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Hospital Acquired Clostridium Difficile Infection Prevention

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Hospital Acquired Clostridium Difficile Infection Prevention

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Clinical Leadership Theme

My Clinical Nurse Leader project focuses on the curriculum element of *Clinical Outcome Manager*. The Clinical Nurse Leader (CNL) role function is Outcome Manager and Educator. As the CNL on the Acute Care Unit 1800, I will lead the interdisciplinary team and delegate auditing assignment to staff and managers. In addition, I will analyze data collected, partake in the HAI workgroup meetings, participate in decision making, policy modifications, culture changing process, and plan and implement interventions to prevent hospital acquired Clostridium Difficile (C diff) infections on my unit.

Statement Of The Problem

With the increase of Clostridium Difficile Infection (CDI) incidences and severities, the institution initiated a project to improve methods to prevent CDI. A workgroup is developed to work on infection prevention project. The workgroup generated tools and audits to screen hospital infection rates and monitor compliance of C diff infection control. Moreover, environmental cleaning and C diff patient transfers protocols are still being modified.

The theme for my global aim statement came from a Hospital Acquired Infection (HAI) workgroup meeting. Management had expressed concerns in the increased numbers of incidents of C diff throughout the hospital from the previous year, thus contributing to increased risks of mortality and morbidity, high costs and increased length of stay. The alarming findings the month of January 2017 have reported 5 different cases of C diff in different departments in the hospital. The goal is to have a clinical nurse leaders assigned to each department in the hospital to implement the project at the center of the microsystem and to promote quality outcome. The workgroup will meet every two weeks to discuss interventions and outcomes. According to the

ANA (2011), “ CNL applies the nursing process at the point of care through the strategic assessment, diagnosis, intervention, and evaluation of the unit as a whole to guide efforts for systematic, quality, and safety improvements.”

Project Overview

Hospital Acquired Infection (HAI) workgroup meeting created an opportunity for me to take on the project on Medical Surgical unit 1800. The goal is to address three main HAI problems in the hospital: C Diff, Catheter-Associated Urinary Tract Infections (CAUTI), and Central line-associated bloodstream infections (CLABSI). The team decided to address one issue at a time, with meetings held every two weeks. Starting with C Diff issue, the first kick-off meeting was focused on brainstorming and fishbone diagrams, which is a great tool to help identify the root cause of the problem. The majority staff votes resulted in narrowing the causes to: 1. Hand hygiene and cross contamination compliance 2. Personal protective equipment (PPE) compliance.

Based on my findings, using the SWOT analysis, I will work on improving patient safety and reducing hospital acquired infections. Current hand hygiene compliance in the organization is 80%, the goal is to implement signs over sinks and provide staff basic re-education on hand hygiene techniques. For cross contamination issue, I will initiate a policy on patient’s transfers and ambulation, initiate early diagnosis and isolation (training on new Algorithm sheet), explore lab results delay, educate patient and family on C diff, educate the staff not to remove isolation signs prior to sanitizing the rooms, initiate Infection control department rounds. For PPE compliance, I will have PPE more accessible in the hallway and stocked properly, educate staff

on proper doffing and donning of PPE, initiate a RED Line tape by the patient's doorway (no peeking without donning), explore staff barriers to non-compliance with PPE.

CNL exhibits leadership by implementing change in the healthcare delivery system to achieve the quality outcome (AACN, 2007). This project highlights all different CNL educational aspects of Nursing Leadership, Care Environment, and Clinical Outcome Manager. The American Association Colleges of Nursing (AACN) in the White Paper on the Role of the Clinical Nurse Leader, describes how CNL functions (AACN, 2007).

The change theory utilized in this project is Kotter's change theory (1996). Kotter's theory includes eight steps:

1. Establishing a sense of urgency
2. Creating the guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering broad-based action
6. Generating short-term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture

The powerful theme of Kotter's change model is that it drives individuals to experience the emotional connection to actually embrace change. Feelings play an essential role in motivating change. By adopting Kotter's change theory into my project the culture change within the organization is gradually establishing thus connecting to the organizational goals, and building a solid relationship among the interdisciplinary team.

Rationale

According to the yearly hospital HAI reports, there has been an increase in C diff incidents. A root analysis was done to identify the factors leading to increased C diff infections incidents in the hospital. At the HAI committee kickoff meeting, fishbone diagrams was used to help visualize the potential causes of increase in hospital acquired C diff infections (Appendix A). The HAI workgroup developed tools for C diff data collection. A sequence of audits and observations on infection control compliance were conducted, and data was collected from communication and microsystem evaluations to analyze the root cause of the problem of rise in HAI (Appendix H). A SWOT Analysis (Appendix B) revealed some weaknesses that needed to be addressed. Based on the facts collected, cross contamination, PPE and hand hygiene compliance were persistent problems in controlling infection.

Methodology

The project is conducted in a large suburban community based hospital in Northern Solano County in California. It's a Magnet Recognized institution that overlooks two campuses. The first campus consist of 24 hour Emergency Department, 132 medical surgical unit, Level II Trauma center, Stroke and Cancer center, Critical care unit, Cath lab, Surgery and Vascular center, and NICU. The second campus consists of 24 hour ER, 44 bed med-surg, Radiology and lab. All units and departments in the hospital are involved in the HAI prevention project initiated by the HAI workgroup. There are personnel from each department that attend the bi-weekly meetings in addition to infection control department, pharmacy and physicians. As a CNL, my focus is the med surge unit in campus 1 unit 1800 which is a 34 bed unit, with census ranging on

average of 31 patients, nurse ratio is 1:5.

The Hospital Acquired C diff reduction project is in process, it is progressing well with continuous staff cooperation, and management support and participation in implementing interventions for quality improvement. Based on the hand washing audits collected for the past 6 weeks from different hospital departments, data revealed that the staff lack the technique on handwashing (Appendix D), this week's goal (starting 3/09/17) is to reinforce education on basic skills of handwashing techniques by having managers demonstrate it during huddles. A team of four staff members are working on forming a poster together of proper hand washing technique to place on the nursing communication board to incorporate into huddle meetings (Appendix E). The poster will be emailed to all members of the workgroup and approval deadline is Tuesday 3/14/17 by 5 pm. Based on the PPE compliance audits, results revealed 75% compliance this includes improper doffing and donning of PPE. Education was reinforced and demonstrated during huddles, posters were posted on the nursing communication boards of proper doffing and donning of PPE (Appendix G). Audits will be implemented starting 3/24/17 to collect data to check if the interventions were effective and if the project is progressing positively towards the desired goal. As for cross contamination, audits are still in progress to collect baseline data, no interventions were implemented in this area yet.

Literature Review

PICO strategy helped me refine my research and I found multiple of articles and literature to support my CNL project. In addition, the literature found ensured that my project is evidenced-based. I was able to narrow my search further by researching articles that were

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published within the past 5 years. I look forward to exploring the literature and review the articles to uncover useful information that would support my project.

PICO Statement: Barriers to reduce hospital acquired c diff in acute care facility

P: Patient/Population: Adults in medical surgical unit

I: Intervention: Hand hygiene and PPE compliance; reduce cross contamination

C: Comparison: Implement early detection and isolation strategies, educate staff and family on transmission and epidemiology of CDI. Compliance with environmental cleaning and disinfection.

O: Outcome: Decrease the incidence of healthcare acquired C. diff infections at the acute care unit 1600 to zero for the next quarter. Increase patient safety, reduce unnecessary costs and patient's length of stay, and reduce risks of mortality and morbidity.

Literature review surrounding hospital acquired C diff infection prevention reveals that C diff is transmitted in the hospital from contaminated areas and via the hands of healthcare providers. According to Dubberke and Olsen (2012), "*Clostridium difficile* infection (CDI) is associated with increased length of hospital stay, costs, morbidity, and mortality in patients. CDI increases hospital length of stay by 2.8 to 5.5 days. US hospital costs for CDI management have been estimated to be \$1.0-4.9 billion per year. The attributable mortality of CDI is estimated to be 5%-10% leading to an estimated 14,000-20,000 deaths attributable to CDI in the United States each year."

According to Boyce & Pittet (2002), fast diagnosis of C diff "will lead to prompt treatment and implementation of contact precautions that can limit the spread of C. difficile in

the environment of care.” With the project’s focus on prevention tools of hand washing and PPE compliance and cross contamination control, literature review was centered on these issues.

The Health Research and Education Trust (2016, p.10) stated that C diff “can be spread by direct human to human contact or by indirect means through fomites (e.g., bed rails, equipment, ear thermometers, etc.), contact precautions are critical to preventing infections of staff, visitors and other patients.” Adhering to the fundamentals of contact precaution, early diagnosis and isolation will break the chain of infection. Thus “ presumptive isolation and Contact Precautions have been recommended while awaiting the results of screening for patients who develop health care-associated diarrhea” (HRET, 2016, p.10). The Infection Control and Hospital Epidemiology (2009) further describes that “poor handwashing plays a key role in the spread of infection in hospitals, yet there is considerable evidence that compliance with such a simple task is low.” Therefore, infection control team must promote innovative educational programs on hand hygiene compliance to reduce safe patient care and reduce C diff transmission.

According to the Agency of Healthcare Research and Quality (2011), a study have been conducted in 1985 on infection control that verified the cost advantage and economical saving of infection control programs in hospitals. One of the suggested tools recommended in the study and was implemented in the my project is assigning a trained and certified infection control personnel (ICP) to monitor ongoing surveillance and observation of hospital acquired C diff infections in the organization. Therefore, the ICP’s responsibility is to collect infection rate data and report to the HAI workgroup thus the staff can get trained and educated on strategies to prevent infection transmission and control.

Timeline

The project kickoff meeting was initiated on January 31, 2017 and the anticipated ending period is June 30, 2017. With meetings held bi-monthly, the leadership load on implementing intervention throughout the units is delegated among the group members. For the next two weeks I will be working with two other members on crosswalk policy and education on hand washing, the deadline is April 6, 2017. The next two weeks I will continue to work on cross contamination audits. Data result from audits will be evaluated and analyzed on the next HAI workgroup meeting on May 4, 2017. The team will work on implementing the proper interventions based on the root cause.

Expected Results

The hospital acquired C diff infection prevention has raised awareness among the staff and created a culture of change. Majority of the staff realized that change is required and new habits should be adopted and taken more seriously to obtain results in the fight against hospital acquired infections. The cooperation of the staff, leaders and managers created a culture of trust where collaboration and voicing opinions was smooth and resulted in positive outcomes. With the interventions implemented thus far the staff revealed motivation on moving forward to make the appropriate changes to provide safe environment for our patients and their families.

Nurses have been using the C diff algorithm more efficiently to properly diagnose patients with symptoms of diarrhea. There were some resistance from the nursing staff on completing the forms correctly due to some confusion in the wordings. The HAI committee have revised the forms and created a simpler, easy-to-understand version to eliminate uncertainty.

Moreover, nurse leaders have been more mindful and supportive in assisting nurses who were struggling with completing the forms.

Huddles have been more productive in addressing hospital acquired infections and making sure the staff are aware of the current infections and case studies of fall-outs are being discussed to prevent incident recurrence (Appendix F). Hand washing techniques and proper PPE techniques are re-enforced. A section of the nursing boards is now dedicated to HAI where all our work and progress is presented to all units in the hospital (Appendix C). The boards contain many valuable information and tools about the recent active hospital acquired infections, case studies, hand washing and PPE techniques, and a suggestion table for improvement ideas.

Evaluation

HAI workgroup meeting on April 20, 2017 reported day 38 of zero C diff infection throughout both campuses and in all units, the successful results of the project after implementing the changes are positive and the progress is moving in the right direction. However, based on the audits and data collected, many barriers need to be addressed to maintain positive outcome.

Based on the cross contamination audits conducted, results revealed that C diff contaminated furniture and equipment remain to be placed in the hallways without any clear explanation or information on whether it has been appropriately cleaned. Space remains to be an issue and the storage room on acute care unit 1800 is currently in the process of being uncluttered. Thus, unnecessary equipment is being removed to make room for blood pressure machines that are currently in the unit's hallway. Management reached out to engineering

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department to install electrical outlets in the storage room to charge any equipment stored so it will be clean, charged and ready for use when needed. Based on a recent cross contamination audit I conducted on March 27, 2017 I have spotted a chair in the hallway next to C diff contaminated room that is undergoing Tru D (Tru D is a tool that uses UVC light energy to disinfect rooms) after a patient's discharge, none of the staff seems to be aware who placed it there and whether it has been cleaned. Therefore, this issue resulted in implementing a green color stickers to be placed on furniture as an indication that it has been cleaned, this would be the responsibility of the staff that is moving the furniture. This intervention will be evaluated further from the data of the audits that will be collected for the next two weeks.

Another barrier is lack of communication in hand off information of isolation patient between units. The suggestion of "trip ticket" is to be utilized, it can easily be placed on the patient during transfer. This tool has been used previously on some units but not enforced in all departments. Implementation issues and feedback will be discussed in two weeks in the next meeting.

Lastly, C diff lab order report data collected the past six months is being evaluated to compare the time frame of the C diff stool test from the time of the order, time of collection, time send to lab and time of results. There seems to be a 2 day gap between the time the stool is collected to the time of the lab results. Due to lack of time, the HAI workgroup will coordinate with lab personnel and revisit this issue to implement proper interventions required to present rapid stool test results available to staff. Early isolation has been implemented in the last meeting for suspected C diff patients who present symptoms of the disease "which involves placing signs

on the door of the infected patient's room to notify support staff, clinicians, patients, and visitors of the need to take special precautions before entering" (GNYHA, 2011, p. 15).

Materials used in the project are hand washing standard work and PPE doffing and donning posters that are currently displayed by all the patient's doors on all units (Appendix E & G). In addition, the quality nursing boards are updated with information of the progress of the work of infection prevention of the HAI workgroup (Appendix C). Moreover, management and leaders are reinforcing the 20 seconds hand washing techniques and proper donning and doffing of PPE during huddles. Real time education simulation and observation of hand washing took place in some of the units to reinforce proper techniques and ensure compliance. A video was developed and was shared electronically to all hospital staff which clearly demonstrates proper hand washing techniques. Audits are no longer performed on paper, the organization has adopted an online tool Tracers with AMP (Accredited Manager Plus) which is a product for data collection through the Joint Commission Resources. This will allow users to record, track, evaluate and analyze data collected electronically. The HAI workgroup invested in modifying and standardizing the quality boards on all units. Due to lack of space on some units such as ICU and ER, lead nurses are working on arranging the huddle boards and organizing the space to fit the new quality boards. Majority of the votes have decided on a unique, uniform name for the boards "WOOO" which is an acronym for "We Own Our Outcomes."

Nursing Relevance

Preventing hospital acquired C diff infections has various implications on nursing. The project has promoted teamwork among the staff and a clear understanding of the

responsibilities they hold towards cleaning, disinfecting, stocking supplies, efficient communication, and complying with the policies and procedures of hand hygiene and PPE compliance. Leaders and managers has recognized “that effective cleaning and disinfection are crucial to the limitation and reduction of CDI and that cleaning and disinfection takes time” (APIC,2013). Therefore, nurse’s workload is minimized to allow enough time to care for C diff patients and provide appropriate patient care and vigorous disinfecting and cleaning of their environment.

All staff are trained and educated on infection prevention strategies with the emphasis on C diff prevention efforts. Hand hygiene and PPE compliance are reinforced and directly observed to evaluate and support best practices and techniques. The staff, with the support of the HAI workgroup team, is fostering strong implementation of the new program that is compatible with the organization’s mission. The project is likely to deliver continued sustainability because of the staff involvement and strong support of the organizational champions (Balsells, Filipescu, Kyaw, Wiuff, Campbell & Nair, 2016). The program included CNL personnel on each unit and are strategically placed to foster continuation and implement innovative measures. The organization values and acknowledge the CNL position and its benefit and advantage to ensure this project’s success and sustainability.

Conclusion

This project have enhanced collaboration and communication among the interdisciplinary team from different departments. It set an opportunity for open dialogue and discussions among the staff and created a transparent environment working towards common goal which is to

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provide and deliver safe care to our patients. According to the AACN (2013), the CNL “promote a culture of continuous quality improvement within a system.”. With the ongoing assessments of C diff knowledge and intensified education on prevention among the staff, the team is continuously working on modifying the program to target all barriers in preventing hospital acquired infections down to zero.

My CNL internship granted me better understanding of the CNL role and how to effectively implement quality improvement change strategies in care delivery at the microsystem level that is evidenced-based and patient centered. The hospital acquired C diff prevention project provided me with the opportunity to integrate the CNL role into practice and acquire the knowledge and the skills of a leader to improve care and implement change.

I want to thank the HAI workgroup and the staff unit in acute care 1800 for their support and the opportunity to participate in the project. A special acknowledgement goes out to my preceptor who so very kindly gave her knowledge, patience, and time. As a result of her guidance and expertise, I have a profound understanding of the clinical nurse leadership role and have gained professional and valuable experience that would benefit my profession. I appreciate her contribution to my career advancement and success.

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practice on clinical nursing units. *Journal of Nursing Management*, 15, 367-370.

Appendix A

Fishbone: C Diff



Appendix B

SWOT ANALYSIS

<p style="text-align: center;"><u>Strengths</u></p> <ul style="list-style-type: none">> Communication with lab/staff> Sinks are accessible.> Manager rounds> Infection department rounds> Hand hygiene audits: 50 employees/month> Antimicrobial pumps accessible> Educated staff on self generated orders for stool samples.	<p style="text-align: center;"><u>Weakness</u></p> <ul style="list-style-type: none">> Lab delays for results> Hand hygiene compliance <80%> Communication among staff from different departments (hand-off)> Lag in isolation time> Proper sanitization; proper signage.
<p style="text-align: center;"><u>Opportunities</u></p> <ul style="list-style-type: none">> Proper demonstration of doffing and donning PPE> Training on new stool collection algorithm> Patient and family education tools on Cdiff	<p style="text-align: center;"><u>Threats</u></p> <ul style="list-style-type: none">> New stool collection algorithm forms are not ready> Families and visitors non compliance> No policy on C diff patient transfers and ambulation.

SHARED MENTAL MODEL

~

Getting on the same page: priceless!



HAI Work Group—The Path To ZERO

This workgroup will use evidence based practice and LEAN principles to drive quality improvement initiatives. **Our success depends on everyone!!!**

Please huddle with your team and assure that all receive this communication

Nursing Operations Council Approval
Date: 3/1/2017__

Hand Washing 1-2-3

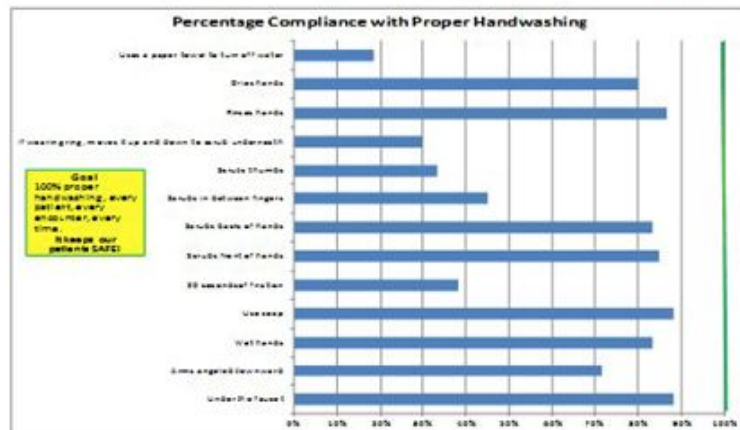
HUDDLE GUIDE # 203

Date: 3/15/2017

Situation: Our organization experienced higher Hospital Acquired Infection (HAI) rates in 2016 than 2015. Our CAUTI, CLABSI, C. diff rates were also above national benchmarks (*bad*).

Background: National studies show that improper hand hygiene is a high contributors to HAI.

Assessment: The HAI work group observed our NorthBay health professionals' practice specifically around **proper** hand washing. Are we washing our hands, and are we washing thoroughly???? **NO!!!**



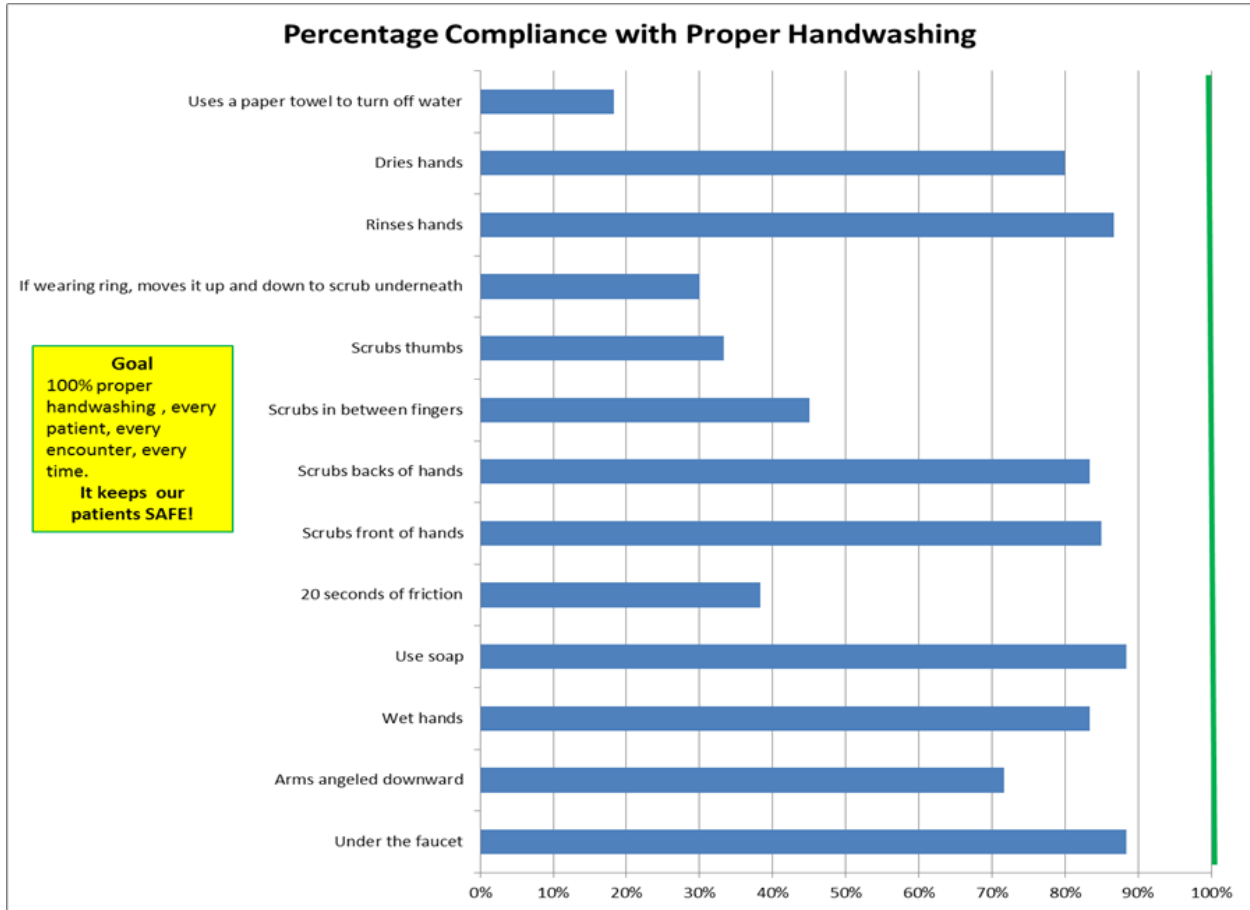
Recommendations: Communicate a standard, evidence based, practice for proper hand washing (see attached) with the following goals

- Provide safe, infection free environment for our patients
- Keep each other accountable. Utilize the NorthBay Way to provide collegial feedback if you do not see the standard process followed.

Questions: See your department HAI work group representative.

Appendix D

Hand Washing Compliance



Appendix E

Hand Washing Technique

Standard Process for Hand Washing

Step	Action
1	Hands are under faucet
2	Arms angled downward
3	Wet hands
4	Use soap
5	20 seconds of friction
6	Scrubs front of hands Scrubs back of hands Scrubs between fingers Scrubs thumbs
7	If wearing a ring, move it up and down to scrub underneath
8	Rinse hands
9	Dries hands
10	Use paper towel to turn off water



Centers for Disease Control and Prevention. (2002). *Guideline for hand hygiene in health-care settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. MMWR Recommendations and Reports, 51(RR-16), 1-45.* Accessed March 2016 via the Web at <http://www.cdc.gov/mmwr/pdf/rr/r15116.pdf> (Level II)

Appendix F

Case Study

C. diff HAI NB ICU 2/25/17- FIN 12617659

Situation: We had a hospital acquired *C. difficile* infection on 2/25/17 in the *ICU*. This patient has previously been on **multiple units** before being transferred to ICU and came into contact with **multiple disciplines** during her stay.

Background:

2/13/17: This patient was brought in by ambulance to the *VVED* because she was found down at home by family. There was suspicion of a GI bleed because of low H/H. She was started on *protonix*, and admitted to 1 West.

2/14/17: Patient was started on a 7-day course of *ciprofloxacin* for UTI. An EGD was performed, which was negative for active bleeding.

2/25/17: Early in the morning a code blue was called for a *brady* arrhythmia, the patient was intubated and transferred to *VVICU* at 0430. Patient was then transferred to *NBCU* at 1115.

2/21/17: The patient was ordered and given a one-time dose of *bisacodyl* (*Duclax* suppository) 10mg PR at 1028. At 1405 "medium, black, green, loose" stool documented (Patient did not have any documented stools prior to this).

2/24/17: WBC increased to 11.24. There was a suspicion of possible PNA, but no additional antibiotics were ordered.

2/25/17: WBC 11.14. The next stool documented was at 1145 was "large, brown, and formed." At 1230 there was a "large, brown, loose" stool documented. *C. diff* PCR was ordered at 1239. The sample was collected at this time. Contact orders were placed and contact isolation was documented as initiated at 1241. At 1355, there was a "medium, brown, loose" stool documented. At 1443, the sample was reported as positive. The RN, MD, and infection control were notified appropriately.

Assessment: Stool was sent appropriately despite *C. difficile* specimen audit checklist not being utilized for this patient. This patient had contact with **multiple departments and disciplines** during hospitalization – This is a call to action for all of us! Risk factors included GI procedure, *protonix*, and antibiotic usage.

Recommendations:

Please remember to:

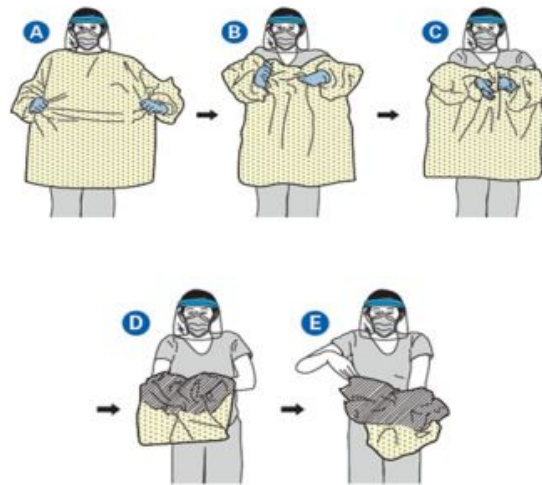
- Doff PPE correctly
- Wash hands thoroughly
- Use single patient use items when available
- Clean multi-use items with bleach/wipes using 2-step process
- Use the *C. difficile* specimen audit checklist

Appendix G

PPE Doffing and Donning

Standard Process for Doffing (Removing) PPE

Step	Action
1	Doff PPE at doorway
2 (A)	With gloved hands, grasp gown in front
3 (B)	Pull away from body so that ties break
4 (C)	When removing gown, fold or roll gown inside out into a bundle
5 (D)	While removing the gown, peel off gloves at the same time
6 (E)	Touch only the inside of the gloves and gown with bare hands
7	Discard both in receptacle immediately inside patient room.
8	Perform hand hygiene immediately



Centers for Disease Control and Prevention: Protecting healthcare personnel. (n.d.). Retrieved February 27, 2017, from <https://www.cdc.gov/hai/prevent/ppe.html>

Appendix H

Increased Hospital Acquired C diff Rates

