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Peripherally inserted central catheter in pediatrics and neonatology: Possibilities of systematization in a teaching hospital

Cateter central de inserção periférica em pediatria e neonatologia: possibilidades de sistematização em hospital universitário

Catéter central de inserción periférica en pediatría y neonatología: posibilidades de sistematización en hospital universitario

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Abstract

Objective: To describe the systematization of the use of the peripherally inserted central catheter (PICC) in neonates and children in a university hospital located in the south of Brazil. **Methods:** This is a qualitative study, developed with the Creative-Sensitive Method (CSM). Three dynamics with ten nurses were developed. The data were submitted to the French discourse analysis. **Results:** The results pointed out that Nursing Care Systematization (NCS) must be applied throughout the process of use of peripherally inserted central catheter; one must create an out-patient service articulated with the admission sector and the families so that children can make use of the catheter in outpatient units. **Conclusion:** The institutional protocols for the use of this catheter must be developed from the Nursing Care Systematization, based on the patient's needs, the scientific evidence, the institutional reality and the dialogue among nursing team, medical team and family.

Keywords: Catheterization; Central Venous Catheterization; Pediatric Nursing; Neonatology.

Resumo

Objetivo: Descrever a sistematização do uso do cateter central de inserção periférica em neonatos e crianças, em um hospital universitário do sul do Brasil. **Métodos:** Estudo qualitativo, desenvolvido com o método criativo sensível. Foram desenvolvidas três dinâmicas com dez enfermeiras. Os dados foram submetidos à análise de discurso francesa. **Resultados:** Os resultados apontaram que, a sistematização da assistência de enfermagem deve ser aplicada durante todo o processo de utilização do cateter central de inserção periférica; deve ser criado um serviço ambulatorial articulado com o setor de internação e as famílias para que as crianças possam fazer uso do cateter ambulatorialmente. **Conclusão:** Os protocolos institucionais para o uso deste cateter devem ser desenvolvidos a partir da sistematização da assistência de enfermagem, tendo por base as necessidades do paciente, as evidências científicas, a realidade institucional e o diálogo entre a equipe de enfermagem e médica e a família.

Palavras-chave: Cateterismo; Cateterismo venoso central; Enfermagem Pediátrica; Neonatologia.

Resumen

Objetivo: Describir la sistematización del uso del catéter central insertado periféricamente en neonatos y niños, en un hospital universitario del sur de Brasil. **Métodos:** Estudio cualitativo, desarrollado con el método creativo sensible. Fueron desarrollados tres dinámicas con diez enfermeras. Los datos fueron sometidos al análisis de discurso francés. **Resultados:** Los resultados apuntaron que, la sistematización de la asistencia de enfermería debe ser aplicada durante todo el proceso de utilización del catéter central de inserción periférica; debe ser creado un servicio ambulatorio articulado con el sector de internación y las familias, para que los niños puedan hacer uso del catéter ambulatoriamente. **Conclusión:** Los protocolos institucionales para el uso de este catéter deben ser desarrollados a partir de la sistematización de la asistencia de enfermería, teniendo por base las necesidades del paciente, las evidencias científicas, la realidad institucional y el diálogo entre el equipo de enfermería y médica y la familia.

Palabras-clave: Cateterismo; Cateterismo venoso central; Enfermería pediátrica; Neonatología.

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INTRODUCTION

The care of children and newborns that need intravenous therapy requires from nurses some specific skills and knowledge, such as: anatomical and physiological characteristics, growth and development standards, as well developing health care guidelines that underlie the practice[1]. Under this perspective, it is essential that nurses make use of scientific evidence that guide a safe practice in the use of the various types of intravascular devices.

The peripherally inserted central catheter (PICC) is a long central intravascular device, which is composed of biocompatible and biostable materials and of low thrombogenicity (silicone and polyurethane), inserted through a peripheral vein and positioned in the superior or inferior vena cava[2].

The PICC gained popularity among nurses, as device of choice for intravenous therapy, when it was introduced in neonatal intensive care units in the 1970s, for the administration of parenteral nutrition. Since then, it has been widely used in adults, children and newborns[2].

In Brazil, the use of PICC started from the 1990s; however, this advanced nursing practice was regulated in 2001, by the Resolution 258/2001 of the Federal Nursing Council. Since then, its use is becoming increasingly common, especially in hospitalized newborns and children that require intravenous therapy for an extended period of time. In the Brazilian scenario, the indication, insertion, maintenance and removal of PICC are privately tasks of nurses, provided that they have theoretical and practical training[3].

The nursing care to patients that require intravenous therapy entails a continuous assessment at all stages of the process. Thus, it becomes imperative to have the construction, implementation and assessment of clinical guidelines that guide the choice of the best intravenous device, with basis on the customer's needs.

The Nursing Care Systematization (ASN) is an important managerial tool used for planning, implementation, control and assessment of the actions of direct and indirect care to customers. Accordingly, NCS is crucial to the development of the whole process of intravenous therapy that must be based on institutional protocols, constructed from the specificities of the clientele and the best scientific evidence[4]. The NCS provides for the nursing team to develop interrelated actions that allow the organization of client care, in addition to providing the legal support for the nursing actions and the enhancement of the bond between professional and customer[5]. In light of the foregoing, the question was: what are the possibilities of systematization in the use of PICC in neonates and children in a teaching hospital? The aim of the study was to describe the systematization of the use of PICC in neonates and children in the context of a teaching hospital.

METHOD

This is an exploratory and descriptive study with a qualitative approach. The stage of data production was developed in a participatory manner, through the Creative-Sensitive Method (CSM), since this method allows the collective construction of knowledge with the research participants from their expertise and subjectivity[6].

The CSM combines consolidated data collection techniques with artistic productions associated to drawing, collage, modeling, role-playing, among others[6]. The dynamics of creativity and sensitivity (DCS) allow spaces for discussion and reflection, thereby leading the research subjects to problematize their experiential and existential practices[6]. The DCS is developed in five moments, namely: 1) presentation of group; 2) presentation of objectives and dynamics; 3) artistic production; 4) discussion/ brainstorming; 5) synthesis and collective validation[7].

The research was conducted in a teaching hospital located in the south of Brazil, which is characterized as a medium-sized public hospital of high complexity, and it is a reference to health in the central region of the State of Rio Grande do Sul. The data collection was developed in the first half of 2012.

The inclusion criteria for selecting the research subjects were: being a nurse of the permanent staff of the institution (public servants), belonging to the inpatient units that attend the neonatal and pediatric population, and having the training course for the use of PICC at the moment of data production. The exclusion criteria were: being on sick leave of any nature, removed from service for an indefinite time or on vacation at the period of data collection.

From the inclusion and exclusion criteria, 20 nurses were framed under the criteria for being research subjects. They were individually invited to participate in the study and, those who agreed, was able to appear at the first marked meeting. Three DCSs were developed: Tree of Knowledge, Knowledge Body and Almanac. The meetings took place on days and times previously scheduled with the subjects. Thus, at the end of the three dynamics, it has totaled the participation often nurses as research subjects who took turns during the meetings.

The findings presented and discussed in this paper were produced in the DCS Almanac[7], with the participation of five nurses. The meeting took place in a room in the hospital itself, previously organized. This DCS was the expression of subjectivity about a certain theme, from the introspection that the cutting and collage of pictures provide to the research subjects.

For the construction of artistic productions by the subjects, the following discussion generation issues (QGD, as per its Portuguese acronym) were elaborated: How should be the performance of the nursing professional during insertion, maintenance and removal of PICC? What are the criteria used for the indication of its use? From cuttings, engravings, pictures and drawings, there was the construction of an almanac as artistic production.

The transcription of the DCS formed the corpus that was submitted to discourse analysis in its French strand[6], with the purpose of interpreting verbal and non-verbal senses, as well as how body language can produce sense. Discourse analysis[6] is not a methodology, but a system of interpretation, and it is a process that is triggered with the establishment of the corpus of analysis. The corpus refers to the transcription, which is product of the DCSs.

In the first stage of discourse analysis, the horizontal analysis was developed. In this stage, the objective was to give motion to the text, by offering it a linguistic materiality in which some orthographic resources could be used: /: short reflective pause; //: long reflective pause; /// very long reflective pause; ...: incomplete thought; #: interruption of the enunciation of a person; [ ]: to complete verbal thought in the same speech; '...' simple quotes indicate speech or text of someone quoted within the enunciation of others; (...) indicates that there was a cutting taken in the subjects' speech.

In the second stage, there was a vertical analysis, in order to deepen the analysis of the discursive object, by trying to understand how the sense of the words are made up, i.e., the "said" and the "unsaid", manifested during the discursive process[6]. In the vertical analysis, the following analytical devices were applied: paraphrase, polysemy and metaphor[6].

The ethical principles of research involving human beings were observed, that is why the Free and Informed Consent Form (FICF) was applied and explained to the subjects, thereby ensuring the ethical precepts. The study was approved by the Research Ethics Committee of the Federal University of Santa Maria, under protocol number: 0054181265246. With a view to ensuring the confidentiality and privacy of the subjects, the letter "E" (E1, E2, E3, etc.) was used to hold the identification of the nurses in accordance with the order of their enunciations in the dynamics.

RESULTS

After analyzing the results, the following analytical categories were developed: The process for the use of PICC and the Nursing Care Systematization (NCS) and Possibilities to systematize the use of PICC in children from the sectors of oncology-hematology, which will be presented hereinafter.

The process for the use of PICC and the Nursing Care Systematization (NCS)

By considering the whole process for the use of PICC, the respondents highlighted relevant aspects of scientific and technical training of staff and the stages of indication, insertion, maintenance and removal of catheters. Knowledge is cited by nurses as essential for the use of PICC, as well as the permanent education for the constant updating of teams. Accordingly, they highlight the organization of periodic courses, review and adaptation of rules and routines for each sector, with a view to enhancing the use of this type of device.

> *(...) the question of knowledge. (...) it's not enough only to have a training focused on the PICC, but the permanent, permanent education. (...) there should have periodic courses (...) review of routines, of which we could better adapt to that sector. Even to encourage the increase in frequency... [passage] of PICC (E10).*

The clinical judgment is highlighted as a prerequisite for the indication of PICC. This was cited by nurses as the first step of the whole process, since it requires careful assessment:

> *In the indication (...) we have to have a clinical view of the patient. Knowing of the health picture, of the diagnosis, (...) time in which we'll prepare an antibiotic (E4).*
>
> *We [from the Neonatal ICU], we have: low weight, prolonged length of stay [of the newborn]. Moreover, the concentrations of the solution [solutions with high concentration]. Because, sometimes, we might admit the baby there: obese, with veins difficult to access (...) extremely premature (...) Then, before we puncture all veins, we already pass the PICC (...) (E5).*

When appointing the type of intravenous device, the nursing professional makes use of clinical judgment to assess the needs of each patient. Thus, the factors that have influenced in the indication of PICC by nurses of the study setting were: medical diagnosis, therapeutic plan (with emphasis on antibiotic therapy and concentration of solutions), extreme prematurity, low weight, obesity, and prolonged length of admission.

The respondents emphasized the need for careful assessment of the venous network before inserting the catheter, because it might increase the assertiveness and reduce the number of attempts at puncturing and the exposure of the patient to numerous painful procedures. To that end, the routine has aggregated the institution of three alternatives of potential veins to be punctured during the procedure for assessing the venous network of the child.

> *(...) assessing carefully this vein, which location is right, having 1st, 2nd, 3rd choice (...) at the time of inserting the PICC (E7).*

Other points highlighted by the respondents in relation to the insertion of PICC were: the need for technical knowledge, skill for conducting venipuncture and calmness during the procedure. That is why they have stressed that one should exempt from the environment the viewers who are not assisting in insertion technique during the accomplishment of this procedure.

The nurse E2 stresses that, in order to insert the PICC, it is necessary to promote a comfortable environment for the team and the patient.

(...) comfort, both for the professional who will pass the PICC, and (...) for the patient (...) (E2).

(...) knowledge and skill, in insertion (E4).

(...) when I'm passing very quiet there, so two or three arrive to [people] look, I don't know if it's my insecurity, but this situation disturbs me (E5).

I believe that is a time of relationship of the nurse, of the professional with the patient who is receiving that care actions (E10).

The maintenance and removal were highlighted by nurses as crucial stages of the use of PICC, mainly with regard to the care actions that provide greater durability of the device, thereby preventing loss of the catheter before the end of the expiry date.

(...) one has to do all possible actions so that the maintenance time is extended as far as possible (...) (E7).

(...) sometimes (...) the PICC is lost, or doesn't even last for 24 hours. (...) /// that's difficult/ the PICC that you pass is not valued [speech with grief] // (E5).

For the respondent E10, maintenance care is every action that the nursing professional must observe during the permanence of the intravenous device, with the purpose of giving it a greater durability. The respondents E4 and E5, metaphorically, reported a feeling of frustration when the PICC is removed in less than 24 hours after its insertion because of obstruction or other complications.

I see the maintenance, both dressing changes, as the preservation, administering medications, all this is part of the maintenance (E5).

(...) We often feel as if one threw a bucket of cold water over us [she feels frustrated]. (...) Sometimes it locks, or I don't know, any other complication happens and we end up having to remove. (...) (E4).

Another issue raised by the interviewees was the removal of PICC by medical request when there is suspicion of catheter-related infection, which reveals the lack of consensus between medical and nursing teams with regard to the removal of the device.

That issue [to infect the catheter before the end], is a breakdown for us, because the nursing is always struck by it [takes the blame] (...) (E2).

(...) the other criteria should be assessed, other issues, it's not only one! (...) teams should talk before removing, not only, be an imposition [medical]... of removal. (E10).

The statements have revealed that, often, the catheter is early removed by medical request because of suspicion of catheter-related infection. Metaphorically, E2 refers that the guilt of the early removal is usually assigned to the nursing team. E10 complements arguing that several criteria for removing the catheter must be considered in a joint decision between medical and nursing teams.

The Nursing Care Systematization (NCS) appears as an imperative at all stages of the process for inserting the PICC, with emphasis on the record of nursing care actions, as the following enunciation:

(...) The NCS [Nursing Care Systematization] is extremely important at all stages of PICC; it is the record of the work of the nursing professional. (...) showing the whole sequence that constitutes the work of the nursing professional, the responsibility, the commitment in all the // complexity of this work (E10).

The interviewees reported the importance of reactivating the group of nurses intended for the development and implementation of clinical guidelines for the care of patients holding intravenous devices (intravenous therapy group), which previously existed in the institution.

It's been more than a year... after she [nurse coordinator of the intravenous therapy group] left (E2).

(...) She said she thinks they will take back [group activities of intravenous therapy] (E9).

Nurses recognize the creation and maintenance of a group of nurses of intravenous therapy as an important strategy of the Nursing Care Systematization, especially in the use of PICC.

Possibilities to systematize the use of PICC in children from the sectors of oncology-hematology

Nurses have reflected on the possibility of the use of PICC in pediatric patients with hematological and oncological diseases in outpatient level:

I passed [inserted] in a patient who was on the verge of discharge (...) and would go home with the PICC. But, after it, I don't know... when one is at the outpatient clinic, we don't know what happens (E5).

(...) So, there is an entire logistics that must be changed and that depends not only on the sector. (...) Of the difficulty of preserving it [PICC] later. (...) In the hematological-pediatric unit, it [the PICC] would be extremely useful. Because we have long periods of admission, shortly after the first stage of diagnosis, an average of 30 to 40 days of admission. But, it doesn't have (...) a routine, a protocol

> *for referring this patient with PICC to home, right? So it's passed for a month, when he comes back, we've to pass [to obtain] another access (E10).*

Due to the oncological-hematological diagnosis, some children need to return to hospital for using outpatient chemotherapy. In the viewpoint of nurses, the sectors might be organized through the NCS so that patients can have discharge even holding the PICC, without the need to obtain a new venous access when they return to the hospital.

One of the barriers faced is the preservation of access, after hospital discharge, due to the lack of a specific service to that end with continuity in an outpatient level. E10 complements by saying that there should be institutional support towards this cause, because the PICC would be a feasible option of device in the unit of pediatric hematology-oncology, especially in the first stage of diagnosis, due to the long period of admission.

> *I put this photo here [localize in the figure]of this child with a disability. Because we have to face our limitations. In our sector [hemato-oncology], one of the limitations is this, to accept, often, the pressure of the medical team to keep only the peripheral access and not accept other types of access. On other hand, there is no position on the part of the nursing (E10).*

In the speech of the nurse who works in the sector of hematology-oncology, one can observe that there is a conflict between medical and nursing teams concerning the indication of PICC in children with hematological-oncological problems, which hinders the performance of nursing in the choice of the intravenous device for these patients.

> *The tendency is to use the catheter... the totally implanted catheter. (...) Because our patient [of the center for bone marrow transplantation]he suffers from interspersed admissions, during two years, three years (...), because, subsequently, he might present a risk of relapses and such (E10).*

According to the nurse from the center for bone marrow transplantation (CBMT), the preference for the totally implanted catheter in lieu of the PICC is due to the fact that the patient of the sector of pediatric hematology-oncology remains in treatment for a long period and has frequent hospital admissions and risk of relapses of illness. In compliance with the discourses, in this clientele, practitioners have opted for peripheral venous catheters and long-term catheters, in particular the totally implanted catheters.

DISCUSSION

The use of PICC in pediatrics and neonatology is an advanced, specialized and highly complex practice. In order to make nurses able to develop such practice, one should require a specific qualification acquired in training courses. Nonetheless, only such courses are not enough to keep nurses updated in relation to new scientific evidence and new institutional protocols[8].

The nurses who provide care, in infusion therapy, to customers of pediatric and neonatal services must have specific knowledge and clinical expertise focused on this population. Furthermore, the practice of intravenous therapy must be guided by institutional protocols and standardized guidelines that meet specificities of this group[1].

A study conducted with 180 neonatal intensive care nurses, in 43 American states, showed that the PICC is inserted not only by specialist nurses with training courses, but also with annual revalidation of training[2].

Regarding the Brazilian pediatric intensive care units, the nurses have highlighted the role of the permanent education in filling gaps of the scientific and technical knowledge, since this fosters the discussion on the nursing care to patients with PICC, thereby providing reflection and updating of practices[9]. The incorporation of new technologies in intravenous therapy must be accompanied by review of practices that can effectively benefit patients and teams[10].

The indication of PICC requires from the nursing professional a technical expertise, a clinical judgment and a mindful, safe and effective decision-making[9]. PICC is indicated in long-term therapies (over six days); administration of parenteral nutrition, infusion of vesicant, irritant or vasoactive medications; hyperosmolar solutions or with non-physiological pH and administration of chemotherapy drugs[2,11,12]. The indication of PICC must be done at an early stage, and it is the first choice among intravascular devices; however, such device is not recommended for all patients, that is why it is a task of the nursing professional, together with the medical team, to assess and indicate or not its use[11,12]. As for the medical diagnoses showed by customers who made use of PICC, a national study conducted in a neonatal ICU identified the prevalence of prematurity and complications related to this diagnosis[13]. An American research conducted with 182 nurses showed that 83.2% of respondents take into consideration the type of infusion therapy and 36.2% the weight of the newborn to indicate the PICC[2]. The Centers for Disease Control (CDC) indicates the use of PICC in therapy that last more than six days[14]. The Infusion Nursing Society recommends the use of PICC for infusion of antineoplastic solutions; irritating or vesicant; parenteral nutrition; antimicrobials; with pH less than 5 or greater than 9 and with osmolarity greater than 600 mOsm/L, regardless of the length of therapy[1].

The successful insertion of PICC is related to several factors that involve the technical skill of the nursing professional, choose of the vein to be punctured, insertion technique and methods for visualizing the venous network. The veins of first choice for the insertion of PICC are the basilic and the saphenous, both related to low complication rates. Authors have shown that an early indication of PICC, associated with technical skill of the nursing professional and the use of methods for visualizing the venous

network, might increase the success rates of insertion in children and newborns[2,12].

The Modified Seldinger Technique has been used for the insertion of PICC in children, newborns and adults, by reason of using small-gauge introducers to protect the blood vessel from rupture during insertion. The methods for visualizing the venous network described in the literature are candling, infrared rays and the ultrasound. Recently, the infrared technology has been associated with increased assertiveness in venipuncture in newborns. The insertion of PICC guided by ultrasound, in children and adults, reduces the puncture attempts and complications associated with insertion[2,12]. It is worth highlighting that the use of new technologies to visualize the venous network was not mentioned by the interviewed nurses.

When mentioning to prefer a quiet and uninterrupted environment, the nursing professionals seek to preserve the required care towards the technique for inserting the PICC. Studies emphasize that interruptions might compromise the patient's safety during the accomplishment of nursing care[15].

The maintenance of PICC until the end of the indication is one of the pillars of the institutional guidelines that govern its use. The early removal of the catheter, i.e., before the end of the indication, has direct implications on the patient care and on the work process in nursing. Accordingly, the care and maintenance of PICC include: prevention of infection, stabilization of catheter, dressing change, routine for cleaning the catheter and clearance through the use of special substances according to each type of obstruction[2]. A study conducted with 104 premature newborns revealed that the mechanical complications are the most common causes for the removal of PICC before the end of the indication[16]. Blockage is among the leading causes for removing catheters before the end of the indication[2,16].

Obstruction of thrombotic and non-thrombotic origin is among the leading causes for the removal of PICC, especially in catheters smaller than two french diameter used premature newborns. Obstructions of thrombotic origin are caused by the formation of a fibrin tail around the catheter and the non-thrombotic by the precipitation of infused incompatible drugs[12]. In order to prevent thrombotic and non-thrombotic obstructions and maintain permeability, the recommendation is to wash the catheter with saline solution before and after infusion of drugs, blood components and collection of blood sample through the catheter[1,2,12]. A routine of daily wash of the catheter must be adopted so that one can reduce the risk of obstruction[1,12]. In case of obstruction of a catheter, the treatment options include removal or replacement of this device and the clearance by means of fibrinolytic agents. The clearance with fibrinolytic agents has been successfully used in pediatric and neonatal patients; however, it is still seldom adopted[2].

Suspicion of infection is another common cause for the removal of PICC before the end of the indication. In the absence of another source of infection, the catheter-related bloodstream infection (CRBSI) is defined as the presence of growth of the same microorganism in the tip of the catheter and in the peripheral blood culture[12,14]. The CRBSI offers a potential life-threatening and includes local or systemic infection. The diagnosis of CRBSI in children and newborns is not always confirmed because of the difficulty of obtaining blood cultures of the catheter and of the laboratory techniques, for analysis of the tip of the catheter, which are not always available[12]. Therefore, it is necessary to have a thorough assessment of the actual need for removing the catheter on the part of the whole team that provides care to patients with PICC, as well as combining professional experience, scientific evidence, available resources and assessment of each case.

Maintenance actions for the prevention of CRBSI are duties of the whole health team; however, the nursing plays a key role in the management of intravenous devices. Studies show that increased CRBSI is related to lack of training of the nursing team. That is why the CDC recommends that all practitioners who handle the devices have high-level qualification, permanent education and appraisement of the knowledge of the institutional guidelines for the prevention of CRBSI[14].

The Nursing Care Systematization is realized by nurses in this study as a tool that allows that the work is held in a systematic and individualized manner. The use of NCS allows nurses to add the scientificity to the organization of nursing care; perform more effectively actions of supervision, assessment and management of care actions that go beyond the assessment of implemented actions[4]. The reaffirmation of the autonomy of the nursing professionals runs through the incorporation of the nursing process applied to NCS, as well as the assessment of its impact on the clientele[17].

It should be emphasized that, an appropriate print can improve the quality of nursing care and management, thereby allowing continuity of record, future studies and enhancement of nursing practice in relation to indication, insertion, maintenance and assessment of the use of catheters[13].

One of the strategies to systematize the practice of intravenous therapy is the creation of intravenous therapy groups. The specialized groups of nurses in infusion therapy are already recognized as effective in reducing the complications and costs of intravenous therapy, since they coordinate the elaboration of protocols and routines to spread the use of PICC and of other intravenous devices with effectiveness and safety[14].

Children in oncological-hematological therapy, admitted to the center for bone marrow transplantation, need venous access for prolonged periods and are often exposed to pain and stress caused by multiple venous punctures of repetition. That is why the long-term catheters, especially the totally implanted, are the most used. Nevertheless, studies have shown that, for children undergoing oncological treatment, the PICC is a safe alternative, with lower cost and that does not require surgical implantation[11,12]. The resistance of the medical team to indicate other types of intravenous devices for these children might be related to the lack of experience with the use of PICC in pediatric hematology-oncology.

The PICC is considered a trusted device, and it is successfully used both in hospital environment and in home spaces, when the therapy is completed through *assistência domiciliar* or home care. This type of device might be used in pediatric patients that need chemotherapy for a prolonged time. The family should be trained for conducting child care before the hospital discharge[18].

CONCLUSION

As prerequisites indispensable for the indication, insertion and maintenance of PICC, the nursing professionals in this study highlighted the implementation of NCS in the whole process of intravenous therapy, combined with scientific knowledge, technical capability and clinical judgment. Nevertheless, the study showed that, in everyday of health care, there are conflicts between the medical and nursing teams permeated by different visions of intravenous therapy process and of autonomy of the nursing professional to participate in the indication of the best type of intravenous device for the patient. Accordingly, the implementation of NCS is essential to the management of care for patients that need intravenous therapy, as well as to give visibility to the practice of nurses and ensure their autonomy in the context of interdisciplinary work.

The possibilities for the implementation of NCS for the use of PICC have signaled the need for systemization at all phases of the process for the use of this device, especially in maintenance protocols due to losses of catheter by obstruction. In this context, the performance of the intravenous therapy group deserves attention in this process. Another possibility of implementation of NCS for the use of PICC is the creation of an outpatient service, in order to follow-up oncological and hematological children, articulated with the admission sector and with the family members.

From the results of this study, it is recommended that the indication, the maintenance care and the removal of PICC must be guided by institutional protocols developed from the NCS, based on the patient's needs, the best scientific evidence, the institutional reality and the dialogue among nursing team, medical team and family.

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