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Research Article

**INFECTION CONTROL REGIME IN MAYO HOSPITAL,  
LAHORE**<sup>1</sup>Dr. Muhammad Mashkat Junaid, <sup>2</sup>Dr. Hammad Rafique, <sup>3</sup>Dr. Nida Amir<sup>1</sup>King Edward Medical University, Lahore, Pakistan<sup>2</sup>IMO, BHU Hari Har, Kasur<sup>3</sup>WMO, RHC Manga Mandi, Lahore**Abstract:**

*Infection control is the discipline concerned with preventing nosocomial or health care associated infections, a practical sub discipline of epidemiology. Implementation of infection control measures is especially important in hospitals because it reduces morbidity and mortality and improves the health statistics of the country.*

*Objective: The objective was to assess the infection control measures being followed in the hospital and to compare them with standard infection control measure.*

*Study Design: Descriptive cross-sectional study.*

*Place and Duration: Mayo Hospital Lahore, 3 months.*

*Methods: A descriptive cross sectional study regarding infection control regime was conducted in Mayo Hospital, Lahore in 2017. There were total 100 participants, including 60 doctors and medical students and 40 nurses selected randomly. We visited medicine, surgery, emergency, operation theatres and outdoors. The data was then analyzed through SPSS version 23.*

*Conclusion: Standard infection control practices are not being followed in the hospital. The hospital has infection control committee but it is not properly working. Infection control practices are not properly followed due to lack of resources and high volume of patients. The conditions are much better in emergency but in outdoors and wards they are disappointing. Hand washing policy is not being followed satisfactorily. Patients are not properly screened for infections nor isolated. Surgical instruments, OT scrubs and floors of wards and OTs are not properly disinfected and sterilized. Incinerators are not available for waste disposal. There is a need to establish an effective strategy for control of infection and its strict implementation. There should be increase in the availability of resources for this program to get fruitful results.*

**Key Words:** *Infection control regime, Mayo hospital, Lahore.*

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**INTRODUCTION:**

Center for disease control and prevention (CDC) defines healthcare associated infections as a localized or systemic condition resulting from an adverse reaction to presence of an infectious agent(s) or its toxin(s). There must be no evidence that the infection was present or incubating at the time of admission to the acute care setting [1]. HAIs can be caused by bacterial, viral and fungal pathogens which are transmitted by direct contact through contaminated objects and airborne droplets [2]. Hospital acquired infection is a major problem in hospitals worldwide and the prevalence is two to three fold higher in developing countries compared to Europe or USA [3,4]. HAIs increases the socio-economic burden due to direct and indirect medical costs and extra duration in hospitals. It adds on the mortality rate and increases the physical and psychological sufferings to the patients [5]. Implementation of infection control measures is especially important in hospitals because it reduces morbidity and mortality and improves health statistics of the country. Massive researches have been done in this regard both locally and internationally to assess the availability, enforcement and benefits of these measures and problems that arise due to faulty execution of these measures.

A US based study indicates that almost 2 million people suffer from hospital acquired infections every year in America and most of them are preventable [6], yet these are considered as one of the leading causes of death [7] with mortality rate of 10 % in developed countries and 25% in developing countries [8]. The separation of source includes not only the isolation of infected persons but also all the aseptic techniques that act as barrier between infected or potentially contaminated tissue and the environment. In Pakistan conditions are really dreadful. A study conducted in the hospitals of southern Punjab revealed that even basic measures like sterilization of instruments use of incinerators and maintenance of hygiene by medical staff is not being practiced leading to poor health conditions in those areas [9]. A study conducted in India suggested that among the measures to control infection hand hygiene has turned out to be the most important key factor as contaminated hands of medical personnel are most common source of causing spread of MRSA, VRE and C Difficile [10]. Another research in India also states that general measures of infection control includes the use of sterile gloves for performing sterile procedures, masks face shields and shoe and head covers. Reusable equipment should not be used for the care of another patient [11]. Other study conducted in US that sterilization and disinfection of instruments also play a great role in reducing

transmission of infection. Personnel performing sterilization should be properly trained and their proper monitoring should be do [12,13]. Another study conducted in US suggests that nosocomial pneumonia can be prevented by removal of tubing when not needed. Another US based study suggests that for prevention of surgical site infections, use of specific antiseptic agents, use of prophylactic antibiotics and laparoscopic procedures give a good outcome [15,16]. Another Indian study suggested that proper isolation rooms for high risk patients are highly effective [11]. It is suggested by American researches that integrated management of hospital waste and cleaning of environment can reduce spread of infections [17]. Another Asian research suggests that infection control committees and programs if conducted properly can decrease infections [18]. Proper screening of blood before transfusion can reduce the risk of transfusion related infections.

As far as the control of infections in public hospitals is concerned the conditions are very alarming doctors usually do not follow the standard measures of infection control and most paramedics have no awareness about the importance of these measures due to which HAIs are increasing day by day. We are conducting the study to observe the measures taken for infection control in Mayo hospital and then draw a framework for hospital to develop and implement plans to prevent and control infections and integrated approach across all programs, services and settings. The objective was to assess the infection control measures being followed in the hospital and comparing them with standard infection control measures.

**METHODOLOGY:**

**Study design:** Comparative cross-sectional.

**Setting:** Mayo Hospital Lahore.

**Duration of study:** 3 Months.

**Sample size:** 60- Doctors and medical students  
40- Members of paramedical staff

**Sampling Technique:** Convenient.

**Sample selection:**

**Inclusion Criteria:** Doctors, Paramedical staff, 4<sup>th</sup> year and 5<sup>th</sup> year medical students are included in the study.

**Exclusion Criteria:** Patients and medical students other than 4<sup>th</sup> year and 5<sup>th</sup> year are not included.

**DATA COLLECTION PROCEDURE:**

This cross sectional survey was carried out at Mayo hospital, Lahore. It is a tertiary care teaching hospital with multiple in patient units, a busy out-patient department, emergency, operation theaters and a burn department.

Comprehensive coverage of all main departments was necessary to collect adequate data. We were a research group of 9 medical students of 4<sup>th</sup> year MBBS. For efficient and systematic approach, we divided ourselves into 2 groups. We visited medicine, surgery, emergency, operation theaters and outdoors. Each group visited one ward each day. We collected data in 7 days from 100 participants.

The process of data collection was simple. Prior to collection, we explained the research design to the participants, we started data collection at 10am till 2pm for 7 days. At the visit, permission to conduct

survey was requested. The primary research tool was 2 separate questionnaires. One questionnaire was for doctors and medical students and other questionnaire for paramedical staff. Questionnaires included all relevant information. Consent was taken before filling of questionnaire. Some questions were taken from “**Questionnaire for health/care associated infections**” (generals.plos.org)

#### DATA ANALYSIS PRODECURE:

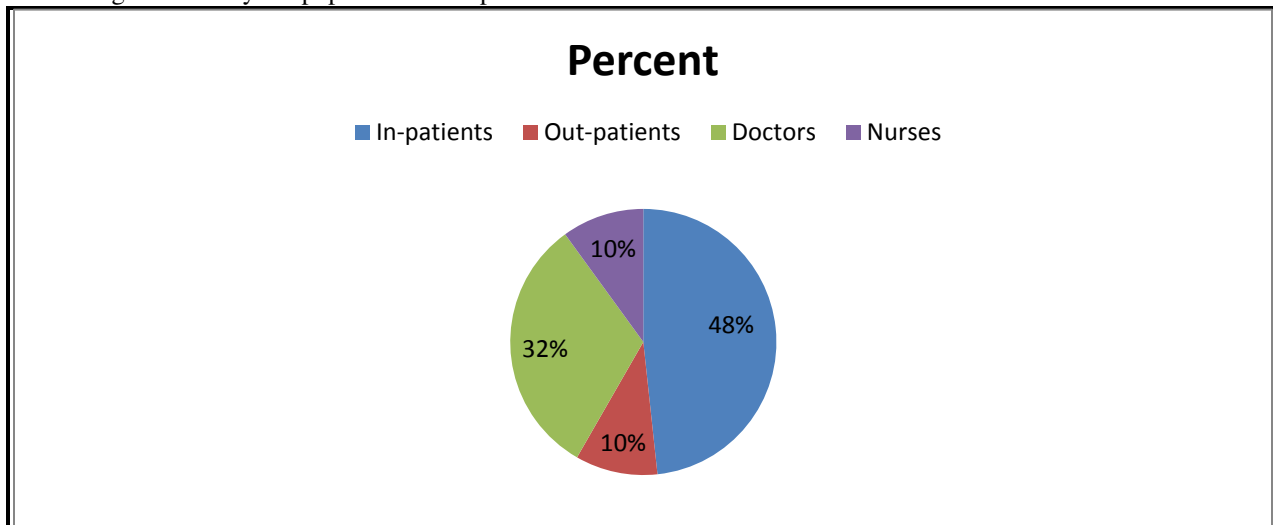
All collected data was entered and analyzed in computer program SPSS version 23.

## RESULTS:

### DOCTORS and MEDICAL STUDENTS:

60 questionnaires were circulated among randomly selected doctors and medical students of Mayo Hospital, Lahore who filled out the forms according to their observations and awareness about infection control in the hospital. According to this study, 22(36.7%) were aware about the Nosocomial Infection Monitoring Program and 23(38.3%) were aware about the existence of Infection Control Committee although it was observed that the committee was not functioning and there was no implementation of rules and regulations regarding health care.

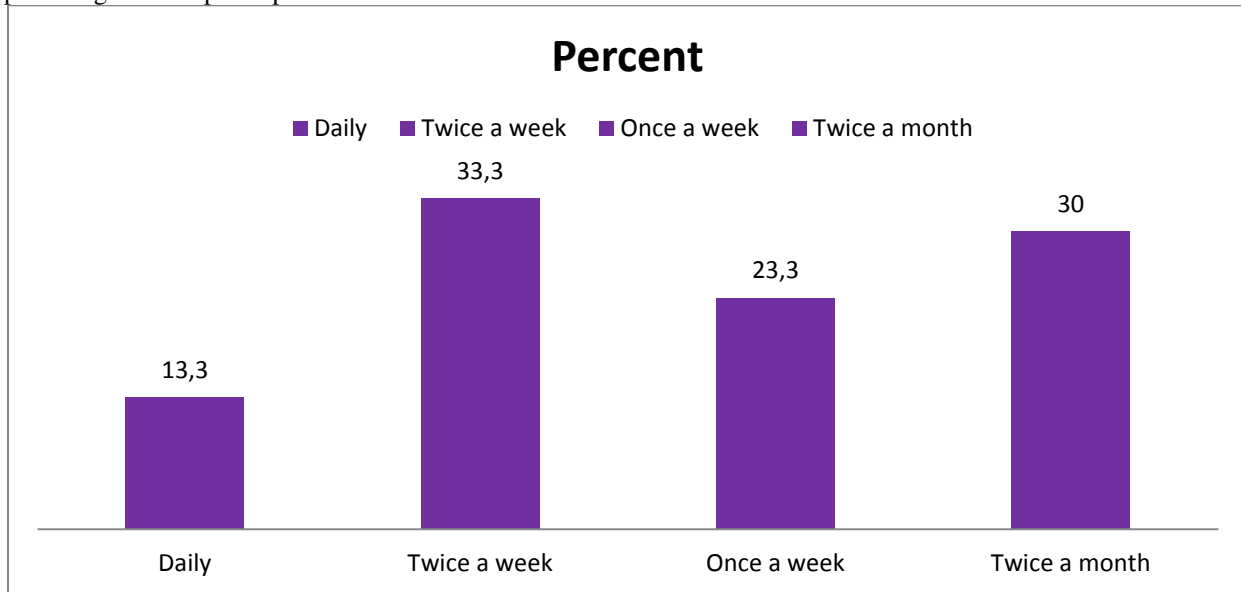
According to the study the population susceptible to health care associated infections included:



Although almost all the participants of the study were aware about HCAs in the hospital, almost half of them noticed that the patients were never screened for infections before admission and even after the patients were labeled as infectious they were kept in the same ward as the other patients. Hand hygiene policy was not properly followed according to 36(60%). Although nearly half the participants said that the hand sanitizers were available in the wards and outdoors and they sanitized their hands after examining each patient, they never washed/sanitized their hands before examining a patient. According to 22(36.7%) gloves and masks were sometimes available in the wards, outdoors and emergency with

the gloves being latex according to half the participants but 5(8.3%) never used them while examining every patient or handling fluids, secretions, blood. 21(45%) observed that surgical masks for infectious patients were not available in adequate supply while 12(20%) said that there is lack of patient's compliance. More than half the participants (mostly students) wore OT scrubs long before operation and 23(38.3%) sometimes disinfected their OT scrubs. 40(66.7%) recorded that the instruments were not properly sterilized using standard procedure. Disinfection of bed sheets, blanket and wards and outdoors was not properly achieved.

This is the bar chart explaining the frequency of disinfection in the wards and outdoors as observed by different percentages of the participants:

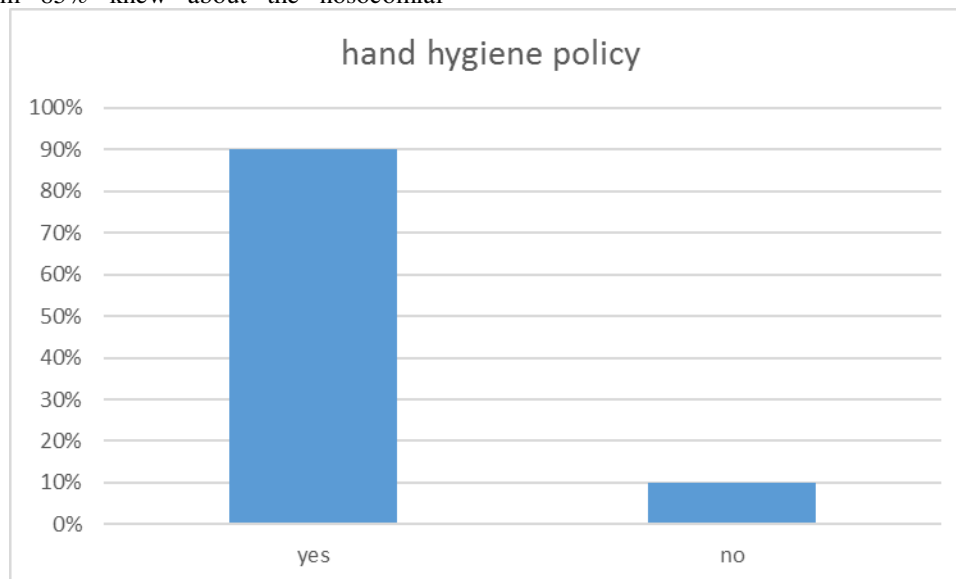


According to 39(61.9%) health care workers, doctors and students were vaccinated. According to 43(71.7%) there wasn't any standard operating procedure on accidental pricks to medical staff. Availability of incinerators was denied by 47(78.3%). Overall, the infection control in Mayo Hospital, Lahore is poor and no encouraging efforts for its improvement were being taken.

#### RESULTS OF PARAMEDICAL STAFF:

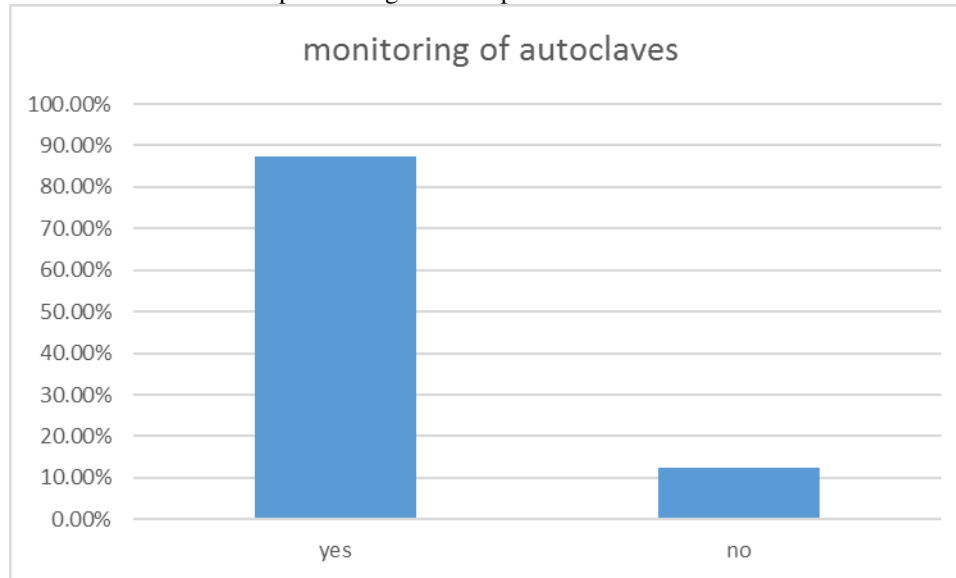
A total of 40 questionnaires were filled by nurses. Among them 85% knew about the nosocomial

infection monitoring program in Mayo hospital but only 55% thought that it is functioning properly. Hand hygiene policy is the most important factor for controlling spread of infection and fortunately 36 nurses (*Fig 1*) followed this policy but most of them washed their hands only with water and only 10% used hand sanitizers despite the fact that 70% nurses approved the availability of hand sanitizers in outdoors and wards however most of them wore new gloves before examining each patient.



**Fig 1:** Percentage of nurses who follow hand hygiene policy which turned out to be 90%

A good number of nurses (87.5%) took good care of their own hygiene. As far as disinfection and sterilization is concerned, 25 nurses (62.5%) were of the view that wards and outdoors are daily disinfected and 60% noticed that instruments were sterilized using standard procedures. 87.5% said that autoclaves are monitored properly (*Fig 2*). Only 55% disinfected their OT scrubs properly which is very disappointing but 38 nurses (95%) mentioned that antiseptic measures were taken before performing invasive procedures.



**Fig 2:** Percentage of nurses having a view about proper monitoring of autoclaves

Isolation of infectious patients plays an essential role in discouraging spread of infections but only 30% nurses told that such patients are kept in separate wards. On taking waste disposal into account, 29 of them (72.5%) observed that there is always a safe and quick disposal of used needles and syringes and 60% found that incinerators are available for this purpose.

### DISCUSSION:

Standard infection control practices are not being followed in the hospital. These findings are likely to be representative of not only the rest of hospital, but other government hospitals throughout the country. Infection control awareness is generally lacking throughout the healthcare system in the country [8].

Standard of infection control practices are generally lacking due to poor economic status, high volume of patients, low staff to patient volume and lack of time<sup>8</sup>. Hand hygiene is the most effective method to prevent health care associated infections. Hand hygiene has turned out to be the key factor among all the infection control measures as contaminated hands of medical personnel are the most common source of causing spread of MRSA and VRE [10].

Sterilization and disinfection of instruments also play a great role in reducing transmission of infective agents. Prevention of surgical site infections, use of specific antiseptic agents, personal protective equipments and use of prophylactic antibiotics give a

good outcome [15,16]. Proper isolation rooms for high risk patients are highly effective<sup>11</sup>. Integrated management of hospital waste and cleaning of environment can reduce the spread of infections<sup>17</sup>. Incinerators should be available in the hospital. There should be proper monitoring of autoclaves. Proper screening of blood before transfusion can reduce the risk of transfusion related infections. Masks should be available to infectious patients.

Pakistan has a high prevalence of HBC and HCV with a high incidence in health care workers. HIV is on the rise in Pakistan. The high incidence of needle risk injuries in hospital staff and absence of standard procedures for needle stick injuries found in this study has also been documented in other studies<sup>8</sup>. Health care workers need education and training in prevention of sharp injuries<sup>8</sup>. There should be quick disposal of used syringes and color code segregation of waste in all the wards of hospital as being followed in emergency of Mayo hospital. All the doctors, healthcare workers and medical students should be properly vaccinated. According to our study, absences of hand hygiene, improper sterilization of instruments, and inadequate use of personal protective equipments are all due to inadequate facilities, low staff to patient ratio, lack of time, lack of sufficient knowledge and casual attitudes toward infection control [8].

Infection control committees and programs if educated properly can decrease the infections as well as economic burden. There is a need to establish an effective strategy for control of infections and its strict implementation. There should be increase in the availability of resources for infection control program to get fruitful results. This study provides a better understanding of infection prevention and its economic implications. It will also help the infection control personnel in making better decisions.

### CONCLUSION:

As far as the control of infection in Mayo hospital is concerned the conditions are very alarming. Doctors usually do not follow the standard measures of infection control and most paramedics do not have any awareness about the importance of these measures due to which hospital acquired infections are increasing day by day. We conduct this study to observe the measures taken for infection control on practical grounds and the setbacks in infection control measurements. This study will help the authorities to develop a more effective strategy for infection control and its implementation.

### Recommendations:

#### For infection control committee:

- There should be a proper infection monitoring program and functional infection control committee.
- It should have subdivisions for efficient working.
- Funds should be properly utilized and distributed among all the hospital departments as per requirement.
- There should be a system of accountability.
- There is a need to establish an effective strategy for control of infections and its strict implementation.
- There should be increase in the availability of resources for infection control program to get fruitful results.
- Availability of incinerators should be assured.

#### For doctors and nurses:

- They should follow standard infection control measures.
- Hand hygiene policy should be followed according to standard recommendations.
- There should be proper sterilization of instruments and disinfection of OT scrubs, theatres and wards.
- There is a need to establish an effective strategy for control of infections and its strict implementation.

- Autoclaves should be monitored properly.

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