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EAST TENNESSEE STATE UNIVERSITY
HONORS COLLEGE
MIDWAY HONORS PROGRAM
&
COLLEGE OF NURSING
HONORS-IN-DISCIPLINE PROGRAM

Midway Honors Scholars Program
Honors-in-Discipline Program
East Tennessee State University

Visitor Hand-washing Compliance According to Policies and Procedures at a Regional Neonatal
Intensive Care Unit

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An Honors Thesis submitted in partial fulfillment of the
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Abstract

Hospital-acquired infections cost hospitals approximately \$30.5 billion per year and also result in longer hospital stays, chronic conditions, and even death with associated malpractice costs.

According to the Centers for Disease Control and Prevention, hand hygiene is a simple, effective way to prevent illness and infection. The purpose of this research was to determine if visitors to a neonatal intensive care unit (NICU) in a regional medical center comply with hand-washing policies and procedures. If NICU visitors wash their hands properly, they can prevent potentially fatal infections from spreading to patients, healthcare workers, and unaffected family members.

Hand-washing compliance has been previously studied in NICU staff and other healthcare workers, but not solely visitors. The researcher observed more than 120 visitors as they entered the NICU to determine the number who washed their hands for the required three minutes. Based on the findings, NICU staff and administration will be encouraged to provide more effective education, post informative signs, and install equipment to encourage visitors to use proper hand-washing techniques. Effective hand-washing should result in lower infection rates among NICU patients and lower health care costs.

Keywords Hand-washing, Compliance, Visitors, Neonatal Intensive Care Unit

Introduction

A mother watches her tiny, premature baby fight for its life due to an infection that could have been prevented.

Proper hand-washing is an important step in preventing the spread of infection and the transmission of diseases

(1). Babies in neonatal intensive care units may be at greater health risk if visitors are non-compliant with posted hand-washing procedures.

Hand hygiene is simple to do and the best way to prevent illness and infection (1). If NICU visitors wash their hands using appropriate technique and at the standard length of time posted by the facility, they can prevent potentially fatal infections that can be spread from visitors to patients and healthcare workers.

Hand-washing compliance has been studied primarily in health care workers, but not solely visitors. One study in particular was done with both staff and visitors but focused mainly on the hospital staff (3). The suboptimal results showed that, before interaction with a patient, more hospital staff was completing the recommended hand-washing than the visitors. However, even though staff members were washing more than visitors, they were still not washing according to the hand hygiene guidelines recommended by the CDC.

The following steps detail the hand-washing technique recommended by WHO

Guidelines on Hand Hygiene in Health Care (Advanced Draft 2005):

When washing hands with soap and water, wet hands with water and apply the amount of product necessary to cover all surfaces.

Vigorously perform rotational hand rubbing on both hand palms and back, interlace and interlock fingers to cover all surfaces. Rinse hands with water and dry thoroughly with a single-use towel. Use running, clean water whenever possible. Use towel to turn off tap/faucet.

Make sure hands are dry. Use a method that does not recontaminate hands. Make sure towels are not used multiple times or by multiple people. Avoid using hot water, as repeated exposure to hot water may increase the risk of dermatitis. Liquid, bar, leaf, or powdered forms of plain soap are acceptable when washing hands with a non-antimicrobial soap and water. When bar soap is used, small bars of soap in racks that facilitate drainage should be used (2).

Objective

Based on the lack of studies on hand-washing by visitors to the NICU, improper hand-washing practices are possible. The study NICU staff asks visitors to wash their hands from fingertips to elbows for three minutes, or 180 seconds. The purpose of this study was to determine if visitors are compliant with the hand-washing requirements of the facility and to identify whether or not a problem exists in the effectiveness of their hand-washing.

Study results are necessary to inform changes in visitor education, informative signs, and the use of technology to encourage visitors to wash their hands for the posted length of time according to the facility policies and procedures.

Methods

Design

This research was descriptive observational. The investigator observed visitors washing their hands as they entered the NICU. The study took place on various days of the week including weekdays and weekends at 7:00 p.m. EST for approximately one to two hours.

Instruments

An evaluation tool was developed by the observer that included a checklist for gender and whether or not soap was applied, water was used, hands were rubbed, and hands were dried. The time spent washing hands was also documented. The time was measured using a stopwatch capable of recording multiple instances. The time was then recorded in the appropriate column on the evaluation tool.

Figure 1. EVALUATION TOOL FOR HANDWASHING:

GENDER	APPLIED SOAP	USED WATER	RUBBED HANDS TOGETHER	AMOUNT OF TIME SPENT WASHING (min:sec)	DRIED HANDS
				:	
				:	
				:	
				:	

Data Collected

The researcher sat at the nurses’ station with an unobstructed view of the sinks provided for NICU visitors. The data were collected as soon as visitors entered. The first observation was determining and documenting the gender of each visitor. Next, as visitors approached the sink the observer documented if soap was applied, water used, hands were rubbed, the amount of time spent washing, and whether visitors dried their hands. For three months, data were gathered immediately after shift change on various days at 7:00 p.m. EST because the researcher was told this was a high traffic time for NICU visitors. This study was approved by the medical center and the East Tennessee State University Institutional Review Board.

Analysis

The findings were analyzed using Statistical Package for Social Sciences (SPSS) software. Frequencies and an independent t-test were used to answer the research questions. Frequencies were used to determine the number of visitors who applied soap, used water, rubbed hands, dried hands, and washed for 180 seconds. The t-test compared the time that males and females washed their hands. A 2-tailed test was used because it was unknown which gender would wash their hands longer.

Results

From the total population, 54 male visitors and 72 female visitors were observed. All visitors, with the exception of one who used hand sanitizer and another who did not wash upon her second entry, applied soap, used water, and dried their hands. However, of the 126 visitors, only 2 washed their hands according to the facility's policies and procedures. One hundred twenty-four visitors washed for less than 180 seconds, or 3 minutes. The minimum time spent washing by all visitors was 0 seconds and the maximum was 180 seconds with a mean of 57.10 seconds. Although not significant, the results of the t-test comparing genders approached significance ($t=1.854$, $df=124$, $p=.066$).

Before the study began, the researcher inspected the hand-washing equipment. The researcher concluded that the timers on the sinks were not working. The issue was resolved by requesting a clock with a second hand. The clock was installed above the sinks. The researcher also noticed that the board above the sinks was cluttered with reading material (PHOTO 1).

PHOTO 1:



One day, a visitor did not use soap and water, but did use an alcohol-based hand sanitizer. The visitor entered the NICU in a wheelchair that was lower than the sinks provided in the entryway. On a different day, another visitor washed her hands upon first entering the NICU; however, she left and came back. It was noted that she held a toddler at the entryway while waiting for another visitor to leave; she then handed off the toddler to the visitor that was leaving and proceeded to enter the treatment area.

During another observational period, three visitors came in at the same time. One of them asked the observer “Do we need to wash hands?” The observer nodded “yes”. In the meantime, the observer was asked by an employee what the observer was doing there. The observer replied “research”. After thirty seconds, the three visitors finished washing; it was overheard that it was their first visit to the NICU. An employee told them to scrub fingertips to elbows for three minutes. They washed again. This time for a total of 2 minutes 30seconds. When finished, the employee restated that they need to wash fingertips to elbows for three minutes every time. It was noted that this was the first and only time the observer heard staff say this to a visitor. Lastly, during a separate visit, one visitor went out of the entryway and told two other visitors: “She said ya’ll can come back –make sure you wash your hands for three minutes”...their compliance was observed.

TABLE 1

Descriptive Statistics

Gender	N	Min	Max	Mean	Std. Deviation
1 Male TimeWashing in sec	54	12	180	65.04	44.695
2 Female TimeWashing in sec	72	0	180	51.14	39.222

Discussion

It is estimated that lack of adherence to infection control practices cause one third of all hospital-acquired infections (4). In the United States, health care associated infections affect approximately 1.7 million patients hospitalized each year, leading to increased length of stay or even death (6). Of those infections, 48,000 deaths were attributed to sepsis and pneumonia in 2006 (6). The additional hospitalization leads to approximately \$8.1 billion in added costs (6). Hospitals are adversely affected by nosocomial infections because Medicare and some insurance companies refuse to reimburse when patients acquire infections while in the hospital. Nurses must be aware that a problem with compliance exists so they can intervene by educating visitors about the importance of proper hand hygiene to not only lower infection rates but also because visitors may believe that healthcare professionals contribute to hospital-acquired infections when actually their own hand-washing behavior may be the source.

Behavioral change involves a combination of education, motivation, and system change (5). Numerous studies give conflicting reports about the length of time needed to eliminate bacteria by hand-washing. More nursing research is needed to determine if washing for a shorter duration has any effect on infection rates. Another alternative would be to also use alcohol-based hand sanitizer after washing with soap and water. Furthermore, installation of a special sink that only provides water three minutes after dispensing soap should be investigated. Removing the clutter above the sink and posting informative hand-washing posters should also be included.

Researchers should also explore the need for visitors to wear gowns and gloves to prevent the transfer of microbes from their clothing. This study was not designed to determine which intervention is the most effective approach to improving hand-washing compliance and lowering

infection rates. Future research should answer the questions: Do visitors really need to wash for 3 minutes? Why do men wash longer than women? Are women visitors more comfortable in handling babies after not washing their hands effectively? After improving education and installing new equipment, further research will determine the impact these changes have on visitors' hand-washing compliance.

Conclusion

Patients and their families will benefit from nurses holding others accountable for their actions. Establishing a hygiene system that is monitored for non-compliance will reduce the spread of bacteria that leads to infections. Nurses can be influential in motivating everyone to implement proper hand-washing techniques. They can ensure that others are educated in hand-hygiene. Once educated, nurses can ascertain whether visitors are competent by observing their hand-washing technique upon first entering the NICU, setting the foundation for all their subsequent visits. In addition to motivation and education, installation of new equipment will assist in resolving non-compliance. Improving the system will ultimately alleviate infection rates, lower mortality rates, decrease length of stay, and reduce healthcare costs.

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