

# The work process of a medication team from an action research perspective

*O processo de trabalho de um time de medicação na perspectiva de uma pesquisa-ação*

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## ABSTRACT

This study aimed to describe and analyze the work process of the medication team in a neonatal intensive care unit. This action research was carried out with the participation of 21 nurses at a university hospital neonatal unit. Interviews were conducted, along with documental research, systematic observation and workshops for data collection and thematic analysis. The study indicated three categories: difficulties encountered in the work process of the medication team; description of material resources and working environment; and standardization of the work process of the medication team. The principal barriers indicated were lack of standardization of the work process and the absence and/or updating of instruments supporting work practices. As such, the following products were elaborated from the group actions: work process flowchart; development and standardization of printouts; updating of Standard Operational Protocols and duties of the nursing team; and standardization of storeroom, pharmacy and support material.

**Descriptors:** Patient Safety; Medication Systems; Intensive Care, Neonatal; Workflow; Neonatal Nursing.

## RESUMO

Objetivou-se descrever e analisar o processo de trabalho do time de medicação na unidade de terapia intensiva neonatal. Pesquisa-ação realizada com 21 enfermeiros de uma unidade neonatal de um hospital universitário. Foram realizadas entrevistas, pesquisa documental, observação sistemática e seminários para a coleta e análise temática dos dados. O estudo apontou três categorias: dificuldades encontradas no processo de trabalho do time de medicação; caracterização dos recursos materiais e ambiente de trabalho; padronização do processo de trabalho do time de medicação. As principais barreiras apontadas foram a falta de padronização do processo de trabalho e a ausência e/ou atualização de instrumentos que subsidiam sua prática. Desta forma, a partir das ações do grupo foram elaborados os seguintes produtos: fluxograma do processo de trabalho; construção e padronização de impressos; atualização de Protocolos Operacionais Padrão e atribuições da equipe de enfermagem; padronização de material de almoxarifado, farmácia e apoio.

**Descritores:** Segurança do Paciente; Sistemas de Medicação; Terapia Intensiva Neonatal; Fluxo de trabalho; Enfermagem Neonatal.

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**How to cite this article:** Almeida VS, Andrade M, Querido DL, Christoffel MM, Alves AMA, Esteves APVS. The work process of a medication team from an action research perspective. Rev. Eletr. Enferm. [Internet]. 2019 [cited on: \_\_\_\_\_];21:54575. Available at: <https://doi.org/10.5216/ree.v21.54575>

Received on: 08/23/2019. Accepted on: 11/18/2019. Available on: 12/31/2019.

## INTRODUCTION

To promote safe use of medication, it is essential to seek to understand human factors in the use of technology and control of environmental conditions. Despite the benefits, this process remains vulnerable and offers risks, possibly resulting in undesired effects on care<sup>(1)</sup>.

Among the undesired risks are the so-called Adverse Drug Events (ADE), which are frequent all over the world. A study reveals that these are the most frequent incidents in Neonatal Intensive Care Units (NICU), the principal cause being human activities in the provision of care<sup>(1)</sup>. It is estimated that the probability of errors with the potential to cause harm is three times greater in hospitalized children than in adults<sup>(2)</sup>, with eight times more chance of it occurring with NICU patients than with other hospitalized patients<sup>(3,4)</sup>.

A study carried out in an NICU revealed that the most common medication-related incidents are related to incorrect or inappropriate dosage (mean of 38%), followed by omission, failure in the administration technique, and wrong route administration<sup>(1)</sup>. Premature newborns (NBs) are the most susceptible due to the severity of their condition, which demands a longer stay in hospital with numerous interventions being necessary for treatment and recovery<sup>(3-5)</sup>. Furthermore, the specific dosages for this group of patients directly influences the necessity for greater care in the preparation and administration of medication<sup>(1)</sup>.

In the international literature, the most recent Guidelines (2011) advocate that specialized intravenous care teams, known as IV Teams, are effective in reducing the incidence of infections related to catheters, complications, and costs associated with this procedure. Moreover, the risk of infection increases with the reduction of specialized nursing personnel, among other reasons<sup>(6)</sup>.

Thus, the “Medication Team” (MT) was created to target patient safety and the reduction of ADEs in the NICU. It consists of nurses dedicated exclusively to the preparation, discussion and revision of the medication system, as a strategy to reduce harm to the most vulnerable group of patients.

The creation of a specialized group in the area is important, as organization of the work process in all phases of drug therapy varies according to the institution. This makes it difficult to establish standardized conduct, increasing costs and potential risks that could compromise patient safety<sup>(7)</sup>.

The MT acts as a kind of “consultant/guide”, based on good practices and the literature, analyzing and making decisions related to the entire drug therapy process<sup>(8)</sup>. The group is involved in all stages of the unit’s medication system, including drug prescription, preparation, dispensing and administration.

The creation of a team contributes significantly to diminishing variability in professional nursing practices,

providing improvements in the quality of care and reducing risks and complications in drug administration, besides promoting development, education, policies, and guidelines related to the theme<sup>(9)</sup>.

Work processes are presented as an important form of healthcare technology aimed at patient safety<sup>(10)</sup>. However, there is a gap in the literature with regards to describing the work of teams focused on drug therapy. A search on the databases registers the occurrence of other teams, none of which are connected to the theme<sup>(11,12)</sup>. A recent integrative review indicates a lack of studies with strong levels of evidence relating to the Brazilian scenario<sup>(13)</sup>.

In light of the above, it was deemed necessary to better understand how the process works and what the possible vulnerabilities in the work process of the team are, leading to the following aim for this study: describe and analyze the work process of a medication team at an NICU.

## METHOD

This is descriptive action research (AR) with a qualitative approach. The study took place in a type II NICU, with a 25-bed capacity, at a university hospital in the state of Rio de Janeiro, which mainly attends premature NBs or full-term NBs with clinical/physiological instability.

In AR, the subjectivity of the individuals involved is considered, with recognition of the genuine need for change<sup>(14)</sup>. This is an important aspect to be considered in the research strategy, since there are different work groups in the organizational area, whereby targets and decisions cannot be executed without the participation of all members<sup>(15)</sup>. The introduction of participative methods is recommended, with the aim of increasing productivity and improving the workplace<sup>(15)</sup>.

In the organizational context, this type of study considers prioritization of the participation of representatives with interest in the study, who bring experience, values, behavior, and specific perceptions. Its principle consists of collaboration between researchers and interested members; definition of the problem; searching for solutions; and deepening of the available knowledge, accompanied by pedagogical practices. Moreover, it has the objective of provoking organizational change through new technology, information circulation, collective learning, and organization of work into groups uniting various skills<sup>(15)</sup>.

In AR, research participants are intentionally chosen for their relevance regarding a determined issue<sup>(15)</sup>. In this case, the nurses of the MT needed to meet the following criteria for inclusion: specialization or *stricto sensu* course in the neonatal area; and at least two-year’s experience in drug therapy in neonatology. Those on medical leave or absent for any motive during the data collection period were excluded. A total of

21 nurses participated in the study, which corresponds to all the nurses composing the MT meeting the pre-established criteria. Free participation and data anonymity were guaranteed through adoption of an alphanumeric code composed of the letter T (Team) and an Arabic numeral according to the sequence of interviews.

Data collection took place in 2014 and will be described in accordance with the corresponding phases in Chart 1.

With the grouping of the obtained data, the results were organized as per the stages of the thematic analysis: pre-analysis, exploration of the material, treatment of the results,

inference, and interpretation. The aim was to identify and codify the emerging themes so that they could subsequently be grouped by similarity, enabling the elaboration of three categories that assisted in the description and understanding of the investigated phenomenon<sup>(16)</sup>, and which were presented through descriptive data, figures and tables in the results.

The study followed the recommendations of the Regulations and Guidelines for Research involving Human Beings, presented in Resolution n° 466/2012 and was approved by the Research Ethics Committee of the institution, decision n° 146.409 and CAAE n° 10209312500005259.

**Chart 1.** Research stages. Rio de Janeiro, RJ, Brazil, 2014.

Phase	Activity
Exploratory phase (Preliminary)	<p>Data collection in this phase was carried out in the period from March to May 2014, through semi-structured interviews consisting of a socio-professional profile form and questions related to barriers, resources and other factors that interfere in the work process of the MT.</p> <p>In parallel, all of the documents used, created by, or related to the group were surveyed and collected over the same period: SOP, communication instruments, order books and nursing occurrences books, team meeting minutes, and printouts used in the unit. Furthermore, systematic observation was also carried out by the lead researcher, using a structured script related to the medication room; material resources used; and the work process of the MT.</p>
Exploratory phase (Preliminary)	<p>The script was based on the medication system proposed by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO): prescription, preparation and dispensing, administration of drugs, and patient monitoring in relation to the effects of the same.</p> <p>Moreover, a fifth process known as “medication transcription” was incorporated into the script. This occurs in the study scenario when a professional from the nursing team makes systematized copies (by time, patient name, and medication) of the data referring to the medication prescribed to a form exclusive to the nursing team.</p>
<p>Exploratory phase (Meetings)</p> <p>1<sup>st</sup> and 2<sup>nd</sup> Workshop meetings</p>	<p>After the preliminary exploratory phase, in the period from June to August 2014, action research workshops were adapted to the routine of periodical in-service team meetings. Five meetings, previously arranged on the unit timetable, were used for this exploratory phase (1<sup>st</sup> and 2<sup>nd</sup> meetings) and for the action phase (3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> meetings).</p> <p>The meetings also supported other action research phases (data collection, learning, action, and assessment). Each meeting lasted two hours, on average, and was recorded for later transcription in its entirety, besides being registered in the field diary. All the meetings were carried out in meeting rooms attached to the NICU, without external interference.</p> <p>To begin the exploratory phase (meetings), at the first two meetings the following aspects were discussed: aims of the study; group interests; rules of participation and definition of the functioning of meetings (date, place, time, and duration); survey of necessities and problems; listing of tasks and duties of the lead researcher and the nurses of the team within the research.</p> <p>The discussions were guided by trigger questions, elaborated according to the results of the analysis of data collected in the interviews, documental research, and observation.</p> <p>In these groups, the team nurses were able to reflect on common practice to identify vulnerable points and plan actions related to the themes listed by the group as most relevant.</p> <p>The wording of the problem was determined by the lack of standardization and the need to update the participants on important themes related to their work process.</p>

Continue...

**Chart 1.** Continuation.

Phase	Activity
Action Phase 3 <sup>rd</sup> , 4 <sup>th</sup> , and 5 <sup>th</sup> Workshop meetings	Based on the data obtained in the exploratory phase (preliminary and meetings) the priority themes established for the action phase were: development of printouts (SOP related to medications and other specific printouts that provide support to the work of the group); updating of other SOPs and nursing team duties; standardization of printouts, storeroom material, pharmacy material and support material already adopted by the institution. For this, the nurses were divided by shift and affinity to develop or update the materials. The exchange of experiences between the participants provided a rich learning experience, which was also supported by a theoretical update regarding the use of medication in the NICU. At the 5 <sup>th</sup> meeting, the group elaborated a proposal for standardization of the work process of the MT, through the development of a flowchart with a description of the steps from the medical prescription phase up to monitoring of adverse effects, based on the material developed by the group.
Assessment Phase 6 <sup>th</sup> meeting	All the materials developed by the group were presented to and evaluated by other nurses from the unit that were not members of the MT. These instruments were put into practice with the intention of functioning as a guide, enabling each professional to follow a structured itinerary (previously non-existent), with the aim of reducing the risk of error during the work process of the team.

## RESULTS

The results of the completion of the socio-professional profile form by the 21 participants showed that there is an age range of 30 to 60 years, with a mean age of 42. The longest period of professional qualification was 30 years and the shortest period was one year, with a mean of 12 years. Time working at the institution and in the neonatal intensive care area varied from two to 25 years, with a mean of six years in the NICU. The mean time working on the MT was two years, whereby 15 professionals referred to having participated in professional events for updates, 12 had received further training or refresher courses in the area, 14 had a *lato sensu* qualification, and seven a *stricto sensu* qualification.

The generated data resulted in the three categories described below.

### Difficulties found in the work process of the medication team

The main difficulties faced by participants were reported as: lack of standardization in the work of the group, both in relation to the care itself and to standardization of printouts and material resources used by the group; and excess external noise during the preparation of medicines in the medication room:

*[...] this [lack of standardization] hampers a lot of the team's work because if it were written down, there would be a rule (T3).*

*[...] there are a lot of things that aren't written, that we do the way we think [...] including with the printouts, so that*

*when there is someone new or a resident and there isn't a list [...]* (T4).

*[...] the materials that we should use to prepare are not written down, like whether the syringe to administer in the PICC has to be 10 or 20 [ml], we know because we are used to it* (T1).

*[...] one thing that makes it difficult is the noise when we're preparing medication, it distracts us* (T20).

### Description of the material resources and the working environment of the medication team

The statements obtained from the participants highlighted the importance of setting out strategies to minimize the difficulties chosen as priorities, among which were the confection of Charts 2 and 3, which characterize the resources and working environment of the medication team.

### Standardization of the work process of the medication team

Figure 1 presents a flowchart describing the operational sequence of the different stages of the unit's medication system, and the interaction between the professionals themselves and with nurses from the team.

To make the functions of each member of the nursing team in the medication system clearer in the NICU, their duties were updated, as defined in Chart 4.

Based on this organization it was also possible to describe the duties of other professionals acting within the medication

**Chart 2.** Structural and functional description of the Medication Room, with description from the perspective of the participants. Rio de Janeiro, RJ, Brazil, 2014.

Statements of the Participants	Description of the Medication room
<i>In the room, we only prepare the medication, that's all it's for. But there is medication that is given in bed, for nebulization, ointment (T1).</i>	<p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>- Exclusively for the preparation of parenteral and enteral solutions for NBs admitted to the NICU.</li> <li>- Topical and inhalation medications are manipulated at the bedside of the NB and the materials used for their administration are for individual use, this procedure being a duty of the nursing technician.</li> </ul>
	<p><b>Measurement</b></p> <ul style="list-style-type: none"> <li>- 5.3m<sup>2</sup>.</li> </ul>
<i>[...] the lighting in the room is good, there's no problem, and the air-con works well, it's actually pretty cold, you have to write down the room temperature in the SD and SN [...] (T8).</i>	<p><b>Illumination, Ventilation, and Air Conditioning</b></p> <ul style="list-style-type: none"> <li>- Illumination is provided by a sufficient quantity of suitable fluorescent lamps.</li> <li>- There are no windows, only a small aperture in the door so that the medication nurse can communicate with the interior area of the NICU, in case of emergency.</li> <li>- Ventilation is provided by openings in the upper part of the division enclosing the preparation area, which allows communication with the patient area of the NICU.</li> <li>- Air conditioning is provided by a central system, installed in the ceiling of the medication preparation room.</li> </ul>
<i>[...] we put things on the shelves like it was a back-up store of medication [...] (T8).</i>	<p><b>Furniture and Resources</b></p> <ul style="list-style-type: none"> <li>- The room has a sink and recipients for soap and paper towels fixed to the wall. There are also shelves for storage of parenteral and enteral route medication, and a recipient for the disposal of sharp material, as well as a stainless-steel partition at the sink, separating it from the dry counter used for the preparation of medication.</li> </ul>

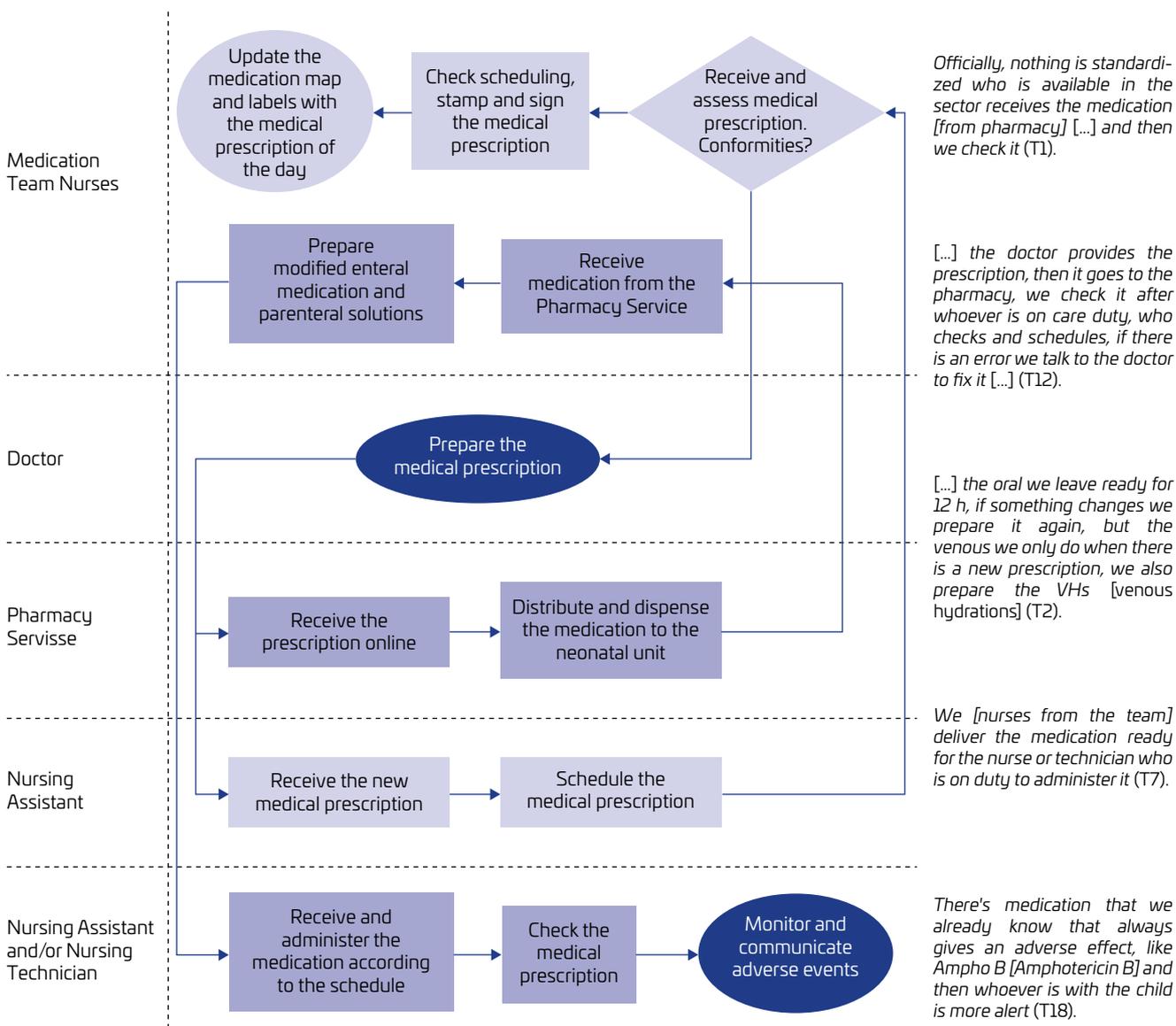
**Chart 3.** Description of material resources and their description from the perspective of the participants. Rio de Janeiro, RJ, Brazil, 2014.

Statements of the Participants	Material resources used by the Medication Team	
<i>[...] it's never-ending paperwork, everything is paperwork, but it also serves for our control, because we have a lot of it to clear up doubts and consult and others to fill in that the pharmacy and storeroom demand [...] (T2).</i>	P R I N T O U T S	Developed by the team  Medication map; table for the administration and conservation of oral use medicines; solicitation map for medicines manipulated at the pharmacy; table of medicines usually manipulated in the neonatal unit; refrigerator temperature control; table of standardized equipment for use in medication; table of standardized materials for use in medication; table of medication dilution (name of medicine, storage, dilution, compatible solutions, infusion time, stability after reconstitution, observations and incompatibility).
		SOP for the preparation of oral route (OR), intramuscular (IM), intravenous (IV), subcutaneous (SC), or sublingual (SL) medicines; ADE medication notification form; SOP for patient monitoring regarding adverse effects from medication.
	Updated by the team	SOP related to the administration of IM, IV, SC, OR and SL medicines.  Duties of the nursing team.
	Standardized by the institution	Requests for psychotropic drugs and special medicines; medical prescription; water balance.

Continue...

**Chart 3.** Continuation.

Statements of the Participants	Material resources used by the Medication Team	
[...] for preparation we use syringes, needles, alcohol, gauze, sterile gloves, trays, serum equipment (T21).	Storeroom Material	Syringes, needles, extenders, tubes, infusion pump equipment, caps, masks, sterile gloves, procedure gloves, sterile gauze, non-sterile gauze, paper towels, adhesive tape, devices, irrigation device in closed system flasks, and degermation brushes.
The medication we put in basins and the VHs [venous hydration] on trays [...] (T10).	Pharmacy Material	Antiseptic solutions used during the preparation of medicines: 70% alcohol and 0.5% chlorhexidine requested weekly from the Pharmacy Service.
	Support Material	Basins, trays, measuring cups, pots and plastic bags.



**Figure 1.** Flowchart of the work process of the medication team, of the NICU, and description from the perspective of the corresponding participants. Rio de Janeiro, RJ, Brazil, 2014.

system, beginning from the moment when the doctor requests the prescription on the online system.

The Pharmacy Service is responsible for receiving the prescriptions, immediately after finalization by the doctor. Simultaneously, the prescriptions are printed out and delivered to the nursing assistants, who conduct the first check. If everything is correct, this nurse schedules the medication times, considering, among other factors, the prescribed dose interval and possible interactions with food or other medication. The nurse then signs and stamps the prescription.

The medication nurse then checks once more. Therefore, there is a “double” check, before signing and stamping. If any item is not in compliance, the medical prescription returns to the “prepare the medical prescription” phase. If there is an alteration, this does not occur on the system; the medication is suspended, altered or added to manually on the prescription. Subsequently, the medication map is checked once more, and corrections and updates are made by the medication nurse.

It was a consensus among the group that the transcription phase is an important stage within the medication system, since the frequent unavailability of the prescription for preparation of the medication, due to adjustments by the medical team, impairs execution of the same.

In the present study, the role of the pharmacy is restricted, being limited primarily to the dispensing of medication, with difficulty in reviewing prescriptions. Upon receiving the online prescription, the pharmacy service selects the medicines for use in the following 24 hours and dispenses them individually, with a copy of the prescription. However, it was observed that sometimes a greater quantity of medication is dispensed than necessary, due to the lack of quantity prevision used in filling equipment and perfusers.

**Chart 4.** Nursing Team Duties. Rio de Janeiro, RJ, Brazil, 2014.

Function	Ativity
Medication nurses	Prepare medication in the medication room. There is a team of 24 professionals.
Nursing assistants	Assist/engage in the direct care of the most critical NBs or execute procedures of greater complexity, besides administering medication via central-venous catheters. This is a team of 27 professionals.
Nursing technicians	Assist/engage in the direct care of low and medium complexity NBs and administer OR, SC, IM, SL, topical, inhalation and IV medication in peripheral venous catheters. There are 36 professionals on this team.

During the Day shift, the medication nurse receives the medication and the copies of the prescriptions sent by the Pharmacy Service, and carries out a new check, observing the identification of the NB, medicine name, prescribed pharmaceutical form, dose, dose interval, validity, temperature and packaging.

As a preliminary strategy for improving medication preparation, given the noise problem, it was established that a sign would be made with the warning: “Medication in preparation. Do not enter”. Moreover, a routine of locking the medication room door during preparation was adopted, also with the objective of minimizing noise coming from outside.

The preliminary procedure for the preparation of the medication begins with the preparation of labels and identification tags for the medicines. The group chose to add the name of the professional that prepared the medication to the label.

The MT nurses prepare enteral medication after the prescription has been made, using a sterile technique, with the medicine remaining stored in the refrigerator for up to 12 hours and distributed according to the schedule. Parenteral solutions for continuous infusion or intermittent administration are prepared according to the time of the prescription.

The nursing assistant or the nursing technician assigned to work directly with the NB receives the medication in individual basins, protected by plastic, with the orientation that the medicine should be administered in good time and not left on the counter, so as to maintain its integrity. After receiving the medicine, they check the prescription and administer the medication. The nursing technician is trained to administer medication via all routes, except through central-venous catheters (CVC).

After administering the medication, the professional checks the medical prescription and the medication nurse verifies the registration of the same on the water balance and on the prescription. After administration, the professionals closely monitor the progress of the NB, and communicate an ADE, should it occur. However, this communication is frequently carried out verbally, and occasionally on the patient’s records. This occurs even when the prescription of further medication is necessary as a result of the ADE, it not being possible to report it after the event.

Given the importance of systematic monitoring and acknowledgement that this is not being carried out in this phase of the medication system, the group resolved to create a notification form, contemplating ADEs and an SOP for patient monitoring.

It should also be highlighted that the present study showed the importance of reducing the rotation of nurses preparing medication on each shift. This enables the professional to

acquire knowledge, expertise and abilities in relation to the most-used medicines in the sector, including in regard to analysis and transcription of medical prescriptions.

## DISCUSSION

The medication system of an NICU should be based on teamwork, transcending the prescription and administration phase, including a continuous work process that involves the development of clinical work protocols, specific printouts, discussions and the raising of awareness of the entire team involved in the process. Standardization promotes improvements in quality and progress of related activities, through guides or flowcharts for the developed procedures, providing agility and efficiency<sup>(8)</sup>.

Among the procedures attributed to the medication team is the assessment of material resources used in the work process within the unit<sup>(8)</sup>. Besides the resources used, another important point is the environment where the group develop their activities, the medication room.

The nursing services room in the neonatology area is for the storage and preparation of medication and should have a minimum size of 6.0 m<sup>2</sup><sup>(17)</sup>. Even after a recent extension, the space still does not comply with the legislation; the arrangement of the furniture remains inappropriate (shelving, refrigerator and benches), and nurses having difficulty to move around freely.

The parenteral solution preparation area should be dedicated exclusively to this end with restricted access. The illumination and ventilation should be sufficient so that the temperature and humidity of the air do not deteriorate the medicines, and also enable the performance of activities<sup>(4,18)</sup>.

The environments require a sufficient number of washbasins/sinks, with the provision of soap, antiseptic and hand-drying material. The parenteral solutions could be stored directly on load boards or shelves. Ready-to-use products can be stored in a specific cupboard, inside the preparation room<sup>(18,19)</sup>.

The infrastructure in the medication room is adequate in regard to wash basins, soap dispensers, shelves for storing medication, and recipients for the disposal of sharp material<sup>(18)</sup>.

During data collection, the presence of noise was observed in the unit, which made it difficult to concentrate on the preparation of medication. Such situations should be minimized, and the team should be encouraged to eliminate noise so that the process occurs with quality and safety, diminishing the risks to the patient<sup>(20)</sup>.

The medication transcription phase is common practice in the nursing team; however, this action may cause serious harm; with the possibility of changing the prescribed medicine or the administration route being highlighted, among others<sup>(21)</sup>.

During transcription, the labels made for small-volume parenteral solutions should contain the complete name

of the patient, bed, name of the medication, dosage, time, administration route and identification of the professional that prepared it<sup>(18,20)</sup>.

In the studied institution the medical prescription is electronic, which contributes to the prevention of medication errors derived from handwriting or the reading of the same when handwritten<sup>(22)</sup>. Furthermore, denomination of standardized medication by the electronic system facilitates its identification and contributes to reducing the chances of errors related to the name of the medication.

It is recommended that all alterations to the prescription are carried out electronically on the system<sup>(23)</sup>, and immediately communicated to the nursing team.

Double checking is also recommended, especially for high-risk patients, such as pediatric patients<sup>(5,23)</sup>. This should always be carried out by two nurses prior to administration.

At the time of checking, it is also important to clear up any possible doubts on the indication and posology of the medication prior to administration. This may help prevent unwanted drug interactions in the scheduling phase<sup>(19,23)</sup>.

Regarding the role of the pharmacy service, it is recommended that the pharmacist observes the concentration, viability, and physical-chemical and pharmacological compatibility of the components, dosage, pharmaceutical form, and administration route and time<sup>(21,24)</sup>. The distribution system of individualized medication, characterized by the distribution of prescribed medicines per patient, for 24-hour coverage, is presented as safer than a collective distribution system, albeit less safe than a unitary dose system<sup>(5,23)</sup>. This is because in the latter system the dose of medicine is dispensed ready for administration, without the necessity for transfer, calculation, or prior manipulation on the part of the nurses before administration<sup>(23)</sup>.

In relation to the medication preparation and administration phases, these constitute stages with the potential for medication errors. The moment of administration is the last opportunity to verify and interrupt possible errors, which is essential for the reduction of avoidable harm<sup>(25)</sup>.

Therefore, preparing the medication immediately before administration greatly contributes to avoiding errors<sup>(19,23)</sup>. Transport of the medicine from the preparation room to the patient should be carried out with due care to maintain physical-chemical and microbiological integrity<sup>(18)</sup>, and whenever possible it should be taken directly to the incubator of the NB<sup>(20)</sup>.

Administration of medication can be legally carried out by nursing technicians, although a nurse should supervise this stage, ensuring registration and administration, avoiding duplication of administration of the medicine by another professional<sup>(19,23)</sup>. Furthermore, it is the role of the nurse to train and update their team in relation to medication processes.

The lack of adequate ADE monitoring reveals the fragile awareness of the professionals involved regarding

the importance of such an action for patient safety, for the quality of care provided, and the efficacy of treatment, considering that this stage often ends up occurring only when undesired effects become evident after administration<sup>(20)</sup>.

The lack of systematization in the monitoring and communication of ADEs in the NICU hampers the investigation and implementation of measures that could contribute to the prevention of new events. This finding is based on the results collected from the monitoring of types and causes of these occurrences in the unit.

Every adverse event involving infusion therapy should be duly investigated based on the records of the problem<sup>(1,18)</sup>.

In this study, it is important to highlight the fundamental role of the nursing team in the medication system of the NICU, and the importance of the interactions between the various professional categories, which are essential for successful drug therapy.

Within this context, it should be remembered that the methodology enabled the nurses from the team to act as transforming agents of their own practice, in a specific organizational context.

## CONCLUSION

In the present study, it was possible to recognize and reproduce reflections on the work process of the MT. Within this context, the main difficulties reported by the group were lack of standardization of the work process, and absence and/or updating of various instruments that support their practice.

Thus, based on the prioritization of specific vulnerable areas, a flowchart was elaborated that describes the context and the relationship with other professionals through a graph guided by the phases of the medication system, demonstrating certain failings, especially in the monitoring of adverse events and in the revision of prescriptions by the Pharmacy Service.

The method also enabled the implementation of actions, the correction of failings, and decision making, generated by the professionals themselves based on their reality, making it a safe and high-quality process. This had an impact on operations and learning through a collectively constructed action plan, in which the nurses demonstrated knowledge of problems related to their daily routine, with the proposition of executable improvement strategies, such as the development of printouts; updating of SOPs and duties of the nursing team; and standardization of printouts, storeroom material, pharmacy material, and support material already adopted by the institution.

One of the limitations of the present study is related to the short time available for carrying out the groups, which inhibited a deeper analysis on the part of the participants. However, it is an unprecedented study on a theme of this nature, committed to and including all the phases of the medication system of

a specific unit, with the standardization of the work stages, constructed by the subjects themselves, strengthening the process within the unit in order to reduce ADEs.

Furthermore, the promotion of new technology, created based on the formation of a team dedicated to drug therapy, and the systematization of the work process, adds knowledge to the area of medication and provides support for replication in other groups of the same nature.

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