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ORIGINAL ARTICLE

CENTRAL CATHETER BUNDLE: BEHAVIOR OF HEALTH PROFESSIONALS IN NEONATOLOGY

BUNDLE DE CATETER CENTRAL: COMPORTAMENTO DE PROFISSIONAIS DA SAÚDE EM NEONATOLOGIA

BUNDLE DE CATETER CENTRAL: COMPORTAMIENTO DE PROFESIONALES DE LA SALUD EN NEONATOLOGÍA

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ABSTRACT

Objective: to verify the self-reported behavior of health professionals on the central catheter insertion and maintenance bundle (CVC). ***Method:*** a quantitative, exploratory and descriptive study with 41 health professionals from a neonatal intensive care unit. The data collection instrument was a questionnaire, stored in Excel 2010® software and analyzed by descriptive statistics. ***Results:*** 94.8% always use maximum protection barriers, 56.7% use chlorhexidine degermant and alcoholic for skin degermation, 40.6% use only degermant and 84.2% avoid the femoral vein. Regarding maintenance, all who perform dressing changes report wearing sterile gloves, 96.0% wear a mask, and 85.7% wear a cap. In the administration of intravenous drugs, 57.8% always performed antisepsis of the connectors. ***Conclusion:*** the health professionals present weaknesses in the behavior about the insertion and manipulation of CVC in neonatal intensive care. Developing permanent education strategies can contribute to the knowledge and adherence to good practices of insertion and maintenance of this device. ***Descriptors*:** Intensive Care Units, Neonatal; Newborn; Central Venous Catheterization; Patient Safety; Behavior; Patient Care Team.

RESUMO

Objetivo*:** verificar o comportamento autorreportado dos profissionais da saúde sobre o *bundle* de inserção e manutenção de cateter central (CVC). ***Método*:** estudo quantitativo, exploratório e descritivo, com 41 profissionais da saúde de uma unidade de terapia intensiva neonatal. A coleta de dados foi com um questionário, armazenados no programa *Excel* 2010® e analisados por estatística descritiva. ***Resultados*:** quanto à inserção, 94,8% sempre utilizam barreiras máximas de proteção, 56,7% usam clorexidina degermante e alcoólica para degermação da pele, 40,6% usam apenas o degermante e 84,2% evitam a veia femoral. Quanto à manutenção, todos que realizam a troca de curativo reportam uso de luva estéril, 96,0% utilizam máscara e 85,7% utilizam gorro. Na administração de medicamentos intravenosos, 57,8% sempre realizam antissepsia dos conectores. ***Conclusão: os profissionais da saúde apresentam fragilidades quanto ao comportamento acerca da inserção e manuseio do CVC na terapia intensiva neonatal. Desenvolver estratégias de educação permanente pode contribuir para o conhecimento e a adesão às boas práticas de inserção e manutenção desse dispositivo. ***Descritores*:** Unidades de Terapia Intensiva Neonatal; Recém-Nascido; Cateterismo Venoso Central; Segurança do Paciente; Comportamento; Equipe de Assistência ao Paciente.

RESUMEN

Objetivo: verificar el comportamiento auto reportado de los profesionales de la salud sobre el bundle de inserción y mantenimiento de catéter central (CVC). ***Método:*** estudio cuantitativo, exploratorio y descriptivo, con 41 profesionales de la salud de una unidad de terapia intensiva neonatal. El instrumento de recolección de datos fue un cuestionario, almacenados en el programa Excel 2010® y analizados por estadística descriptiva. ***Resultados:*** la inserción, el 94,8% siempre utilizan barreras máximas de protección, el 56,7% utilizan clorohexidine degermante y alcohólica para degermación de la piel, el 40,6% usa sólo el degermante y el 84,2% evitan la vena femoral. En cuanto al mantenimiento, todos los que realizan el cambio de curativo reportan uso de guante estéril, el 96,0% utilizan máscara y el 85,7% utilizan gorro. En la administración de medicamentos intravenosos, el 57,8% siempre realizan antisepsia de los conectores. ***Conclusión:*** los profesionales de la salud presentan fragilidades en cuanto al comportamiento acerca de la inserción y manejo del CVC en la terapia intensiva neonatal. Desarrollar estrategias de educación permanente puede contribuir al conocimiento y la adhesión a las buenas prácticas de inserción y mantenimiento de ese dispositivo. ***Descriptores*:** Unidades de Cuidado Intensivo Neonatal; Recién-Nacido; Cateterismo Venoso Central; Seguridad del Paciente, Conducta; Grupo de Atención al Paciente.

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INTRODUCTION

Neonatal Intensive Care Units/NICUs treat newborns with clinical conditions that demand high complexity care due to acute and high severity conditions. Morbidity and mortality in the neonatal period mainly affects preterm (gestational age less than 37 weeks) and/or low birth weight (birth weight less than 2,500 g).[1]

Central catheters are widely used in neonatal intensive care, as they are indicated for patients requiring continuous and prolonged administration of intravenous fluids and drugs, parenteral nutrition, drugs or solutions with high concentrations, blood products and hemodynamic monitoring.[2-3] More than 50% of patients admitted to intensive care units in the United States use some type of central venous catheter (CVC), resulting in an amount of 15 million catheter/day per year.[3]

In the last decades it has been admitted that hospitalizations in hospital institutions not only cure diseases and relieve pain, but also cause harm and misfortune to the patient and his/her relative.[4] Thus, although the use of CVC is necessary for the care safe for the neonate who needs intensive care, also predisposes the patient to innumerable complications, and infection is one of the most important events.[5-6]

Infections resulting from the use of central catheters can be defined as primary bloodstream infections associated with central venous catheter or infections related to central venous catheter.[5] The first situation is due to consequences of severe systemic infection, bacteremia or sepsis, with no primary focus identified. Central venous catheter-related infections occur at the catheter insertion site, without systemic repercussions.[5-7] The occurrence of this complication increases length of hospital stay, hospital costs, and neonatal mortality in intensive care.[8-9]

A study that retrospectively analyzed 192 neonates hospitalized in a neonatal intensive care unit evaluated the prevalence of primary bloodstream infection and found that 8.3% of neonates had this complication. Of these, 31% died.

To contribute to the prevention and control of the occurrence of infection from intravascular catheter use, the Centers for Disease Control and Prevention (CDC) has published guidelines called the Guidelines for the Prevention of Intravascular Catheter-Related Infections Bundle.[10] The word Bundle is used to synthesize this package of preventive measures that, if applied systematically, contribute to reduce the occurrence of central catheter-related bloodstream infection. The main recommendations for the insertion of the catheter are: hand hygiene; use of maximum precautionary barriers; daily review of the need for catheter maintenance; use of chlorhexidine as an antiseptic to clean the catheter insertion site; adequate selection of the insertion site, avoiding the femoral region.[7,11] Regarding the maintenance of the central venous catheter, the aspects to be considered are: hand hygiene, use of protective equipment and aseptic technique for the administration of injectable drugs and performance of dressings.[11-2]

The implementation of each recommendation is successful when implemented jointly, and may include, constant surveillance, health team education, insertion team training, and catheter care. Thus, the package of preventive measures based on scientific evidence (Bundle) aims to improve patient care and minimize the occurrence of catheter-related infections, by reducing the risk of hospitalized patients, thus promoting greater care security.[7] However, the existence of protocols institutions does not guarantee their proper use.

Studies on the behavior of health professionals about the use of the central catheter bundle are scarce. The development of research that shows results of the applicability of the Bundle in the care practice can contribute to evaluate the implementation of protocols and rethink the need for training and adequacy of the work process aiming at the implementation of the recommended measures for the prevention of infection of the bloodstream arising the use of the central catheter.

Thus, considering the constant indication and use of a central venous catheter in newborns requiring intensive care, and the importance of evaluating the health team's performance against the implementation of preventive measures for the reduction and control of infection related to the use of this device was proposed the accomplishment of this study.

OBJECTIVE

- To verify the self-reported behavior of health professionals about the central catheter insertion and maintenance bundle.

METHOD

A quantitative, exploratory and descriptive study performed at the neonatal intensive care unit of a large public hospital in Belo Horizonte. The institution attends patients of medium and high complexity for propaedeutics, clinical and surgical treatment. It has a total installed capacity of one thousand beds and is considered a reference center in the Unified Health System in the state of Minas Gerais, MG, Brazil.

The population was composed of nurses and physicians working in the unit, having as inclusion criteria to perform central catheter insertion and/or maintenance. Professionals who were on leave, leave or have been in the unit for less than six months were excluded. During the study period, 47 professionals worked in the unit. However, two physicians and four nurses had time in the unit less than six months. Thus, the final sample totaled 41 professionals, of whom 21 were doctors and 20 were nurses.

For the data collection, a structured instrument was used, with closed questions, composed of two parts. The first one is related to socio-demographic data and the identification of respondents whose variables were: gender, age, professional training, training time, unit working time, work shift and type of employment relationship. The second part addressed a question about the professional's knowledge about the central catheter insertion and maintenance bundle and the others were related to the health professional's self-reported behavior regarding recommendations for infection prevention in the insertion and maintenance of CVC based no bundle.[7, 10-2]

Data collection was performed in October 2015. For the questionnaires to be completed, researchers were scheduled to meet with the professionals listed for the study. The meetings were held in the shifts and schedules according to the work scale of each participant. It should be noted that all work shifts were considered. At the meetings, after clarifying the research and signing the Free and Informed Consent Term, the questionnaires were distributed, filled in the presence of one of the researchers and collected as soon as they were completed.

The data were stored in an Excel 2010® spreadsheet and submitted to descriptive analysis by EpiInfo 7.0® software. In the descriptive analysis, central tendency measures were calculated for the quantitative variables. Frequencies and proportions were calculated for the categorical variables.

The project followed the recommendations of the National Health Council, receiving a favorable opinion from the Research Ethics Committee of the Federal University of Minas Gerais CAAE nº: 32994314.0.1001.5149.

RESULTS

Of the 41 professionals interviewed, women predominated (78.1%). The age ranged from 27 to 55 years, with a mean of 41 years. Most of the respondents (68.2%) had more than eight years of training and more than half (56.1%) had been in the unit for more than five years. In relation to the employment relationship, 61.0% of the professionals were statutory.

Prior to initiating self-reported behavior questions, practitioners were asked, if they had general knowledge about the central venous catheter bundle. More than half (55.0%) reported moderate knowledge, 22.5% of respondents said they knew the Bundle well, 15.0% knew little and 7.5% said they did not present any knowledge about the package of preventive measures.

Responses to self-reported behavior on the catheter insertion bundle are presented in table 1.

Table 1. Self-reported behavior of health professionals in relation to prevention measures for central catheter insertion in neonatal intensive care. Belo Horizonte (MG), Brazil, 2015.

Variables	n (%)
Use of maximum protective barriers (bonnet, mask, bonnet and sterile gloves)	39*(100.0)
Always	37(94.8)
Few times	1(2.6)
Rarely	1(2.6)
Never	-
Solutions used for degermação	37*(100.0)
Clorexidine degermante + alcoholic	21(56.7)
Clorexidine degermante	15(40.6)
PVPI	1(2.7)
Respects time of action of the antiseptic after the degermação (2 minutes)	37*(100.0)
Always	25(67.5)
Few times	7(18.9)
Rarely	4(10.8)
Never	1(2.7)
Prevents the use of the femoral as insertion site	38*(100.0)
Always	32(84.2)
Few times	3(7.9)
Rarely	2(5.3)
Never	1(2.6)
Evaluates daily the need for catheter permanence	35*(100.0)
Always	30(85.7)
Few times	4(11.4)
Rarely	1(2.8)
Never	-

Note: *Percentage valid for questionnaires filled with the variable.

It should be noted that, although questions about the use of maximum protection barriers were individualized in the questionnaire, the frequency of use of the four items (cap, mask, cloak and sterile gloves) were identical.

The results of the responses on the self-reported behavior of the professionals in relation to recommendations for maintenance of the central catheter were answered only by the nurses and are presented in table 2.

Table 2. Behavior of health professionals in relation to prevention measures for central catheter insertion in neonatal intensive care. Belo Horizonte (MG), Brazil, 2015.

Variable	n (%)
Use of a dressing change cap	20*(100)
Always	18 (90.0)
Few times	2(10.0)
Rarely	-
Never	-
Use of mask to change dressing	20*(100)
Always	19(95.0)
Few times	-
Rarely	1(5.0)
Never	-
Use of sterile gloves to change dressing	19*(100%)
Always	19 (100)
Few times	-
Rarely	-
Never	-
Antisepsis of connectors with alcohol 70% for 30 seconds	19*(100)
Always	11 (57.9)
Few times	5 (26.3)
Rarely	1 (5.3)
Never	2 (10.5)
Exchanging equipment and connectors on time	14*(100)
Always	12(85.8)
Few times	1(7.1)
Rarely	-
Never	1(7.1)

Note: * Percentage valid for questionnaires filled with the variable.

DISCUSSION

In this study, in relation to the characteristics of the professionals, the female gender predominated, similar to other studies.[13-4] The mean age observed in this study corroborates the result of a studyt that highlighted maturity (age greater than 37 years) as a a determinant variable in the best scores of questions about good practices in the insertion and management of the central venous catheter.[14] The predominance of the stationary employment bond contributes to a lower turnover of professionals in the unit. This fact interferes in the performance of the team in relation to adherence to the recommendations of insertion and maintenance of the central venous catheter. Increased turnover and replacement of regular caregivers by temporary and/or substitutes tends to increase the risk of primary bloodstream infections resulting from the use of a central catheter.[16]

As for general knowledge about the CVC bundle, most respondents reported moderate knowledge. It is noteworthy that even the majority of the team presenting the statutory bond and with time of action in the unit over eight years, this does not guarantee the knowledge about such a relevant topic. The updating and training of protocols that guide practice should be continuously considered, regardless of the time of training and practice in the practice of care.[7] The care given to neonatal intensive care units requires a high quality of care. For excellence in care, the team that operates there must have up-to-date knowledge of the technologies and guidelines available and available in the market.[1] Thus, training and capacity building on the subject are strategies capable of reducing ICSRC, as demonstrated in several studies that suggest , including the inclusion of evidence-based guidelines on the subject in university curricula.

Regarding the implementation of the recommendations indicated for the insertion of the catheter, almost all the professionals affirmed to use all the maximum barriers of protection (cap, mask, sterile capote and sterile sleeve). However, only 56.7% reported using chlorhexidine degermant + alcoholic in skin antisepsis before insertion of the catheter. Studies indicate that Chlorhexidine shows superiority in skin antisepsis and excellent tolerance with rare cases of adverse reactions.[7-11]

Less than 70% of professionals are waiting for the indicated antiseptic time. Chlorhexidine is a bacteriostatic agent and in the highest concentrations, acts as a bactericide. The waiting time for action contributes to the action's effectiveness of the solution. This fact emphasizes its efficacy when compared to the preparation based on 10% iodine tincture or 70% alcohol.[17] The result found in this research is similar to the data reported in other studies performed with professionals of intensive care units, in that they have demonstrated inadequate team behavior regarding skin asepsis.

Most professionals avoid the femoral site for CVC puncture. A study carried out in an intensive care unit in Rio de Janeiro showed that only 51% of the multiprofessional team was aware of this recommendation and half of the physicians did not consider this recommendation at the moment of determining the insertion site.[13] The measure of avoiding the femoral region is due to the local characteristics of the microbiota of the skin and the risk of thrombophlebitis.[7,10-1]

It was observed that not all professionals attend to the daily evaluation of the need for catheter permanence. This recommendation aims at the early removal of the device, contributing to the reduction of infection rates associated with a catheter, since, the longer the catheter stays longer, the greater the chance of biofilm formation and subsequent bloodstream infection. [6-7,12] In this sense, studies discuss and recommend a checklist to assess the need for daily devices and rounds of the team to define catheter permanence.[20-21] Other research has shown that actions performed as the care bundle , education of professionals, promotion of safety culture and its periodic evaluation, control of compliance with measures, surveillance of infection rates, with feedback to professionals, are important strategies for the reduction of infection rates in patients with Intensive Care Units.[21-2]

Questions about self-reported knowledge about CVC maintenance were answered only by nurses and all reported wearing a cap, mask, and sterile gloves for dressing change. Find the one that meets the infection prevention guideline. [7]

The performance of antisepsis of the connectors with 70% alcohol by 30 seconds was conduct reported by less than 60% of the nurses. The lack of disinfection of infusion systems is strongly linked to the increase in bloodstream infection rates, considering that this risk is increased not only by CVC time of permanence or by contamination of its insertion site, but also by colonization of the infusion circuit[7]. Among the great technological advances in the health area, the

central venous catheter demands that nurses acquire and update their knowledge regarding the manipulation and maintenance of this device, to guarantee quality and safety assistance in the care of the patients. patients.[9]

Although the results are relevant, this study presented as limitations the data collection in a single unit restricting the generalization of the results, besides being a research that did not use the observation of the participants. The researchers opted for the interruption of data collection prior to observation due to the findings of the research and the need for educational interventions in the units in which the research was conducted.

CONCLUSION

The health professionals present weaknesses in the self reported behavior about the insertion and manipulation of the CVC in neonatal intensive care. Regarding the insertion, it was observed that the majority of professionals do not use the adequate solution for the degermação of the skin and does not wait the waiting time of two minutes for action of the antiseptic. Regarding the maintenance of the CVC, the professionals report a greater deficit in the antisepsis of the connectors before the manipulation of the device.

The results show the need for investment in continuous training of the team aiming at safer, more qualified assistance based on the principles of patient safety.

It is important to note that permanent educational interventions have been proven effective for adhering to good practices and reducing infection rates. These strategies should focus on improving knowledge and evaluating the adherence and behavior of professionals in the day-to-day care, especially about the items that presented the greatest fragility reported by them.

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