

# Detection of Bacterial Load from Ipad's Used by Students in Dental Clinic

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## Abstract:

### Aim and Objectives:

The aim of the study is to detect the bacterial load seen from iPads used by students in dental clinics. The objective is to eradicate the cross contamination which occurs most commonly in dental setup

### Background:

The oral cavity is a natural habitat for a large number of microorganisms. This ecological niche can be a reservoir for opportunistic and pathogenic microorganisms that can pose a risk for cross-contamination and infection and may even cause systemic infections. This is of particular importance in the case of routine dental practice, as the risk of exposure to microorganisms in the oral cavity is increased due to the open and invasive nature of the procedures. It is important to consider that the pathways of contamination can be bidirectional. An infectious microorganism may be transferred from the patient to members of the dental team, but also vice versa, e.g. through the hands of the dental team

### Materials And Method:

A sample size of 20 has been taken. The sample here used is iPads that are used by the Students in dental clinics. Swabs have been collected on the iPads and cultured to detect the microorganisms present on the iPads. This research activity tells us about the bacterial loads from iPads that are used by students in dental clinics and protective measures in prevention of cross contaminations.

### Result:

The present study was conducted to check the bacterial load on the iPads. 20 samples were collected from each surface and the type of bacteria grown and the colony count was made and tabulated in Table 1. All the 20 samples in each group showed the presence of bacterial growth. Out of 20 samples collected from the surface of iPads the predominant bacteria found in most of the samples were *Enterococcus faecalis* and *Staphylococcus albus*. The other organisms grown in samples were *Micrococcus*, *Bacillus* and *Viridans Streptococci*. Sample 16 showed growth of Beta haemolytic *Streptococci* arranged in chains, catalase negative and sensitive to bacitracin which is considered pathogenic.

**Key Words**-IPad, Cross contamination, Sample collection, Bacterial loads

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## INTRODUCTION

iPads have become one of the most indispensable accessories of professional and social life. They are increasingly becoming an important means of communication worldwide being easily accessible, economical and user-friendly. They are widely used by the healthcare workers (HCWs) and non-HCWs equally in every location. With all the achievements and benefits of the iPads, it is easy to overlook the health hazard it might pose to its many users [1].

The constant handling of mobile phones by users in hospitals (by patients, visitors and HCWs, etc.) makes it an open breeding place for transmission of microorganisms, as well as health care-associated infections (HAIs). This is especially so with those associated with the skin due to the moisture and optimum temperature of human body especially our palms [2]. These factors and the heat generated by iPads contribute to harboring bacteria on the device at alarming levels. When we consider an iPad's daily contact with the face, mouth, ears, and hands, the dire health risks of using germ-infested mobile devices are obvious [3].

Unlike our hands, which are easily disinfected using alcohol-based hand rubs (ABHRs) that are made available readily across all hospitals and medical facilities; our iPads are cumbersome to clean. We even rarely make an effort to

disinfect them. As a result, these devices have the potential for contamination with various bacterial agents [4]. This study was conducted to investigate bacterial contamination of iPads in a hospital setting.

## MATERIALS AND METHOD

The estimated sample size of 20 was chosen, the sample were collected aseptically by rotating sterile cotton swabs moistened with peptone water over the surface of iPads. The swabs are then cultured in blood agar and MacConkey agar and incubated at 37°C for 24 h. The growth on the plates were differentiated and identified by morphology, gram staining. The Gram positive cocci in clusters were tested for coagulase production. Gram positive cocci in clusters which are coagulase negative are taken as *Staphylococcus albus*. Gram positive cocci, coagulase negative arranged in tetrads are taken as *Micrococcus*. Gram positive cocci arranged in Pairs with no hemolysis on blood agar are taken as *Enterococcus faecalis*. Gram positive cocci arranged in chains showing Alpha hemolysis on blood agar are taken as *Viridans Streptococci*.

## RESULT

The present study was conducted to check the bacterial load on the iPads. 20 samples were collected from each

surface and the type of bacteria grown and the colony count was made and tabulated in Table 1.. All the 20 samples in each group showed the presence of bacterial growth. Out of 20 samples collected from the surface of iPads the predominant bacteria found in most of the samples were *Enterococcus faecalis* and *Staphylococcus albus*. The other organisms grown in samples were *Micrococcus*, *Bacillus* and *ViridansStreptococi*.. Sample16 showed growth of Beta haemolytic *Streptococci* arranged in chains, catalase negative and sensitive to bacitracin which is considered pathogenic. In sample 2 and 14 Beta haemolytic *Streptococci* arranged in chains, catalase negative and sensitive to bacitracin was grown.(7,8,9)

#### Type of Bacteria Grown And The Colony Count

Sample	Colonies	Colony Count (CFU)
SAMPLE 1	<i>Enterococcus</i>	150
SAMPLE 2	<i>Enterococcus</i>	85
SAMPLE 3	<i>Micrococcus</i> , <i>Enterococcus</i>	240
SAMPLE 4	<i>Micrococcus</i>	175
SAMPLE 5	<i>Staphylococcus albus</i> , <i>Bacillus</i>	350
SAMPLE 6	<i>Staphylococcus albus</i>	300
SAMPLE 7	<i>Micrococcus</i>	260
SAMPLE 8	<i>Enterococcus</i>	30
SAMPLE 9	<i>Enterococcus</i>	750
SAMPLE 10	<i>Micrococcus</i>	520
SAMPLE 11	<i>Micrococcus</i>	250
SAMPLE 12	<i>Enterococcus</i> , <i>Staphylococcus albus</i>	190
SAMPLE 13	Beta heamolytic <i>streptococcus</i> , <i>Micrococcus</i>	230
SAMPLE 14	<i>Enterococcus</i>	340
SAMPLE 15	<i>Enterococcus</i>	585
SAMPLE 16	Gram positive bacilli	155
SAMPLE 17	Beta heamolytic <i>streptococcus</i>	90
SAMPLE 18	<i>Staphylococcus albus</i>	350
SAMPLE 19	<i>Enterococcus</i>	250
SAMPLE 20	<i>Micrococci</i>	560

#### DISCUSSION

1. A practice guideline should be issued by the Hospital and Infection Control Association to address the issues of electronic devices in hospital and health care settings. Some of their recommendations include that hand hygiene should be performed between patient contact and before and after accessing a device, manufacturer's guidelines for use, cleaning/disinfection and maintenance should be reviewed to ensure that these guidelines meet the standards for cleaning and low-level disinfection that are necessary for exposure to multidrug-resistant organisms [5].
2. Screening of mobile phones for bacterial contamination is recommended especially within hospital critical areas.
3. Due care should be taken when using mobile phones hospital and in health care settings especially during working hours to reduce the risk of transmission of detrimental bacterial agents.

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