

# Microbiology For The Hospital Environment

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## Isolation, Identification and Antimicrobial Susceptibility of *Pseudomonas* spp. Isolated from Hospital Environment in Tonekabon, North of Iran

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**Abstract** A wide variety of opportunistic pathogens has been detected in hospital surfaces. Medical center surfaces can serve as reservoirs of pathogenic bacteria. Among this pathogens, *Pseudomonas* species are one of the leading causes of nosocomial infections, frequently found in hospital environments. In this research, we studied the presence of *Pseudomonas* spp. in a hospital wards surfaces. 460 samples from a hospital sections were collected in the city of Tonekabon, in North of Iran, between December 2012 and June 2013. The identification of strains was performed by using biochemical tests and AP2ONÉ (Biomérieux). Finally, the identification of some strains was verified by 16S rRNA gene sequencing. In general, 61 strains of *Pseudomonas* were isolated from all the sources. The highest isolation rate of *Pseudomonas* spp. was recorded in Surgery section (19/71%), followed by ICU (19/23%), Labor (17/66%), CCU (14/19%), Pediatric (11/76%), Internal (9/87%) and while lowest isolation was recorded in Dialysis section (1/56%), out of 61 isolates 52 (85/25%) were belonged to *Pseudomonas aeruginosa*, 6 (9/83%) to *Pseudomonas stutzeri*, 2 (3/28%) to *Pseudomonas putida* and 1 (1/64%) to *Pseudomonas fluorescens*. In addition, all *pseudomonas* species isolates were resistant to penicillin, cephalosin and vancomycin, while they showed different levels of susceptibility to other antibiotics. Environments in hospital are vehicle of *Pseudomonas* spp. and therefore the patients and people working in this area must attention to their personal hygiene in order to avoid *Pseudomonas* infection.

**Keywords:** isolation, *Pseudomonas*, hospital surfaces, nosocomial infections, antibiotic susceptibility, Iran

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### 1. Introduction

Nosocomial infection is one of the most important problems in the worldwide. It is an old problem and it starts when a patient is admitted in a hospital for reason other than that infection. It is called nosocomial infection if it develops 72 h after the admission to the hospital. These infections are more dangerous than other infections because they are caused by bacteria have a high resistance to antibiotics. These infections are an important cause of increased morbidity, mortality and health care costs worldwide [1]. Nowadays although modern antibiotics have improved, still sometimes the treatment is difficult and causes morbidity and mortality to patients. Many outbreaks of nosocomial infections have raised from reservoirs of pathogens in the inanimate hospital surfaces. The contribution of the environment surfaces is so important. It has been reported that 10% hospitals acquire this infection while staying hospital [2]. Based on statistics and the result of the researches, the rate of infection varies in different part of the world. The etiological agent of Hospital-Acquired Infections varies

from hospital to hospital and in different geographical areas [3,4].

*Pseudomonas* is one of the most important factors of nosocomial infection which threatens the lives of many patients annually. *Pseudomonas* spp. are considered opportunistic pathogens that causes nosocomial infection, very commonly found in nature (soils, water, plants and animals) and water treatment systems, thus demonstrating their adaptation to environments with low nutrient concentration, and over a large temperature range, between 4 and 42°C [5].

In sampling from hospital sentiment, *Pseudomonas* taken from different surfaces of the hospital like, taps water, sinks and other places. The researches have shown that these bacteria grow better in wet surfaces [6]. The typical *Pseudomonas* bacterium in nature might be found in biofilm, and is one of the most vigorous, fast swimming bacteria seen in infusions and water samples [7]. Because these bacteria have simple growth requirements, they spread extensively. *Pseudomonas* spp. may be present as a part of the normal flora of humans, although the prevalence of colonization of healthy individuals outside the hospital is rather low [8].

Galvin S(1), Dolan A, Cahill O, Daniels S, Humphreys H. Author information: (1) Department of Clinical Microbiology, Education and Research. Buy Microbiology for the Hospital Environment on [livingwithsheep.com](http://livingwithsheep.com) ? FREE SHIPPING on qualified orders. in the department of Microbiology of a teaching tertiary care hospital located in central India. Total samples (air & surface) were collected from the. A hospital-acquired infection (HAI) is an infection whose development is favoured by a hospital environment, such as one acquired by a patient during a hospital. Hospital (KMCTH) environment from 4th March., to 4th April, was Microbiology Laboratory, Department of. Pathology, Kathmandu. Studies of showerheads and hospital shower stalls find them, like therapy pools, to be hospitable environments for Actinobacteria and. Prevalence of Microbes in Hospital Toilets since moisture from hands provides a more favourable environment for microorganisms [1]. Controlling bacteria in a healthcare environment In Microbiology, News & Views, Regulations Control of bacteria in the hospital usually takes place via the use of antimicrobial agents of varying efficacy depending on the. These pathogens thrive in the temperate hospital environment and contaminate numerous sites on surfaces and equipment, including the air. Clinical microbiology; Infection control; Nosocomial infections that we feel the microbiology laboratory hospital personnel, and the environment. quantitative microbiology to adenosine triphosphate (ATP) detection on a sample evaluating the cleanliness of the hospital environment such. nosocomial infection: an infection whose development is favoured by a hospital environment, such as one acquired by a patient during a hospital visit or one. General Principles: Microbiologic Sampling of the Environment; Air Sampling Before , U.S. hospitals conducted regularly scheduled culturing of .. any well-equipped microbiology laboratory and laboratory supplier. Healthcare Environmental Testing Services and Information Overview. clinical and environmental microbiology, housekeeping practices, abatement protocols. Ants in hospital environments may carry significant numbers of bacteria in Hospital Environments, Journal of Microbiology Research, Vol. Not really sure what to think about this article: Ants as Vectors of Bacteria in Hospital Environments. Published in the Journal of Microbiology Research and. Healthcare personnel in all settings should be aware of the potential for used outside the hospital environment compared to hospital practice. What's the best way to evaluate environmental cleaning in your hospital? Compare ATP Monitoring, Microbiology Testing, Blacklight, Visual Inspection. Reduction of bacterial surface contamination in the hospital environment by application of Department of Clinical Microbiology, Falun Hospital, Falun, Sweden. The potential for contaminated environmental surfaces to contribute to transmission of a pathogens depends on the following factors: ability of pathogens to.

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