Contact precautions in Intensive Care Units: facilitating and inhibiting factors for professionals' adherence*

PRECAUÇÕES DE CONTATO EM UNIDADE DE TERAPIA INTENSIVA: FATORES FACILITADORES E DIFICULTADORES PARA ADESÃO DOS PROFISSIONAIS

PRECAUCIONES DE CONTACTO EN UNIDADES DE TERAPIA INTENSIVA: FACTORES FACILITADORES Y LIMITANTES PARA LA ADHESIÓN DE LOS PROFESIONALES

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ABSTRACT

The objective of this study was to identify facilitating and limiting factors for professionals' compliance with contact precautions in an intensive care unit of a general hospital. This cross-sectional study was performed from May to October 2007, using a semi-structured questionnaire for data collection. Participants were 102 professionals, as follows: nursing technician (54.9%), nurse (12.7%), preceptor physician (10.8%), apprentice physiotherapist (8.8%), preceptor physiotherapist (7.8%) and resident physician (4.9%). The limiting factors for compliance with hand cleansing were forgetting, lack of knowledge, distance from sink, skin irritation, and lack of materials. The use of scrubs presented the most difficulty (45%) because they were not available at the shower box, were inappropriately stored, and due to the heat and collective use. Glove use was the practice most easily conducted in everyday practice. Results show the need to implement precaution measures to minimize the dissemination of resistant microorganisms.

KEY WORDS

Intensive Care Units.
Cross infection.
Risk factors.

RESUMO

Objetivou-se identificar os fatores que facilitam ou dificultam a adesão às precauções de contato, por parte de profissionais de um Centro de Terapia Intensiva de hospital geral. Tratou-se de um estudo transversal, realizado de maio a outubro de 2007, utilizando-se um questionário semi-estruturado para coleta de dados. Participaram do estudo 102 profissionais: técnico de enfermagem (54,9%), enfermeiro (12,7%), médico preceptor (10,8%), fisioterapeuta aprimorando (8,8%), fisioterapeuta preceptor (7,8%) e médico residente (4,9%). Os fatores dificultadores para a adesão à higienização das mãos foram o esquecimento, falta de conhecimento, distância da pia, irritação da pele e falta de materiais. O uso do capote apresentou maior dificuldade (45%) pela sua ausência no box, acondicionamento inadequado, calor, e ao seu uso coletivo. O uso de luvas foi a conduta de maior facilidade na prática cotidiana. Os resultados deste estudo apontam a necessidade de implementar medidas de precaução a fim de minimizar a disseminação de microrganismos resistentes.

DESCRITORES

Unidades de Terapia Intensiva.
Infecção hospitalar.
Fatores de risco.

RESUMEN

Este estudio tuvo por objetivo identificar los factores facilitadores y limitantes de la adhesión a las precauciones de contacto por parte de los profesionales de la Unidad de Terapia Intensiva de un hospital general. Se trató de un estudio transversal realizado entre mayo y octubre de 2007, utilizándose un cuestionario semiestructurado para la recopilación de datos. Participaron del estudio 102 profesionales de las siguientes áreas: técnicos de enfermería (54,9%), enfermeros (12,7%), médicos de planta (10,8%), fisioterapeutas residentes (8,8%), fisioterapeutas de planta (7,8%) y médicos residentes (4,9%). Los factores limitantes para la adhesión a la higienización de manos fueron: el olvido, la falta de conocimiento, la distancia hasta los lavatorios, irritación de la piel y falta de materiales. El uso de guardapolvos y similares presentó mayor dificultad (45%) por su ausencia en el *box*, acondicionamiento inadecuado, calor y uso colectivo. La utilización de guantes fue la conducta de mayor aceptación en la práctica cotidiana. Los resultados de este estudio indican la necesidad de implementar medidas de precaución para minimizar la propagación de microorganismos resistentes.

DESCRIPTORES

Unidades de Terapia Intensiva.
Infección hospitalaria.
Factores de riesgo.

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INTRODUCTION

Hospital acquired infection (HAI) is considered an important public health problem, affecting morbidity and mortality, time of hospitalization and costs of diagnostic and therapeutic procedures. Coupled with these are repercussions for the patient, family and community such as being withdrawn from social life and work, which compromises social, psychological and economic aspects[1-6].

Data indicate that HAI occurs, on average, in 5 to 17% of hospitalized patients; is responsible for an average increase of 15 days of hospitalization, which raises care costs in an average of $30,000 to $40,000[1,3-4,6].

The incidence of HAI associated with resistant microorganisms has increased worldwide in recent years. In the United States, more than 70% of bacteria isolated in hospitals are resistant to at least one antibiotic commonly used for treating infection. The transmission of microorganisms generally occurs by manual contact, through the hands of professionals to patients and by the direct contact of patients with contaminated material or the hospital environment[6-9].

Hence, the dissemination of microorganisms can leave patients susceptible to infections and bacterial colonization. Dissemination occurs as a consequence of important factors, such as excessive, indiscriminate, and often times inappropriate use of antibiotics and the low compliance of the health team with recommendations to control infection[6,8].

The progressive increase of bacterial resistance in hospital facilities is more severe in Intensive Care Units (ICU). Analyzing the impact of HAI in ICUs, we verified that it is responsible for a significant increase in mortality, morbidity, time of hospitalization and use of resources. It is also known that the etiology of bacterial resistance is multifactorial, thus, the control of the dissemination of resistant microorganisms requires the implementation of control measures that involves the adoption of standard precautions and contact precautions, in addition to the rational use of antimicrobial agents[1,4,10-11].

However, healthcare facilities and their health teams many times value a technological arsenal to the detriment of simple measures that could reduce the dissemination of microorganisms. It is important to propagate knowledge about HAI mechanisms of transmission and encourage positive behavior in relation to isolation guidelines and precautions proposed by the Center for Disease Control and Prevention (CDCP). These guidelines aim to minimize the risk of the transmission of microorganisms from colonized/infected patients to other patients or health professionals. Two levels of precautions are established: those called standard precautions and contact precautions, which are based on the method of transmission, such as droplet, aerosol and contact[12].

Aware that the dissemination of microorganisms, whether through colonization or infection of patients, is facilitated by the characteristics of the ICU and its hospitalized patients, coupled with the professionals' behavior, simple measures of standard precautions and contact precautions can reduce or even avoid the spread of microorganisms[7,13].

There is abundant literature addressing the adoption of standard precautions but a scarcity of studies addressing contact precautions among the multiprofessional team.

OBJECTIVE

This study identified the aspects that either facilitate or hinder adherence to contact precautions of professionals from an ICU of a general hospital.

METHOD

Healthcare facilities and their health teams many times value a technological arsenal to the detriment of simple measures that could reduce the dissemination of microorganisms.

This cross-sectional study was carried out between May and October 2007 in a large philanthropic general hospital with 180 beds that cares for patients from both the public health system and private health insurance. The study's setting was the Adult Medical/Surgical Intensive Care unit composed of 20 beds with an average residence of five days and with 1,156 admissions/year. It cares for severe clinical patients and patients with surgical pathologies from the following specialties: digestive track surgery, cardiovascular, neurology, orthopedics, neurosurgery, and solid organs transplantation, including the pancreas, kidneys and liver.

All professionals, members of the ICU health team, were invited to participate in the study. The inclusion criteria were: being assigned to the ICU; actively practicing a care function during the data collection period and agreement to participate in the study. Those professionals who were on vacation and/or health leave during data collection were excluded.

A semi-structured questionnaire was developed to collect demographic characteristics (gender, age, professional category, time since graduation, time working in the institution, time working in the ICU, work shift, number of jobs), and factors that favor and inhibit adherence by professionals in the case of contact precautions (hand washing with water and soap, rubbing hands with alcohol at 70% concentration, use of gowns and gloves).

The professionals working in the ICU were first verbally invited, which was followed by a letter informing them of the study's objectives and goals. Their participation was

voluntary with no financial gratification. Interviews were individually carried out by previously trained interviewers.

Descriptive statistics with distribution of frequencies and central tendency measures were used in data analysis. Collected data were analyzed through the Statistical Package for the Social Sciences (SPSS) software (version 13.0).

The project complied with Resolution 196/96 of the National Council of Health that regulates research involving human beings and was approved by the Ethics Research Committee (ETIC 14/07).

RESULTS

1- Professionals' socio-demographic profile

A total of 102 professionals, 85% of the population working in the ICU, participated in the study. Eighteen professionals did not meet the study's inclusion criteria, five were in vacation, seven on health leave, four were not in the ICU during the period of data collection and two declined to participate.

The global analysis evidenced that the participants were predominantly female (73.5%). Age varied between 22 and 57 years, with a median of 31.5. There was a higher percentage of professionals in the age range of 22 to 27 years (27.5%). The following categories participated in the study: nursing technician (54.9%), nurse (12.7%), preceptor physician (10.8%), physiotherapist trainee (8.8%), preceptor physiotherapist (7.8%) and resident physician (4.9%).

In relation to time since graduation, there was a higher percentage of professionals who graduated between 5 and 11 years prior to the study (30.7%). The majority (51%) of the 102 participants had up to three years of experience in the hospital and in the ICU (56.9%).

Forty-nine percent of the participants worked during the day, 42.2% at night and a smaller part (physicians), worked both during the day and night shifts (8.8%). Half of the participants had only one job, 39.2% had two jobs and 10% of them had more than two jobs.

2 – Identification of factors facilitating and inhibiting contact precautions

According to professionals, the factors that hindered adherence to hand washing with water and soap and rubbing hands with alcohol at 70% concentration in their daily practice were forgetfulness, followed by lack of knowledge about the importance of such practices, distance from the sink, skin irritation and then lack of material (Table 1).

Table 1 - Factors that hinder the adoption of hand washing with water and soap and rubbing hands with alcohol at 70% concentration by the multiprofessional team - Belo Horizonte, MG, Brazil - 2007

Ihibiting Factors	Hand washing with water and soap		Alcohol at 70%	
	N	%	N	%
Forgetfulness	53	52.0	55	53.9
Lack of knowledge about its importance	44	43.1	40	39.2
Distance from the sink	38	37.3	-	-
Lack of time	37	36.3	21	20.6
Skin irritation	26	25.5	23	22.5
Lack of material	18	17.6	28	27.5
Total	**102**	**100**	**102**	**100**

The professionals were asked whether they had difficulty in adhering to hand hygiene, gloves, and gowns. Half of the professionals reported they did not have difficulty adhering to any of these procedures. For those who reported difficulties, 45% of the professionals reported more difficulty in using a gown in daily practice. The professionals who reported more difficulty were preceptor physicians (Table 2).

Table 2 - Percentage reporting difficulty adhering to the use of gowns, hand hygiene and gloves - Belo Horizonte, MG, Brazil - 2007

Condutas	Enf.*	Téc. Enf.*	Méd. Pre.*	Méd. Res.*	Fisio. Pre.*	Fisio. Apri.*	Total
	N = 13 (%)	N = 56 (%)	N = 11 (%)	N = 5 (%)	N = 8 (%)	N = 9 (%)	N=102 (%)
Usar capote	(53,8)	(32,1)	(90,9)	(60,0)	(62,5)	(33,3)	(45,0)
Higienizar as mãos	(7,7)	(0,0)	(0,0)	(40,0)	(0,0)	(0,0)	(2,9)
Usar luvas de procedimento	(0,0)	(1,8)	(0,0)	(0,0)	(0,0)	(0,0)	(0,1)

Professional categories were abbreviated: Nursing tech= nursing technicians; Precept phys.*=preceptor physician; Resid phys.*= resident physician; Precept physio* = preceptor physiotherapist; Physio trainee* = Physiotherapist trainee

According to the professionals, the following factors hindered adherence to the use of a gown: gowns are not always in the cabinet, lack of time, heat and gowns being collectively used. We highlight that among those professionals who reported difficulty adhering to the use of a gown, 32.6% reported they could not find a gown in a storage cabinet.

When professionals were asked about what factors favored adherence to hand hygiene, use of gloves and gowns, only three professionals reported they easily adhered to these precautions. Among the studied measures, hand hygiene was the conduct that professionals most reported as easy to adhere to, followed by the use of gloves (Table 3).

Table 3 - Percentage reporting ease in adhering to hand hygiene, gloves and gowns by professionals of an ICU Belo Horizonte, MG, Brazil - 2007

Conduct	Nurse*	Nursing tech*	Precept phys*	Resid Phys*	Precept physio*	Physio trainee*	Total
	N = 13 (%)	N = 56 (%)	N = 11 (%)	N = 5 (%)	N = 8 (%)	N = 9 (%)	N = 102(%)
Hand hygiene	(61.5)	(75.0)	(90.0)	(60.0)	(100.0)	(100.0)	(80.3)
Gloves	(69.2)	(57.1)	(54.5)	(60.0)	(75.0)	(66.6)	(60.8)
Gown	(15.4)	(23.2)	(9.0)	(20.0)	(12.5)	(33.3)	(20.6)

Professional categories were abbreviated: Nursing tech= nursing technicians; Precept phys.*=preceptor physician; Resid phys.*= resident physician; Precept physio* = preceptor physiotherapist; Physio trainee* = Physiotherapist trainee

DISCUSSION

The factors that hindered members of the multiprofessional team from hand washing and rubbing hands with alcohol at 70% concentration are related both to the individuals and the institution. Forgetfulness is one of the aspects related to the individuals and highly reported. The results indicate that it might be related to a lack of knowledge concerning the importance of this conduct in HAI control, especially the risk of cross contamination, since these professionals manage a large number of patients.

It is worth noting one study that evaluated non-adherence to precautionary measures that also indicated forgetfulness and a lack of knowledge as the main factors inhibiting adherence[14].

Several studies show that low adherence to hand hygiene is not directly associated with theoretical knowledge concerning HAI or the situations in which one should perform it, but rather to the incorporation of this knowledge into the daily practice of these professionals. Many times, it is not incorporated into practice due to a lack of motivation, lack of awareness of the risk of disseminating microorganisms, overload of activities/tasks, a lack of material and/or the institution's poor physical structure[15-18].

In relation to the aspects related to the institution, one has to pay attention to the unit's physical structure considering the need to have dispensers of alcohol at 70% solution properly installed and supplied.

Another aspect that directly interferes with adherence to hand hygiene goes beyond infra structure and the appropriate conditions to perform it. It refers to motivation and training through continued programs addressing epidemiological indicators and rates of HAI and adherence to hand hygiene to sensitize the multiprofessional team.

When the professionals were asked about having difficulty adhering to hand hygiene, use of gloves and gowns, the latter was reported as the most difficult conduct to which to conform. One possible explanation for this finding is related to improper storage, the fact that users oftentimes leave gowns in places inappropriate for continued use and especially when their use is largely collective.

In one study addressing the difficulty adhering to the use of Individual Protective Equipment (IPE), the gown was reported as the most difficult item to be used. The reported reason was the discomfort caused by the heat it generates[15]. However, what should be taken into account is the risk of disseminating microorganisms to patients due to the absence of gowns or their inadequate use.

When professionals were asked about how easy adhering to hand hygiene, gloves and gowns was, hand hygiene was indicated as the easiest measure to be adopted (80.3%). This might be explained by the fact that these professionals consider this conduct a facilitating factor of greater importance when compared to other precautionary measures. Perhaps it is because hand hygiene is more related to professionals' beliefs where not only rational factors but also emotional factors are valued, as studies addressing the relation between intention and attitude in hand washing have shown[18].

Although a larger number of professionals mentioned hand hygiene as the easiest conduct to be adopted in practice, the conduct that presented the highest adherence was the use of gloves. It might be a consequence of professionals placing higher value on their own protection and, perhaps, a lack of knowledge concerning the importance and efficiency of washing hands and alcohol concentrations in preventing the spread of microorganisms. Regardless, studies have shown that less than 50% of health professionals adhere to hand hygiene, despite it being considered a basic measure, essential to controlling HAI and the dissemination of resistant microorganism[6, 14-17,19].

CONCLUSION

Hand hygiene was considered a measure easily adhered to when compared to other precautionary measures, though the use of gloves was the easiest measure to be adopted in practice.

The professionals reported that this habit influenced more adherence than knowledge about precautionary measures adopted in the prevention of hospital-acquired infection. Adherence to the gown use was inferior to the use of gloves in terms of adopting contact precautions while in physical contact with patients to manipulate patients. This study shows the ineffective adoption of contact precautions, which is contrary to effective precautions requiring hand hygiene and the use of both types of individual protective equipment.

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