# PATIENT SAFETY AND CHANGE-OF-SHIFT REPORTING IN NEONATAL INTENSIVE CARE UNITS

# SEGURANÇA DO PACIENTE E PASSAGEM DE PLANTÃO EM UNIDADES DE CUIDADOS INTENSIVOS NEONATAIS

# SEGURIDAD DEL PACIENTE Y CAMBIO DE TURNO EN UNIDADES DE CUIDADOS INTENSIVOS NEONATALES

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Objective: to identify how patient safety is contemplated in shift reporting of nursing teams in Neonatal Intensive Care Units. Method: quantitative, exploratory-descriptive study conducted between 2012 and 2014. The sample consisted of 51 non-participant observations in three Neonatal Intensive Care Units using an observation form, field notes and audio recordings. Absolute and relative frequencies were used in data analysis. Results: non-beneficial behaviors such as delays, early departures, parallel conversations and non-use of technological resources were observed during the shifts. Conclusion: nursing professionals recognize the importance of change-of-shift reporting to ensure the continuity and the safety of care actions. However, some practices proved to be fragile and changes are necessary to ensure safety and to guide the care practices performed.

Descriptors: Patient safety. Nursing. Communication. Neonatal Intensive Care Units.

Objetivo: identificar como a segurança do paciente é contemplada na passagem de plantão de equipes de Enfermagem em Unidades de Cuidados intensivos neonatais. Método: pesquisa quantitativa, exploratório-descritiva realizada entre 2012 e 2014. Amostra constituída por 51 observações não participantes em três Unidades de Cuidados Intensivos Neonatais, mediante formulário de observação, notas de campo e gravações em áudio. Para análise de dados, utilizou-se frequência absoluta e relativa. Resultados: foram verificados comportamentos não benéficos à segurança do paciente durante a passagem de plantão, como os atrasos, saídas antecipadas, conversas paralelas e não utilização de recursos tecnológicos. Conclusão: existe o reconhecimento, por parte dos profissionais de Enfermagem, da importância da passagem de plantão de forma que se garanta a continuidade e a segurança das ações de cuidado instituídas. No entanto, algumas práticas mostraram-se frágeis e mudanças são necessárias para garantir segurança e nortear as práticas de cuidados realizadas.

Descritores: Segurança do paciente. Enfermagem. Comunicação. Unidades de Terapia Intensiva Neonatal.

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Objetivo: identificar como la seguridad del paciente es chequeada en el cambio de turno de equipos de enfermería en Unidades de Cuidados Intensivos Neonatales. Método: investigación cuantitativa, exploratorio-descriptiva, efectuada entre 2012 y 2014. Muestra compuesta por 51 observaciones no participantes en tres Unidades de Cuidados Intensivos Neonatales, mediante formulario de observación, notas de campo y grabaciones en audio. Se utilizaron frecuencias absolutas y relativas para analizar los datos. Resultados: se verificaron comportamientos no benéficos a la seguridad del paciente durante el cambio de turno, como retrasos, salidas tempranas, conversaciones paralelas y no utilización de recursos tecnológicos. Conclusión: hay el reconocimiento, por parte de los profesionales de enfermería, de la importancia del cambio de turno de forma que se garantice la continuidad y la seguridad de las acciones de cuidado establecidas. Sin embargo, algunas prácticas se mostraron frágiles, lo que requiere cambios para garantizar seguridad y orientar las prácticas de cuidado.

Descriptores: Seguridad del Paciente. Enfermería. Comunicación. Unidades de Cuidado Intensivo Neonatal.

#### Introduction

Prior to the global movement of positive actions for patient safety, authors such as Hippocrates<sup>(1)</sup> and Florence Nightingale<sup>(2)</sup> had already addressed the need to avoid causing harm to patients when providing health care. However, changes over time and on the world stage aimed at achieving safe and quality care were better visualized after the publication of the Institute of Medicine of the United States of America, which showed the magnitude of the issue, bringing alarming information about the mortality caused by avoidable errors and adverse events during hospitalizations<sup>(3)</sup>. Among the data published in this material, it is estimated that about 44,000 to 98,000 people die every year in the United States due to errors in the provision of health care. This was identified as the eighth cause of mortality (3).

Thus, due to the impact on global health, the World Health Organization (WHO) created in 2004 the Global Patient Safety Alliance. Currently, the WHO has 13 lines of action in the area of patient safety, among which are the Solutions for Patient Safety, created in 2007. It should be emphasized that among the solutions established by the WHO, one of them refers to the communication among professionals in health institutions in this context, communication in Nursing is a broad process in which the professionals transmit information about the patients, covering all the exchanges of information between the nursing team members and the other members of the health teams (5).

Shift reporting is one of the forms of communication within the nursing team and occurs during the change of shifts of these professionals. On this occasion, the assistance and the responsibility are transferred to the other professional. For this, information about the patients is transmitted in order to specify their problems and their needs, carrying out the planning of nursing actions for effectiveness of the prescribed treatment (6).

It is known that the quality of information passed on depends on the person's ability to transmit it, the eligibility of the communication modality, the amount of time dedicated to perform this activity and the team's commitment to record information that exposes the intercurrences that happened with the patient. Shift reporting depends on an articulated work among team members in order to create effective ways of transferring consistent information (7).

With regard to the factors that makeshift reporting difficult, we have: excessive or reduced amount of information; limited opportunity to ask questions; inconsistent information; omission or passing on erroneous information; non-use of standardized processes; unreadable records; language-related errors; lack of ability to transmit information; failures in the professional training process on the subject; interruptions and distractions. It is also worth mentioning the loss of patient information during the change-of-shift reporting, pointed out by some professionals (6,8).

Communication problems are among the main causes of adverse events in the context of health care. Such events include incorrect medication administration, delays in treatment or failure at the time of its implementation, as well as unnecessary repetition of avoidable exams and readmissions. In this way, the communication of accurate, organized and complete information about the patients, especially at the moment of change-of-shift reporting, is an important safety barrier under the responsibility of health professionals, particularly nurses (9).

Also in the scope of patient safety, it is known that the daily routine of the Nursing team is unique in Neonatal Intensive Care Units (NICUs), since they are complex environments that can offer greater risk to the patient's safety due to the peculiarities of the intensive care for neonates, the frequent use of technological devices and the need for specific knowledge and professionals skills (10)

Errors and adverse events that occur in NICUs are often serious, although preventable. The concern of the nursing teams working in these units is related to the fragility of these patients, because of their immaturity associated with the continuous implementation of high risk procedures and the low tolerance to medication errors .

Thus, in view of the relevance of change-ofshift reporting in the work process of Nursing teams and the specificity of the care provided in NICUs, this research aimed to identify how patient safety is contemplated in change-of-shift reporting by Nursing teams in neonatal Intensive Care Units.

# **Method**

Descriptive-exploratory study with quantitative approach performed in three NICUs of public hospitals in the South of Brazil. The choice of the places for study was due to the fact that these hospitals were the most accessed in the region. The study was conducted from 2012 to 2014. The NICUs were identified as NICU A, NICU B and NICU C. During the study, the NICU A had 5

active beds; the NICU B had 32 active beds; and the NICU C had 7 active beds.

The study sample consisted of 51 non-participant observations of change of shifts of nursing professionals of the three NICUs, which were divided into four stages: elaboration of an observation form, entry in the field work, data collection and data analysis.

The observation form used for data collection was elaborated based on literature review and consisted of two guiding axes: "Unit Identification" and "Change-of-shift Reporting". Both covered distinct topics about the changeof-shift reporting and patient safety. After its elaboration, this form was sent for evaluation by ten professional experts in patient safety and/or neonatology. The selection of these evaluators met the following criteria: being a Brazilian nurse; publishing works in the area of neonatology or patient safety; having a PhD or postdoctoral degree in the areas of knowledge of this study; and being integrant of research groups. From the ten evaluators, only four responded to the invitation for voluntary appreciation of the form's primary content, being three from the Southeast region and one from the South region of the country. Thus, after the evaluation by the experts, the form was improved according to the contributions received. For these changes, the level of significance was set at 70%.

Prior to beginning the field work, the heads of each NICU were contacted and invited to participate in the study. The objectives, justification and stages of the research were presented. Secondly, prior to data collection, daily visits during 3 to 4 days were made to the three hospitals surveyed to invite the other professionals of the Nursing teams to participate in the study, clarifying their doubts and formalizing their participation by the signing of the Individual Informed Consent Form (ICF).

In addition to the collection by using the observation form, field notes and audio recordings of the change-of shift reporting were also used for seven consecutive days, including weekends and holidays. The data collected were tabulated in a *Microsoft Excel*® spreadsheet

and analyzed based on absolute and relative frequencies.

Ethical issues were considered, respecting the norms and directives regulating research involving human beings defined in Resolution n. 466/12 of the National Health Council, Ministry of Health. The study was approved by the Ethics Committee of the at the Universidade Federal de Santa Catarina under n. 2278/2.

## Results

During the data collection period, 18 observations were performed in the NICU A, 14 in the NICU B, and 19 in the NICU C. In relation to the shifts when the observations were made, 21 were in the morning period, 9 in the evening and 21 at night. The differences related to the number of observations per shift in each hospital were due to the dynamic functioning of each unit.

Among the factors related to the operationalization of the change-of-shift reporting, we observed that only the nursing team participated in this activity; other health professionals did not get involved. Regarding the change-of-shift reporting, 32 (62.8%) were performed at the patient's bedside and 18 (37.2%) at the unit's central desk.

In general way, the professionals who were responsible for patient care during the shift where the ones who passed on the information during the change-of-shift reporting, often performed by technicians and nursing assistants, as verified in 47 (92%) observations. Notably, nurses, as coordinators of the nursing team, complemented the information provided by colleagues. Regarding the duration of this activity, in 38 (74.5%) observations, the total time dedicated to this activity comprised between 6 and 10 minutes.

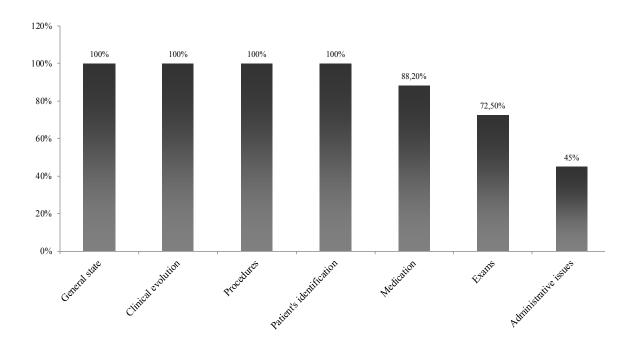
We noted in all the observations that all members of the nursing team received information about the patients. As for the presence of companions/relatives of the newborns, it was possible to perceive that they were not present during the change-of-shift reporting.

In all change-of-shift reports, there was predominance of isolated verbal communication. It is noteworthy that few professionals used nursing notes of the care provided during the shift to pass the patients' information to the team. The use of technological devices as support for the realization of shift reporting was also not identified in any of the observations.

However, it should be noted that, in this study, shift reporting was not considered verbal and written, since the annotations were not standardized at this moment and were based on non-systematic annotations that had the only purpose of providing support to the nurses at the time of Nursing evolution.

In addition to factors related to the operationalization of shift reporting, issues on the conducts and behaviors of professionals during this activity were also considered. Thus, it was verified that in 50 (98%) observations, the professionals were attentive to the information passed on by colleagues. On the other hand, delays and early departures of professionals were identified in 29 (56.8%) change-of-shift reports. Other behaviors such as parallel conversations and provision of care for newborns were less frequent, observed in 21 (41.1%) and 19 (37.2%) observations, respectively. It was also observed that in all change-of-shift reports, there was opportunity to clarify doubts and to the considerations of questions about the care and treatments prescribed by the professionals. The type of information passed on at this time was also determined (Graphic 1).

**Graphic 1 –** Types and frequency of information passed on during change-of-shift reporting in Neonatal Intensive Care Units. Florianópolis, Santa Catarina, Brazil, 2014



Source: Created by the authors.

Information regarding the general condition was mainly related to the "evolution of the clinical picture" and to "changes in signs and symptoms" of the newborn in 51 (100%) and 49 (96%) change-of-shift reporting occasions, respectively.

Regarding the information on medications used, the medication name and the route of administration were more frequently mentioned, both of which were verified in 37 (72.5%) change-of-shift reports. However, this topic deserves attention, because some peculiar situations occurred. At some times, professionals reported only the class of medication used, such as "antibiotics". In other moments, they reported the abbreviated name of the medication, such as "Amica" for Amicacin medication.

Also regarding the information on the medications used, the least mentioned were the

time of administration, in 17 (33.3%) observations; administered dose, in 14 (27.5%); and adverse drug reactions, in only one observation (1.9%).

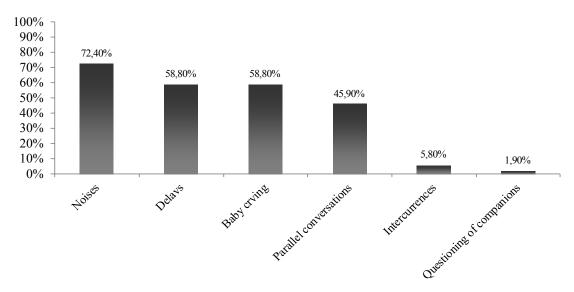
Regarding the information about exams, these were exclusively about the types of exams that were or would be performed with the newborns in 37 (72.5%) change-of-shift reports.

Among the issues related to administrative activities, information on equipment maintenance was passed on in 11 (21.5%) observations, followed by information regarding the work process (human resources) of the unit and requests for consumable materials in 7 (13.7%) and 6 (11.7%) change-of-shift reporting occasions, respectively.

Another aspect verified in this research was the occurrence of interruptions or factors that interfered in the shift reporting realization (Graph 2).

6 Patient safety and change-of-shift reporting in neonatal intensive care units

Graph 2 - Factors that interfere with change-of-shift reporting in Neonatal Intensive Care Units. Florianópolis, Santa Catarina, Brazil, 2014



Source: Created by the authors.

We noted that the occurrence of factors that interfered in the realization of the change-of-shift reporting was present in 46 (90.2%) observations. The identified factors were: monitor noises, delays and early departures of professionals, baby crying, parallel conversations among professionals, and intercurrences with patients.

# Discussion

The exchange of information between work shifts in health services represents an aspect of the communication process considered potentially critical for the occurrence of adverse events to patients (12). Communication is an essential aspect of nursing practice, since most of its actions occur in the context of interpersonal relationships. From this perspective, the communication process, through the Nursing change-of-shift reporting, make the identification of risk factors for patients possible and guarantee the planning of more appropriate and effective care (13).

We also understood that the establishment of an adequate communication among professionals during the change-of-shift reporting is intrinsically related to human, behavioral, environmental, technological and managerial factors, and it is necessary to know its dynamics, as well as to

identify situations that may interfere with this process.

When the dynamics of knowing operationalization of the shift reporting, we noted that they were performed exclusively among the members of the Nursing team. This has also been found in another Brazilian study 14. However, it is necessary to change this scenario; this activity must be carried out by the multidisciplinary team, because the positive results of this activity benefit patients, professionals and institutions. It brings positive contributions in the sense of performance of a more secure care, for the operationalization and articulation of the care provided to the user, potentiates the change-ofshift reporting between the teams, and it is an indispensable tool to guarantee the exercise of safe care.

Among the potentialities identified are the reduction of costs, greater personal satisfaction and quality of care as a result of earlier identification of clinical problems and referrals. There is also the implementation of preventive nursing interventions (14).

With regard to the place where the shift reporting happens, which influences the dynamics and quality of these actions, we observed that the findings are in line with other studies, in which most of the professionals perform it at the patient's bedside or they make that recommendation. It should be emphasized that the choice of this place guarantees patient safety, because it reduces the loss of information, and also contributes to greater professional satisfaction, as it encourages teamwork (13,15).

The modality chosen by professionals and health institutions for the realization of change-of-shift reporting is also a determining factor in this process, as it ensures that relevant and reliable information be passed on, ensuring the continuity and safety of care actions aimed at the patient.

As for standardized technological devices and instruments to support the change-of-shift reporting, their utilization in the units surveyed was not observed. However, it is known that the use of electronic systems and specific protocols for performing the change-of-shift reporting have shown positive results for patient safety, since they improve the quality of the information passed on, significantly reducing the errors related to the loss of information and communication problems among health teams  $^{(13,16\text{-}17)}$ . It is worth noting that there is a certain tendency to carry out the change-of-shift reporting on the basis of the joint use of written and verbal modalities due to the benefits of their alliance for patient safety. This is due to the low retention of information, as well as to no interaction among those involved, with the opportunity for reflection, questioning and clarification of doubts, when the verbal and written modalities are used isolated (13,18).

Still in relation to the transference of information made by the professional on duty in that shift, usually performed by the assistant and technical nursing staff and complemented by the nurses responsible for the shift, we emphasize that this configuration reduces the risks of loss or omission of information and assures that they be more reliable <sup>(19)</sup>.

Regarding the time dedicated taken to perform the change-of-shift reporting, this depends on factors such as the number of professionals present at the shift reporting, the quality and quantity of information passed on, the number of beds and the patient's severity. According to studies performed, this time can vary from less than 5 minutes to more than 45 minutes.

The absence of companions during the change-of-shift reporting and the consequent lack of patient-nurse interaction during these moments is also relevant. This fact points to the reflection about possible beneficiaries of this situation for both actors, since patients - in this case the parents - will not have the opportunity to make questions and contribute with relevant information (15).

Regarding the behaviors and conduct of the professionals observed, although they acknowledge the importance of the accomplishment of this activity, showing interest in participating at that moment, they presented behaviors that are non-beneficial to the patient's safety during this activity, such as delays and early departures, besides parallel conversations. This behavior was observed in more than half of the change-of-shift reports; and this deserves close attention, because such behaviors interfere with the quality and follow-up of the information passed on, which may compromise the safety and continuity of care actions (17)

Parallel conversations among professionals were also observed under the same perspective of delays and early departures, but their occurrence was less frequent during the changeof-shift reporting. This factor interferes with the dynamics of this activity, since it diverts the focus from the professionals involved. In the face of these interferences, the professionals who are passing on the information may erroneously transmit them or even forget something important to be passed on. As for those who are receiving the information, they may pay less retention because of distraction or lack of attention to the information provided. These represent situations in which there is an increased probability of risk for the patient's integrality of health.

With regard to the factors that interrupt or interfere with the change-of-shift reporting, which are more frequent in the activities observed, it should be emphasized that the noise prevents the establishment of an effective communication among professionals, since it makes it difficult to understand the information spoken. Thus, the communication process may become discontinuous and unsatisfactory. Likewise, also the occurrence of parallel conversations may change the focus of those involved, and information may be lost or forgotten.

In this context, the WHO establishes some guidelines for the realization of the change-of-shift reporting and indicates that the treatment and the changes or complications that occurred and that may occur during the shift are primordial topics to be passed on. Moreover, it mentions the need to clarify doubts and raise questions, promoting the interaction between those involved during the transfer of this information (21). All shift reporting observed promoted the interaction between the professionals involved, with the opportunity to clarify doubts and make questions, as well as to transfer the information related to the current general state, clinical evolution and procedures performed in the unit. These two topics are, therefore, in line with what is advocated by WHO. However, some disparities in relation to what is established by the WHO guidelines were also identified, such as the lower frequency of passing on information on medications used and scheduled or performed tests.

Regarding the information provided on the medications used, the need for a clear language, without the use of abbreviations or jargons, is important so as not to run the risk that the information will be not correctly understood (7,14). Regarding the information related to exams, this is a factor that deserves attention. Implications of the absence of this information can lead to inadequate care, unnecessary or incorrect procedures and/or lack of the previous preparation for such procedures.

In face of the above considerations, changeof-shift reports were in accordance with some guidelines established by WHO, specifically as those related to the place to carry out the changeof-shift reporting, questions and clarifications of doubts, transfer of information related to the current general state, clinical evolution and procedures performed with the patient. On the other hand, the reports were fragile due to the choice of the modality for their accomplishment, the delays and early departures of professionals, parallel conversations, lack of insertion of family members in this activity and recognition of the relevant information to be passed on with clarity to the team, mainly in relation to the medicines used and performance of tests.

**Problems** related to the adequate implementation and use of records, as well as standardized technological resources and instruments as supportive tools for the changeof-shift reporting were also observed and denote weaknesses on the part of the professionals of the nursing teams and the hospital institutions. Therefore, we suggest an articulated work among the main areas involved, with the objective of developing and promoting positive actions for patient safety, with the creation of strategies that minimize risks and guarantee a safe and quality care.

We suggested the development of studies in the area of communication and patient safety aimed at creating and/or strengthening a culture of safety in the work environment, which guides professionals towards safer and quality care practices.

# **Collaborations**

- 1. project, design, analysis and interpretation of data: Mariana Itamaro Gonçalves and Patrícia Kuerten Rocha;
- 2. writing of the article, critical review of the intellectual content: Sabrina de Souza, Andréia Tomazoni, Bruno Pereira Dal Paz and Ana Izabel Iatobá de Souza:
- 3. final approval of the version to be published: Sabrina de Souza, Andréia Tomazoni, Bruno Pereira Dal Paz, Ana Izabel Jatobá de Souza, Mariana Itamaro Gonçalves and Patrícia Kuerten Rocha.

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