



# Analysis of Nurse Ability In Preventing Nosocomial Infections on the 6b Floor Using the Nvivo Method

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**Abstract:** Nosocomial infection is an infection originating from a hospital caused by hospital staff or health workers during the health service process or hospital visitors. The background of this research is the lack of role of nurses in the process of preventing nosocomial infections. The purpose of this study was to explain the role of nurses in preventing nosocomial infections at RSU Royal Prima. This type of research uses a qualitative approach method with in-depth interviews with informants in order to know clearly and in depth the role of nurses in preventing nosocomial infections at RSU Royal Prima. The results showed that nurses already know their role in terms of reporting to the doctor if there are signs and symptoms of infection and implementing isolation of infectious diseases and maintaining prevention while on duty at the hospital. However, there are still nurses who do not know their role optimally in terms of maintaining hospital cleanliness. In maintaining hand hygiene, nurses only know their role in terms of washing hands, the implementation is not in accordance with procedures. In using Personal Protective Equipment, nurses know their role in terms of wearing masks and gloves, but in practice there are still nurses who have not used Personal Protective Equipment according to standards. In addition, there are obstacles for nurses in preventing nosocomial infections such as inadequate infrastructure.

**Keywords:** Infection prevention; Nosocomial infection; Nurse

## Introduction

The hospital is a place for overall health services that provides inpatient, outpatient and emergency services provided by doctors. Many people go to the hospital hoping for a speedy recovery, but not a few people leave the hospital with serious infections (Rahmatilah & Jamaluddin, 2020). Ranging from mild infection, moderate, to sepsis which is fatal. Infectious diseases are disorders caused by several organisms, such as bacteria, viruses, fungi or parasites. Many organisms in our body cannot cause disease, but certain conditions can cause sudden illness. Infectious diseases can be transmitted from person to person or from animals. When organisms enter the body and attack the immune system, the organisms will cause infection. Signs and symptoms are caused by various kinds, such as fever, diarrhea, muscle aches, nausea, vomiting and coughing.

There are several ways of transmission by direct contact, such as from person to person by touching, kissing or coughing (Buana Irfana et al., 2023).

Transmission can also occur from the exchange of body fluids, namely sexual contact (Deryabina et al., 2021). Animal bites to people, this transmission is infected from animal scratches or bites. Meanwhile, indirect contact transmission, such as germs sticking to inanimate objects such as tables, doorknobs, and others. This transmission is infected from scratches or animal bites. Meanwhile, indirect contact transmission, such as germs sticking to inanimate objects such as tables, doorknobs, and others (Magill et al., 2018). This transmission is infected from scratches or animal bites. Meanwhile, indirect contact transmission, such as germs sticking to inanimate objects such as tables, doorknobs, and others (Mustika & Kusbaryanto, 2021).

## How to Cite:

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Nosocomial infections are infections related to treatment that were not present at the time of admission. People who get this nosocomial infection can be infected in various areas such as hospitals, long-term care, or may appear on discharge from the hospital. The most common nosocomial infections are urinary tract infections, surgical site infections, or use of ventilators in pneumonia patients. A survey conducted in the United States in 2015 showed that the most common nosocomial infections were pneumonia, then gastrointestinal, bloodstream, and urinary tract infections. Pathogens that cause nosocomial infections include bacteria, viruses, and fungi.

Treatment detection of nosocomial infections is very important because many people recover completely with treatment but people with nosocomial infections spend 2.5 times longer in the hospital (Zulqarnain et al., 2017). The CDC estimates that about 2 million people are infected and about 100,000 of cases will result in death. The responsibility for preventing nosocomial infections depends on the health facilities provided by hospitals and health care staff by means of sterilization and disinfection, but it is impossible to eliminate 100 percent of nosocomial infections. WHO in collaboration with JCI (Joint Commission International) created a program in an effort to improve patient safety and reduce the incidence of infection by launching the World Alliance for Patients. In 2011 the JCI criteria for hospital accreditation were to improve patient safety by reducing the risk of infection in health care (Abkar et al., 2013).

Nosocomial infections severely affect a large number of patients worldwide resulting in significant increases in mortality, and financial loss. Based on a survey in 2015, the prevalence of nosocomial infections is lower than in 2011. According to WHO, around 15% of all inpatients suffer from this infection 4-56% cause of neonatal death (Greene et al., 2018).

Based on data from RSUD Dr. Pirngadi Medan on January 30 2014, obtained 1,401 nosocomial infection patients in 2012, while in 2013 there were 1,588 patients. In 2013, there were 47 patients with surgical wound infections, 23 patients with UTI, 21 patients with pneumonia, and 33 patients with catheters. Based on surveys and medical records, it shows that the incidence of nosocomial infections is increasing. In Indonesia the prevalence rate of nosocomial infections is quite high, namely 6% - 16% with an average of 9.8% of nosocomial infections that occur due to surgical wound infections (ILO). In the North Sumatra region, the prevalence rate of nosocomial infections is 5.6% of cases (Chang et al., 2020).

## Method

This type of research is qualitative research using the case study method which aims to find out the role of nurses in preventing nosocomial infections at the Royal Prima Medan Hospital in July - August 2022. Then, the data is grouped based on needs with an interactive approach to the subject for further analysis. The interactive approach is an in-depth study using direct data collection techniques from people in their natural environment.

This research required an employment sample, namely nurses with inclusion and exclusion criteria. These criteria are useful for determining whether or not the sample can be used. In this study also used a sampling technique, namely selecting a sample by taking the entire population as a sample. Inclusion criteria: Nurses dealing with patients in the room and nurses who are willing to participate in this study. Exclusion criteria: Nurses who refused to participate in this study for certain reasons and nurses who are sick or on leave in this study.

This research is a qualitative descriptive research, with more descriptions based on the results of interviews and observations. The data obtained will be analyzed qualitatively and described in descriptive form. The data analysis technique in this study follows the steps proposed by Bungin (2012), data collection activities in this study are by using in-depth interviews and documentation, data reduction is carried out starting from data collection starting with making summaries, coding, tracing themes, making clusters, writing memos and so on with the intention of setting aside irrelevant data/information, displays data presentation of qualitative data is presented in the form of narrative text. The presentation can also be in the form of matrices, diagrams, tables and charts and verification and confirmation of conclusions is drawing conclusions in the form of interpretation activities, namely finding the meaning of the data that has been presented.

## Result and Discussion

Nosocomial infections or healthcare-associated infections (HAIs) are health care-related infections occurring in patients in medical care at health services after more than 48 hours and after less than 30 days after leaving a health care facility (Alhidayah et al., 2020). Based on the results of the study, it was found that the types of nosocomial infections that often occur on the 6B floor Royal Prima Medan Hospital comes from catheters, blood, patient room fluids and NGT devices. Nosocomial infections are a major safety issue for healthcare providers as well as patients. Increased

infections will have an impact on increasing the patient's stay in the hospital. This led to a significant increase in medical costs (Herlina et al., 2019a). These nosocomial infections can be fatal or cause delayed recovery, functional impairment, and aesthetic damage which can have lifelong consequences for patients.

One type of nosocomial infection in this study was a urinary tract infection in patients with dower catheters. Urinary catheterization is performed if the patient is unable to excrete urine normally (urinary retention and obstruction). Placement of a urinary catheter becomes a port of entry for microorganisms to enter the urinary contents of a contaminated catheter. Urinary tract infections constitute 40% of all nosocomial infections that occur in hospitals (Rahmatilah & Jamaluddin, 2020).

Nurses are the largest group of health professionals who are most interactive with patients. Nurses are one of the medical staff who are most at risk of experiencing nosocomial infections. The role of nurses in preventing nosocomial infections at Royal Prima Hospital Medan which will be further investigated in this study relates to hand washing (hand hygiene), use of personal protective equipment (PPE), respiratory hygiene, and disposable syringes (Mudenda et al., 2023).

Nosocomial infections can also occur in patients who are in the process of processing nursing care at the hospital which is not optimal as a result of the large number of nosocomial infections (Rahmatilah & Jamaluddin, 2020). Based on the results of the study, it was found that the role of nurses in implementing the prevention of nosocomial infections on the 6B floor of Royal Prima Medan Hospital was good. All informants stated that before and after examining patients, they washed their hands using soap or handsrub available at the sink, in front of the room and also on the nurse's desk. Hand hygiene is the most important intervention to prevent nosocomial infections, but many health workers still do not comply with recommended hand hygiene procedures (WHO, 2016). Good hand hygiene practices can reduce the spread of potentially life-threatening infections in healthcare facilities. Research conducted by WHO in Wijaya et al (2018) has proven that the act of washing hands carried out according to the rules can reduce nosocomial infections by up to 40% (Syahputra Siregar et al., 2017). Also stated that there was a significant decrease in the number of bacteria between before and after washing hands using hand rub which effectively reduced the number of bacteria on the hands of health workers at the Diponegoro National Hospital. The incidence of infection is a necessity for nurses to protect patients from incidents of infection by increasing understanding, behavior and actions in washing hands properly and correctly (Ortega, 2015). Five Moments of Washing Hands at St. Elisabeth has been running, but not optimal. The hand washing compliance rate at the

moment before contact is very high. This indicates that there are still nurses who carry out hand washing because they are supervised. The non-compliance of nurses in washing their hands can also be seen from the results of the research by Rahmatillah et al (2020) that most nurses at Djoelham Hospital do not wash their hands before contact with patients. They consider the most important time to wash their hands is after contact with patients and the hospital environment, although not all respondents do it (Rahmatilah & Jamaluddin, 2020).

In contrast to the results of this study, the ability of nurses as executors of nosocomial infection prevention in this study was good. According to Wijaya et al (2018), factors supporting the implementation of hand washing can be carried out properly, including the availability of facilities and infrastructure and the support from the hospital management. In line with the statements of the informants in this study that soap or handsrub is always available at the sink, in front of the room or on the nurse's desk, so they can easily wash their hands before and after examining patients. This is also supported by the research of Pakaya et al (2022) that handwashing facilities, availability of antiseptics and availability of handwashing places that are easy to reach are factors that can increase staff compliance in washing hands (Saleem et al., 2019).

The habit of washing the hands of nurses is a fundamental behavior in an effort to prevent cross infection. This is because the hospital is a gathering place for all kinds of diseases, both infectious and non-communicable. The implementation of the infection prevention and control program at the Royal Prima Medan Hospital has been going well. Management support for the infection prevention and control program in the hospital has also been maximized. Hospital management has paid attention to the completeness of the provision of facilities as an effort to prevent and control hospital infection (Magill et al., 2018). Availability of hand washing facilities and infrastructure as one of the supports for hospital management in controlling nosocomial infections, especially for nurses. Nurses are workers who have more direct contact with patients, therefore nurses must implement the use of Personal Protective Equipment (PPE) in accordance with the Standard Operating Procedure (SOP).<sup>18</sup> The use of PPE is a nurse's effort to provide an environment that is free from infection as well as an effort to protect the patient against disease transmission (Murray et al., 2022).

PPE that is often found in hospitals includes gloves, masks, goggles (protective glasses), face shields (face shields), and also robes.<sup>18</sup> Based on the results of the study it was found that the role of nurses as executors of nosocomial infection prevention in terms of using

personal protective equipment (PPE) on the 6B floor Royal Prima Medan Hospital pretty good. This is because the availability of personal protective equipment (PPE) on the 6B floor of the Royal Prima Medan Hospital is complete. Gloves (hanscoon) are PPE that must be used by nurses in preventing nosocomial infections in Indonesia 6B floor Royal Prima Medan Hospital. The purpose of using gloves is to reduce the risk of contamination of the hands of health workers to blood and other body fluids (Rahmatillah, et al., 2020). Nurses who have used PPE according to SOP while on duty can also be seen from the results of Madjid and Wibowo's research (2013) stating that washing hands and using PPE, namely gloves, is a nosocomial infection prevention measure that has been carried out well by nurses in the Inpatient Room of Tebet Hospital.

However, there were some nurses who stated that they sometimes forgot or were lazy to use the hanscoon when dealing with patients. This is caused by limited hanscoon stock, inappropriate sizes, and busyness. The reasons for non-adherence to using PPE on nurses in this study were also seen from the results of research conducted by Padilha et al (2016) stated that as many as 28% of respondents did not use the right gloves due to habit, 22% said that the reasons for the poor quality of the gloves, 20% were due to a lack of concern for aseptic behavior, and 13% were in a hurry when work and don't have time to wear the right kind of gloves. As many as 22% of nurses still do not use sterile gloves for aseptic procedures (Deryabina et al., 2021). In contrast to the research by Maramis et al (2019), it can be seen that the use of PPE by nurses at Maria Walanda Maramis Hospital is good (Raffa et al., 2018).

Personal protective equipment is a tool used to protect oneself or the body against the hazards of work accidents, which technically can reduce the severity of work accidents that occur (Raffa et al., 2018). Personal protective equipment does not eliminate or reduce the hazard. This equipment only reduces the number of contacts with hazards by placing barriers between workers and hazards (Chang et al., 2020). Socialization needs to be increased in connection with problems related to the use of PPE. Socialization of SOPs and training on the proper use of PPE for nurses has been proven to increase nurses' awareness of the proper use of PPE, so as to minimize the incidence of nosocomial infections both from nurse to patient and vice versa. Nurses who have never attended training are 8,400 times more likely to be disobedient in using PPE compared to nurses who have attended training. In addition, supervision is very important to influence nurses' actions in using PPE as a prevention of infection in hospitals (Massinga\_ZE, n.d, 2012).

Cough etiquette or respiratory hygiene is a procedure for coughing that is good and right, by

covering the nose and mouth with a tissue or sleeve, so that bacteria do not spread into the air and are not transmitted to other people (Harmawati and Etriyanti, 2020). Respiratory hygiene is a component of behavior to prevent infection transmission (Murray et al., 2022). Based on the results of the study, it was found that the role of nurses as executors of nosocomial infection prevention in terms of respiratory hygiene on the 6B floor Royal Prima Medan Hospital is good enough. Furthermore, the source stated that hygiene respiration has ethics such as coughing and not drooling carelessly, and cover your mouth or use a mask when coughing.

The same thing can be seen from the results of research by Masloman et al (2015) regarding respiratory hygiene/cough etiquette in the operating room, it was found that all staff in the operating room, including doctors, nurses, sanitarians, and laundry workers, had performed according to the guidelines for implementing infection prevention and control by wearing masks (Indrayadi et al., 2022). Respiratory hygiene is an important way to control the spread of infection at its source.<sup>6</sup> Therefore, Cough ethics needs to be known, because from this you have acted in the infection prevention process.

However, the results of a study conducted by Barry et al in Murfat et al (2021) regarding respiratory hygiene in people who were observed regarding cough ethics found only 4.7% were able to apply correct cough ethics, as many as 64.4% covered their nose and mouth did not use hands and 27.3% mouth and nose were not covered when coughing and sneezing. If cough etiquette is not done properly, the virus or bacteria can spread quite far, reaching a distance of several meters and can be inhaled by other people (Murray et al., 2022).

The head nurse of the room can provide direction and support for the nurses to achieve the desired results, good direction can have a positive effect on infection prevention and control efforts (Ferreira de Oliveira Padilha et al., 2016). Nurses' high knowledge and awareness of wearing masks in carrying out cough etiquette greatly minimizes the spread of viruses. Health workers and caregivers are frequently exposed to microorganisms, which can cause serious and fatal infections. The incidence of nurses getting punctured injections contaminated with blood is high.<sup>16</sup> Based on the results of the study, it was found that the role of nurses as executors of nosocomial infection prevention in terms of disposable syringes on the 6B floor Royal Prima Medan Hospital is already good. All informants stated that they only used syringes (injections) only once for one patient. If the syringe has been used, they will throw the syringe away to a special trash can for syringes and other sharps (Ferreira de Oliveira Padilha et al., 2016). However, the results of this study are different from the preliminary survey conducted by Istiqomah et

al (2022) that not all health workersThe Jogja Hospital ICU can properly practice safe injecting. Likewise, the results of research conducted by Majdid and Wibowo (2017) stated that one of the actions to prevent infection that was not good by nurses in the Tebet Hospital inpatient room was giving injections. In limited health care facilities, syringes are reused without going through high-level sterilization and disinfection processes (Hertina et al., 2019b).

Furthermore, the informants in this study stated that using the wrong syringe could spread the infection. This is in line with the statement put forward by Akbar et al (2013) that Unsafe injection practices such as using unsterile syringes and needles can cause transmission of 32% of Hepatitis B Virus (HBV), 40% of Hepatitis C Virus (HCV), and 5% of Human Immunodeficiency TeVirus (HIV) (Abkar et al., 2013). How to inject safely is one of the standard precautions designed to reduce the risk of infection with infectious diseases in health workers from both known and unknown sources of infection (Marfu'ah, 2018).

## Conclusion

Based on the results of research on the ability of nurses to prevent nosocomial infections on the 6B floor of Royal Prima Medan Hospital in 2022, it can be concluded that types of nosocomial infections that often occur in Royal Prima Medan Hospital, including catheters, blood, patient room fluids and NGT devices, rolenurses as executors of nosocomial infection prevention in terms of washing hands (hand hygiene) on the 6B floor Royal Prima Medan Hospital is good, the role of nurses as executors of nosocomial infection prevention in terms of using personal protective equipment (PPE)on the 6B floor Royal Prima Medan Hospital is quite good and the role of nurses as executors of nosocomial infection prevention in terms of respiratory hygieneon the 6B floor Royal Prima Medan Hospital is quite good. The role of the nurse as executor of nosocomial infection prevention in terms of jdisposable syringes on the 6B floor Royal Prima Medan Hospital is good.

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## Author Contribution

All authors had significant contributions to the completion of this manuscript

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## Conflicts of Interest

The author's interest in the last 3 years has been in the public health. Because in today's era public health is very important to improve, especially in the field of hospital services, where the quality of service is expected to get maximum results, for the realization of better public health.

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