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Original Research Paper

Microbiology

HAND HYGIENE COMPLIANCE IN THE INTENSIVE CARE UNITS OF A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: : Health-care associated infections are recognized as a major burden for patients. Improper hand hygiene by healthcare workers (HCWs) is responsible for about 40% of nosocomial infections.

Methodology: Individual HCW was observed during routine patient care with respect to potential HH opportunities available and number of HH actions performed in the ICU's of a teritiary care centre.

Results: Total desired HH opportunities during the study period were 66.1% from staff nurses and 33.9% from doctors. HH actions actually performed by the HCWs were 212 and overall compliance of the study group was estimated as 59.71%. It was 71.7 % in the intensivists, 52.6% in attending physicians, 33.3% in senior residents and 62.1% in the nurses. Compliance was inversely related to activity index. Compliance for high, medium and low risk of cross-transmission was 53.6%, 61.9% and 60% respectively.

Conclusion: Hand hygiene is the most effective tool to control nosocomial infections.

KEYWORDS :

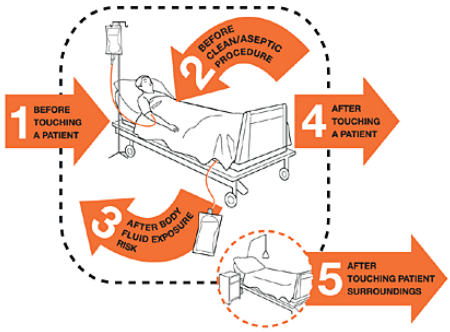
INTRODUCTION

Handwashing with soap and water has been considered a measure of personal hygiene for centuries. In 1858, an Austrian-Hungarian physician Ignaz Semmelweis discovered the importance of hand hygiene, opening the era of infection control. He noted that physicians who went directly from the autopsy suite to the obstetrics ward had a disagreeable odor on their hands despite washing their hands with soap and water upon entering the obstetrics clinic. He postulated that the puerperal fever that affected so many parturient women was caused by "cadaverous particles" transmitted from the autopsy suite to the obstetrics ward via the hands of students and physicians. Perhaps because of the known deodorizing effect of chlorine compounds, as of May 1847, he insisted that students and physicians clean their hands with a chlorine solution between each patient in the clinic. The maternal mortality rate in the First Clinic subsequently dropped dramatically and remained low for years. In 1961, the U. S. Public Health Service produced a training film that demonstrated handwashing techniques recommended for use by health-care workers (HCW). In 1975 and 1985, formal written guidelines on handwashing practices in hospitals were published by CDC. In 1988 and 1995, guidelines for handwashing and hand antisepsis were published by the Association for Professionals in Infection Control. In 1995 and 1996, the Healthcare Infection Control Practices Advisory Committee recommended that either antimicrobial soap or a waterless antiseptic agent be used for cleaning hands upon leaving the rooms of patients with multidrug-resistant pathogens (e.g., vancomycin-resistant enterococci [VRE] and methicillin-resistant *Staphylococcus aureus [MRSA]*) [1]

Bacteria recovered from the hands were divided into two categories: transient and resident. Transient flora, which colonize the superficial layers of the skin, are more amenable to removal by routine handwashing. They are often acquired by HCWs during direct contact with patients or contact with contaminated environmental surfaces within close proximity of the patient. Transient flora are the organisms most frequently associated with health-care--associated infections. Resident flora, which are attached to deeper layers of the skin, are more resistant to removal. In addition, resident flora (e.g., coagulase-negative staphylococci and diphtheroids) are less likely to be associated with such infections. The hands of HCWs may become persistentlycolonized with pathogenic flora (e.g., S. aureus), gram-negative bacilli, or yeast[2]Health-care associated infections (HAIs) are recognized as a major burden for patients, society and healthcare management [3]. Hospitalization in an ICU further increases the risk of HAIs [4]. 7-10% of patients admitted to hospital are affected by nosocomial infections [5]. Incidence of nosocomial infections in the intensive care unit (ICU) is about 2 to 5 times higher than in the general in-patient hospital population[6]. Drug resistant bacterial infections are responsible for the morbidity and mortality of patients in ICU [7]. Patients in the ICUs are more likely to be colonized or infected by multi-drug resistant organisms[8].Most of these infections are spread via health care workers' hands. Infection control is a primary goal for hospitals and is particularly challenging for intensive care units (ICUs). [9] Improper hand hygiene by healthcare workers (HCWs) is responsible for about 40% of nosocomial infections. Lack of knowledge and lack of recognition of hand hygiene opportunities during patient care are mainly responsible for poor hand hygiene among HCWs [10] Hand Hygiene (HH) is the single most effective measure to prevent this spread. Despite its relative simplicity, HH compliance rates vary and may still be very poor [8] HAIs burden patients, complicate treatment, prolong hospital stay, increase costs & can be life threatening.[11]

FIVE MOMENTS OF HAND HYGIENE

This approach recommends health-care workers to clean their hands



STEPS OF HAND WASHING TECHNIQUE

- Turn on the faucet and wet both hands under running water
- Apply soap or hand wash liquid on hands while covering all surfaces
- Rub both hands, starting by doing it palm to palm

- Next, place the right hand's palm over the back of the left hand with fingers interlaced. Vice versa.
- Then, rub both hands, palm to palm, with interlocked fingers.
- Place the back of the right hand's fingers inside the palms of the left hand, with interlocked fingers. Vice versa.
- Clasp the right hand's thumb inside the left hand's palm while rubbing rotationally. Vice versa.
- Clasp the right hand's fingers on the palm of the left hand while rubbing rotationally forwards and backwards. Vice versa.
- Finally, rinse both hands thoroughly under running water.
- Dry hands using a clean towel.

AIMS AND OBJECTIVES

To assess compliance regarding hand hygiene practices among healthcare workers in medical ICUs of a teritiary care centre

MATERIALS & METHODS

This cross sectional study was carried out in the medical ICUs of Sree Balaji Medical College and Hospital after obtaining approval from the hospital ethical committee. Each ICU is well-equipped with Hand Hygiene (HH) facilities. The bottles of an alcohol-based liquid hand disinfectant were available at the patient's bedside. All the patients admitted to the ICU during the study period were included in the study. Health care workers in this study included all physicians on rounds in the ICUs, intensivists, all postgraduate (PG) residents and nurses involved in patient care in these ICUs.

Hand washing: It included washing hands with an unmedicated soap or medicated soap (antiseptic hand washing) and water for 1 minute. Hygienic hand rubbing with an antiseptic solution or alcohol based hand rub using a small quantity (2-3 mL) (handrubbing) for at least 20 seconds till the hands are dry and HH action will include all the recommended steps.

An opportunity was any potential HH action needed during patient care. Opportunities were stratified into three categories with respect to risk of cross-transmission [5]

High risk of cross-transmission : Before direct patient contact, between care of a dirty and a clean body site, before intravenous or arterial care, before urinary, respiratory or wound care.

Medium risk of cross-transmission : After direct patient contact, after intravenous or arterial care, after urinary, respiratory or wound care and after contact with biological body fluids.

Low risk of cross-transmission : other conditions like bedding etcIndividual HCW was observed during routine patient care with respect to potential HH opportunities available and number of HH actions performed. Each HCW was included only once in the study and was not aware of being observed. HH action, whether by hand-washing or alcohol-based hand rubbing, was the main outcome variable.

ANALYZE AND INTERPRET DATA

During the study, a total of 43 HCWs were observed over a one month period, which created 355 HH opportunities. The HCWs comprised of 7 attending physicians, 4 intensivists, 4 senior residents and 28 nurses posted in the ICUs.

Total desired HH opportunities during the study period were 66.1% from the staff nurses and 33.9% from the doctors. HH actions actually performed by the HCWs were 212 and the overall compliance of the study group was estimated as 59.71% (212/355 opportunities). It was 71.7 % (28/39) in the intensivists, 52.6% (30/57) in attending physicians, 33.3% (8/24) in senior residents and 62.1% (146/235) in the nurses.

[Table 1]. Compliance was inversely related to activity index. Compliance for high, medium and low risk of cross-transmission was 53.6% (37/69), 61.9% (106/171) and 60% (69/115), respectively [Table 2].

Table 1 : Compliance to hand hygiene in relation to professional status

Professional status	Number	Opportunities available	HH action perfored	Compliance (%)
Nurses	28	235 (66.1)	146	62.1
Senior residents	4	24 (6.8)	8	33.3
Intensivists	4	39 (11)	28	71.7
Physicians	7	57 (16.1)	30	52.6
Total	43	355	212	59.71

Table 2 : Compliance with hand hygiene in relation to activity index and risk of cross transmission of infection

	Risk of cross transmission of infection			
	High	Medium	Low	
Opportunities available (n=355)	n	69	171	115
	%	19.4	48.2	32.3
HH action performed (compliance)	n	37	106	69
	%	53.6	61.9	60

CONCLUSION

In recent years, there are many studies & training programmes emphasizing the importance of hand hygiene in the prevention of nosocomial infections. Inspite of such efforts the adherence & compliance rate of hand hygiene remains low. Health care workers should be continuously educated & motivated to improve hand hygiene practices.

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