

# Spectrum of microorganisms isolated from mobile phones of general surgeons

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**Abstract-** Mobile phones have been the source of communication within the hospital. Mobile phones can act as an important source of microorganism capable of causing nosocomial infections, however in surgeons mobile they can be more devastating by acting as an important source of surgical site infections.

**Index Terms-** cell phone infection, mobile phone bacteria, mobile phone infections, Nosocomial Infection, surgeon's mobile phone, surgical site infection

## I. INTRODUCTION

Colonized micro-organisms in the devices of health care personnel may be transmitted to patient even if patients do not have direct contact with mobile phones. Nosocomial infection may be caused in patients with weak immune system but micro-organisms may not cause any harm in patients with strong immune system<sup>[1]</sup>.

Risk of infection involved in using mobile phones in the operation theatre has not yet been determined there are no cleaning guidelines available that meet hospital standards. However, mobile phones are used routinely all day long but not cleaned properly as health care workers may/ do not wash their hands as often as they should<sup>[2]</sup>

## OBJECTIVE-

Hence the present study was undertaken with objectives to screen mobile phones of general surgeons for the presence of micro-organisms, to isolate and identify the micro-organisms with the help of standard laboratory techniques

**Methods:** Swabs were taken from mobile phones surfaces, inoculated in Blood agar and MacConkey agar and thioglycollate medium, and incubated aerobically. Growth was identified as per standard microbiological procedures. Antibiotic susceptibility was determined for *S.aureus*

## II. MATERIALS & METHODS

All general surgeons of all age group including surgery residents and consultants and of both genders who were ready for consent were included in this study. This study was carried out from 1st August 2014 to 30th September 2014 at Hi-tech medical college and hospital, Bhubaneswar.

Sterile cotton swab moistened with sterile normal saline was used to collect the specimen. Swab was rotated on the sides, back and over the keypad of mobiles and on screen of a touchscreen phone.<sup>[3]</sup>

The swab were immediately sent to microbiology department after collection, where they were

Inoculated and streaked onto blood agar, MacConkey's agar, Sabouraud's dextrose agar. Plates were incubated aerobically at 37°C for 24 hrs. Isolated organisms were processed according to colony morphology, gram stain. Organisms were identified according to standard protocol<sup>[4]</sup>.

## III. RESULTS

A total of 40 mobile phone swabs of resident doctors were analyzed for presence of microorganisms. It was revealed that of the 40 mobile phones, 26 (65%) were contaminated with microorganisms (Table 1).

26 micro-organisms were isolated from 40 mobile phones as shown in Table 2. Among 26 isolates, Coagulase negative Staphylococci 17 (69.23%) was dominant organism followed by Diphtheroids 7 (26.92%), *Aspergillus niger* 1 (3.84%), MRSA 1 (3.84%)

**Table 1. Microbial contamination of mobile phones of general Surgeons**

Mobile Phones	Doctors
Contaminated	26
Non-Contaminated	14
Total	40

**Table 2. Organisms isolated from mobile phones of general surgeons**

Organism	No of surgeons
Coagulase Negative Staphylococci	17 (69.23%)
Diphtheroids	7 (26.92%),
M.R.S.A	1 (3.84%)
<i>Aspergillus niger</i>	1 (3.84%)
Total	26

## IV. DISCUSSION

The present study was conducted at Hi-tech medical college and Hospital. A total of 40 mobile phone swabs of general surgeons were analyzed for the presence of micro-

organisms. It was revealed that of the 40 mobile phones, 26 (65%) were contaminated with micro-organisms. It is similar to studies conducted by Kilic I. H. *et al.* and Datta P. *et al.* who found contamination of mobile phones 61.3% and 72% respectively. [1,2] While studies conducted by Karabay *et al.*, Ulger F. *et al.*, Tambekar D. H. *et al.* found higher rate of mobile contamination than our study i.e. 90.98%, 94.5%, 95% respectively [4-6]. Isolation of Coagulase negative Staphylococci was predominant in our study (**Table 2**) i.e. 69.23% which is comparable with study of Karabay O *et al.*, Kilic I. H. *et al.* and Ulger F. *et al.* who found Coagulase negative Staphylococci isolation 68.4%, 60% and 58.96% respectively [1,4,5].

## V. CONCLUSIONS

This study emphasizes that mobile phones act as a carriers & may play an important role in spreading of nosocomial infection. Surgeons are often exposed to pathogenic microorganisms during hospital work & they may carry these micro-organisms on their mobile phones and act as a source of infection to others. Restricting mobiles in health care set up is a debatable issue as use of mobile is unavoidable in emergencies. Hence regular surveillance and development of effective preventive strategies such as regular decontamination of mobile phones with alcohol disinfectant to reduce the burden and use of antimicrobial additive materials are required. We could easily avoid spreading bacterial infections by using regular cleaning agents and rearranging our environment. In conclusion, it can be said that hand hygiene is greatly overlooked and under-emphasized in health care settings as many preach but few follow it.

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