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CLINICAL PRACTICE OF THE NURSING TEAM RELATED TO INTRAVENOUS THERAPY IN A NEONATAL AND PEDIATRIC UNIT

PRÁTICA CLÍNICA DA EQUIPE DE ENFERMAGEM ACERCA DA TERAPIA INTRAVENOSA EM UNIDADE NEONATAL E PEDIÁTRICA

PRÁCTICA CLÍNICA DEL EQUIPO DE ENFERMERÍA CON RESPECTO A LA TERAPIA INTRAVENOSA EN UNA UNIDAD NEONATAL Y PEDIÁTRICA

Aline Cerqueira Santos Santana da Silva[1]
Thaina Pinheiro das Neves e Silva[2]
Daniel Nascimento Alves[3]
Luiz Henrique Amarante[4]
Fernanda Garcia Bezerra Góes[5]
Maithê de Carvalho e Lemos Goulart[6]

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Objective: to analyze the professional practices of a nursing team regarding intravenous therapy in the neonatology and pediatrics sector. Method: a quantitative, descriptive and exploratory study developed in a public hospital in a country town of the Rio de Janeiro state, Brazil. The data collection technique was an interview conducted in September and November 2017. Results: the sample was composed of 9 (31.1%) nurses and 20 (68.9%) nursing technicians. The only intravenous device used was the flexible peripheral venous catheter (100%) and only nursing technicians (100%) were responsible for the dilution and administration of medications. Conclusion: in the healthcare practices of the nursing team, the device of choice was the flexible peripheral venous catheter and the adhesive tape was the only cover used for the setting, in addition to the fact that the intravenous therapy is performed mainly by nursing technicians, ignoring legislation and standards of safety and quality care practice.

Keywords: Intravenous Infusions. Pediatric Nursing. Peripheral Catheterization.

Objetivo: analisar a prática assistencial de uma equipe de enfermagem acerca da terapia intravenosa no setor de neonatologia e pediatria. Método: estudo de abordagem quantitativa, descritivo e exploratório em um hospital público no interior do Rio de Janeiro, Brasil. A técnica de coleta de dados foi a entrevista desenvolvida entre

[1] Nurse. PhD in Nursing. Assistant Professor at Universidade Federal Fluminense. Rio das Ostras, Rio de Janeiro, Brazil. alinecer2014@gmail.com. http://orcid.org/0000-0002-8119-3945.
[2] Nurse. Universidade Federal Fluminense. Rio das Ostras, Rio de Janeiro, Brazil. http://orcid.org/0000-0002-8972-5790.
[3] Nursing Student. Universidade Federal Fluminense. Rio das Ostras, Rio de Janeiro, Brazil. http://orcid.org/0000-0003-3651-2027.
[4] Biochemical Pharmacist. PhD in Pharmacy. Associate Professor da Universidade Federal Fluminense. Rio das Ostras, Rio de Janeiro, Brazil. http://orcid.org/0000-0003-4411-5929.
[5] Nurse. PhD in Nursing. Adjunct Professor at the Universidade Federal Fluminense. Rio das Ostras, Rio de Janeiro, Brazil. http://orcid.org/0000-0003-3894-3998.
[6] Nurse. PhD in Nursing. Adjunct Professor at the Universidade Federal Fluminense. Rio das Ostras, Rio de Janeiro, Brazil. http://orcid.org/0000-0003-2764-5290.

setembro e novembro de 2017. Resultados: amostra composta por 9 (31,1%) enfermeiros e 20 (68,9%) técnicos de enfermagem. O único dispositivo intravenoso utilizado foi o cateter venoso periférico flexível (100%) e apenas os técnicos de enfermagem (100%) eram responsáveis pela diluição e administração de medicamentos. Conclusão: na prática assistencial da equipe de enfermagem, o cateter venoso periférico foi o dispositivo intravenoso de escolha e o esparadrapo, a única cobertura utilizada para fixação do dispositivo, além de a terapia intravenosa ser executada majoritariamente por técnicos de enfermagem, expressando ações que ignoram a legislação e os padrões de prática assistencial segura e de qualidade.

Descritores: Infusões Intravenosas. Enfermagem Pediátrica. Cateterismo Periférico.

Objetivo: analizar la práctica asistencial de un equipo de enfermería con respecto a la terapia intravenosa en el sector de neonatología y pediatría. Método: investigación cuantitativa, descriptiva y exploratoria en un hospital público en una ciudad pequeña del estado de Rio de Janeiro, Brasil. Se coleccionó a los datos por medio de una entrevista hecha desde septiembre hacia noviembre, 2017. Resultados: la amuestra incluyó 9 (31,1%) enfermeros y 20 (68,9%) técnicos de enfermería. El único dispositivo intravenoso utilizado fue el catéter venoso periférico flexible (100%) y los técnicos de enfermería fueron los únicos responsables por la dilución y administración de los medicamentos. Conclusión: en la práctica asistencial del equipo de enfermería, el catéter venoso periférico fue el dispositivo intravenoso de elección, y el esparadrapo fue la única cobertura utilizada para fijar el dispositivo. La terapia intravenosa fue, mayoritariamente, hecha por técnicos de enfermería, ignorando las leyes sobre los estándares de la práctica asistencial segura y de calidad.

Descriptores: Infusiones Intravenosas. Enfermería Pediátrica. Cateterismo Periférico.

Introduction

Drug administration is a topic widely addressed in the scientific and academic environment, especially when considering the nursing team professional practice, not only due to its impact in patient recovery, but also due to the broad spectrum of risk and complications involved in this process. However, when it comes to pediatric patients, the safety and efficacy of this procedure requires knowledge and attention from the entire multidisciplinary team, from the establishment of the patients, prescriptions and preparations, to the administration of the necessary drugs and surveillance of adverse effects[1].

Intravenous Therapy (IT) has become an indispensable resource in clinical practice and is extremely important in the treatment of acute and chronic diseases and health recovery. The therapy has been used for several purposes, such as hydroelectrolytic disorders, blood loss, infectious processes, among others[2]. Nowadays, about 90% of patients admitted to hospitals undergo IT, making it one of the most common forms of intervention therapy instituted to restore their clinical conditions[3].

This practice, especially in the field of neonatology and pediatrics, is characterized as one of the most critical and direct assistance activities in nursing, requiring direct assistance from nurses, since these professionals are closely related and primarily responsible for carrying out this practice. Thus, for a safe care, knowledge about the use of technologies used in this therapy needs to be expanded, not focusing only in the incorporation of technological equipment, but also in the need for professionals able to use them[4].

In the context of neonatal and pediatric nursing, the administration of injectable drugs has some specificities, such as specific calculations, minimum dosages and the manipulation of different technologies. For this reason, the use of standardized safety barriers is widely recommended, barriers which can prevent or minimize adverse events arising from this type of assistance[5].

Nonetheless, IT is often associated with a high incidence of complications. Thus, aiming at preventing and controlling these complications, what stands out is the importance of adopting

good practices resulting from the knowledge and skills necessary for the establishment and maintenance of a safe and quality practice in the preparation and administration of medicines[6-7].

Thus, the nursing team plays a key role in preventing such complications. The nurse team seeks to reduce its incidence and enable safe and quality care through the prevention of incidents. Considering the importance of early detection of suggestive signs and symptoms, it is essential that patients are observed daily[8]. Thus, IT, in the setting of newborn and children care, is a procedure that requires a high level of technical-scientific complexity, knowledge and professional skill.

This study aims to analyze the care practices of a nursing team regarding intravenous therapy in the neonatology and pediatrics sector.

Method

This is a descriptive and exploratory study, with a quantitative approach, developed in the pediatric and neonatal unit of a public hospital located in the interior of the state of Rio de Janeiro, Brazil.

The institution considered in the study has high patient turnover, attending not only the population of the municipality where it is located, but also neighboring regions, being a primary entryway for requesting units. The institution was chosen because it is large and is a reference in maternity assistance in the region. In addition, it has a nursery, pediatric emergency room and pediatric inpatient unit, which meet a wide variety of clinical diagnoses.

The nursing team is composed of four nursing technicians and a nurse, who are divided between the emergency room and the pediatric unit, since these are interconnected sectors. Three nurse technicians are in the emergency room and one in the pediatric unit, under the supervision of a nurse. In the nursery, there are two technicians and one nurse. All of them work 24-hour shifts followed by 96 hours of paid rest, plus 16 hours of complementary work times.

The number of participants in the survey was limited to the total number of professionals in the above-mentioned sectors, who met the inclusion, exclusion and availability criteria. The study sample consisted of 29 professionals, 9 nurses, and 20 nursing technicians. Among the total number of professionals, 3 were on vacation, 5 on sick leave, and the other professionals who did not participate, did not want to or could not participate due to unavailability of time.

Inclusion criteria were: degree in nursing or in a technical nursing course; working in the neonatal and pediatric sectors; being active in these sectors for at least three months (the participant was expected to be acquainted to the work process in the setting and understand it, regardless of the time since graduation). The exclusion criteria were: those on leave of any type and those who worked only in administrative functions.

The recruitment and selection of participants took place in the institution itself, at an opportune moment, when the sector was calm and the professional was free. On the date scheduled for data collection, the researcher introduced himself to the participant and explained to him in a detailed and clear way what the research and its objectives were. The researcher also clarified that the interview was based on a structured script, lasting an average of 30 minutes, and would be held in a private room in the sector, in a calm environment, respecting their privacy, in addition to ensuring to then the confidentiality and secrecy of their information.

Data collection took place from September to November 2017. The instrument was divided in two parts, containing sociodemographic questions (age, sex, educational level, time since graduation, length of experience in the pediatrics and nursery sectors, among others) and questions regarding the clinical practice of IT, such as: most used intravenous device, duration of venous access, most used medication in the unit, professionals responsible for the dilution and administration of the medication, among other questions. A pilot test was carried out with

three participants and necessary adjustments were made to the instrument regarding the sociodemographic questions.

To record the data collected, an Excel spreadsheet was created, covering the variables of interest for the study. Data were subjected to descriptive statistical analysis, with frequency, mean and standard deviation being calculated using the software Epi Info 7.1.5.0.

In compliance with Resolution No. 466/2012 from the National Health Council[9], which approves the Regulatory Guidelines and Norms for Research Involving Human Beings, the project was submitted to the Research Ethics Committee (CEP) of the Universidade Federal Fluminense and obtained approval under protocol No. 1.570.065 and CAEE 53503416.2.0000.5243.

Results

The sample consisted of 29 professionals, with 9 (31.1%) nurses and 20 (68.9%) nursing technicians. The mean age was 42.2 years (± 9.0) and most participants were females (24 -- 82.8%). Regarding the nurses' time since graduation, 2 (22.2%) had between 6 and 10 years and 7 (77.8%) had more than 10 years. As for the professional experience, there was a prevalence (13 - 44.9%) of more than 10 years in pediatric nursing, while in neonatal nursing there were only 5 (17.2%) professionals with this time experience.

In this study, the most used route of administration reported by the 21 (67.8%) professionals in the pediatric and neonatal inpatient units was the intravenous. Regarding the intravenous device, the flexible peripheral venous catheter was unanimously reported as the only method used. Regarding the material used for setting the catheter, the adhesive tape was mentioned by 18 (62.1%) participants. For the variable length of stay of the device in the patient, one to three days was the time reported by 19 (65.6%) professionals, while 9 (31.0%) said they maintained it for as long as the venous access lasted. Of the total number of professionals interviewed, 27 (93.1%) stated that the way in which the device was fixed did not allow the visualization of the insertion site, while 2 (6.9%) said it did.

In the analysis of the variables related to the person responsible for the dilution and administration of the medication, it was found that only nursing technicians were responsible for these actions. Another information, confirmed by 20 (69.0%) nursing professionals, was the absence of nurse supervision of the nursing technician during the dilution and administration of medications.

Regarding pharmacotherapeutic safety, almost all professionals claimed to perform actions aimed at patient safety, from the acquisition of the drug to its administration, as shown in Table 1.

Table 1 – Distribution of variables related to the clinical practice of intravenous therapy in the neonatal and pediatric inpatient unit at a public hospital in a country town. Rio de Janeiro, RJ, Brazil – 2017 (N=29) (continued)

Variable	n	%
Administration route		
Intramuscular	10	32.2
Intravenous or intra-arterial	21	67.8
Device used		
Flexible peripheral venous catheter	29	100.0
Device setting		
Adhesive tape	18	62.1
Micropore	11	37.9
Time the device remains on the patient (days)		
1 to 3	19	65.6
4 to 7	1	3.4
Until the access is lost	9	31.0

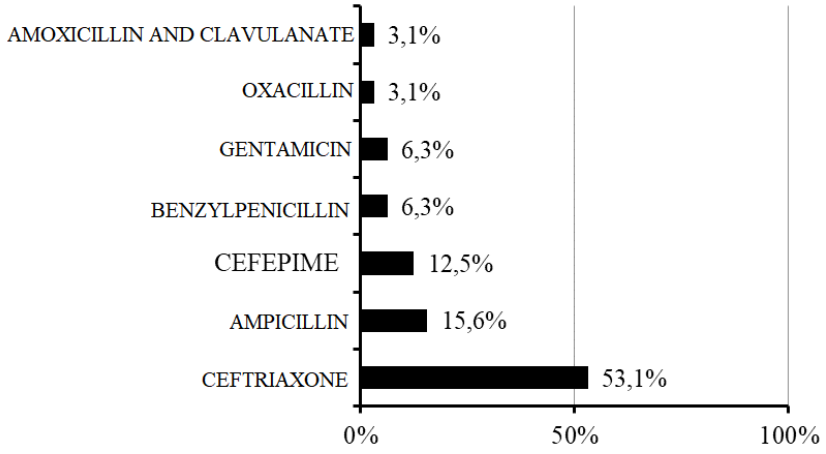
Table 1 – Distribution of variables related to the clinical practice of intravenous therapy in the neonatal and pediatric inpatient unit at a public hospital in a country town. Rio de Janeiro, RJ, Brazil – 2017 (N=29) (conclusion)

Variable	n	%
Visualization of the insertion site by the professional		
Yes	2	6.9
No	27	93.1
Responsible for diluting the medication		
Nursing technician	29	100.0
Responsible for the administration		
Nursing technician	29	100.0
Nurse supervision in the preparation and/or administration of medication		
Yes	9	31.0
No	20	69.0
Actions for the pharmacotherapeutic safety of the patient		
Yes	27	93.1
No	2	6.9

Source: The authors.

In the sectors considered in the study, the antibiotics reported as most used were: Ceftriaxone, followed by Ampicillin and Cefepime, as shown in Image 1.

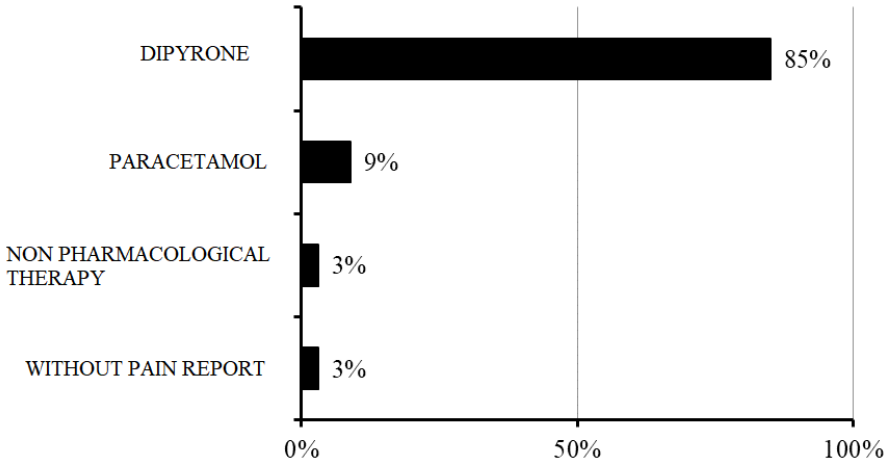
Image 1 – Antibiotics used in the neonatal and pediatric unit in a public hospital in the state interior. Rio de Janeiro, RJ, Brazil, 2017 (N=29)



Source: The authors.

Regarding pain control, it was possible to observe the prevalence of the use of pharmacological measures, through the administration of analgesics (dipyrone), when compared to non-pharmacological measures (Image 2).

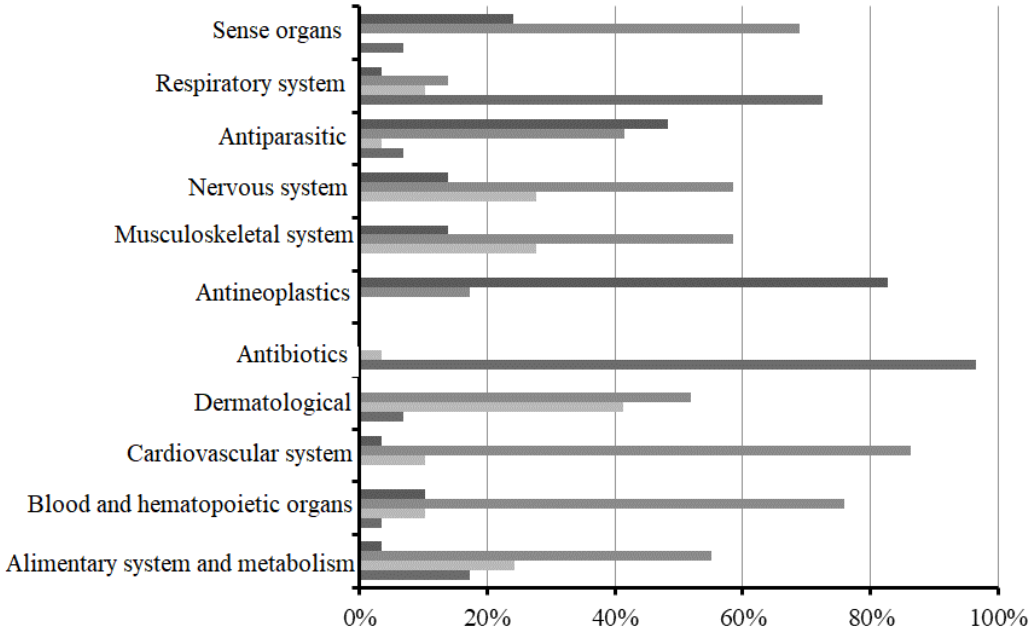
Image 2 – Adoption of measures for pain control in neonatal and pediatric units in a public hospital in a country town. Rio de Janeiro, RJ, Brazil, 2017 (N=29)



Source: The authors.

Regarding the drugs most used by professionals in those units, the Anatomical Therapeutic Chemical Code (ATC) classification [10] was used, which made it possible to identify a higher frequency of antibiotics for systemic use, followed by those for treatments of the respiratory system. (Image 3).

Image 3 – Frequency of medication use by nursing professionals in neonatal and pediatric units in a public hospital in a country town. Rio de Janeiro, RJ, Brazil, 2017 (N=29)



Source: The authors.

Discussion

Medication administration is a complex procedure, seen as a situation prone to error, especially in pediatric and neonatal assistance, due to a series of factors, like lack of standardization of drugs for this age group due to the inability of establishing effective communication[11]. In this context, the care related to this procedure does not only comprise objective issues, but also subjective dimensions. Thus, it is essential, not only for the safety and quality of the assistance provided, but also to express respect and care, technical-scientific knowledge, ethics, and a critical view during the procedure.

Considering that the intravenous therapy is one of the most widely used therapeutic resources in the clinic, the parenteral route of administration stood out in this study as the most used. This fact is related to type of health institution, as they are characterized as places where the intravenous route is usually the most accessed in patients with unstable clinical conditions, who need immediate and prolonged interventions and larger and constant infusions, with the purpose of recovering their clinical condition[12].

In line with this finding, it was also observed in this study that the flexible peripheral venous catheter was the only intravenous device used in this procedure, regardless of the type of therapy proposed and its duration and/or medical diagnosis. This data is consistent with a study[13], in which this type of device proved to be effective in meeting the needs of patients in their therapy. However, some factors such as duration of treatment, types of infusion, vascular characteristics, age of the patient, ability, and resources to provide assistance must be considered before the decision to use the device.

In addition to these factors, and considering the neonatal and pediatric population, it is necessary to observe some characteristics, such as the vascular net, which is less developed, contributing to greater difficulty in locating the vein to be punctured, in addition to the fear regarding the procedure. This fact can complicate collaboration during the procedure and makes it difficult to set the device, and adds to a range of factors that can result in a set of unexpected complications, such as phlebitis and infiltrations, directly influencing the choice of the device to be used[14].

The type of coverage most used to set the intravenous device in this study was the adhesive tape. It is noteworthy that this type of coverage occludes the insertion site, making it impossible for nursing professionals to see and evaluate phlogistic signs, hiding complications, such as lesions around the catheter, bruises, occlusion, phlebitis, infiltration, leakage, in addition to signs that may indicate infections[6].

It should be noted that, according to the Centers for Disease and Prevention (CDC)[15], the cover aims to protect the insertion site and minimize the possibility of infection and fix the device in place, preventing movement that can damage to the vessel. In this context, all coverage for peripheral or profound catheters must be sterile and may be semi-occlusive or a semi-permeable transparent membrane. The CDC also states that the use of gauze and adhesive tape should only occur when the access is to stay less than 48 hours; otherwise, gauze and adhesive tape should not be used. Thus, it is highlighted that the catheter fixation, when performed with adhesive tape, makes it impossible to have daily assess the insertion site, therefore preventing the adoption of good practices in face of intravenous therapy.

Regarding the person responsible for the dilution and administration of the drugs used in the IT, it was observed that this action was performed by the nursing technician without the nurse's supervision. However, when asked about the adoption of actions for the effective guarantee of the patient's pharmacotherapeutic safety, the vast majority of the interviewees reported that they occurred.

Since drug administration is the most common form of intervention in health institutions, there is a consensus in literature that errors become frequent, especially in the pediatric sector. The literature states that, among the causes for the continued hospitalization, about 3% were related to serious adverse events resulting from

medication therapies during the hospital stay[16]. Therefore, it is urgent that nursing professionals have knowledge and skills regarding preparation, routes of administration and adverse events, in addition to the implementation of strategies, good practices and greater responsibility in the administration of drugs[17].

In this context, the responsibilities of nurses in relation to IT are highlighted, and are described in Decree no. 94,406, from June 8, 1987, which regulated Law no. 7,498, from June 25, 1986. In its Article 8, item II, paragraph f, this rule delegates to nurses the participation in the elaboration of preventive measures and systematic control of damages that may be caused to the patient during nursing care [18]. In this procedure, there is a complex interaction of factors involving the nurse, the individual, and their safety.

According to a study about the role of nurses in drug administration in a hospital [19], the action of this professional regarding IT has been the target of many questions. This can be explained by the scientific and technical knowledge required to carry out this practice, due to the fact that this responsibility is often delegated to the nursing technician, and to the lack of nursing supervision of all stages that include IT. As a result, drug administration is not a simple procedure. On the contrary, it is a process in which the professional involved must have knowledge of pharmacodynamics, pharmacokinetics, side effects, adverse reactions, incompatibility, drug interactions between the drugs administered and, last but not least, knowledge about the method, routes, locations, actions, dilutions and aseptic techniques[16].

Regarding the use of antibiotics for the treatment of morbidities, especially in the respiratory system, the administration of Ceftriaxone through a flexible peripheral venous catheter was largely observed. However, since this medication has vesicating and irritating characteristics, osmolarity higher than serum osmolarity, with a low Hydrogen Potential (PH), lower than serum PH (<7), its application should be via Peripheral Insertion Central Catheters (PICC)[20].

Another study[21] points out that flexible peripheral venous catheters should not be used for continuous infusion of vesicant products, such as the drug mentioned above, Parenteral Nutrition (PN) with a high Glucose Infusion Rate (TIG), as well as other additives. The use of this type of device in patients in unstable clinical states may present imminent risks. It can lead to the interruption of the prescribed therapy, as well as to the development of phlebitis, vessel spasms and primary bloodstream infections, pain, in addition to increasing the permanence of the patient in the hospital[12].

Regarding pain control in patients admitted to the neonatal and pediatric unit under study, a higher proportion of dipyrone administration was observed, compared to other analgesics and non-pharmacological measures. It is worth mentioning that pain control is the responsibility of the multidisciplinary team, especially the nursing team. Thus, the effectiveness of this action must be preponderant during assistance, through pharmacological and non-pharmacological strategies. However, contrary to what was evidenced in the present study, national literature[22-24] confirms that, for pain control, the implementation of analgesic measures is infrequent. On the other hand, non-pharmacological strategies favor care modalities that act in the stage of modulation of painful experiences, subsidized in established international protocols, becoming a relevant strategy in the care of newborns, as well as children. Promoting comfort and reducing the possibility of errors due to health assistance.

This study presents as a limitation the fact that it includes a single institution, especially due to the number of people investigated, which prevents the generalization of the findings, thus implying the need for further studies on the theme in different settings.

Conclusion

The analysis of the clinical practice of intravenous therapy in the neonatal and pediatric units showed the flexible peripheral venous

catheter as the device of choice, regardless of the length of stay and/or therapy implemented. It was found that the use of adhesive tape was the only cover for the intravenous device, and that the preparation and administration of medications were performed exclusively by nursing technicians, without a nurse's supervision. These actions ignore the legislation and standards recommended for safe and quality intravenous therapy.

Considering the complexity and specificity that characterize intravenous therapy, especially in the neonatal and pediatric assistance, it is necessary to provide structures, organizational processes, as well as professionals with a high level of technical and scientific knowledge and competence, aiming at reduce medication-related incidents.

This research offers important results about the clinical practice of intravenous therapy in a public hospital in a country town of the state of Rio de Janeiro. Enabling a critical analysis that aimed at the development of management strategies that can provide the adoption of good practices, reaching good health results, and reducing injuries related to the preparation and administration of medications.

Collaborations:

1 – conception, design, analysis and interpretation of data: Aline Cerqueira Santos Santana da Silva, Thaina Pinheiro das Neves e Silva, Luiz Henrique and Daniel Nascimento Alves;

2 – article writing and relevant critical review of intellectual content: Luiz Henrique Amarantes, Daniel Nascimento Alves and Fernanda Garcia Bezerra Góes;

3 – final approval of the version to be published: Aline Cerqueira Santos, Fernanda Garcia Bezerra and Maithê de Carvalho and Lemos Goulart.

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