



THE NURSE IN THE PREVENTION OF INFECTION IN INTENSIVE CARE O ENFERMEIRO NA PREVENÇÃO DE INFECÇÕES EM TERAPIA INTENSIVA LA ENFERMERA EN LA PREVENCIÓN DE LA INFECCIÓN EN CUIDADOS INTENSIVOS

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ABSTRACT

Objective: to evaluate the actions of nurses regarding prevention of infections in adult, neonatal, pediatric and coronary intensive care. **Method:** a descriptive study with a qualitative approach, performed with 18 nurses in the ICU for Adults, Neonatal/Pediatric and Coronary of a Hospital Size IV, Northwest of the State of Rio Grande do Sul/RS/Brazil. The data production occurred through an open interview recorded and, subsequently, underwent content analysis and presented in two analytical categories. The research project was approved by the Research Ethics Committee, CAAE n. 219.0/2011. **Results:** two analytical categories emerged, claiming about the understanding of nurses related to nosocomial infection and actions taken by them in order to prevent it. **Conclusion:** the results of the survey indicate important changes for qualifying assistance to patients in intensive care and reducing hospital infections. **Descriptors:** Hospital Infection; Nursing; Nursing Care; Intensive Care Units.

RESUMO

Objetivo: avaliar as ações de enfermeiros referentes à prevenção de infecções em unidades de terapia intensiva adulto, neonatal, pediátrica e coronariana. **Método:** estudo descritivo, com abordagem qualitativa, realizado com 18 enfermeiros nas UTIs Adulto, Neonatal/Pediátrica e Coronariana de uma instituição hospitalar Porte IV, do Noroeste do Estado do Rio Grande do Sul/RS/Brasil. A produção dos dados ocorreu mediante entrevista aberta gravada; posteriormente, foram submetidos à análise de conteúdo e apresentados em duas categorias analíticas. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, CAAE nº 219.0/2011. **Resultados:** emergiram duas categorias analíticas, que versam a respeito do entendimento dos enfermeiros referente à infecção hospitalar e ações desenvolvidas por eles no sentido de preveni-las. **Conclusão:** os resultados da pesquisa sinalizam mudanças importantes para qualificar a assistência aos pacientes em terapia intensiva e a redução de infecções hospitalares. **Descritores:** Infecção Hospitalar; Enfermagem; Cuidados de Enfermagem; Unidades de Terapia Intensiva.

RESUMEN

Objetivo: evaluar la actuación de las enfermeras en materia de prevención de infecciones en unidades de cuidados intensivos para adultos, neonatales, pediátricos y coronarias. **Método:** estudio descriptivo, con abordaje cualitativo, realizado con 18 enfermeros en la UCI de adultos, Neonatal / Pediátrico, coronaria de un hospital IV Porte, en noroeste del Estado de Rio Grande do Sul/RS/Brasil. La producción de datos ocurrió a través de la entrevista abierta en audio y posteriormente se sometió al análisis de contenido y se presenta en dos categorías analíticas. El proyecto de investigación fue aprobado por el Comité de Ética de Investigación, CAAE nº 219.0/2011. **Resultados:** dos categorías de análisis surgieron, reclamando sobre la comprensión de los enfermeros relacionados con la infección y las medidas adoptadas por ellos con el fin de evitar las. **Conclusión:** los resultados de la encuesta indican cambios importantes para calificar la asistencia a los pacientes en cuidados intensivos y la reducción de las infecciones hospitalarias. **Descriptores:** Infección Hospitalaria; Enfermería; Cuidados de Enfermería; Unidad de Cuidados Intensivos.

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INTRODUCTION

The Hospital Infection (IH) currently nominated for Infection related to Health Care (IRAS), is defined as any infection that the individual acquires after interning at a hospital from 48 to 72 hours and out of the incubation period.¹ IH is acquired after the patient going through a hospital and is manifested during the same or after discharge, related to hospitalization or procedures to which he was subjected while institutionalized.²

Their infections are caused by imbalance in the human microbiota relationship and the mechanisms of host defense of multifactorial origin, related to the clinical status of patients, the health team, the materials used, the hospital environment and their prevention has to do with direct awareness of the nursing team, led by nurses.^{2,3} With regard to the control of infections, it is important to take care and be aware of their relation to the environment, individuals and microorganisms.

It is shown a higher incidence of nosocomial infection in intensive care units (ICUs), by patient characteristics combined with invasive procedures and frequent handling. The ICU is an important focus of attention related to the care practices, to represent on average 20-30% of all reported infections in hospitals, with morbidity related to such infections around 25% of deaths in this unit.² These and such numbers can be even higher and depend on the type of ICU, the patient profile and clinical status, need for invasive procedures, exposure to immunosuppressive and antimicrobial therapies, constant manipulation of patients by professionals, kind of surveillance carried out in the institution, as well low membership of multidisciplinary protocols for hospital infection control team.²

In the work of nurses regarding prevention and control of nosocomial stand out continuing education activities with a multidisciplinary team in intensive care, epidemiological surveillance, one of the main indicators of quality of patient care in the intensive care unit, active surveillance, control antimicrobials, control of multidrug-resistant organisms that allows tracing the microbial profile, feedback to the team together with the results of educational campaigns to control, reduce and prevent HAIs.^{1,2}

It is considered important the participation of nurses who work in intensive care in the Committee of the Hospital Infection Control (CCIH), qualified space discussions, which sets

bond, communication and dissemination of information. In this sense, the HICC is an advisory body to the general direction of the hospitals, which requires its members skill, ability, administrative support and clinical staff in order to enable control policies that are adopted and followed.¹ In this sense, the results depend on the CCIH adherence of health professionals directly or indirectly involved in patient care.

OBJECTIVE

- To evaluate actions of nurses regarding prevention of infections in ICU Adult, Neonatal / Pediatric and Coronary.

METHOD

This is a descriptive study with a qualitative approach. The data production occurred during September and October 2011, the ICU Adult, Neonatal/Pediatric Coronary and a hospital IV Porte, Northwest State of Rio Grande do Sul, with nurses (18) who worked in shifts morning, afternoon and evening. Inclusion criteria were listed: become a nurse, work in one of the ICUs: Adult, Neonatal/Pediatric Coronary and for at least six months. Exclusion criteria were established: to work in their units for less than six months and being away for reason whatsoever.

To produce the data, an open interview with the guiding question was used: "Tell me, what you mean by hospital infection and what you do in your daily life in intensive care to prevent them?" Age, gender, marital status, children, education, length of service, time in the ICU and chose to work in intensive care: beyond open interview, a form with demographic data was used.

Data were collected in a prior appointment with the nurses of the units mentioned, the interviews took place in a specific room, recorded on audio tape, upon presentation and signing by all participants of the Term of Consent. Later, the data were transcribed and evaluated, and the collected data were analyzed and evaluated from the ordering of the data, resulting in two analytical categories, which are: The understanding of nurses on hospital infection and Actions performed by nurses to prevent infection hospital Intensive Care. 5 In order to preserve the identity of the subjects, they were appointed by E1, E2, E3, and so on.

All ethical issues governing research with persons were observed. 4 The research project was approved by the Ethics

Committee in Research of Unijuí, CAAE 219.0/2011.

RESULTS E DISCUSSION

The study included 18 nurses working in ICUs Adult, Neonatal / Pediatric and Coronary. Of these, 17 are female, aged between 24 and 50 years old. Of the subjects, 12 have children, 10 are singles, 7 are married and 1 is divorced. As for the length of employment, this ranges from two to 14 years and the time in the ICU for six months to ten years.

From the search to apprehend the essence of the content of the speeches of those surveyed, two categories emerged, described and analyzed sequentially.

♦ The understanding of nurses on Hospital Infection

Health care has evolved with scientific and technological advances and led to improvement in health actions. If on one hand there is a contingent of technical and scientific apparatus, on the other, old problems remain, such as hospital infections, and a worldwide public health problem, both in its incidence and the high personal costs, social and econômicos.⁶ Still, the risk of acquiring infections is determined by the susceptibility of the patient and the clinical and invasive procedures performed during their hospitalization.

IH is a condition that influences the mortality of the patients who remained bedridden, especially fragments of UTIs.⁷ lines E1, E3, E13 and E17 show the understanding that they have related to nosocomial infection, including two of them relate to occurrence of the same within 48 to 72 hours after hospital admission.

For me nosocomial infection is one in which the patient, the child will acquire in hospitals and not come home (E1).

Hospital infection is acquired in the hospital environment, which may cause harm to the patient; it's here in the ICU, but as in all hospital units (E3).

Nosocomial infection is one that is acquired in the hospital, with more than 72 hours (E13) hospitalization.

It is everything that can cause patients between 48 and 72 hours to change their clinical (E17).

In the statements below, the subjects reported signs and symptoms suggestive of IH:

With the staff that works here is thus observed clinical changes. Doing antibiotic, but doing hyperthermia? Changed this

secretion? Work is thus to know what is nosocomial infection (E1).

When it sees a different thick, yellowish and secretion indicates odor which may be an IH (E7).

Stand out as signs and symptoms characteristic of IRAS: hyperthermia, chills, hypotension, blood culture positive for relevant pathogen and absence of infection at another site, radiological examination with major changes, infectious leucogram, purulent sputum, tachypnea, dyspnea, increased need oxygen, urinary frequency, dysuria, urgency, positive urine culture, among others.¹ Being aware of such changes constitutes acknowledgment and proper conduct to avoid other complications associated with IH.

IH in neonates, except for placental form transmitted, is that associated with rupture of membranes, more than twenty-four hours.⁸ In his speech E9 highlights the relationship of maternal infections with nosocomial infection in neonates, but without reference to the presence route bag and determined to be considered nosocomial infection period:

All the infections that are of maternal origin are considered nosocomial infection in newborn, unlike adults (E9).

It is perceived an erroneous understanding of this professional, because not all infections that occur in mothers are transmitted to newborns and considered hospital. Sequentially, E15 reports the importance of differentiating the IH Community, for epidemiological surveillance and conduits to be taken:

Are germs or bacteria that colonize the patient during hospitalization or not, can be community or hospital; Community the patient gets out of the hospital and on some days, the length of stay, it is possible to tell whether it is inpatient or outpatient (E15) .

In this sense, it is emphasized that the community infection is associated with the extension or complications of infections already present on admission, unless a change in pathogen or evidence of a new infection occurs.¹

Nurses, study subjects, relate to the crosswords nosocomial transmissions, which occur among hospitalized patients, professionals, relatives and other visitors; complements that these relate to the numerous invasive procedures and break barriers.⁷ In the following statements are explained these placements, more specifically, staff and patients include:

Cross-infection that happens by a microorganism, here, in the hospital, especially in the ICU "(E7).

Cross infection is contamination between patients (E8).

A cross-infection, for example, is a hospital-acquired infection (E10). (...) The patient has contact with microorganisms during hospitalization, as in the case of UTI (E11).

The ICU is characterized by the presence of patients susceptible to nosocomial infection, which are bedridden, immunosuppressed with serious diseases require invasive monitoring and use of broad-spectrum antibiotics.⁷ These characteristics of intensive care, were highlighted in the statements below:

The patient develops infection in the ICU, or the state of his health, or illness that he presents (E7).

(...) How he (the patient) is with low immunity and has several diseases in the same environment in which it is (E11).

When a person is susceptible to a disease, immunity and depending on the offending agent, it acquires (E16).

As the patient has low immunity, weakened favors the occurrence of infection (E18).

It is evident from the IH compared with multidrug-resistant organisms in the speech of E5, when it states that:

Hospital infection is everything that involves the microbiota, multidrug-resistant organisms, and is not part of that site (E5).

In this context, it is defined multi-resistant microorganisms that are resistant to different classes of antimicrobials tested in microbiological examinations germs.⁸

Bacterial resistance is directly related to the indiscriminate use of antibiotics, the long stay of patients, the lack of identification of the etiologic agent (culture) to initiation of treatment and inadequate washing or inexistent.⁹ Immunosuppressed patients, debilitated and old hands are the most susceptible to colonization by bacteria resistant to multiple drugs. In this sense, E18 reports the relationship between immunosuppressed patient, indiscriminate use of antibiotics and bacterial resistance:

You'll have to use more antibiotics, will stay with the lower immunity, because the greater the use of antibiotics, the individual becomes more resistant (E18).

In relation to the main etiological agents found in the ICU, we highlight *Proteus mirabilis*, *Citrobacter koseri* and *Enterobacter aerogenes*⁷, and *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Acinetobacter baumannii*.¹⁰ The risk factors for colonization by these germs are sex, length of stay, use of invasive procedures and the presence of community infection.¹¹

The occurrence of nosocomial infection after discharge is related to the procedures that the patient underwent during hospitalization. They can occur within 30 days of the surgical procedure, or until a period of one year in the presence of prosthesis with signs and symptoms that may be related.¹ In this context, E2 and E16 mention:

The patient who underwent surgery with placement of a prosthesis or orthosis can provide hospital infection up to one year after surgery (E2).

Hospital infection is considered after discharge, 30 days for certain surgeries and more aggressive, as prosthetics and orthotics, up to one year (E16).

The IH adversely affects the quality of care, generates costs for the health institution for the patient and for society as a whole.¹². Among the subjects, E16 reports the importance of the relationship between quality of care and hospital infection:

Hospital infection refers to the quality control of the hospital, by their numbers, the work efficiency and consequent control of infections (E16).

A discourse analysis of nurses shows that they have an understanding, but sometimes fragmented, about the concept of IH. In this context, it highlights the importance of these professionals participate in continuing education, refresher courses specific programs in order to expand knowledge about the subject and thus contribute to reducing the rates of both IH, as for quality of care and safety of patients admitted to intensive care.

♦ Actions performed by nurses to prevent Infection in Intensive Care

Prevention of nosocomial infection relates to the actions of professionals in hospitals. Among these actions, hand-washing is a simple but important economic measure and control of nosocomial infection, including community-acquired infections. Thus, with regard to the epidemiology of transmission of multidrug-resistant bacteria, the hands of health professionals are the main source of the spread of these pathogens.¹ Thus, some subjects relate to the education of parents of children in the ICU, especially premature:

To the parents is important to the correct orientation of hand hygiene (E1).

After hand-washing using the alcohol gel. Is oriented the same way parents who contact the visitors of children here in the ICU. He is already a premature; the stakes are higher (E2).

I try to guide parents in the care they should have to touch the patient (E9).

This approach to the relatives of patients was also highlighted by E16:

When a family enters the ICU is oriented hand-washing (E16).

Concomitant hand-washing, the use of alcohol gel was mentioned by all respondents and even E7 relates to the ease of access:

We have alcohol gel available in all locations of the unit, near the ICU, the head of the bed, in the stands (...) (E7).

The friction with alcohol gel can replace hand hygiene with soap and water when hands are not visibly soiled, and its objective application to reduce the number of viable and potentially contaminating microorganisms.

Low adherence to prevention of IHS relate to various aspects, including the physical structure, design professionals, availability and quality of materials, management strategies, lack of knowledge, risk perception and demand procedures. These factors put the professionals in infection control and continuing education in constant dilemma in terms of how to intervene in these practices and compliance services professionals, and much of the care provided to the patient is individual and dependent form of their ethical awareness and professional.¹³ In this sense, E9 refers to some of these aspects, which are experienced in everyday life in intensive care:

Since the distance between the cribs, the number of patients hospitalized (...) the amount of suitable professionals for the number of patients is important for infection control (...) realize that when you have overcrowding, or lack of professionals to take care of these patients the rate of infection increases (...) ranges from cleaning to more complex procedures (E9).

As regards the incentive strategy to professionals, education is the main form of dissemination and multiplication of knowledge, however, this stance has not changed behaviors and behaviors.¹⁴ Became evident, in the statements below, issues related to accession strategies, education and guidance of the nursing staff:

We work with continuing education, always reinforcing the primary measures for infection prevention. So does working together with the hospital CCIH (E2).

Continuing education is important to employees, does reflect on what they are doing (E4).

The statements described below reinforce the relevance of intensive care nurses work together with CCIH. E14 and E5 punctuate:

You need guidance and training with the team with the nurse CCIH (E14).

That would be great if we had a representative of all ICUs in CCIH, come

back with that look, each one is more responsible for a part and forget the IH control (E5).

Fit to nurses working in intensive care encourage and stimulate the use of Personal Protective Equipment (PPE), with the goal of reducing barriers inherent in their use and beliefs, to facilitate access and involvement of these workers in the control programs IH.¹⁵ in the interim, E13 notes the use of PPE as devices that contribute to the reduction of infections and E2 refers to avoid using loud both by practitioners and users.

The use of PPE is essential to prevent nosocomial infections (E13). The withdrawal of adornments, rings, bracelets, watches by professionals and visitors who will come into contact with the baby, the fragility and low immunity, which facilitate hospital infections, like any other hospital patient (E2).

Regarding the colonization and spread of microorganisms in ICU patients, coupled with antimicrobial resistance, collecting swabs of all patients coming from other ICUs and/or who have exercised in the past six months or are recommended for antimicrobial use broad spectrum.¹⁶ In this context, E14 and E17 reveal this practice, which meets the recommended concerning the collection of rectal swabs in patients at risk of infection with *Klebsiella pneumoniae* carbapenemase (KPC) in the last six months.

The collection of oral swab every Monday occurs in all patients. On admission is made to collect the patient who comes from another ICU, makes the collection of rectal swabs (E14).

When the internal patient and Mondays oropharyngeal swab is collected, if he sees another ICU is collected rectal swab (E17).

The spread of pathogens in ICU via physical structure was another important aspect that nurses scored. E1 and E13 speak of cleaning equipment and materials with alcohol as the CCIH protocols:

Suitable materials, sanitized and sterilized coming into contact with the child, exclusive (...) (E1).

The cleaning of equipment with 70% alcohol to clean the infusion pumps, appliances (...) the cleaning of incubators, cribs, and beds is essential to prevent infections (E13).

Still, in relation to prevention and control of infections show up questions relating to proper maintenance of the physical environment in the prevention and control of nosocomial infections, including mechanical cleaning and disinfection.

Always keep the environment clean, both at the entrance of the patient, as the output (E4).

Hygienic bed, walls, curtains and floor (...) when the bed is isolated from the cleaning terminal (...) is performed in the ICUs disinfection is also performed once a week, and if necessary, before (E12).

Study identified the presence of bacteria in hospital furniture such as telephones. Still, the authors claim that identify the areas as a source of contamination of IRAS may provide a basis for greater adherence to control measures in addition to alerting pathways of spread still underestimated.¹⁷ In this sense, E10 highlights the issue of irrational use the phone as a source of transmission of germs:

The phone is a means of pollution (...) then the requirement is to enhance hand-washing (E10).

Another action developed and mentioned by nurses was related to the strict observance of aseptic principles in technical procedures.

Aseptic techniques in procedures those may be contaminated, particularly invasive (E4).

Make possible more aseptically all procedures (...) care in the handling of catheters (E8).

The dressings should be careful about contamination, using sterile drapes and sterile gloves and also guide the employees to reach requested materials correctly (E12).

E18 relates the low rate of infection with central venous catheter with the standardization of the use of alcoholic chlorhexidine in making the dressing for this device:

It is well below our rate of central venous catheter infection, we used the alcohol to the dressing chlorhexidine(E18).

The ventilator-associated pneumonia is the second most frequent IH in American ICUs, the most frequent in European.¹⁸ In order to prevent these infections, guided oral hygiene with chlorhexidine at a concentration of 0.12% in hospitalized adult patients on mechanical ventilation, 3-4 times a day, in addition to maintaining aseptic precautions during aspiration.¹⁸

Oral hygiene is performed in intubated patients with chlorhexidine (E15).

It was obtained a good adhesion of the nursing staff on the use of chlorhexidine 0.12% for oral hygiene in patients on mechanical ventilation to prevent ventilator-associated pneumonia (E16).

Concomitant to care related to oral hygiene with chlorhexidine highlights the use of moisture exchanger filter respirators. Regarding filters, E17 reports:

It's wonderful, we use humidifiers, filters in patients with little secretion and it prevents airway infections (E17).

Proper maintenance of cuff pressure in intubated/tracheostomy patients was another action taken by nurses to prevent the occurrence of infections in ICUs is. Proper maintenance of cuff pressure is essential to the integrity of the trachea and prevention of nosocomial infection. When the pressure is excessive may impair microcirculation and cause injury to the trachea; already below the recommended pressure can cause leakage of subglottic secretion by traquéia.¹⁸ between the tube and the nurses interviewed E7 and E15 relate the care of pressure cuff for the prevention of respiratory infections:

We checked the cuff pressure, because in some extent it also prevents infection of the respiratory tract (E7).

We also check the tube cuff, with cuffmeter and thus are preventing infections (E15).

Another important action related to the control of infections in ICUs is the care with medicines, essential for patient recovery. In this sense, the drugs can lose their effect because of the packaging and/or improper storage and that the knowledge of them results in benefits to the patient.¹⁹ E12 and E13 refer to care medications:

Observe the expiration time of each medication as the laboratory as directed by the pharmacist. Regarding the packaging of medicines, to avoid contamination (E12).

Administration of antibiotics should be at the right time and in the right dosage, the delay reduces its effectiveness (E13).

Another aspect that contributes to the occurrence of IH refers to wastes from healthcare services, which can contaminate the professionals that handle, extend to patients and families, and the consequent environmental contamination resulting from inadequate management of their waste. E5 and E12 refer to various types of medical waste and care in handling.

Clean equipment and materials contaminated with proper disposal. The control of infection ranges from garbage (E5).

It nursing observes and advises on the correct disposal of waste: Care toxic waste disposal to the dry waste, proper disposal of needlestick, syringes, needles and vials (E12).

For infection control refers to controlling the flow of people in the ICU, another action of nurses, as visitors, relatives and other professionals of the institution may constitute potential sources of transmission. In this sense, E1 and E16 expose the need for control of movement of people in intensive care:

It controlled the flow of people coming here in the NICU (E1). The problem is the

movement of people, cannot keep a restriction in place that has to be restricted, it's complicated (E16).

Important action recently adopted in ICUs is the appropriate and specific dress, every day. In this sense the NR 32 directs that these garments are for exclusive use in the unit and in appropriate conditions.²⁰ E12 highlights this issue:

We are guiding to the ICU staff to use specific clothes unit, to leave here and leave the clothes in the hamper and not take them home, goes to the hospital laundry (E12).

Also highlights the careful insulation, which is a measure applied to patients hospitalized, in which the type and the time that the patient needs to stay should be evaluated daily.¹ The statements below describe these measures:

Separation of patient isolation box, separate from the others, as well as attendance by only one member of the nursing team, with the goal of minimizing the risk to other patients (E2).

Use of apron and glove, keeping care Insulated (E6).

To hospitalize the patient is placed in previous isolation until they have results of their cultures (E15).

Efforts to control and prevention of nosocomial relate directly to the quality of patient care in intensive care. In this context, it is considered important that the nurse is in this thematic reference to other team members. However, it is observed in the speech of nurses, this knowledge needs to be expanded and one suggestion is that this professional integrates the institutional program of continuing education, in line with the HICC.

FINAL CONSIDERATIONS

The results of this study showed that nurses who work in intensive care units seeking to develop their activities with competence; however, it becomes clear gaps in their knowledge of the nosocomial infection, which may affect both the planning of actions to prevent them, as the quality of care. The study shows us the reality of a region of the country, but the results may support actions of nurses working in intensive care, instigating for the prevention and control of hospital infection in these workspaces and stimulate the development of new studies.

It was observed that the subjects, who had joined the research knowledge that could be expanded related to IH, become more consistent in order to allow them a performance directed to the real needs of

each ICU, including providing the inclusion of family members and other visitors on preventive activities. In addition, the nurse Racing update and instrumentalization of the team under his responsibility and thus is a clear need for it to be prepared for such.

These survey results signaled changes that can and should be done by nurses working in intensive care, with the goal of qualifying patient care and contribute to reducing the rates, higher each day, nosocomial infection. Among the activities that can be performed, we highlight the formation of study groups in line with the CCIH and conducting research with a focus on nursing care of patients in intensive care, with a view to the prevention and control of hospital infection.

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