

## Original Research Article

### Blood Pressure Cuff - As a Fomite for cross infection

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#### ABSTRACT

##### Keywords

Blood pressure  
Cuff, Cross  
infection,  
Disinfections,  
Nosocomial  
infection

Blood pressure cuff has been found to be a major source of cross-infection between the patients. A 200 swab samples obtained from 50 blood pressure cuffs and 50 patients were collected from patients admitted in the critical care units, of either gender, of any age group. First (A) swab sample from BP cuff before placing the same on patient's arm. Second (B) swab sample taken from patient's arm after application of 70% ethyl alcohol Third (C) swab sample taken from patient's after taking blood pressure. Fourth (D) swab sample taken from the blood pressure cuff, after disinfecting with 70% ethyl alcohol. All the A samples showed 100% growth of microorganisms, where all the B samples showed no growth. Of the 50, C samples, only 38 (76%) showed growth of microorganisms, while 12 (24%) showed no growth. D samples showed 5 (10%) growth of microorganisms. Staphylococcus aureus was the most common organism seen. 66.66% of them were MRSA in A samples and 61.53% in C samples. Disinfection of blood pressure cuffs should be made mandatory while treating the immunocompromised patients admitted in the critical care wards of the hospital

#### Introduction

Infectious diseases constitute the leading cause of death worldwide. Decades of research has been done on fomite borne cross infection Nosocomial infection from contaminated equipments such as blood pressure cuff is a major problem [Martin et al 1978]. It acts as additional carrier as it comes in contact with all the patients. Significant bacterial colonization with drug resistant organisms on surface of

blood pressure cuffs can lead to cross infection among patients either directly or indirectly by health care giver hands [Cormican M.G. et al 1994]. Majority of the studies in this respect have been conducted in other countries, but only a negligence number have been conducted in our country. Because of the lacunae in the information regarding cross contamination caused by blood pressure

cuff in our country. This study is being conducted to emphasize the importance of high vigilance and decontamination of blood pressure cuff in prevention of cross-infection in hospital setting.

## **Materials and Methods**

The present study has been carried out in the Critical Care Units (MICU, ICCU, NICU, PICU and Surgical ICU) of Index Medical College Hospital and Research Centre, Indore (M.P.) from August 1 to August 7, 2013.

### **Study Design**

The present study is prospective, observational and interventional study.

### **Study Population**

Patients admitted in the critical care units of Index Medical College Hospital and Research Centre, Indore are the study population for the present study.

### **Inclusion Criteria**

- ❖ Patients admitted in the critical care units
- ❖ Patients of either gender
- ❖ Patients of any age group
- ❖ Patients giving verbal consent for taking swab samples from the arms where blood pressure cuff was tied for taking BP
- ❖ Patient's relatives / blood relatives giving verbal consent on behalf of the patient

### **Exclusion Criteria**

- ❖ Patients not giving verbal consent
- ❖ Patient's relatives / blood relatives not giving verbal consent

A total of 200 swab samples from 50 blood pressure cuffs and 50 patients were collected.

**First (A)** swab sample from BP cuff before placing the same on patient's arm.

**Second (B)** swab sample taken from patient's arm after application of 70% ethyl alcohol (Contact period: 5 min).

**Third (C)** swab sample taken from patient's after taking blood pressure.

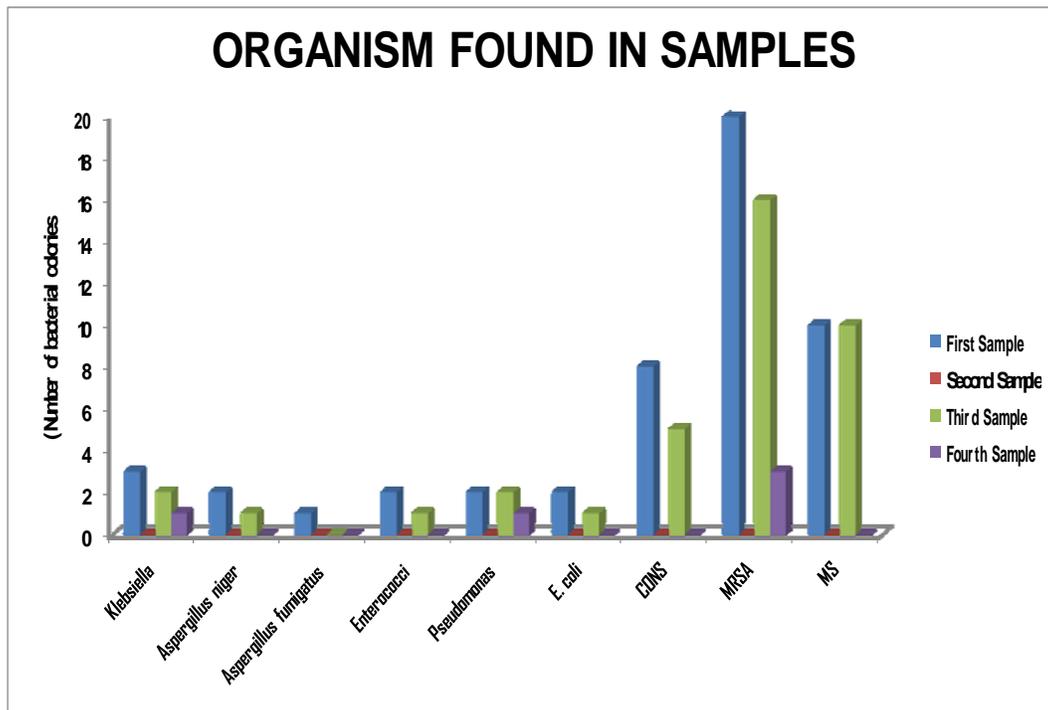
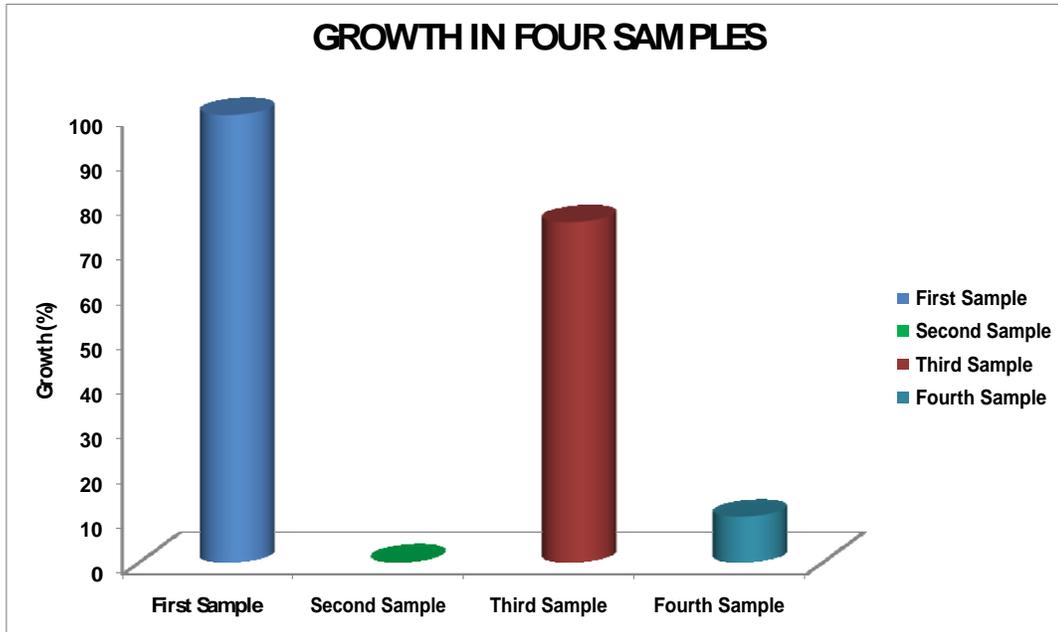
**Fourth (D)** swab sample taken from the blood pressure cuff, after disinfecting with 70% ethyl alcohol.

These swabs were put in peptone solution just before application and after taking the sample, were immediately sent for analysis. SPSS software was used for statistical analysis.

## **Results and Discussion**

All the A samples showed 100% growth of microorganisms, where all the B samples showed no growth after being disinfected with 70% ethyl alcohol solution [Smith VB et al 1996]. Of the 50 C samples, only 38 (76%) showed growth of microorganisms, while 12 (24%) showed no growth.

D samples showed 5 (10%) growths of microorganisms, even though were properly disinfected. *Staphylococcus aureus* was the most common organism seen. 66.66% of them were MRSA in A samples and 61.53% in C samples. [Marcee et al 1993] [ Boycee J.M et al 1999]



Healthcare workers need to be aware of potential cross contamination from blood cuff used in hospitals. Disinfection of blood pressure cuffs should be made mandatory while treating the immunocompromised patients admitted in the critical care wards of the hospital.

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