, and 24 h. Additionally, 100 µL aliquots of EL were plated at same timepoints on BA. Viability was compared to the 0 hr count for each strain-swab combination.

RESULTS

All 21 MRSA strains were adequately recovered from all swabs seeded with 10^1 to 10^6 CFU/mL regardless of swab type, plating timepoint, or plating procedure. However, of the 21 strains diluted to 10^1 CFU/mL inoculum concentration, only 10 (48 %), 7 (33 %), and 5 (24 %) were recovered from M40 (16 ± 76 %), 16 (76 %), and 15 (71 %) from E4; and 17 (81 %), 17 (81 %), and 16 (78 %) from EL at 0, 6, and 24 h, respectively. At 10^3 CFU/mL concentration, 10 (48 %), 7 (33 %), and 5 (24 %) were recovered from M40 (9 ± 43 %), 4 (43 %), and 3 (38 %) from E4; and 11 (52 %), 11 (52 %), and 10 (48 %) from EL at 0, 6, and 24 h, respectively.

CONCLUSIONS

This study sought to determine if the ESwab had an advantage over its conventional counterpart in picking up MRSA even when present at very low levels. The efficacy of recovering any amount of MRSA is of pivotal importance and has clinical ramifications for patient colonization, infection control, and for containing the spread of MRSA.

REFERENCES