

**TITLE:** SURFACE ENVIRONMENT CONTAMINATION IN A INTENSIVE CARE UNIT OF AN HOSPITAL IN MANAUS

**AUTHORS:** <sup>1</sup>LIMA, L. S. <sup>1</sup>BRITO, E. M. <sup>2</sup>SALLES, V. N. <sup>1</sup>CARVALHO, A. S. <sup>1</sup>MAGALHÃES, K. R. C. C.

**INSTITUTION:** <sup>1</sup>UNIVERSIDADE FEDERAL DO AMAZONAS – UFAM (AV. GENERAL RODRIGO OCTÁVIO JORDÃO RAMOS, 6200, COROADO I. PRÉDIO DA FACULDADE DE CIÊNCIAS FARMACÊUTICAS – FCF. SETOR SUL DO CAMPUS UNIVERSITÁRIO UFAM. CEP: 69080-900, MANAUS-AM, BRAZIL). <sup>2</sup>HOSPITAL UNIVERSITÁRIO GETÚLIO VARGAS –HUGV (AV. ARIPUANÃ, 04, PRAÇA 14 DE JANEIRO, CEP:69.020-170, MANAUS-AM, BRAZIL).

**ABSTRACT:**

In the last years, substantial scientific evidence has demonstrated that contamination of environmental surface in hospital rooms plays an important role in the transmission of several key healthcare associated pathogens. The Intensive Care Unit (ICU) is often called the epicentre of opportunistic infections with 25% of all healthcare associated infections occurring in ICU patients, resulting in increased morbidity, mortality and healthcare costs. Therefore, the aim of this study was to assess the occurrence of Gram-negative bacteria on different surfaces of an ICU. The surfaces samples were collected from bed side rails, mechanical ventilation, infusion pump, monitors, curtains and taps. Two sequential swabs were used to take each sample: first, a wet swab was rotated and rubbed in a zig-zag pattern over the surface and this process was repeated at an angle of 90° with a dry swab. Both were put into a tube with a PBS solution. The samples were streaked onto MacConkey agar and incubated for up to 48h at 37°C. The identification procedure and antimicrobial susceptibility test were conducted using a VITEK 2 system (bioMérieux), by employing cards according to manufacturer's and Clinical Laboratory Standards Institute. From the 69 surfaces sampled analysed in this study, 33 were culture-positive (47.8%). Of these positive samples, 54.5% were Gram-negative bacteria and 45.5% were common opportunistic fungi identified as *Paecilomyces* sp and *Penicillium* sp by the slide culture method. Gram-negative positive samples were collected on bed side rails (n=1), mechanical ventilation (n=10), infusion pump (n=1) and taps (n=6). *Pseudomonas* sp was the most frequent genera. *P. stutzeri* was recovered from mechanical ventilation (n=3) and infusion pump (n=1) and *P. aeruginosa* (n=3) from the taps. Strains of *Citrobacter freundii*, *Pantoea* spp. and *Sphingomonas paucimobilis* were also recovered. All strains were susceptible to carbapems (imipenem and meropenem) and polymyxins (colistin). Strains with resistance to  $\geq 3$  class of antibiotics were not recovered. Almost all of the surfaces were contaminated with bacteria and fungi which is of great concern, since it may be a potential source of cross-infection from the hands of the health care workers to their patients.

**Keywords:** microbial monitoring; Gram-negative, intensive care unit

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