KNOWLEDGE OF INTENSIVE PROFESSIONALS ABOUT THE BUNDLE FOR THE PREVENTION OF URINARY TRACT INFECTION ASSOCIATED WITH THE USE OF PROBES

CONHECIMENTO DE PROFISSIONAIS INTENSIVISTAS SOBRE O *BUNDLE* PARA A PREVENÇÃO DE INFECÇÃO DO TRATO URINÁRIO ASSOCIADA AO USO DE SONDAS

CONOCIMIENTO DE PROFESIONALES INTENSIVISTAS SOBRE EL *BUNDLE* PARA PREVENCIÓN DE INFECCIÓN DEL TRATO URINARIO ASOCIADO AL USO DE SONDAS

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ABSTRACT

Objective: to verify the knowledge of the bundle of urinary tract infection associated with the use of probes by intensive care unit professionals. **Method:** quantitative cross-sectional study with 82 professionals from a public hospital. A descriptive analysis was performed, using absolute and relative frequencies, presented in the table. **Results:** it showed a satisfactory level of knowledge regarding catheter insertion care and the need for a daily review of the use of this device. However, regarding the practices that make up the bundle, in terms of indications for FVP use and care in its maintenance, fragility of knowledge. **Conclusion:** prevention and control measures of infections caused by the use of FVP should be adopted by professionals involved in care, based on theoretical and technical knowledge and practical experience, in order to qualify care and minimize the risk of iatrogenies. **Descriptors:** Patient Safety; Intensive Care Units; Knowledge; Infection.

RESUMO

Objetivo: verificar o conhecimento do *bundle* de infecção do trato urinário associado ao uso de sondas por profissionais de unidade de terapia intensiva. **Método:** estudo quantitativo, tipo transversal, com 82 profissionais de um hospital público. Realizou-se análise descritiva, utilizando frequências absolutas e relativas, apresentadas em tabela. **Resultado:** evidenciou nível satisfatório de conhecimento quanto aos cuidados na inserção do cateter e à necessidade de revisão diária do uso deste dispositivo, entretanto, quanto às práticas que compõem o *bundle*, no quesito de indicações ao uso da SVF e cuidados na sua manutenção, encontrou-se fragilidade de conhecimento. **Conclusão:** medidas de prevenção e controle de infecções causadas pelo uso de SVF devem ser adotadas pelos profissionais envolvidos no cuidado, baseado nos conhecimentos teóricos e técnicos e na experiência prática, a fim de qualificar a assistência e minimizar o risco de iatrogenias. **Descritores:** Segurança do paciente; Unidade de Terapia Intensiva; Conhecimento; Infecção.

RESUMEN

Objetivo: verificar el conocimiento del bundle de infección del tracto urinario asociado al uso de sondas por profesionales de unidad de terapia intensiva. **Método:** estudio cuantitativo, tipo transversal, con 82 profesionales de un hospital público. Se realizó un análisis descriptivo, utilizando frecuencias absolutas y relativas, presentadas en tabla. **Resultados:** evidenció un nivel satisfactorio de conocimiento en cuanto a los cuidados en la inserción del catéter y la necesidad de revisión diaria del uso de este dispositivo, sin embargo, en cuanto a las prácticas que componen el bundle, en lo que se refiere a indicaciones al uso de la SVF y cuidados en su mantenimiento, se encontró fragilidad de conocimiento. **Conclusión:** medidas de prevención y control de infecciones causadas por el uso de SVF deben ser adoptadas por los profesionales involucrados en el cuidado, basado en el conocimientos teóricos y técnicos y en la experiencia práctica, a fin de calificar la asistencia y minimizar el riesgo de iatrogenias. **Descriptores:** Seguridad del Paciente; Unidades de Cuidados Intensivos; Conocimiento; Infección.

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INTRODUCTION

The health service system is complex and has increasingly incorporated elaborate technologies and techniques, accompanied, however, by additional risks in providing care to patients.¹ The intensive care unit (ICU) deserves special attention since it deals with an environment where intensive care is performed with the support of advanced technologies that can make the severe patient more susceptible to adverse events.

The World Health Organization (WHO) reported that thousands of people around the world are affected by damage caused during the healthcare process in hospital settings.² The theme of patient safety gained real space in Brazil with the creation of the National Program of Patient Safety, that aims to prevent and reduce the incidence of adverse events related to health care assistance, establishing, as the main goal, the consolidation of the patient's safety culture.³

Patient safety is the reduction, to an acceptable minimum, of the risk of unnecessary harm associated with health care. Thus, the adoption of risk prevention methods to assure undamaged assistance or with the least possible harm requires knowledge on the part of the professionals that make up the teams and, above all, the adoption of risk prevention methods.⁴

The concept of safety culture is defined, by the Ministry of Health, as the culture in which all workers, including professionals involved in direct patient care and managers, take responsibility for their own safety, for the safety of their colleagues, their patients and their families.⁵

WHO estimates that five to 10% of patients who use hospital services acquire one or more infections.¹ Thus, Health Care-Related Infections (HCRI) are those acquired after admission of the patient and occurring during hospitalization or after discharge when it may be related to hospitalization or hospital procedures.⁶ Among the most prominent HCRI in the literature is the urinary tract infection associated with the use of bladder catheters.

The prevention and control of HCRI are essential for patient safety, since the occurrence of such infections is characterized as a public health problem by increasing mortality, hospitalization time, with consequent overload of the health service, in addition to the increase in financial cost.

In the ICU, the use of bladder catheterization (BC) is a routine procedure. Its main indications are: the need for reliable

control of urinary output; patients with neurological problems; cognitive deficits with chronic manifestations; incontinence; bladder surgeries or postoperative of major surgeries.

The use of BC causes trauma to the urethral mucosa and residual accumulation of urine in the bladder, leading to bacterial proliferation and adhesion, resistance to defense mechanisms and biofilm formation.⁷ Biofilm is a set of bacteria firmly adhered to a surface, functioning as the main form of survival and proliferation,⁸ and increasing the risk of the development of HCRI.

The risk factors for HCRI, associated with the use of bladder catheterization, may be intrinsic and extrinsic. It is considered an intrinsic risk factor that is not influenced by the actions and actions provided by the health team, such as: sex, advanced age, diabetes, immunodeficiency, while extrinsic risk factors can be modified by the quality of care provided. These comprise maintaining aseptic technique in the installation of the device, reducing the dwell time of the device in the patient's body, maintaining the closed drainage circuit and properly handling the drainage bag.

When considering that urinary tract infections are responsible for 35 to 45% of HCRI in adult patients⁹, and that many of them, when admitted to ICUs, use bladder catheters, it is understood that the indication of this procedure should be more careful.

The *Institute for Healthcare Improvement* (IHI) has created specific measures to control infections and these have been brought to the clinical reality as package or, sets of interventions or in the English language, bundle. Among them, measures were designed to reduce urinary tract infections associated with the use of bladder catheterization. This bundle consists of measures such as: inserting catheters only with appropriate indications; maintaining them only as long as necessary; using aseptic technique at the time of installation and providing correct care during catheter use.¹⁰

Assuming that, not all professionals working in the Intensive Care Units are aware of the *bundle* for the prevention of urinary tract infection. Thus, this study is based on the following question: the health professionals, who work in the Intensive Care Units of a public hospital city of Salvador, know the prevention measures for the reduction of urinary tract infections associated with the use of bladder catheterization? To answer the guiding question, it was defined as the objective of this study:

- To verify the knowledge of the bundle of urinary tract infection associated with the use of probes by intensive care unit professionals.

METHOD

This study is part of the project "Patient Safety in Intensive Care Units: a multiprofessional approach" presenting to the Multiprofessional Health Residency Program of the State University of Bahia / UNEB.

A quantitative, cross-sectional study that had, as a data collection instrument, a self-administered questionnaire structured with 15 questions elaborated from the objectives of the study and based on the bundle of urinary tract infection associated with probes, created by the Institute for Healthcare Improvement.

The data were collected between April and May 2015. Initially, the sample of the research would be composed of 100 professionals, but, due to the resistance of some professionals to participate, the study counted on the total of 82 professionals, among them, doctors, nurses, Nursing technicians and physiotherapists, who worked in, at least, one of the selected intensive care units (Clinical, surgical and neurological ICUs) of a large public hospital in the city of Salvador / BA, Brazil.

The questionnaire initially reported the search title, followed by the fill-in instructions. It was composed of eight sociodemographic questions and seven questions of specific knowledge of the subject, being the questions of single or multiple choice answer. It was applied during ten visits to the hospital locus of the research. The participants' filling time, ranged from ten to 15 minutes.

This research was approved by the Research Ethics Committee of the State University of Bahia (Protocol No. 1,020,486 / 2015), according to Resolution 466/12 of the National Health Council. All professionals, who accepted to participate of the study, signed the Term of Free and Informed Consent, containing all the procedures that would be performed and means of contact with the researchers.

The data, after the collection and conference were entered in Microsoft Access 2003 and, after typing, were exported to the statistical software *Statistical Package to Social Sciences* (SPSS), version 19, for treatment and generation of results. Descriptive analyzes (percentage indices) were carried out, using tables containing absolute (n) and relative (%) frequencies.

RESULTS

The results will be presented from two categories of analysis: Characterization of professionals and knowledge of the bundle of urinary tract infection associated with the use of probes.

Each of the 82 professionals received a complete questionnaire, but, some did not answer all the questions contained in the instrument, leading to the emergence of values added to the title "no answer".

♦ Characterization of the professionals surveyed

In order to characterize the professionals, we considered age, profession, time of training and experience in ICU, the existence of another employment relationship and courses on patient safety (Table 1).

Table 1 shows that, 45 (54.9%) of the professionals in the multiprofessional team that participated in the research had ages between 30 and 40 years. As for the profession, 31 (37.8%) were nurses; 31 (37.8%) Nursing technicians; five (6.1%), physicians and 15 (18.3%), physiotherapists.

As for the training time, nine (11%) had more than two years of graduation or technical course; 11 (13.4%), from two to five years; 23 (28%), from five to ten years; 14 (17.1%), from ten and fifteen years and ten (12.2%) with fifteen years of training. Of these, 44 (53.7%) had specialization in intensive care.

Table 1 shows that 26 (32.7%) of the respondents had between five and ten years of age, and six (7.3%) had less than one year of work experience. In addition, 44 (54%) of the respondents practiced their professional functions in the General ICU.

Regarding the existence of other employment relationships, 33 (40.2%) reported not working in another institution, and 35 (42.7%) reported working in another hospital.

When asked if they had taken courses on patient safety, 40 (48.8%) answered that yes and 42 (51.2%) denied participation in these courses.

Table 1. Characterization of the professionals working in the ICUs of a public hospital. Salvador, Brazil, 2015.

Variables	N	%
Age		
Up to 25 years	9	11.0
Between 25 and 30 years	11	13.4
Between 30 and 40 years	45	54.9
Over 40 years	17	20.7
Profession		
Nursing Technician	31	37.8
Nurse	31	37.8
Doctor	5	6.1
Physiotherapist	15	18.3
Has taken course on patient safety		
Yes	40	48.8
No	42	51.2
Graduation Completion Time		
<2 years	9	11
2 to 5 years	11	13.4
5 to 10 years	23	28
10 to 15 years	14	17.1
15 years	10	12.2
No reply	15	18.3
Has a postgraduate course		
Yes	44	53.7
No	15	18.3
No reply	23	28
ICU working time		
Up to one year	6	7.3
1 to 2 years	11	13.41
2 to 5 years	18	22
5 to 10 years	26	31.7
> 10 years	20	24.4
No reply	1	1.2
ICU that works		
Surgical	17	20.7
Clinic	44	54
Neurological	3	3.4
Surgical, clinical and neurological	1	1.2
No reply	17	20.7
Works in another institution		
Yes	33	40.2
No	35	42.7
No reply	14	17.1

● Knowledge of professionals about the bundle of urinary tract infection associated with the use of probes

The professionals surveyed, when asked if they had knowledge of a bundle of urinary tract infection, 32 (39%) answered positively; 38 (46.3%) denied and 12 (14.6%) did not respond. However, when asked if the use of this instrument can provide benefits, 51 (92.7%) said yes.

To verify the professionals' knowledge about the bundle of urinary tract infection associated to the use of probes, five items were presented, as shown in table 2.

1. Practices to reduce urinary tract infections associated with bladder catheter use. It is based on four practices described in the literature: avoiding unnecessary urinary

catheter; careful indication; insertion of the bladder catheter with aseptic technique; maintenance of the system according to bundle recommendations and daily revision of the bladder catheter indication. Among the alternatives presented, only one was incorrect, which mentioned the change of probe every 72 hours.

Of the 82 participants, 26 (31.7%) answered all the alternatives correctly, 30 (36.6%) answered three questions, nine (11%) answered one or two questions, one (1.2%) answered an incorrect and 16 (19.5%) did not answer the question.

2. Criteria for using a urinary catheter. Four statements were made: careful use of catheters in selected surgeries and procedures; monitoring urinary output in

critically ill patients; applying pressure ulcer care in patients with urinary incontinence, and in cases of excretion using urinary catheter for comfort in terminal patients.

Respondents should consider all listed alternatives correct. However, only four (4.9%) reported all correct, 30 (36.6%) scored three correct alternatives; 36 (43.9%) scored one or two correct and 12 (14.6%) did not respond to question.

3. Care for insertion of bladder catheters with aseptic technique: use gloves, field and sponge; sterile or antiseptic solution for cleaning the urethral meatus; Sterile lubricant gel tube for single use (or first use) insertion and use of the smallest caliber catheter, to prevent urethral trauma are some of the necessary care.

In this respect, where all the affirmations were correct, the respondents had the option to mark as right or wrong. It was verified that 56 (68.3%) professionals indicated the answer as correct; six (7.3%), as wrong and 20 (24.4%) did not respond.

4. *Bundle* recommendations for system maintenance. Interviewees should check the options: keep the urine flow clear and keep

the catheter safe to avoid any movement or urethral traction. The "keep drainage system interleaved" option was incorrect. As shown in table 2, only three (3.7%) surveyed scored all the correct questions; seven (8.5%) answered, at least one correct statement; 32 (39%) scored one correct and one incorrect; two (2,4%) reported two correct and one incorrect and 38 (46.3%) did not answer the question.

5. Daily revision of catheters. The *bundle* recommends: minimizing urinary catheter use and duration in all patients, who are at increased risk for urinary tract infection, such as women, the elderly, and patients with compromised immunity; minimizing the use and duration of urinary catheter in all patients, who are at higher risk of mortality, such as the elderly and patients with serious diseases. The two options listed were correct. 48 (58.5%) correct answers were found; 16 (19.5%), were incorrect and 18 (22%) did not respond.

Table 2. Knowledge informed by professionals of Intensive Care Units of a public hospital on the bundle of urinary tract infection associated with the use of probes. Salvador, Brazil, 2015.

Variables	N	%
Practices for the reduction of ICUs		
Marked all four correct alternatives	26	31.7
Marked three correct alternatives	30	36.6
Marked one and / or two correct alternatives	9	11
Marked an incorrect alternative	1	1.2
No reply	16	19.5
Criteria for using a catheter		
Marked all four correct alternatives	4	4.9
Marked three correct alternatives	30	36.6
Marked one and / or two correct alternatives	36	43.9
No reply	12	14.6
Correct actions for insertion of probes		
Right	56	68.3
Wrong	6	7.3
No reply	20	24.4
System maintenance		
Marked all 2 correct alternatives	3	3.7
Did you mark at least one correct alternative	7	8.5
You marked a correct and an incorrect one	32	39
Marked two correct and one incorrect	2	2.4
No reply	38	46.3
Daily catheter revision		
Right	48	58.5
Wrong	16	19.5
No answer	18	22

DISCUSSION

Regarding the characterization of the professionals, it was verified that 54.9% are

aged between 30 and 40 years. As for the profession, the number of Nursing professionals (Nursing technician and nurse), both with 37.8%, was the majority, since

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these professionals are majority in the staff of the ICUs. The lowest percentage was physicians (6.1%).

In a study carried out in an ICU of a University Hospital in Natal / RN, which identified the degree of knowledge of the Nursing team related to the bladder catheter of delay, it was found predominance of younger adults, with ages between 21 and 35 years.¹¹

Regarding the years of training and time spent in the ICU, 28% of the professionals have between five and ten years of training and 31.7%, five to ten years of experience in the ICU, demonstrating that the largest part of the participants has their trajectory care of the critical patient. Regarding the training, 53.7% of the respondents reported having undergone post-graduation in intensive care. The professional experience and the search for improvement in the area of action bring knowledge about the care to be provided to the critical patient. In this research, these findings were statistically significant when associated to the success rate in the knowledge test.

Professionals have sought expertise in the areas of practice, becoming more capable and able to offer better assistance and, consequently, recovery or healing of the client.¹² Thus, given the complexity of intensive care assistance, professional experience provides a better orientation to the way of care and has a great interference in professional action.¹³ This training influences the management of technologies that are articulated to the care of the person in a situation of illness that, when poorly or inadequately assisted, is subject to the occurrence of iatrogenias which affect personal safety.

Permanent Education, as a teaching-learning practice, provides constant updating of health practices, according to innovations in the theoretical, methodological, scientific and technological fields,¹⁴ which greatly contributes to the qualification of the assistance to be provided. However, with regard to patient safety, in this study, 51.2% of the participants stated that they had not had a course on this topic until that moment.

Of the participating professionals, 40.2% reported having another employment relationship. In a study carried out in 2009, a high percentage (71.4%) of professionals with more than one job was also found in the ICU of a university hospital in Paraíba.¹⁵ Days of excessive work cause physical and emotional fatigue among workers, which can lead to decrease in the quality of care provided and

Knowledge of intensive professionals about...

the occurrence of iatrogenias in daily practice.

In this study, the majority of participants, representing 54%, were employees of the clinical ICU, the unit with the highest number of beds and professionals in the hospital under study, which may explain the finding of the study.

The control of hospital infections requires forms of knowledge that are expressed by theoretical knowledge and practical experiences of the multiprofessional team, which requires reflection on the actions performed in the daily work and their real need for applicability.¹⁶

The knowledge of the bundle of measures for the control of infection by the use of bladder catheter is of great relevance, being necessary that high adherence by the team of professionals to the recommended measures occurs, so that the proposed guidelines are applied jointly, promoting the safety culture of the patients.¹⁷ However, 46.3% of the professionals participating in this study, when asked if they had knowledge about the existence of the urinary tract infection bundle, reported that they did not know about it and 14.6% did not respond to the question. It has been observed that the term bundle is not routinely used, but rather the term "package of measures". When the instrument was applied, it was visible the lack of knowledge of the expression and not the measures necessary to combat the infection. When they understood the meaning of the term, 92.7% answered that bundle application provided benefits for the assistance.

Regarding the four practices described in the literature for the reduction of urinary tract infections associated with the bladder catheter (avoiding unnecessary urinary catheter, insertion of the bladder catheter with aseptic technique, maintenance of the system according to bundle recommendations and daily revision of the catheter indication), 31.7% of the professionals answered all the alternatives correctly and 36.6% answered three questions, demonstrating a good knowledge about the question addressed.

The objective of this study was to evaluate the use of bladder catheter, indication, length of stay, urinary tract infection density, hospital mortality and hospital stay in 2011, in the Hospital de Clínicas of the Faculty of Medicine of Marília, SP. As a result, the bladder catheter was considered inadequate in relation to its indication and in relation to the duration of use in clinical patients, in 29% and 47% of the cases, respectively, as well as

an increase in hospitalization time in three days.¹⁸

In another study conducted in a university hospital with the objective of evaluating the conduct of nurses related to the bladder catheterization procedure, it was observed that 21.2% of the interviewees considered that errors in catheter manipulation helped to increase the occurrence of infection.¹⁹

Regarding the criteria for urinary catheter use, 43.9% scored one or two correct questions and 14.6% did not respond to the question. It was therefore observed that the criteria for the use of the FVP were related to the relative knowledge of the professionals, given that it is essential to raise problems that affect the patient so that the conduct can be drawn, among them, bladder catheterization only when there is a real indication.

The use of FVP is indicated in cases of continuous or intermittent irrigation of the bladder; control of urine output; prevention of obstruction of the urethra by blood clots, tumors, or any other obstacle to urine elimination; prevention of skin lesions in patients with incontinence; patients who undergo long surgeries or who involve the urinary tract or adjacent organs.²⁰

In the question that lists actions considered necessary for the insertion of bladder catheters with aseptic technique, 58.5% of the professionals scored the right answer. A similar result was found in a study carried out in the city of Campo Grande on the knowledge of nursing professionals and physicians in the prevention of urinary tract infection related to the bladder catheter. On the maintenance of the sterility of the technique, 2%, and, in relation to the caliber of the catheter, hits of 89%.²¹

According to the bundle recommendations, 3.7% of the professionals scored all the correct questions, 8.5% answered at least one correct alternative and 46.3% did not respond to the question, demonstrating a low percentage of correct answers.

Handling the catheter is of great importance for reducing the development of infections. Care as: after insertion, hold catheter securely and do not allow traction or movement; maintenance of closed and sterile drainage system; the exchange of the entire system when disconnection occurs, breakdown of aseptic technique or leakage; maintenance of clear urine flow; Emptying the collecting bag regularly, using individual collecting container and avoiding contact of the drainage tube with the collecting container; keeping the collection bag always below the

level of the bladder; the routine hygiene of the meatus, among others, are necessary to obtain this control of infection.⁹

Regarding the daily catheter revision, 58.5% of correct answers were found, which can be considered a good average of correct answers. Confirming the premise that FVP removal, when no longer indicated, is one of the most important factors in the fight against ICUs.

CONCLUSION

The reduction of the risk of avoidable infection due to the use of bladder catheterization requires a solidification of the safety culture by the multiprofessional team. For this to occur, clear knowledge is needed as to the factors that increase the risks of the patient acquiring the infection, leading to changes in the organizations and the care practices.

In this study, a good level of knowledge regarding the care of the catheter insertion, the need for a daily review of the use and the practices that make up the package of measures for the control of infection associated with FVP were evidenced. However, in terms of indications for use of the device and care in its maintenance, an unsatisfactory knowledge was found. It was also identified that, when considered the word "bundle", it was observed the lack of knowledge of this term by the professionals participating in the research.

As a difficulty for the execution of this research, it was observed the resistance of some professionals to participate, which is why the number of 100 participants in the research proposed in the project methodology was not reached. The refusal / resistance had the overload of demands on the service as justification on the part of the professionals. Another difficulty was the incomplete completion of the questionnaire, which led to the generation of a percentage related to those who did not answer some questions, which may be due to the fact that the participant does not have security regarding the knowledge about the subject addressed in the question.

The multiprofessional team should provide patient-free assistance. Thus, measures to control infections caused by FVP should be adopted by all professionals involved in care, based on theoretical, technical and practical experience, in order to qualify care and minimize the risk of iatrogenies. Therefore, permanent education is necessary in all areas

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of health care, and should involve all professional categories.

The development of research on the subject of patient safety is of great relevance to awaken concern for the safety of the person to be cared for and caregivers, encouraging actions that qualify health care and reduce costs resulting from professional work.

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Submission: 2017/04/24

Accepted: 2017/10/20

Publishing: 2017/12/01

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