

TITLE: HOW TO IMPROVE THE DETECTION OF *S. AUREUS*/MRSA ON ENVIRONMENTAL SURFACES?

AUTHORS: RODRIGUES, S.¹, CONCEIÇÃO, T.¹, DE LENCASTRE, H.^{1,2}, AIRES-DE-SOUSA, M.³

INSTITUTIONS: ¹Laboratory of Molecular Genetics, Instituto de Tecnologia Química e Biológica António Xavier, Universidade Nova de Lisboa, Oeiras, Portugal; ²Laboratory of Microbiology and Infectious Diseases, The Rockefeller University, New York, NY, USA; ³Escola Superior de Saúde da Cruz Vermelha Portuguesa, Lisboa, Portugal.

ABSTRACT:

Methicillin-resistant *Staphylococcus aureus* (MRSA) can survive for long periods on inanimate objects, and therefore environmental surfaces constitute an important reservoir for dissemination. Contrarily to other authors, we have previously detected a high prevalence of MRSA in Portuguese public buses by screening hand-touched surfaces using moistened cotton gauzes. The aim of the present study was to evaluate different methods for screening environmental clinical surfaces for *S. aureus*/MRSA contamination.

A total of 49 inanimate surfaces were screened at a hospital in Luanda (HPDB), Angola and 49 surfaces at a hospital in São Tomé and Príncipe (HCST), by three different methodologies: (i) sterile swabs moistened in saline; (ii) sterile cotton gauzes moistened in Tryptic Soy Broth (TSB); (iii) commercial premoistened sterile sponges (polywipes). The swabs, gauzes and polywipes were introduced into TSB for enrichment and incubated at 37°C overnight. All 294 samples were plated onto Tryptic Soy Agar and onto chromogenic selective media for *S. aureus* and for MRSA.

Among the 49 surfaces screened at HPDB, 14 (29%) were contaminated with *S. aureus*, out of which 12 (24%) were MRSA. In HCST, *S. aureus* was found in nine (18%) surfaces, out of which four (8.2%) were contaminated with MRSA. Comparing the three screening methods, most of the positive cultures were recovered from gauzes (16 out of 98; 16.3%), followed by polywipes (4/98; 4.1%) and swabs (3/98; 3.1%).

The detection of *S. aureus*/MRSA on environmental surfaces is dependent on the screening methodology. Moistened gauzes followed by an enrichment step was the most sensitive method.

Key words: MRSA, environment, *Staphylococcus aureus*, screening methods