

## INFECTION CONTROL PRACTICES IN MICU

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### ABSTRACT

Healthcare-Associated Infections (HAI) are a major cause of morbidity and mortality. Standard Infection control practices are very important in reducing the incidence of HAI. The aim of this study was to assess infection control measures and its impact in the Medical Intensive Care Unit (MICU) of a tertiary care hospital. The Infection control practices studied include Hand hygiene practices, use of Personal Protective Equipment, Environmental Cleaning and Disinfection, Waste segregation and disposal, Aseptic precaution during Intravenous Cannulation, Urinary Catheterization and Ventilator care. Strict implementation of the Infection control practices resulted in a decrease in the HAI rate. So it is mandatory to have an effective infection control programme in every hospital.

**Key words:** Healthcare-Associated Infections, Infection control practice, MICU

### INTRODUCTION

Healthcare-Associated Infections (HAI) is a term that has replaced the old ones such as nosocomial and hospital acquired infections and is now recognized as a major public health problem in industrialized and developing countries<sup>[1]</sup>. These infections are defined as infections not present and without evidence of incubation at the time of admission to a healthcare setting<sup>[1]</sup>. It is estimated to occur in 10% of patients in developed countries and 25% in countries with limited resources where Infection Control practices are often unsafe<sup>[2,3]</sup>. When infection is itself a health hazard of a great expense and significance, HAI becomes more significant. So Infection control measures are to be viewed as a priority and have to be fully integrated into the continuous process of improvement of quality care.

HAI being one of the most frequent medical complication affecting patients in the ICU, this study was done to assess Infection control measures and its impact in the

Medical Intensive Care Unit (MICU) of a tertiary care hospital.

### Methodology

Infection Control practices in the 19 bedded MICU of the hospital was surveyed. audit tools developed by the UK Infection Control Nurses Association and Department of Health for acute care were used with very minor modifications<sup>[4]</sup>. The audit was carried out on a daily basis over a period of three months and it was based on observation. It included Hand hygiene practices, use of Personal Protective Equipment, Environmental Cleaning and Disinfection, Waste segregation and disposal, Aseptic precaution during Intravenous Cannulation, Urinary catheterization and Ventilator care.

### RESULT

#### a. Hand Hygiene

Initial assessment of hand hygiene showed 50% compliance by the health care workers. As per the hospitals hand hygiene policy, health care workers were trained on appropriate hand hygiene, alcohol rub dispensers were provided at every bed- side and the charts depicting hand hygiene techniques were displayed at different sites in the MICU. Following this, the compliance improved to 90%.

#### b. Personal Protective Equipment

Gloves, masks, gowns and caps were supplied in adequate numbers and were being used by all the health care workers regularly.

#### c. Intravenous Cannulation

All the 14 HCWs observed, followed the hand hygiene protocol and used gloves. Disinfection of the cannulation site was done appropriately by 80% of the health care workers only.

#### d. Urinary Catheterization

Seven health care workers were observed introducing

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the urinary catheter. Hand hygiene was practiced and sterile gloves were used by all during the procedure.

#### e. Ventilator care

Disposable single use ventilator tubing and endotracheal airway were used. Ventilator was decontaminated between patients and the filter changed. ET suction catheter was one of single use. Patients were propped up at an elevation of 45°. Sucralfate administration, reduction of the dose of sedatives, daily and regular suctioning of oropharyngeal secretion were adhered to. All aseptic precautions were taken while handling the patients on ventilator.

#### f. Environmental Cleaning and Disinfection

Mopping of the floors was done with water and disinfectant. Cleaning and disinfection of premises, equipments and surfaces in the MICU was done as per the infection control manual protocol. Fumigation followed by sterility checking of the environment was done periodically.

#### g. Waste segregation and disposal

Waste segregation and disposal was done as per WHO and CDC guidelines. Colour Charts were provided to guide in waste disposal. Garbage bins with stickers and colour coded garbage bags were provided. These were found to be used appropriately. Sharps were disposed in puncture proof containers.

### DISCUSSION

Though hospital-based programs of surveillance, prevention and control of healthcare-associated infections have been in place since the 1950s, HAI continues to be a major cause of morbidity and mortality<sup>[1,3]</sup>. Since it affect hundredsof millions of patients worldwide each year, WHO launched the theme "Clean Care is Safer Care"<sup>[5]</sup>. With this theme in mind the tertiary care hospital we studied has implemented infection control practices together with continuous training programme for its health care workers. There is infection control committee, team and infection control manual formulated as per the WHO and CDC guidelines. The HICC team and manual guide the hospital's endeavour to minimise the incidence of hospital acquired infections.

Since contact is the main route of transmission, hand hygiene is the single most important step in the prevention of spread of infection in the hospital setup<sup>[2,6-8]</sup>. In the hospital studied, initially there was little knowledge and casual attitudes toward hand hygiene. With training on hand hygiene methodology, provision of appropriate hand washing facility and hand rub at every bed side, the compliance improved to 90%. Continuous training of health care workers with regards to use of the personal protective equipment provided and routine surveillance on their use has ensured 100% compliance.

Colour coding of the waste segregation bins and disposal bags has ensured 100% compliance with segregation at source. Sharps are disposed off in puncture proof disposal containers. Sanitorial staff have continuous training in this regard. They are immunised against Hepatitis B infection. Reporting and subsequent treatment of needle stick injury protocol is made available for all health care workers as protection of hospital staff is an essential component of Infection control<sup>[9]</sup>. Routine environmental surveillance checks are done to ensure the compliance on cleaning and disinfection in the MICU.

It has been reported that the incidence of HAI is high when infection control practices are not in place<sup>[2]</sup>. The common HAI are intravascular catheter associated sepsis, infection associated with urinary catheterization and ventilator associated pneumonia<sup>[2,10-14]</sup>. In MICU the close proximity of patients facilitates transfer of resistant organisms from patient to patient<sup>[15]</sup>. As per Weber and Researchers, the patients hospitalized in ICUs are 5 to 10 times more likely to acquire nosocomial infection than other hospital patients. Contributing to the seriousness infections, there is increasing incidence of infections caused by antibiotic-resistant pathogens<sup>[16]</sup>. The Centers for Disease Control and Prevention (CDC) estimates that in United States roughly 1.7 million hospital-associated infections contribute to 99,000 deaths each year<sup>[5]</sup>.

In the hospital we studied, inspite of having infection control policies, the rate of infection was higher. With strict implementation of infection control practices together with continuous training programme for its health care workers and routine surveillance and surprise checks to ensure adherence to these practices the HAI

rate, which was 1.7% has come down to 0.7% during the period of our study. Currently it has come down further to 0.3%.

### CONCLUSION

Hospital associated infection leads to increase in the length of stay, increase in number of investigations and prolonged and expensive therapy, resulting in increased cost for the patient. The hospital suffers because of the loss of its effectiveness in terms of quality utilization of hospital beds. As infection control is the quality standard of patient care, it is essential for the wellbeing of patients and safety of both patients and health care workers in a population. So it is imperative for the hospital to have an effective infection control programme and this should be periodically reviewed, upgraded and strictly implemented.

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