

# To study the infection control measures during COVID 19 in ESIC model hospital, Jammu India

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## ABSTRACT

This is a general review covering infection control aspects in dentistry during the COVID pandemic. A literature search was made at National Library of Medicine, Pubmed.gov using key words such as “dentistry and COVID” (357 publications), “dentistry and COVID and infection control” (70 publications). Publications related to behaviour, education, ethics, treatment and childcare were excluded. Publications describing general aspects of infection control were reviewed.

**Keywords:** COVID-19, dentistry, preventive measures, corona virus infection, ESIC model hospital.

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## INTRODUCTION

The outbreak of corona virus in 2019 (COVID-19) was identified as a pandemic by the World Health Organization (WHO) on January 30, 2020. COVID-19 is an illness initiated by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) that originated in Wuhan City, Hubei Province, China, and spread throughout the world via contaminated subjects and airborne transmission. Over 4.7 million deaths have occurred due to COVID-19 up to September 22, 2021.<sup>1</sup>

All health practitioners who potentially come into contact with COVID-19 patients are at risk of infection. This includes dentists practicing dentistry in pandemic areas, especially when dealing with asymptomatic or pre-symptomatic patients. In addition, airborne transmission dynamics inside hospitals creates further risk of infection.

Dental practitioners are at high risk of facing diseases and infections due to their close contact with patients' oral cavity and exposure to aerosols that might potentially contain and exposure to aerosols that might potentially contain a high number of bacteria and viruses. Several protective measures and infection control protocols have accordingly been suggested to protect dental practitioners from infection.<sup>2</sup>

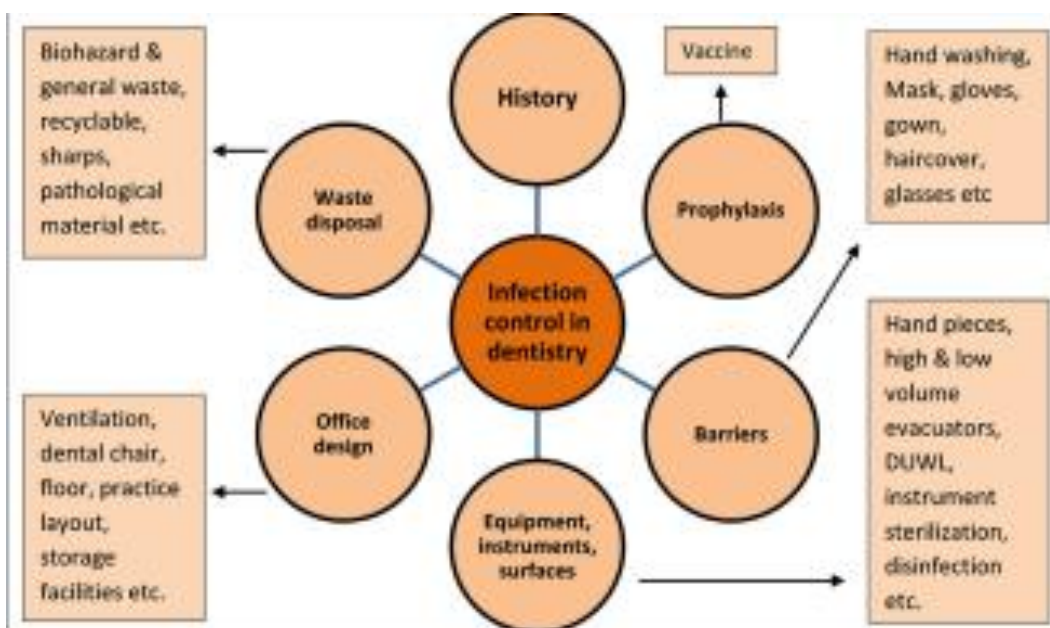
### Role of saliva in the COVID-19 transmission

Saliva is an important source of transmission due to aerosols created through natural activities such as breathing, sneezing and coughing, posing potential danger to healthy uninfected individuals as well as healthcare workers in medical facilities. However, dental personnel who work in close proximity to the oral cavity are at a greater risk due to the extensive aerosols created during dental treatment particularly during the use of high speed drills, ultrasonic scalers and air/water syringes.

SARS-CoV-2 virus has been detected in saliva samples of 87–100% of clinical patients. Moreover, in a study on, COVID-19 positive patients, it was shown that posterior or pharyngeal saliva samples were serially positive for viral load from the onset of symptoms to 25 days, whereas the serum samples were positive only for 14 days<sup>3</sup>. There are three pathways for SARS-CoV-2 to be present in saliva: the direct exchange of secretions from the upper and lower respiratory tract, and the oral cavity. The latter is the first and most important pathway. Gingival crevicular fluid present in the gingival crevice is rich with blood components and can also add viruses to the saliva. Lastly, major and minor salivary glands can be a source of this virus<sup>14</sup> because epithelial cells of salivary gland ducts are found to be an early target for SARS-CoV infections<sup>15</sup> through Angiotensin-converting enzyme 2 (ACE2) receptors, and the newly identified SARS-CoV-2 uses the same receptor to invade cells.

### Infection control in dentistry

Following infection control principles and measures is a moral obligation of all healthcare workers. Dentistry is no exception. Infection control is important in dentistry because patient saliva may be contaminated with oral commensals and opportunistic pathogens. In addition, it can harbour specific pathogens during infection as well as during the carrier state, including SARS-CoV-2. Due to the nature of the dental procedures, exposure to the blood and saliva aerosols is unavoidable. Direct contact with fluid contaminated environmental surfaces, instruments and equipment are also a potential source of pathogen transmission. In a dental practice the dentist, dental assistant, instrument processing and administration staff, as well as the patients are at risk of transmission of infections. Dental laboratory staff members are also at risk due to the cross contamination between the clinic and the laboratory. In addition, it can be extended to their families if the infection control measures are not taken correctly. Therefore, historically step by step infection control measures have been recommended by the CDC and countries across the globe have drawn up individual country specific guidelines<sup>4</sup>. These infection control measures were drawn up with the understanding of the chain of infection and cross contamination. Infection control measures can be grouped into 6 categories as shown in Figure 1. These standard pre cautions, previously called universal precautions, covered all the aspects of infection control required in dental settings and they will not be discussed here<sup>5</sup>.



What has changed in the infection control in dental practice during the present pandemic? Little if any research is available regarding transmission of COVID-19 in a dental setting. However, past literature of possible transmission of infections in dental settings, the known route of transmission and pathogenesis of COVID-19, the highly infectious nature of the causative virus and perhaps the requirement of low infectious dose, suggest the urgent need for modification of infection control measures. In addition, pre- and post-symptomatic and completely asymptomatic carriers can transmit the causative virus. He et al., (2020) has shown that viral shedding may begin 5–6 days before the appearance of the first symptoms. Pre-symptomatic carriers are difficult to identify. Although the viral load is shown to be the highest at the time of symptom onset, the infectiousness of the virus peaks on or before symptom onset<sup>18</sup>. Therefore, any person who enters into the surgery may be a potential source of transmission. The infection control regime can be modified for the current pandemic and thereafter for the long term endemic era. Many countries have banned or restricted dental procedures allowing only the minimum emergency treatment. This is not economical and not a long term solution. Therefore, if the dental practices are allowed to operate, until the vaccine is available, drastic infection control measures are required to prevent the transmission of COVID-19. Thereafter during the endemic period the standard precautions can be applied<sup>6</sup>.

Human-to-human transmission seems to occur mainly through close contact with symptomatic people affected by COVID-19, and the main way of contagion is respiratory droplets when patients sneeze or cough. Although the virus is more contagious when the patient is symptomatic, a growing body of evidence suggests the possibility of human-to-human transmission even in patients with mild or absent symptoms<sup>7</sup>. The possibility that the virus can survive outside

living organisms, in aerosol or on inanimate materials has also been recognized. A study published in the New England Journal of Medicine found that SARS-CoV-2 remained viable in aerosols for up to 3 h with a half-life of 1.5 h. The virus can survive longer on stainless steel and plastic with an average half-life of approximately 5.6 h and 6.8 h, respectively, and the viable virus was detected up to 72 h after application on these surfaces. Because of the pathophysiological characteristics of the COVID-19 syndrome, the particular transmissibility of SARS-CoV-2, and the high globalization of our era, the epidemic emergency from China has spread rapidly all over the world<sup>8</sup>.

In Italy, the first local cases were officially detected on 21 February 2020, with the identification of three clusters located in Veneto, Emilia Romagna, and Lombardy. Since then, the Italian government has ordered restrictive measures and social distancing that were gradually extended to the whole country<sup>9</sup>.

With the aim of containing the spread of COVID-19, many medical clinics including dental surgeries and clinics have drastically reduced patient access by limiting clinical activity only to urgent and non-delayed care<sup>10</sup>. The dental practitioners are particularly exposed to a high risk of SARS-Cov-2 infection due to the inability to maintain an interpersonal distance of more than one meter and to the exposure of saliva, blood, and other body fluids during surgical procedures. Moreover, many dental procedures can generate aerosols. Since January 2020, most provinces and cities in China have adopted a first-level emergency response to public health emergencies. The unique characteristics of dental treatments and the high risk of cross-infection prompted the suspension of all routine dental treatment services.<sup>11</sup>

With the emergence of this novel virus and the ensuing pandemic, dentists have worked to establish guidance for practices to ensure the safety of practitioners, staff members, and patients. As early as March 2020, Journal of Dental Research published the infection control guidelines that dentists at Wuhan University used,<sup>12</sup> and, in April and May 2020, the American Dental Association (ADA) and the Centers for Disease Control and Prevention (CDC), respectively, released interim guidance on infection control protocols and changes to the practice and office environments.<sup>13,14</sup> These guidelines and other local interim guidance documents broadly agree, but the degree to which the US dental profession is aware of and adheres to these recommendations remains unknown. Furthermore, baseline data evaluating infection rates among dentists throughout the US are not widely known because CDC surveillance groups dental professionals with all other health care personnel.<sup>15</sup>

## **RESEARCH METHODOLOGY**

Research in common parlance refers to a search for the knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic<sup>16</sup>. So the researcher has selected A STUDY OF INFECTION CONTROL PRACTICES IN DENTAL DEPARTMENT OF A HOSPITAL during COVID 19 WITH STANDARDS OF INFECTION CONTROL. It is a systematized effort to gain new knowledge. Research is an academic activity and as such the term should be used in a technical sense, researcher aimed to provide an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study observation, comparison etc., researcher is based in analyzing the health and safety of workers in particular unit. The data's were collected qualitatively. By analyzing each every step researcher has aimed to present the measure for Infection Control Management in particular hospital<sup>17</sup>.

### **Research Design**

The design of the research project popularly known as the "Research design" Decision regarding what, where, when, how much, by what means concerning an inquiry or a research study constitutes research design. The research has concentrated each and every step of research design, to design the project<sup>18</sup>. The researcher wants to study the various aspects of Infection Control Management and thereby find ways to assess the level of perception of staff of hospital. Also the researcher wanted to determine better and infection free environment for the health care professionals. The researcher wanted to study the different aspects of attitudinal levels and establish associations between variables. The researcher design is based on objective of research<sup>19</sup>.

### **Aim of the study**

To measure the recommendations for increasing and enhancing safety and infection free environment for healthcare staff, doctor, nurses, housekeeping worker at selected hospital.

### **Objectives of the study**

- To assess the competency of ESIC hospital staff working in various departments specially at Dental Clinic of the selected hospital in terms of knowledge related to infection control management.

- To assess the competency of ESIC hospital staff working in the selected hospital in terms of skills related to infection control management.
- To find out the deficit areas in policies of infection control management of selected hospital and prepare guidelines.

### Scope of the study

In modern days, most of the organization motivate their employees not only through wages but also it status encouraging various welfare benefits, working conditions. To attract and retain hospital staff, health care professionals in the hospital they not only offers jobs and wages but it also tries to increase standard of working condition, safety, better working environment<sup>20</sup>.

In return, employees also develop loyalty, efficiency, teamwork and healthy attitude towards work and organization. Thus it improves productivity and reduces cost. Finally management can improve its profitability. So one of the greatest challenges facing today's healthcare industry is to provide welfare to their employees who are spending all their time in the hospital, safety measures, infection control program is the essential of any hospital. Scope of this study to find out how good are current infection control management in the hospital and suggest any changes to improve this<sup>21</sup>.

## RESULTS

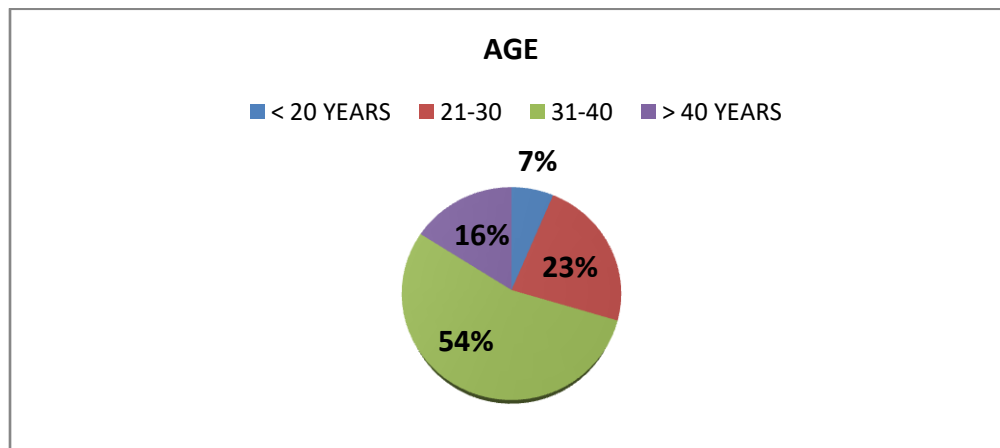
**Table No: 1 Age of The Respondents**

AGE	NO.OF RESPONDENTS	PERCENTAGE
LESS THAN 20	8	6.4
21 – 30	29	23.2
31 – 40	68	54.4
>40	20	16
<b>TOTAL</b>	<b>125</b>	<b>100</b>

Source: Primary Data

### Interpretations:

From the table no. 1 –It has been concluded that 54.4 percentage of respondents fall in the age group of 31 to 40 years, 23.2 percentage of respondents are in the age group of 21 to 30 years, 6.4 percentage of respondents are in the age of Less than 20 years and 16 percentage of respondents are in the age is >40 years<sup>22</sup>.



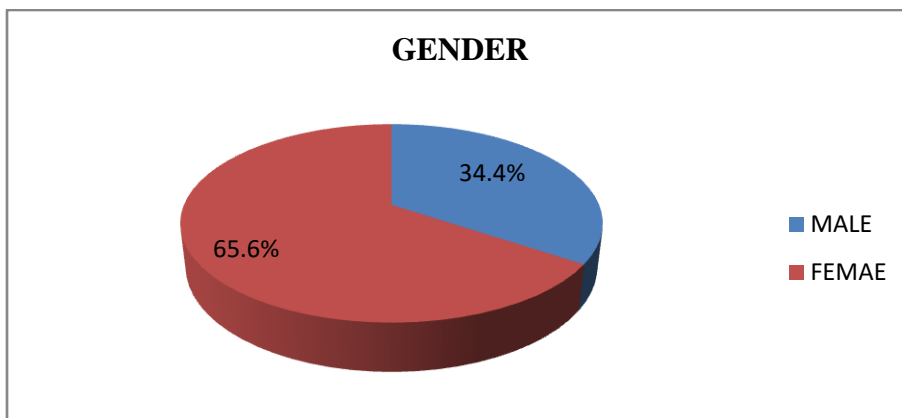
**Table No: 2: Gender**

GENDER	NO. OF RESPONDENTS	PERCENTAGE
MALE	43	34.4
FEMALE	82	65.6
<b>TOTAL</b>	<b>125</b>	<b>100</b>

Source: Primary Data

**Interpretations:**

Form the Table-2 the shows that 65.6 percent of respondents are Female and 34.4 percentage of Respondents are Male.



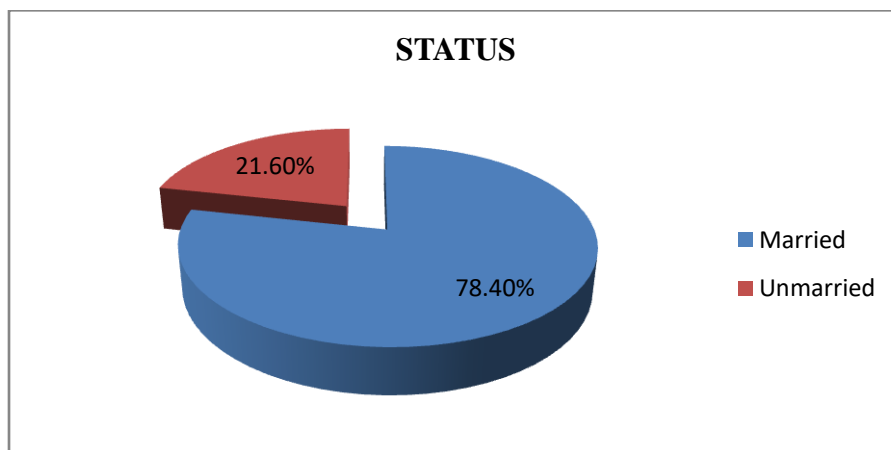
**Table No: 3: Marital Status Of Employees**

STATUS	NO. OF RESPONDENTS	PERCENTAGE
MARRIED	40	80
UNMARRIED	10	20
<b>TOTAL</b>	<b>50</b>	<b>100</b>

Source: Primary Data

**Interpretations:**

It is clear form the above table that 80 percentages of respondents are fall in group of Married status and 20percentages of Respondents are falling in the group of Unmarried status<sup>23</sup>.



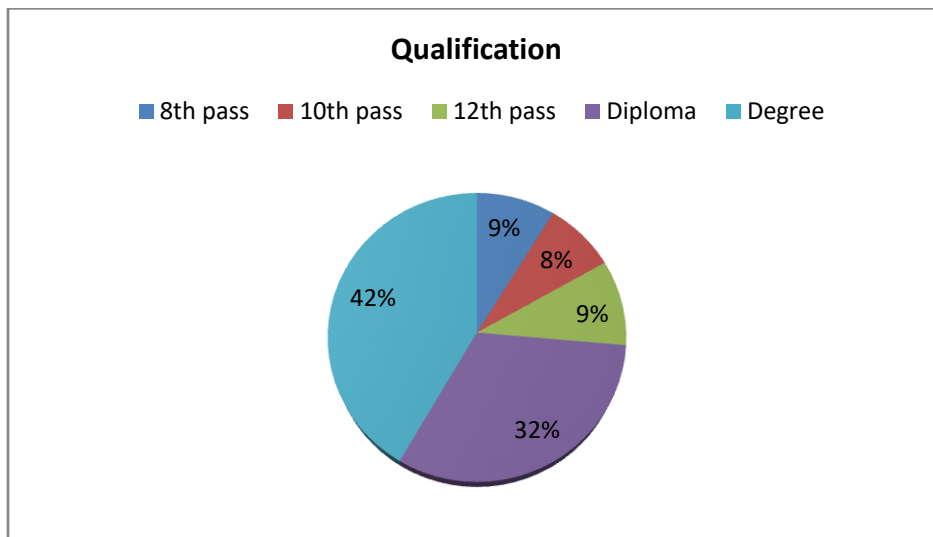
**Table No: 4: Educational Qualification**

QUALIFICATION	NO. OF RESPONDENTS	PERCENTAGE
8 <sup>th</sup> pass	11	8.8
10 <sup>th</sup> pass	10	8.0
12 <sup>th</sup> pass	12	9.6
Diploma	40	32.0
Degree	52	41.6
<b>TOTAL</b>	<b>125</b>	<b>100</b>

Source: Primary data

### Interpretations:

From the above Table it is found out that 46percentage of respondents are falling in the category of Degree, 18percentage of Respondents are falling in the category of Diploma, 16percentage of Respondents belongs to secondary level of education and the remaining 10percentage of Respondents are falling in the group of Hr. Secondary <sup>24</sup>.



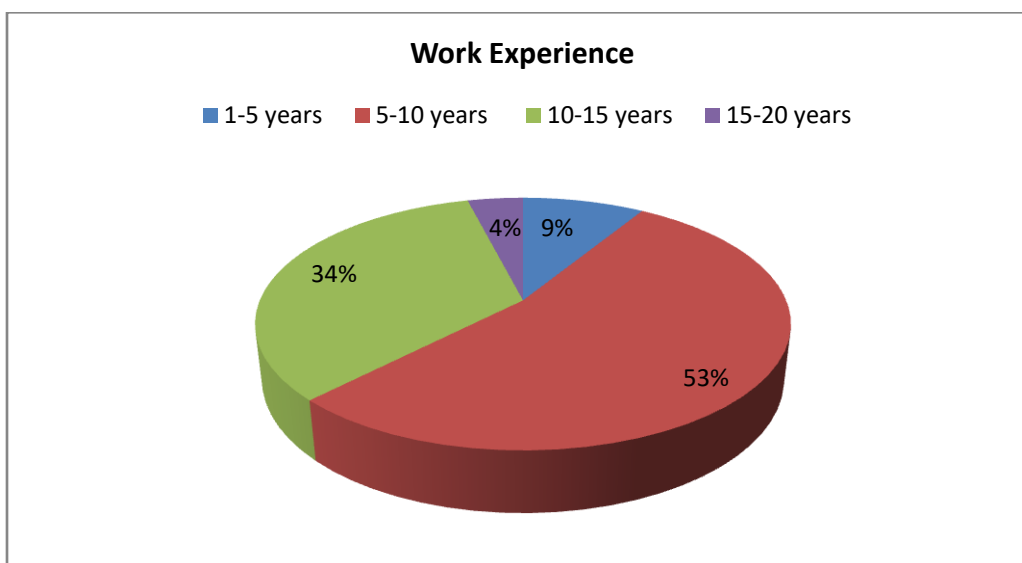
**Table No: 5: Work Experience**

EXPERIENCE	NO. OF RESPONDENTS	PERCENTAGE
1 - 5 YEARS	11	8.8
5 - 10 YEARS	67	53.6
10 - 15 YEARS	42	33.6
15 - 20 YEARS	5	4.2
<b>TOTAL</b>	<b>125</b>	<b>100</b>

Source: Primary Data

### Interpretations:

From the above Table Researcher concludes that 53% of respondents are having an experience of 5-10 years, 34% of Respondents are having 10 -15 years of experience, 4% of the Respondents are having 15 – 20 years of experience and 9% of Respondents are having 1 - 5 years of experience <sup>25</sup>.





## FINDINGS

1. Majority of the respondents are in the age group of 31 - 40 years
2. 84 percentages of the respondents are males.
3. Majority of the respondents are married which constitutes to about 80 percentages.
4. Majority of the respondents that is 46 percentages are qualified up to Graduate level.
5. 46percentages of the respondents has a work experience of 5 - 10 years.
6. Majority of the respondents says the diagnostics center is having a excellent system in disposal of wastages, dust, fume and also provides protective tools.
7. 46 percentages of the respondents says that the workplace is dust free and cleaned regularly.
8. 92 percentages of the respondents says that they are satisfied with hand wash facility .
9. 48 percentage of respondents are highly satisfied with the training received on infection control in the hospital, 46 percentage are satisfied and remaining 6 percentage of respondents are not satisfied with the training received on infection control provided in the hospital.
10. 50 percentages of the respondents says that they flow all steps of hand washing methods, 32 percentages says they flow sometimes and 18 percentages says they flow always.
11. 60% of the staff said they always wear fresh gloves before patient examination while only 10% said they do it sometimes.
12. 64% staff agreed that all the patient care equipments are sterilized properly , 36% did not agree with the above statement.
13. 88% of the staff agreed that good catheter care practices help in avoiding various infections in patients.
14. 56 respondents 53% said that they always dispose off waste in a right colour coded dustbin, 22% did it frequently, 10% did it sometimes, 4% rarely did it and only 2% of the staff members never did it.
15. The staff had mixed views about the quality of sanitation services provided in the ICU. Only 20% felt it was excellent, 48% thought it was good, 26% said its OK and 6% felt it was poor.
16. 58 percentages of the respondents agrees that the building in which they are working is safe.
17. 22.4 percentage of the respondents have been provided with gloves, 17.6 percentage of the respondents have been provided only masks, 20 percentage of the respondents have been provided with glove and masks and 20 percentage of the respondents have been provided with all safety equipments.

## CONCLUSION

The hospital staff and health care professionals need to be trained in infection control measures at frequent intervals. We have noticed that staff are fully aware of importance infection control in their and patient safety. However protective equipment not adequate available. Sanitation procedure need to improve in ICU.

Hospital management need to setup infection control program and basic measures for infection control, i.e. standard and additional precautions. education and training of health care workers; protection of health care workers, e.g. immunization; identification of hazards and minimizing risks; routine practices essential to infection control such as aseptic techniques, use of single use devices, reprocessing of instruments and equipment, antibiotic usage, management of blood/body fluid exposure, handling and use of blood and blood products, sound management of medical waste. effective work practices and procedures, such as environmental management practices including management of hospital/clinical waste, support services (e.g., food, linen), use of therapeutic devices. In addition to implementing basic measures for infection control, health care facilities should prioritize their infection control needs and design their programmes accordingly.

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