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### Healthcare Associated Infections: A Benchmark Study

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Healthcare Associated Infections: A Benchmark Study

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The University of Texas at Tyler School of Nursing

In fulfillment of

NURS 5382: Capstone

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## **Executive Summary**

In hospitalized patients (P), how does staff implementing infection prevention interventions (I) compared with staff not implementing infection prevention interventions (C) affect nosocomial infection rates (O) within a 3-month hospitalization period (T)? According to the Centers for Disease Control and Prevention (CDC), one out of every 31 hospital patients has at least one healthcare-associated illness on any given day ("HAI Data | CDC", 2021). Needed to improve patient outcomes, lower nosocomial infection occurrence rates, and lower related costs. Patient illnesses and deaths are caused by nosocomial infections, which arise during medical treatment. They also increase hospital stays and necessitate additional diagnostic and therapeutic treatments, all of which add to the patient's underlying disease's financial burden. Healthcare-associated infections (HAIs) are a bad outcome, and because some may be prevented, they are viewed as an indication of inadequate patient care, an unpleasant occurrence, and a patient safety issue (Collins, 2021). The urgent need to improve patient outcomes by minimizing or eliminating HAIs is the driving force behind the change that is necessary.

### **1. Rationale for the Project**

When it comes to hospital-acquired infections, whether the hospital has implemented best practice infection control measures, whether it has introduced best practice infection control measures, or whether it will be held vicariously liable for negligent or intentional failures by staff to follow the infection control measures in place, is the determining factor. If a hospital and its administrators fail to develop or implement best practice infection control methods, resulting in patient harm, they may be held directly liable. Patients may be held vicariously liable if hospital employees fail to comply with infection control measures implemented by the hospital during the course and scope of their employment (McQuoid-Mason, 2012). With the average cost of

healthcare-associated infections per patient estimated to be approximately \$20,000, the issue of healthcare-associated infections deserves more research in order to improve patient outcomes and save hospitals money (Scott et al., 2019). Healthcare workers' awareness of healthcare-associated infection prevention and adoption of hand hygiene guidelines should be raised through the use of environmental, organizational, and communication strategies in conjunction with one another as part of an inter-professional collaborative team-based approach to improve patient outcomes and decrease the incidence rate of healthcare-associated infections.

## **2. Literature Discussion to Support Project**

Nurses, despite having sufficient knowledge and a pleasant attitude, consistently perform below expectations. Another key difficulty in hospitals is recognizing the contribution of HAIs to the rise in health-care expenditures, which results in a lack of attention being paid to practical remedies. Taking part in seminars and workshops on the importance of infection control and preventive standards in the health-care profession may be a good investment. The establishment of a system to track HAIs in different wards using standard protocols, the implementation of monthly reporting, and the recognition of wards with the lowest number of HAI cases can all be advantageous. (Nasiri and colleagues, 2019). Compliance with hand hygiene among nurses increases following training, particularly when compared to the compliance of the other professions engaged. The implementation of a hand hygiene training program and subsequent follow-up have a favorable impact on nurses' attitudes toward and compliance with hand hygiene practices, notwithstanding their simplicity. (Graveto and colleagues, 2017) In the course of the data analysis, several factors were uncovered that may have an impact on healthcare workers' (HCWs) compliance with hand hygiene (HH) recommendations. It was determined that the lack of sinks, insufficient staffing, and demanding workloads were all contributing factors, as were

communication issues (such as the dissemination of infection prevention and control (IPAC) information, feedback, and interpersonal professional relationships) within the clinical environment. Individual understanding of IPAC and perceptions of HAI risk were found to be associated with HH adoption. Environmental strategies (e.g., more sinks and HH stations) as well as organizational and communication strategies (e.g., continuing education and training sessions for HCWs, hospital management support, positive feedback) may be effective in assisting HCWs in becoming more aware of HAI prevention and following HH guidelines (Atif et al., 2019). In this study, the motivational factors that influenced health care professionals' compliance with hand hygiene requirements were social effects, the acuity of the care, self-protection, and the use of cues. Resources, education, information, and organizational culture were all factors that influenced health care employees' adherence to hand hygiene recommendations, according to the findings (Smiddy et al., 2015). The use of infection control link nurses (ICLN) in conjunction with systematic audits and feedback has practical implications for hospitals seeking to improve compliance with standard precautions among clinical nurses. Evidence demonstrating the efficacy of using infection control link nurses (ICLN) in combination with systematic audits and feedback has shown improved compliance and nursing care safety (Donati et al., 2020). The training and instructional feedback from supervisors, as well as management support for implementing safe work practices, are believed to assist HCWs in adhering to suggested care practices. When it comes to enhancing patient outcomes, knowledge, beliefs, motivation, and professional accountability all have an impact on how standards are followed (Zingg et al., 2015).

### **3. Project Stakeholders**

In Rusk, Texas, at Rusk State Hospital, the change will be implemented by a collaborative effort amongst administrators, infection control professionals, front-line clinical nurses, nurse managers, doctors, and nursing assistants in order to execute intervention to assist reduce hospital acquired infections. Administrators are responsible for the coordination and administration of educational programs. Using positive reinforcement, nurse managers will be the driving force behind putting the program into action, disseminating it, and supporting strategies for implementation to reduce hospital acquired infections (HAIs). Inter-professional interaction and collaboration are encouraged through weekly meetings with department heads and charge nurses. These sessions are held with permission from the hospital's management. Staff nurses will act as change advocates by monitoring and encouraging adherence to the change, gatekeepers will be department managers and charge nurses, and allies will be infection control specialists, who will assist in the implementation of the change.

Infection control agents (nurses), weekly meetings for evaluations, clarifications, and review, large white boards in hallways advertising department audits, specific YouTube videos for re-training, and HAI incidence rates will be documented in a shared excel file to track progress are all required resources. Making the transition would be facilitated by the infection control nurse and hospital management who would work with the student.

#### **4. Implementation/Timetable**

<b>Implementation Steps</b>	<b>Estimated Duration/Time from Implementation</b>
1. Agree to the Change	
2. Identify Multidisciplinary Team Members to Serve as the Change Team	Within 2 weeks
3. Agree to Use Reports/Implementation Strategies	1 <sup>st</sup> month
4. Create Report/Meeting Strategies and Times	1 <sup>st</sup> month
5. Ensure Implementation Strategies Are Carried Out	2 <sup>nd</sup> month
6. Develop Plan and Implement New Strategies in All Units	4 <sup>th</sup> month- 6 <sup>th</sup> month
7. Monitor Facility Implementation Progress Monthly	6 <sup>th</sup> month-9 <sup>th</sup> month

8. Review Healthcare Associated Infection Rates	As required
9. Sustain the Change	End of 9th month–12th month

The steps of implementation include for staff agreeing to the change of implementing infection control precautions including hand hygiene compliance and follows the implementations steps 2-9 in the table above. When it comes to evidence-based practice change, the Model for Evidence-Based Practice Change is the model itself, which will be used to lead the change project in order to reduce healthcare-associated infections. Clinicians are guided through six steps in which they will be involved in: (1) determining the need for change, (2) locating the best evidence, (3) critically analyzing the evidence, (4) planning practice change activities, (5) initiating and monitoring practice changes, and (6) integrating and maintaining practices changes (Melnyk & Fineout-Overholt, 2019). The coordination and administration of educational programs are under the purview of educational administrators. Nurse managers will be the driving force behind putting the program into action, disseminating it, and supporting methods for implementation in order to reduce hospital acquired infections. Positive reinforcement will be used to motivate nurse managers (HAIs). Throughout the year, weekly meetings with department heads and charge nurses promote inter-professional engagement and collaboration. The hospital's administration has given authorization for these sessions to take place. A team of infection control specialists will aid in the implementation of the change by monitoring and promoting adherence to the change. Department managers and charge nurses will serve as gatekeepers, and infection control specialists will serve as allies in the implementation of the change. Aside from infection control agents (nurses), other resources are needed such as weekly meetings for evaluation, clarifications, and review, large white boards in hallways advertising department

audits, specific YouTube videos for re-training, and HAI incidence rates that will be documented in a shared excel file to track progress.

### 5. Data Collection Methods

All patients admitted to the hospital would be included. All inpatients admitted would be monitored throughout the program and recorded to hospital data. Any hospital acquired infection would be recorded. A comparison in infection rates before intervention/implementation and after intervention/implementation would be conducted. In order to determine whether or not the change was successful, the number of HAIs and hand hygiene compliance would be measured. The process of transformation will be evaluated on a monthly basis, through reports and meetings that take into consideration the distinctions in the data. If the change project is unable to be implemented for any reason, re-education and positive feedback can be implemented inside the organization to ensure that the change has a good impact. When comparing month to month and year to year, it is necessary to examine product consumption and usage in order to determine the success of the adjustment in terms of minimizing the occurrence of HAIs and ultimately improving patient outcomes (Al Salman et al., 2015).

### 6. Costs/Benefits

<b>Estimates of Attributable HAI Cost Estimates from Literature Reviews</b>		
<b>HAI Type</b>	<b>Zimlichman et al</b>	<b>NORC Report</b>
Catheter-associated urinary tract infections	\$924	\$13,793
Central line-associated bloodstream infections	\$47,254	\$48,108
Surgical site infections	\$21,438	\$28,219
Ventilator-associated pneumonia	\$41,406	\$47,238
Hospital-acquired antibiotic-associated Clostridium difficile	\$11,640	\$17,260

(Scott et al., 2019)

One of the most promising avenues for demonstrating a positive return on investment in infection prevention and control is to reduce the length of time patients spend in the hospital and free up those beds for new patients, thereby increasing the volume of patients seen, revenue

generated, and reimbursement received. This opportunity adds to the growing body of evidence showing financial investments in infection prevention and control programs are worthwhile, and that resources to execute best practice measures at the bedside should be made available to healthcare providers. When analyzing the extent to which HAIs are avoidable, the Centers for Disease Control and Prevention (CDC) believes that adequate infection control measures might prevent up to 70% of infections. Successful infection control systems are supported by clinicians, physicians, and executives who work together to foster a culture of safety throughout the company (Pennsylvania Patient Safety Advisory, 2021).

A well-resourced, quality infection control program can save money in a variety of ways, including reducing supply waste through the appropriate selection of products and expensive technology, avoiding regulatory citations and fines for failing to make progress in reducing infection rates, and improving the organization's image by reducing the threat of outbreak, resistant pathogens, employee injuries from bloodborne pathogens, HAI discrepancies, and other health-care-associated infections (HAIs). Many infection prevention methods can improve the overall quality of life without requiring a significant financial expenditure. The guidelines include nurse-driven catheter removal procedures, thorough equipment disinfection and hand hygiene, process and outcome monitoring, as well as accountability criteria for ensuring compliance (Pennsylvania Patient Safety Advisory, 2021).

## **7. Discussion /Conclusion**

Although this project was not implemented in its entirety due to staff and management conflict, however, due to consistent positive outcomes from the literature findings and this project's main goal to not utilize extra resources with its key objective in repurposing existing resources and utilizing staff in a different role, it is likely to show promise for the future in the

prevention and reduction of hospital acquired infections, therefore improving patient outcomes and saving hospitals money. It is low risk high reward project that benefits everyone.

The project's barriers included: a heavy workload, insufficient staffing, and a high patient-to-nurse ratio, a lack of knowledge and education about proper hand hygiene and IPAC practices, budgetary constraints and a lack of time, supply issues, a lack of hand hygiene stations and/or poor placement of hand hygiene stations on hospital units, and hierarchical working relationships.

## **8. Recommendations**

Among the solutions to minimize barriers encountered in this project and found through literature research studies include using existing roles to implement project, disseminate infection prevention and control practices (IPAC) including Hand hygiene (HH) guidelines, placing flyers, handouts, and reminders, audits and making the results of HH audits public to increase compliance, using e-learning and online training sessions, installation of additional sinks, soap and hand sanitizer dispensers, and HH stations, as well as support from hospital management to increase staff adherence to IPAC practices. The recommendation for this change project is to implement it in its' full capacity in compliant units that pose no conflict and collect results and data on that unit, and with positive findings, disseminate the project elsewhere across the hospital.

Healthcare workers' awareness of healthcare-associated infection prevention and adoption of hand hygiene guidelines should be raised through the use of environmental, organizational, and communication strategies in conjunction with one another as part of an inter-professional collaborative team-based approach to improve patient outcomes, decrease the incidence rate of healthcare-associated infections, and save the hospital organization money along the way.

## References

- Atif, S., Lorcy, A., & Dubé, E. (2019). Healthcare workers' attitudes toward hand hygiene practices: Results of a multicentre qualitative study in Quebec. *Canadian Journal Of Infection Control*, 34(1), 41-48. <https://doi.org/10.36584/cjic.2019.004>
- Collins, A. (2021). *Preventing Health Care–Associated Infections*. Ncbi.nlm.nih.gov. Retrieved 25 June 2021, from <https://www.ncbi.nlm.nih.gov/books/NBK2683/>.
- Donati, D., Miccoli, G., Cianfrocca, C., Di Stasio, E., De Marinis, M., & Tartaglini, D. (2020). Effectiveness of implementing link nurses and audits and feedback to improve nurses' compliance with standard precautions: A cluster randomized controlled trial. *American Journal of Infection Control*, 48(10), 1204-1210. <https://doi.org/10.1016/j.ajic.2020.01.017>
- Doronina, O., Jones, D., Martello, M., Biron, A., & Lavoie-Tremblay, M. (2017). A Systematic Review on the Effectiveness of Interventions to Improve Hand Hygiene Compliance of Nurses in the Hospital Setting. *Journal Of Nursing Scholarship*, 49(2), 143-152. <https://doi.org/10.1111/jnu.12274>
- Finco, G., Musu, M., Landoni, G., Campagna, M., Lai, A., & Cabrini, L. et al. (2018). Healthcare-associated respiratory infections in intensive care unit can be reduced by a hand hygiene program: A multicenter study. *Australian Critical Care*, 31(6), 340-346. <https://doi.org/10.1016/j.aucc.2017.10.004>
- Girou, E., Loyeau, S., Legrand, P., Oppein, F., & BrunBuisson, C. (2002). Efficacy of handrubbing with alcohol based solution versus standard handwashing with antiseptic soap: randomised clinical trial. *BMJ*, 325(7360), 362-362. <https://doi.org/10.1136/bmj.325.7360.362>
- Graveto, J., Rebola, R., Fernandes, E., & Costa, P. (2017). *Hand hygiene: nurses' adherence after training*. Knobloch, M., Thomas, K., Musuuza, J., & Safdar, N. (2019). Exploring

leadership within a systems approach to reduce health care–associated infections: A scoping review of one work system model. *American Journal Of Infection Control*, 47(6), 633-637. <https://doi.org/10.1016/j.ajic.2018.12.017>

HAI Data | CDC. Cdc.gov. (2021). Retrieved 20 March 2021, from <https://www.cdc.gov/hai/data/index.html>.

Larson, E., Cohen, B., & Baxter, K. (2012). Analysis of alcohol-based hand sanitizer delivery systems: Efficacy of foam, gel, and wipes against influenza A (H1N1) virus on hands. *American Journal Of Infection Control*, 40(9), 806-809. <https://doi.org/10.1016/j.ajic.2011.10.016>

Melnik, B., & Fineout-Overholt, E. (2019). *Evidence-Based Practice In Nursing And Healthcare* (4th ed.). Wolters Kluwer Health.

McQuoid-Mason, D. (2012). Hospital-acquired infections - when are hospitals legally liable? *South African Medical Journal*, 102(6), 353. <https://doi.org/10.7196/samj.5664>

Nasiri, A., Balouchi, A., Rezaie-Keikhaie, K., Bouya, S., Sheyback,, M., & Rawajfah, O. (2019). Knowledge, attitude, practice, and clinical recommendation toward infection control and prevention standards among nurses: A systematic review. *American Journal Of Infection Control*, 47(7), 827-833.

Pennsylvania Patient Safety Advisory. (2021). Pennsylvania Patient Safety Authority. Retrieved 1 December 2021, from [http://patientsafety.pa.gov/ADVISORIES/Pages/201009\\_102.aspx#](http://patientsafety.pa.gov/ADVISORIES/Pages/201009_102.aspx#).

Picheansathian, W., 2004. A systematic review on the effectiveness of alcohol-based solutions for hand hygiene. *International Journal of Nursing Practice*, [online] 10(1), pp.3-9. Available at: <<https://onlinelibrary-wiley.com.ezproxy.uttyler.edu/doi/epdf/10.1111/j.1440-172X.2003.00457.x>> [Accessed 2 October 2020].

- Scott, R., Culler, S., & Rask, K. (2019). Understanding the Economic Impact of Health Care-Associated Infections: A Cost Perspective Analysis. *Journal of Infusion Nursing*, 42(2), 61-69.
- Smiddy, M., O'Connell, R., & Creedon, S. (2015). Systematic qualitative literature review of health care workers' compliance with hand hygiene guidelines. *American Journal Of Infection Control*, 43(3), 269-274. <https://doi.org/10.1016/j.ajic.2014.11.007>
- Zingg, W., Holmes, A., Dettenkofer, M., Goetting, T., Secci, F., & Clack, L. et al. (2015). Hospital organisation, management, and structure for prevention of health-care-associated infection: a systematic review and expert consensus. *The Lancet Infectious Diseases*, 15(2), 212-224.