Safe administration of medication in...



SAFE ADMINISTRATION OF MEDICATION IN NEONATOLOGY AND PEDIATRICS: **NURSING CARE**

ADMINISTRAÇÃO SEGURA DE MEDICAMENTOS EM NEONATOLOGIA E PEDIATRIA: CUIDADOS DE ENFERMAGEM

ADMINISTRACIÓN SEGURA DE MEDICAMENTOS EN NEONATOLOGÍA Y PEDIATRÍA: CUIDADOS DE **ENFERMERÍA**

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ABSTRACT

Objective: to know Nursing care related to the safe administration of medications in Neonatology and Pediatrics. *Method*: it is a qualitative, descriptive and exploratory study with 23 workers of the Nursing teams through semi-structured interviews, subjecting them to the technique of Content Analysis in the Thematic Analysis modality. Results: they referred to the supervision by the Nursing staff of the Nursing team, the identification of the five recommended ones (child, bed, medication, dose and schedule), the registration of the medication administered in a care plan, the millimetric calculation of doses, checking the validity of the medication, non-application of chemically incompatible drugs at the same time, ensuring the asepsis of the administration site, taking care of the temperature appropriate for storage, use of medicines and doubts prior to the administration of the drugs. Conclusion: it is concluded that patient safety in relation to medication administration in the Neonatology and Pediatrics Units is complex, requiring the professionals of the Nursing team, skills and competencies to cope with them. Descriptors: Patient Safety; Child; Medication Errors; Nursing; Nursing Care; Medication Systems.

Objetivo: conhecer os cuidados de Enfermagem relacionados à administração segura de medicamentos em Neonatologia e Pediatria. Método: trata-se de estudo qualitativo, descritivo e exploratório com 23 trabalhadores das equipes de Enfermagem por meio de entrevistas semiestruturadas, submetendo-as à técnica de Análise de Conteúdo na modalidade Análise Temática. Resultados: referiram-se, como cuidados, à supervisão pelo enfermeiro da equipe de Enfermagem, à identificação dos cinco certos preconizados (criança, leito, medicação, dose e horário), ao registro da medicação administrada em uma planilha de cuidados, à realização do cálculo milimétrico das doses, à checagem da validade da medicação, à não aplicação, no mesmo horário, de medicamentos incompatíveis quimicamente, à garantia da assepsia do local da administração, ao cuidado com a temperatura adequada para o armazenamento, à utilização dos medicamentos e ao esclarecimento das dúvidas existentes antes da administração dos fármacos. Conclusão: conclui-se que a segurança do paciente em relação à administração de medicamentos nas Unidades de Neonatologia e Pediatria é complexa exigindo, dos profissionais da equipe de Enfermagem, habilidades e competências para o seu enfrentamento. Descritores: Segurança do Paciente; Criança; Erros de Medicação; Enfermagem; Cuidado de Enfermagem; Sistemas de Medicação.

RESUMEN

Objetivo: conocer los cuidados de enfermería relacionados con la administración segura de medicamentos en Neonatología y Pediatría. Método: se trata de un estudio cualitativo, descriptivo y exploratorio con 23 trabajadores de los equipos de Enfermería por medio de entrevistas semiestructuradas, sometiéndolos a la técnica de Análisis de Contenido en la modalidad Análisis Temático. Resultados: se refirieron, como cuidados, a la supervisión por el enfermero del equipo de Enfermería, a la identificación de los cinco ciertos preconizados (niño, lecho, medicación, dosis y horario), al registro de la medicación administrada en una hoja de cuidados, el cálculo milimétrico de las dosis, el chequeo de la validez de la medicación, la no aplicación, al mismo tiempo, de medicamentos incompatibles químicamente, a la garantía de la asepsia del local de la administración, al cuidado de la temperatura adecuada para el almacenamiento, la utilización de los medicamentos y aclaración de las dudas existentes antes de la administración de los fármacos. Conclusión: se concluye que la seguridad del paciente en relación con la administración de medicamentos en las Unidades de Neonatología y Pediatría es compleja exigiendo, de los profesionales del equipo de Enfermería, habilidades y competencias para su enfrentamiento. Descriptores: Seguridad del Paciente; Niño; Errores de Medicación; Enfermería; Atención de Enfermería; Sistemas de Medicación.

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INTRODUCTION

INTRODUCTION

One of the problems faced by nursing teams is the possibility of errors in medication administration, which puts patients at risk, weakens their safety and can cause damage or even death. It is prohibited, according to the Code of Ethics of Brazilian Nursing, the administration of drugs without knowing the action of the drug and without making sure the possibility of its risks; it is also forbidden to perform prescriptions of any nature that compromise patient safety; it is a right of the refuse Nursing team to to perform prescription medication and therapy, which does not include the signature and the registration number of the professional, except in emergency situations. It is also established that the Nursing professional can refuse to prescribe medications and therapies in case of error or eligibility identification.¹

It is known that the application of medicines requires scientific knowledge and technical ability, and it is important to emphasize the importance of guidelines or recommendations to improve patient safety with the collaboration of the official bodies of Brazilian health system, regulatory agencies, public and private health and, with the participation active of professionals, to facilitate the development of strategies to minimize these errors.²

It is pointed out that, if the medication administration error occurs in the Neonatal Intensive Care Unit (NICU) or the Pediatric Unit (PU), the consequences may be more severe than in other sectors, since most children do not has adaptive mechanisms of defense, and its metabolism is more accelerated, causing the effect of these drugs to occur almost immediately, not having time to correct the error.

Nursing staff members are required to exercise care to avoid such incidents. It was questioned, in this sense: "What Nursing care implemented to guarantee the safe administration of medicines in the neonatal and pediatric units?".

OBJECTIVE

• To know the nursing care related to the safe administration of medications in Neonatology and Pediatrics.

METHOD

This is a qualitative, descriptive and exploratory study carried out in a NICU and a PU of a university hospital in the South of Brazil (UH), with the participation of the Nursing staff

Safe administration of medication in...

who met the following inclusion criteria: belonging to the NICU Nursing team and / or PU of UH for at least six months, and have practice in the preparation and administration of medicines for children. Professionals who were on leave or health leave during the data collection period were excluded from the study. Candidates were informed about the objectives and methodology of the study and those who agreed to participate signed the Free and Informed Consent Term.

Data was collected in the first half of 2017 through semi-structured interviews. Professionals were questioned about Nursing care used to ensure safe administration of medications. Dates and times were set for the interviews, which were done in the units themselves, in Nursing rooms, because they are spaces that guarantee comfort and privacy. Interviews were recorded and transcribed for analysis.

The data was studied by the **Content Analysis in the Thematic Analysis modality**, operationalized from the Pre-Analysis, in which the grouping of the statements and the elaboration of the registration units were performed. The material was exploited, in which the data were codified, grouped by similarities and differences and organized according to the categories and the treatment of the results obtained. The interpretation was performed, in which the most significant statements were selected to illustrate the analysis and to perform the search of authors to support the study.³

Ethical principles of research involving human beings were respected according to Resolution 466/12.4 The research project was forwarded to the Research Ethics Committee in the Health Area of the Federal University of Rio Grande (CEPAS / FURG). number 71/2017. The speeches of the participants were identified by the letter P, followed by the interview number, in order to guarantee their anonymity.

RESULTS

The following are the characteristics of the study participants and the categories generated from the data analysis.

Characterization of study participants

It was verified that 23 professionals participated in the study, being 14 nurses and nine Nursing technicians. It is observed that 22 are female and one male, and their ages vary between 27 and 55 years, with a mean of 43 years. It is recorded that professionals have between six months and 27 years of work in the health sector, with an average of 11

years; in Nursing, the period of operation varies between four and 35 years, with an average of 17 years. It is noted that six professionals work in the morning shift; eight, in the afternoon shift and nine in the night shift, and only one of the participants works in another institution, besides the researched.

♦ Nursing Care Related to Safe Drug Administration

It is observed that, most of the time, who administers the medication in the units is the Nursing technician. It is understood, as one of the nurses' care, to supervise the work of these professionals, focusing on communication, identifying their doubts and seeking information to clarify them. It is discussed among the professionals about the prescription of each patient, being responsible the team for all the actions taken.

[...] so, it is to be always attentive, paying attention, talking. Although I have long-time employees, they ask from time to time [...]. I'll research, look at the conservation, the route of administration. I'll talk to the pharmacist, I'll read the package insert. (P1) [...] the gurias control it right and we are on top too, because there are not many patients, and we have to do this control. (P12)

It is considered that, because it is a university hospital, the prescriptions of medicines are often carried out by medical academicians and administered by nursing students; in these cases, nurses need to redouble their care and pay more attention to the prescription and administration of these academics.

[...] we work here with residents. These people are learning. So we have to take care of our experience, see, detect if that medication is too much, it is too much, if that volume we think are right or not and always confirm. (P6)

[...] the students had great difficulty and, to this day, I still see that they have this difficulty in relation to the volume of medication, mainly in microdoses [...]. (P7)

It is also indicated the care to follow directly every new Nursing technician that comes to work in the sector. It is verified that these are supervised directly by the nurse who will accompany them for some time, until they are considered fit for the development of their functions.

We have to be more attentive, to see if the person works properly, if he knows what he is doing because sometimes he does not know and does not say that he does not know. Others come and say they have never worked, they do not know what it is. There, you accompany, your help, is quiet. (P2)

Safe administration of medication in...

[...] all the incoming employees, the new ones are accompanied for a period, until they become familiar with the medicines we use [...]. (P6)

It is noticed that, in the PU and NICU studied, the nurses chose to withdraw the medication themselves, translating the medical prescription so that the Nursing technician understands it.

Well, here in Pediatrics, who takes the medication is the nurse and who manages is the nursing technician [...]. (P4)

[...] we are very careful. It is always the nurse who pulls out to see what kind of medication the patient is doing [...]. (P12)

It was pointed out, by the Nursing technicians, that as the ones who take the medication are the nurses, they have the habit of conferring the medication taken with the medical prescription, as a way to avoid possible errors in this process.

First, the nurse pulls out the medication, and I always check. Primarily, if you are a new nurse, who is not accustomed in the industry, I go and look at the prescription. [...]. I think this is one of the first precautions. (P19)

Here, people (technicians) do not take the prescription medication, we get the papers ready. Then I go and check the prescription. (P22)

From the medical prescription, the medications corresponding to each schedule are transcribed, identifying the child's name, bed, name of the medication, dose, dilution and time at which it is to be administered. It is tried to fulfill all the certain five recommended to ensure that the medication is carried out correctly.

[...] have to pay close attention so that there is no flaw in patient identification, bed and name, medication name, medication presentation, dilution, dose to be administered, time and route. (P10)

Always check the right five, because you always think you will not need it later, but it's a routine thing that you end up looking at on the automatic. (P22)

It is also identified the care of keeping the papers in which the medications were transcribed for the check of the medicines administered in the medical prescription to avoid medication failures.

One thing we do is keep the papers on the medication administered during the shift. We have to check and check. (P3)

[...] here, in the NICU, we usually keep the papers of the medications. We keep the papers and confers with the prescription. (P7)

Each medication is recorded on the child's care sheet, signed by the person who

medicated it. It is ensured, with this practice, that you know exactly what medication was applied to each child and at what time.

One more care that was instituted and that, I think, so that is very valid. You have to check in the spreadsheet what medication was administered at each time and its volume and way. (P3)

In order to avoid mixing the syringes placed on the same tray, the following are three important steps: label the syringe with the name of the medication; put the medications of each patient in a single tray and never carry a syringe with oral medication protected with a needle, but placed inside the package itself, avoiding the error regarding the route of administration.

I always label when I go out with more than one syringe in the tray, that's a care I always do. (P16)

It is to separate the syringes by bed in single tray [...]. If it is oral, do not take with needle. (P22)

It is pointed out the validity check of the medication as one of the sought Nursing care, given that overdue medications may have their active principles altered, not having the expected effects or even, having adverse effects.

- [...] the validity, because we have the emergency car here. The staff then reviews overdue medications to change into the pharmacy. Sometimes, they already send medications almost expiring the expiration date. [...] then, it is the care they must have. (P6)
- [...] people are careful in controlling the validity of medications because they are usually the (technical) guinea pigs who prepare and administer. (P11)

It has been found that pediatric patients generally require very low doses of medication and therefore dosing errors can have serious consequences for the child, causing a great deal of concern for practitioners. It is observed that, in this sense, one of the mentioned care consists in the millimetric calculation of the doses to be administered and the use of infusion pumps to guarantee the application of the correct dose.

- [...] here, the doses are very small. We're very careful. [...] you have to know if the milligrams are right. (P8)
- [...] the dose has to be correct, so I use the infusion pump. (P9)

Other concerns are noted in the pediatric area: dilution of medications and volume to be given, as increased volumes may cause hypervolemia and may lead to heart and kidney failure. The dilution of each

Safe administration of medication in...

medication is therefore required in correct amounts.

- [...] take care of the dilution, dilute it in the correct diluent, if it is distilled water or if it is serum, dilute it in the correct quantities [...] if that volume is the volume that is really suitable for that child. (P5)
- [...] when a new drug appears, the doubt arises as to how much is diluted, where it can be diluted. (P13)

The rate of infusion of medications is considered a concern of the Nursing team because, if the medication is infused very quickly, it can cause pain and lesions of the endothelium wall.

You have medications, such as vancomycin, which are more painful. Soon, you have to go in an hour, and the child continues in pain, and you have to spend more time. (P8) Then, during administration, the drip must be dampened, and sometimes even stopped, more diluted, and taken with special care, because of the reactions the patient presents. So the whole process is quite complex. (P10)

It is known that children, mainly from the NICU, need to receive a variety of medications, and some of them may be incompatible with each other; one of the possible precautions to avoid accidents is that the drugs are not administered at the same times and that serum is administered before and after its application to avoid precipitation and the formation of thrombi or emboli.

- [...] you have to see a lot of the issue of the compatibility between what is being administered, with the solutions that are inside the teams. If any medication is incompatible, we have to know. (P21)
- [...] at the time of administration, if I need to do some lavage with saline before the medication, I do with serum, so that there is no mixing of the medicines. (P23)

It is understood that the good condition of the venous network is important for the administration of the medication, so the care taken in maintaining the peripheral or central venous access is related to the use of suitable syringes and to the appropriate manipulation of the materials and equipment, with a view to avoid loss of venous access and its contamination.

- [...] the issue of central access, of using the correct syringe size when administering medication. (P4)
- [...] another care that, for us, is very important, is the way. If it is permeable, the puncture is fine. For no extravasation, because most of the medications we use, especially antibiotics, are very irritating and can cause injury with necrosis. (P20)

Pediatrics.

Rocha CM da, Gomes GC, Ribeiro JP et al.

It is presented the fact that the professionals of the Nursing team have been in the sector for some time as an important factor in the identification of possible errors.

The possibility of errors in the interpretation of medication prescription and application is increased, when professionals in the unit are not familiar with the routine of the sector or distractions distractions, knowledge accidents in in accidents in increased, when professionals in the unit are to be for

If I have a professional who is here to take a break, an attestation, which is not from here, we try to be together. (P3)

who do not have experience in the practice in

[...] normally, the people working here at the NICU have been working for a long time. There are people who are 20 years old. The youngest are three, four years old. So with time and repetition, it is believed that these errors have been drastically diminishing. (P6)

It was also reported the importance of communicating to the team the arrival of a medication with a different concentration than usual.

Every new information about medications goes to the groups, to shift nurses, and she has the task of getting her employees out. (P18)

So draw attention, from talking to the whole team, from going from turn to turn, pointing out that it is now coming in differently, which has to pay attention to the dilution. Or, when one medication is very similar to another, warn to pay more attention. (P17)

It is necessary to take care of storing separately the medications that have similar labels.

So let's try to keep them well separated from each other and pay close attention to the time it takes to get an alert from a communication from all employees. (P17)

I think the storage of medications, a very broad identification of the medications and the very visible labels. (P21)

During the prescription of drugs, several aspects of the child, such as weight and age, are taken into account. From these aspects, it is possible to identify possible errors, such as the appropriate dose and volume to dilute the medications. These errors are recognized when the nurse reviews the prescription.

We usually have an idea of the child's age, weight, to see if it is in accordance with the dose to be administered. The nurse, when taking the medication, gives a check, knows that patient by the weight, that dose or, in the previous prescription, there was one thing and, in today's prescription, there was another. (P14)

It should be emphasized that the timing of the preparation and administration of the Safe administration of medication in...

drugs requires a careful attention, without distractions, and with a focus on the knowledge about each drug, to avoid accidents in its application.

Attention is what has to have, attention, attention. At that time of preparation, you can not be talking to other people, you have to be focused. This is key and at the time of administration, too. (P15)

It has to be done with care, with tranquility, without haste and go reviewing, looking several times to be sure [...]. I, when I do, can not talk to anyone. Very focused. (P18)

It is verified that, when arriving at the bed, the professionals of Nursing look for to make sure of the name of the child who will medicate, since it is common the mothers change the children of bed, being able to cause errors.

Because, here, there are children who are in the bed of others. So, you have to come and question, mothers also leave the children with other mothers, so you have to come and ask the name of the little guy, to make sure that it is the child that you have to administer the medication. (P15)

[...] another thing I always have to do is come by speaking the child's name or the mother's name when it is not yet registered, because if I make a mistake, sometimes the patient or the companion can identify that I'm missing. There are three things I do that I always have to do. (P16)

DISCUSSION

It is revealed, with this study, that the nurse has a concern with the issue of medication administration and realizes that the permanent education of the team, the experience of the professionals and the commitment of each member of the team are factors that can decrease the occurrence of errors in the NICU and UP. It is pointed out that the promotion of safe practices requires the participation of all individuals involved in the drug use process, and that all staff involved in child care should receive support administrators and organizational leaders, and should have them as partners active and responsible for the safety of such a fragile population, and participating in the design and support of a safe and efficient medication use system.⁵

Patient safety studies have been boosted since 2004, with the publication of the World Alliance for Patient Safety; thus, these studies contributed to the practice of safe care for hospitalized children, ⁶ in the context of Pediatric Nursing, establishing that the promotion of safe practices requires the

participation of all individuals involved in the medication administration process.

It was reported, by the study participants, as Nursing care, the importance of recording the medication given. It is understood that the ability to provide quality care to ensure patient safety in Pediatric Nursing is connected to the various forms of care development, which are manifested in the quality of records of information in medical records, the use of checklists in procedures, in professional training, in addition to the involvement of parents as partners in the care process.⁶

It is also considered the need to strengthen and encourage professionals to record errors and adverse events in the units, thus replacing the habitual culture of punishment of the worker, promoting a positive atmosphere in the work environment, valuing and stimulating patient safety.⁷

In this study, the supervision of the team by the nurse is seen as a care, because during the administration of the medication, doubts may arise and this professional should be alert to heal them. It is argued that the preparation and administration of medications are the responsibility of the entire Nursing team, the nurse is however, responsible planning, guiding and supervising practices related to drug therapy, being necessary the knowledge about the drug to be administered, its action, route of administration, interactions and adverse effects, aiding in the prevention medication error.8

It was also noted the concern to label all the syringes placed in the tray so that the equipment does not mix: when organizing the syringes, the medications should be labeled individually so that there is no exchange of medication between the patients.⁹

It is necessary that the professionals put into practice the certain ones to be observed to guarantee a safe practice. ¹⁰ It is also observed that nurses should pay attention to the expiration date and the time required to infuse each medication, a process favored by the use of protocols and agreements between the teams. ¹¹

It was verified that the transcription of the prescription in paper is a strategy, allowing that the preparation of the medication is not made by memorization, however, this information must be the most complete possible to avoid the error¹² since, in the case of children, the care should be doubled considering its diminished body surface and

Safe administration of medication in...

because there are no specific formulations for its physiological characteristics.

is known that biochemical physiological changes take place from the time of birth until adulthood and that these changes significantly influence mechanisms of absorption, distribution, metabolization and excretion pharmaceuticals. It is understood, therefore, that the stages of development of the individual are one of the main variables that can interfere in the metabolization of drugs and, therefore, in the effects on the organism. It is emphasized, therefore, that children can not be seen as "small adults" thev have different reactions regarding the pharmacological effects. 13

In a study comparing the list of essential medicines for children of the World Health Organization (WHO) and the National List of Essential Medicines (NLEM), there is a lack of fundamental drug formulations for children in the Brazil, besides not being found in public units.¹⁴

CONCLUSION

The objective of this study was to know the care related to administration of medication in Neonatology and Pediatrics. As a basic care in drug administration, supervision of the work of technicians, direct follow-up of any new Nursing technician who came to work in the sector, translation of the medical prescription the Nursing technician / assistant, identification of (medication, dose schedule) and the record of the medication administered in the child's care records and signed by the person who administered the drugs.

They also referred to the millimetric calculation of the doses to be administered, the dilution of each medication in its correct amounts, the checking of the validity of the medication, and the non-application of chemically incompatible drugs at the same time to avoid precipitation and the formation of thrombi or emboli, the guarantee of the asepsis of the place of administration, the care with the temperature suitable for the storage and the use of the medicines and the clarification of all doubts existing before the application of the medication.

It was concluded that the topic of patient safety, in relation to medication administration in NICUs and PU's, is complex, requiring professionals of the Nursing team, skills and competencies to deal with it. It is observed that the nurse plays an important

role in the care related to the preparation, administration and evaluation of the patient after the administration of medicines, responding by the permanent education of his team and by the whole drug process, according to his code of ethics, and making itself responsible for any event that occurs during this process.

As a limitation of the study, it is important to carry out the research with participants linked to a single hospital, which led to results referring to a specific reality. It is considered that studies that cover other realities may contribute with new findings on the phenomenon in question.

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Safe administration of medication in...

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