

INFECTION CONTROL AND PATIENT SAFETY

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ABSTRACT

Hospital acquired infection is the infection that a patient acquires during hospital stay. It is also termed as Nosocomial infection. Nosocomial infection is one of the most important cause of mortality and morbidity statistics .The aim of this study is to identify the major infection acquired in a hospital and their causes and highlight the steps to manage various hospital infections.

The most common hospital acquired infection category is urinary tract infection (UTI) Surgical Site Infection (SSI) .The reason of hospital acquired infection include hand washing practices ,cross infection and other .There are many ways by which hospital infection can be prevented. Some of the major solution for infection control include hand hygiene, vaccination, proper disposal of biomedical waste, housekeeping, sterilization etc.

Key words – Hospital Acquired Infection, Major Infection, UTI, Sterilization.

INTRODUCTION

According to the centers for disease control and prevention one out of every twenty hospitalized patients will contract a healthcare associated infection. The spread of these infections can be controlled. There are many types of hospital acquired infection. Effective infection control is central to providing high quality health care for patient and a clean , safe environment for those that work in hospital settings. It is important to minimize the risk of spread of infection to patients and staff in hospital by implementing good infection control programme. Common hospital acquired infection are -

- Ventilated associated pneumonia (VAP)
- Urinary tract infection (UTI)
- Surgical site infections (SSI)

Pneumonia is the second common hospital infection (after urinary tract infection). For critically ill patient ,ventilator associated pneumonia is the most common infection .VAP increase the risk of death and increase length of stay .The current recommendation by centre for disease control and prevention (CDC) for deterrence of ventilator associated pneumonia infection were published in 2004. It is the responsibility of the doctors and the nurses to stop these infections. The evidence shows that the important contribution of the nursing care to prevention of VAP in four areas; hand hygiene, respiratory care, patient positioning and education of staff .Hand hygiene is the most important component of VAP reduction. Evidence exists that alcohol hand rubs reduce the transmission of pathogens from the healthcare workers hand to patient. Gloves changes are required between contact of other patient.

The use of urinary catheters is common in the hospital .UTI is the most common infection in the hospital and a major associated cause is the indwelling urinary catheter. Almost one million accident of UTI are found in the United States. Biofilm formation by uropathogense on the urinary catheter is implicated as the underlying cause of the UTI. Only persons who know the correct technique of aseptic insertion and maintenance of the catheter should handle catheters.

Urinary catheters should be inserted only when necessary and left in place only for as long as it is required. They should not be used solely for the convenience of patient-care personnel. For selected patients, other methods of urinary drainage such as condom catheter drainage, suprapubic catheterization, and intermittent urethral catheterization may be more appropriate.

Hand hygiene should be done immediately before and after any manipulation of the catheter site or apparatus. Catheters should be inserted using aseptic technique and sterile equipment. Gloves, drapes, sponges, an appropriate antiseptic solution for peril-urethral cleaning, and a single-use packet of lubricant jelly should be used for insertion. Indwelling catheters should be properly secured after insertion to prevent movement and urethral traction. Appropriate use of indwelling catheter, education of personnel on proper catheter placing using aseptic technique and sterile equipment.

Surgical site infection (SSI) is another category of severe infections which is caused by bacteria that get through opening made during surgery. WHO launched its guidelines on the prevention of SSI on 3 November 2016. A new WHO report offers guidelines, including hand hygiene observance that will prevent SSI and saves the life of the patient specially in the poor and middle income countries. WHO guidelines recommend that surgical hand preparation should be performed by scrubbing with either a suitable antimicrobial soap and water or using the suitable hand rub before donning sterile gloves.

There are various easy methods that can help in prevention of infection from the basic concept of hand hygiene to the other strategies like Vaccination, Housekeeping, Biomedical waste management and Sterilization.

OBJECTIVES

This research paper aims to look out various causes of infections and suggestions for infection control.

METHODOLOGY

Secondary data is collected through different sources like internet, newspaper, books, articles, reference materials, magazines for the completion of this work.

DISCUSSION

Keeping a good hygiene is a very basic and easy measure that can be adopted to avoid infections. It is a very simple method to prevent infection .Cleaning hand stop the spread of germs inclusive that hamper and become hard to treat. Common healthcare providers clean their hands less than half of the time. In any given day, about 1 in the 25 hospital patients has at least one infection. Healthcare workers' hand are the common way for the transmission of healthcare associated infection from patient to patient and patient to healthcare providers .Hand hygiene is the leading measure of preventing the spread of antimicrobial resistance and prevent the infection .WHO suggests five movements of hand hygiene-

- Before touching a patient.
- Before aseptic procedure.
- After body fluid exposure.
- After touching the patient.
- After touching the patient's surrounding.

In infection control ,hand hygiene plays a very important role .Infection affects almost two million people in the United States every year. Seventy percent of the infection can be prevented through hand hygiene .A study indicates that when the autopsy performing doctors washed their hand with an antiseptic solution before examining woman during the time of child birth , infection and the maternal death fell up to 90 percent in that ward. Sterilization is another form of infection control which refers to any process that eliminate or kills all forms of life and other biological agents (ex, viruses) including transmissible agents present in a specified region .Sterilization is essential for ensuring that medical instrument do not transmit pathogenic microorganism from one patient to other patient by killing the microorganism.

Vaccination is another method to control infections. It helps to reduce the risk of cross infection by working with the body's natural defenses to help it safely develop immunity to disease when germs like bacteria, virus, and fungi attack the human body. The immune system fight with the infections and when it fight off the infection, the body is left with a supply of cells that helps in to recognize the disease in the future. Vaccination reduces the risk of infection among the health care providers. If the hospital staff doesn't get vaccination, it can lead to hospitalization and sometimes death. Bacteria and virus can attack the healthcare provider from the patient if the patient is suffering from serious disease and flu. By getting vaccinated, healthcare providers can stop the spread of infection. Furthermore, Housekeeping department too can play a major role in infection control. It is the responsibility of the housekeeping department to conduct regular and routine cleaning of all surfaces and maintaining a high level of hygiene in the collaboration with the infection control committee. Role of housekeeping department includes-

- Developing policies and procedure for cleaning technique, agents used for each type of room from the highly contaminated to the cleanest areas and ensure that these practices are followed.
- Environmental sanitation.
- Effective housekeeping includes clean supply of bed linen and patient dress and proper bed arrangement.
- Frequent mopping and periodic washing of hospital wards and departmental floor.

- Providing training to the staff.
- Establishing method for cleaning.
- Differentiating the different hospital area by varying need of different department

The role of housekeeping is increasing today for managing hospital acquired infection .Pathogens like Vancomycin Resistant Enterococci (VRE), Multiresistant Gram Negative Bacilli and Norovirus persist in the health care environment . Detergents and disinfectant cleaning can control these pathogens.

In any industry certain inputs are used for processing goods services .During the process certain materials are not utilized properly and go to waste. Similarly in the healthcare industry the materials are not utilized fully or after utilization something remains as leftover. This is treated as biomedical waste .Biomedical waste is defined as waste that is generated during the diagnosis ,treatment or immunization of human being and are contaminated with patient body fluids .They include syringes ,needles ,organ body parts, placenta ,dressings disposable ,plastic and microbiological waste. The risk involved with poor waste management are - Nosocomial infection ,injuries due to sharp ,risk of infection to waste handlers outside the hospital. Biomedical waste is categorized in following ways-

Category no 1 - Human anatomical waste.

Category no 2- Animal waste- Animal tissue organs, Body parts and experimental Animal used in research waste generated by veterinary hospital .

Category no 3- Microbiology and Biotechnology waste-Waste from laboratory culture ,live or Attenuated vaccines, waste from production of biological toxin .

Category no 4- Waste sharps-Needles Syringes, Scalpels, Blades glass ,etc. that are capable of Causing puncture and cuts .this includes both used and unused sharps.

Category no 5- Discarded medicine and cytotoxic drug -Waste comparing of outdated ,

Contaminated and discarded medicine

Category no 6 - Solid waste-Items contaminated with blood, and Bloody fluids including cotton Dressings, Linen ,and other Material contaminated with blood .

Category no 7- Waste generated from disposable items other then the waste sharps , such as tubing Catheter.

Category no 8- Liquid waste-Waste generated from Laboratory and washing ,Cleaning , House keeping and Disinfection activities.

Category no 9 - Incineration ash-Ash from incineration of any Biomedical waste.

Category no 10- Chemical waste-Chemical used in the production of Biological, Chemicals used in disinfections.

Medical care is very important for life and health, but the waste produced from diagnosis and prognosis is a real problem for the human being and environment. Bad management of waste generated in healthcare facilities result in a direct health impact on the society. Healthcare waste contain harmful microorganism which effect hospital patients and the health care worker.

INFECTION CONTROL AND STANDARD OPERATING PROCEDURES (SOPs)

- The organization should have infection control manual which should be updated periodically
- The rules of proper disposal of BMW should be followed.
- The organization should have well designed and coordinated program of infection control.
- The organization must take right actions to control outbreak of action.
- There should be documented procedure for sterilizations in the hospital.
- The infection control programme should be supported by organization management .

RESULTS:-

Hospital infection control committee and objectives:-

Objectives:-

- To prevent the incidence of HCI through safe and hygienic practices.

- To protect the patient and staff against infections through personal protective measures.
- To quickly detect isolate and contain the infections the may occur.
- To prevent and control any outbreaks through speedy investigation source isolation and disruption of transmission.

Control committee:-hospital infection control committee should be developed for all health care facilities. The IC committee should be made up of key personnel form the various health facility departments. It should act as a liaison between de apartments that are responsible for patient care and departments responsible for support (nursing medicine , pharmacy , CSSD, housekeeping, central store, engineering , etc).the Director of the faculty or his deputy could be the chairperson and members suggested are:

7Hospital director as chairman

- Chief of infection control team
- In charge of clinical departments.
- Chief nurse
- Chief pharmacist
- Head of microbiology
- Head of nursing services.
- Members of the infection control team.
- In charge of the pharmacy.
- In charge of support services.

7Head of the maintenance and cleaning department.

- Director of central sterile supply department.
- Financial and administrative in charge of the hospital.
- Other as appropriate occupational health specialist, laboratory pro fissional, surgeon, etc.

- All infection control committees at all levels should consist of the staff available from those listed. The committee may co-opt any other members as deemed necessary.

RECOMMENDATIONS

Despite the fact that present work is based on secondary sources, following recommendations can be observed to keep up the system free from infections-

- Morbidity, mortality, Increase length of stay and the cost should be made to make the hospitals safe by preventive such infections.
- Hand hygiene is a single most effective means of preventive the transmission of infection among patient.
- Follow standard precautions like gobs, gown, eye protection face shield, shoe and head covering.
- For control the UTI insert catheter only for appropriate indications and maintain closed drainage system and urinary bag should never have floor contact.
- For burn patient it is recommended that patient larger burn injury be isolated in private room and ensure physical separation from other patient.
- Following the hand hygiene practices for minimizing the infection health care provider must wash their hand before and after every patient contact.
- Training of staff education on infection prevention must be follow.
- Periodic safety and inspection should be done at particular time.
- Removing sources of infection by treating infection and sterilization.
- Biomedical waste should be handled properly.
- There should be proper disposal of biomedical waste.
- There should be appropriate isolation room for critically infectious patient.

- Enhance resistance with good nutrition and vaccination.

CONCLUSION

Majority of hospital infection are potentially preventable by implementation of evidence based interventions. The priorities among the interventions for prevention of hospital infection should be hand hygiene practices and comprehensive monitoring and anti-microbial stewardship programme, sanitation and disinfection practices .An Infection Control Committee can do a lot good in preventing infections .It is an integral part of the patient safety and health care facility which is responsible for establishing and maintaining infection prevention and control. This committee should include wide representation from all relevant disciplines or departments in the facility. Studies have shown that at least 35-45% of all hospital infection are associated with basic principle of infection prevention. The infection control committee should consider these while formulating and implementing infection control techniques-

- High compliances with hand hygiene.
- Use of standard precautions for every patient and every time.
- Appropriate handling of ventilators.
- Use of check list for surgical procedure.
- Selective use care of urinary catheter.

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