

Hospital-Acquired Infection Quality Improvement Initiative

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A framework that guides the systematic improvement of care provided to patients is termed quality improvement (QI) in health care. The various processes of this QI process involve measurement, analysis, improvement, and control. In the field of nursing, quality improvement is similar to the continuous enhancement practised in healthcare. Many organizations focus on different dimensions of patient satisfaction to achieve better outcomes. However, the spread of healthcare infections (HCIs) requires attention. The [Healthy People 2020](#) goals also aim at reducing the spread of preventable diseases and creating better outcomes for the population at large (CDC, 2021). Healthcare infections are a threat to patients during the time they receive treatment at the hospital, and its prevention must be the prime priority to ensure the overall quality of services. This paper aims to provide an overview of this problem along with the need for quality improvement initiatives in this regard. The paper further explores the previous research conducted regarding the spread and prevention of HCI and explains the methods of implementing and evaluating the quality improvement initiative.

Overview Of The Problem And Setting

The area of focus identified for the implementation of quality improvement is the increasing rate of cross-infections that are caused by poor hygiene practices or exposure to the hospital environment. Patients are admitted to hospitals with certain illnesses that require treatment. However, certain workflow practices and environmental contaminants contribute to increasing patients' vulnerability to infection. It is, therefore, imperative that such processes are streamlined and a secure environment is provided for patients' treatment. Various reasons are attributed to the development of HCIs. Mainly, these hospital-acquired infections develop due to the presence of viruses, fungi, or bacteria in the affected area and are linked to increased mortality and financial loss (Labrague et al., 2018). The most common forms of healthcare illnesses are urinary tract infections, which result from complications arising from catheter insertion, bloodstream infections, infestation at the surgical site, and the development of ventilator-related pneumonia. These infections may occur during diagnostic tests, administering intravenous therapy, or admission to the intensive care unit. The weakened immune system of patients due to various illnesses also contributes towards increased vulnerability (Monegro et al., 2021).

Importance And Expected Outcome

There is an increased need to devise and implement quality improvement initiatives in the identified

area. The development of HCI is known to increase the length of stay, financial burden, and mortality rate. The five most prevalent HCIs incur a cost of approximately \$9.8 billion annually. These costs occur in every surgical and medical sector, including the ICU. Improved hygiene practices can help address this problem. It plays a critical role in the prevention of pathogenic infections. It would also ensure patient safety (Labrague et al., 2018). Moreover, the expected outcomes of this quality improvement initiative are an observable decline in infections and improved health-related outcomes for patients (Monegro et al., 2021).

Previous Research

Numerous studies focus on the varied aspects of hospital-acquired infections. The rate of these infections is high. According to the statistics, one out of every 31 patients admitted to the hospitals is affected by HCI. According to one study, these infections may develop while receiving care in hospitals or other healthcare facilities. These may first appear after 48 hours or more of admission to the facility or within 30 days of receiving the treatment. The most commonly occurring adverse events that affect hospitalized individuals are events involving aversion to drugs, hospital care-associated infections, and complications resulting from surgical procedures (Haque et al., 2018). Another study highlights the expected outcomes of the quality improvement initiative in the form of better hand hygiene practices. The results reveal that infections occur as student nurses demonstrate suboptimal compliance and knowledge related to hand hygiene. The findings of this systematic review study stressed the role of nurse educators in improving the capability of apprentices (Labrague et al., 2018).

The acquisition of care-related infections in intensive care units results in increased rates of death. A study was conducted to explore the development of infections in an adult ICU and to identify the risk factors associated with hospital-acquired infections and mortality. The results revealed the prevalence of infection in 32.7% of patients. Patients also displayed resistance to antimicrobial medication. The rate of resistance was greater than 50% for all antimicrobials except for linezolid, colistin, and tigecycline. The factors associated with these infections were underlying viral infections of the central nervous system and the use of invasive devices such as central venous catheters, urinary catheters, and nasogastric tubes. Increased mortality was reported for patients with diabetes mellitus and intubation who developed the hospital-acquired infection (Despotovic et al., 2020). Another study highlights the increase in the frequency of antimicrobial resistance. This is attributed to the abuse of antibiotics administration. Multi-drug-resistant bacteria are now classified as the leading cause of hospital-acquired illnesses, and enhanced surveillance is critical for antibiotic management which would lead to reduced incidence of HCI (Wang et al., 2019).

Implementation

Nurse practitioners must ensure strict implementation of hygiene practices by exemplifying

appropriate techniques and promoting patient safety. The importance of a clean hospital environment has been stressed since the 1800s when Florence Nightingale posited the environmental theory. Hand hygiene can be maintained through routine decontamination with the use of antiseptic. This must be practised before and after any form of patient interaction and before conducting any health care procedure. Various studies have highlighted hand hygiene as an effective and inexpensive way of preventing HCl. It promotes the health and safety of the patients; therefore, awareness activities must be planned to increase the knowledge of nurse practitioners (Mitchell, 2017).

To control the development of central-line-associated bloodstream infections, various studies have outlined best practices to guide the insertion and replacement procedures of catheters. Patients' bloodstream becomes infected when bacteria enter through the point of insertion. The most effective intervention, therefore, is to seal these points completely. The use of alcoholic-impregnated caps to seal the insertion points of IVs is the most effective measure. Hospitals must also devise policies that enforce the change of catheters to avoid infections caused by long-term insertions (Marschall et al., 2016).

To prevent the HCl from developing due to ventilation issues in ICUs, well-ventilated units should be designed to ensure the free circulation of air to the outside environment. This would curb the incubation of pathogens such as E. Coli. Other factors in the hospital environment that promote the breeding of pathogens include contaminated sinks and floors and saline solutions. These contaminations are not limited to intensive care units but also common area sinks and floors. Microbes such as *Elizabethkingia meningoseptica* spread quickly in contaminated environments. Therefore, regular cleaning at the shortest possible intervals must be ensured (Septimus et al., 2014).

Evaluation Of Outcomes

As identified through past research in this area, hospital-acquired infections may occur due to multiple factors; therefore, the most effective means of intervention is the adoption of a multidisciplinary approach. A pre-intervention report must be compiled to measure the effectiveness of the intervention. Comparing this with post-intervention data can help in measuring the effectiveness of the quality improvement initiative. Data can be gathered through different sources such as the CDC, departmental data, etc. A timeline must be defined for the implementation of the QI initiative, and a yearly review must be conducted. The increase or decrease in such acquired infections will reflect the effectiveness of the intervention.

Variable, Hypothesis, And Statistical Tests

The hypothesis to test the success of the quality improvement initiative would be as follows:

H1: The number of hospital-acquired infections significantly reduced through improved hand hygiene practices

H2: The number of hospital-acquired infections significantly reduced through proper insertion and replacement of catheters and the use of alcohol-impregnated caps

In the hypotheses stated above, hospital-acquired infection is a dependent variable that will increase or decrease through the independent variables, i.e. improved hand hygiene and protocol for catheter insertion. Other variables that must be considered include the duration of patients' stay in ICUs or any other illness that may act as a mediating variable. After the collection of pre-intervention and post-intervention data, tests can be applied to study the trend. These include descriptive analysis and statistical analysis, such as correlation.

Conclusion

Hospitals and other patient care facilities must realize their duty towards their patients and improve the quality of health care services. Measures should be in place to ensure that patients are not vulnerable to any further risks of infection during their stay at the hospitals. Additionally, hospitals should maintain an environment that facilitates the quick recovery of patients. The provision of a safe and clean environment is one of the most basic criteria that all hospitals must meet. Revisiting the workflow processes and revising the practices that risk patients' health can contribute to better health-related outcomes. Referring to the developed guidelines and following protocol whilst dealing with patients can ensure patient safety and reduce the duration of patient stay. It would also provide financial benefits by cutting the cost incurred on prolonged stays.

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