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Pharmacist contribution in the multidisciplinary team in a neonatal intensive care unit

A contribuição da inserção do farmacêutico na equipe multiprofissional em unidade de terapia intensiva neonatal

El aporte de la inclusión del farmacéutico en el equipo unidad de cuidados intensivos neonatales

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Abstract

The newborn, admitted to a neonatal intensive care unit, due to his clinical severity, needs many medications; this increases the risk of problems related to drugs. The inclusion of the pharmacist in a multidisciplinary team can contribute for drug monitoring. Develop and implement a plan for pharmacist insertion in this scenario. It was developed as a work plan, and presented to service heads. The project was included in the Qualineo Program of the Ministry of Health. The pharmacist worked with an intensive care team, promoting rational use of medicines and detecting problems related to them. Initially, the pharmacist presented his objectives and how this could contribute to assist newborns. The nursing technicians had many doubts regarding drugs dilution and reconstitution that were clarified by the pharmacist. The nursing and technicians asked questions related to incompatibilities between medications, access routes and products for infusion. Doctors consulted the pharmacist about products available for prescription. The insertion in the team resulted in reduction of non-standard

products; use of appropriated infusion system; reduced pharmaceutical supplies expenditure, and extension of the team's perception. In summary, a pharmaceutical insertion in the team improved care, and promoted rational use of medicines.

Keywords: Newborn; Care pharmacist; Multidisciplinary team.

Resumo

O recém-nascido, internado em unidade de terapia intensiva neonatal, em sua maioria, devido a gravidade clínica necessitam de muitos medicamentos e aumenta o risco de problemas relacionados a medicamentos. A inserção do farmacêutico na equipe multiprofissional, pode contribuir, para o monitoramento dos fármacos. Desenvolver e implementar um plano para inserção do farmacêutico neste cenário. Foi desenvolvido um plano de trabalho, este foi apresentado as chefias dos serviços envolvidos e inserido no programa Qualineo do Ministério da Saúde. O farmacêutico atuou junto a equipe da unidade de terapia intensiva, visando a promoção do uso racional de medicamentos e detecção dos problemas relacionados a medicamentos. Inicialmente, o farmacêutico apresentou os objetivos do trabalho e possíveis contribuições junto a equipe e assistência ao neonato. Os técnicos de enfermagem apresentaram muitas dúvidas em relação a diluição e reconstituição dos medicamentos, porém esclarecidas. A equipe de enfermagem e técnicos apresentaram dúvidas em relação as incompatibilidades entre os medicamentos, vias de acessos parenterais e escolha dos produtos utilizados na infusão. Os médicos consultavam quais os produtos disponíveis para a prescrição. Esta inserção na equipe resultou na redução de produtos não padronizados; utilização do sistema adequado de infusão reduzindo as perdas e gastos com insumos farmacêuticos; assim como ampliação da percepção da equipe. Em síntese, a inserção do farmacêutico na equipe contribui, significativamente, para a melhoria da assistência, bem como para a promoção do uso racional do medicamento.

Palavras-chave: Neonato; Cuidado farmacêutico; Equipe multidisciplinar.

Resumen

El recién nacido, ingresado en una unidad de cuidados intensivos neonatales, debido a su gravedad clínica, necesita muchos medicamentos; esto aumenta el riesgo de problemas relacionados con las drogas. La inclusión del farmacéutico en un equipo multidisciplinar puede contribuir a la monitorización de fármacos. Desarrollar e implementar un plan de inserción farmacéutica en este escenario. Se desarrolló como un plan de trabajo y se presentó a los jefes de servicio. El proyecto fue incluido en el Programa Qualineo del Ministerio de

Salud. El farmacéutico trabajó con un equipo de cuidados intensivos, promoviendo el uso racional de los medicamentos y detectando problemas relacionados con ellos. Inicialmente, el farmacéutico presentó sus objetivos y cómo esto podría contribuir a ayudar a los recién nacidos. Los técnicos de enfermería tenían muchas dudas sobre la dilución y reconstitución de los medicamentos que fueron aclaradas por el farmacéutico. La enfermería y los técnicos formularon preguntas relacionadas con incompatibilidades entre medicamentos, vías de acceso y productos para infusión. Los médicos consultaron al farmacéutico sobre los productos disponibles para prescripción médica. La inserción en el equipo resultó en la reducción de productos no estándar; uso de un sistema de infusión apropiado; reducción del gasto en insumos farmacéuticos y ampliación de la percepción del equipo. En resumen, una inserción farmacéutica en el equipo mejoró la atención y promovió el uso racional de los medicamentos.

Palabras clave: Recién nacido; Cuidado farmacêutico; Equipo multidisciplinario.

1. Introduction

The newborn (NB), seriously ill, on average, uses 15 to 20 drugs a day, mainly intravenously. One fact calls attention, most of them are not licensed for pediatric use (Kalikstad, Skjerdal & Hansen, 2010). The justification for the prescription is based on the clinical severity of the newborn, invoking the risk/benefit ratio (Carvalho, et al., 2012). The occurrence of medication-related errors is three times higher in hospitalized children, when compared to adult patients (Kaushal, et al., 2001; Sullivan & Buchino, 2004; Conroy, et al., 2007), due to the use of different medications, and communication that can contribute to the occurrence of these erros (Kane-Gill & Weber, 2006).

In order to reduce the risk of errors and medication-related problems (MRP), the Clinical Pharmacy service (CP) (Okumura, Da Silva & Comarella, 2016) is recommended, which should be integrated to the other services of the Intensive Care Unit (ICU) (Brasil, 2019).

> The pharmacist role in the care of critical patients in the ICU, with respect to patient safety, quality management and efficiency, increased the demand for this professional as part of the multiprofessional team. As the reflection of all this movement and growth of medical clinical practice, more and more, specializations in areas of clinical care for critical patients are needed for increasing the professional capacity to impact services positively, contributing to improve clinical, economic and humanistic results (Durbin, 2006).

For promoting assistance to critically ill patients, the pharmacist should fit into the ICU routine, monitor the use of medications and evaluate treatment (Durbin, 2006). However, the clinical pharmacist, in general, has a routine of activities in the hospital pharmacy and this limits his performance at the bedside.

As related above, the presence of an exclusive pharmacist in the pediatric ICU bedside team, especially in the neonatal service, is essential. For this, it is necessary to build a relationship between pharmacists and health professionals in order to develop plans and make decisions to promote the improvement of quality in patients care, as this pharmacist inclusion can decrease the frequency of prescription errors. In addition, the sum of knowledge from different professionals can lead to the production of care under different prisms resulting in a broader and more qualified care. However, this is still a major challenge for managers (Backes & Azevedo, 2017).

This work developed and implemented a pharmaceutical work plan with the multidisciplinary team of a NICU. It evaluated the main doubts of each professional class and its acceptability about the pharmaceutical insertion at the bedside.

2. Methodology

For developing the pharmaceutical work plan, initially, a comprehensive review of the literature and regulatory frameworks related to the exercise of pharmaceutical profession was carried out, as well as resolutions related to the care of critical patients and newborns were discussed. After that, the work plan was outlined and the pharmacist's activities were established focused on the multidisciplinary team, newborns and their families. The pharmaceutical work plan contained the following activities: activity planning; presentation of the plan to the heads service and request for approval; insertion in the NICU health team; participation in clinical team meetings and similar activities; evaluation of medical records to identify MRP, and pharmaceutical interventions with the team and family.

It is worth mentioning that in the development of the pharmaceutical treatment plan for neonates the following "actors" were considered: pharmacist, other professionals of the multiprofessional team, and newborns and their mothers, being the integration of these actors of extreme importance for the clinical practice, as the collaborative practice happens when several health professionals work together with patients, family, caregivers and community to provide quality assistance (Ellery, 2014; Barros & Ellery, 2016).

The heads of the neonatal ICU (NICU) services were sought and the pharmacist demonstrated the interest in developing this pharmaceutical care plan. The project and its objectives were presented, and the chiefs approved and allowed the pharmacist inclusion in another project called Qualineo. It is important to highlight that there was no pharmacist focus on this activity, due to the reduced number of pharmacists in the institution and their focus on other emergency demands. Therefore, the study went hand in hand with the activities developed in the Qualineo project, created to reduce mortality in the northern region of Brazil that has one of the worse neonatal mortality rates in the country. The pharmacist was given responsibility to diagnose the problems related to the pharmacy, and its resolution or proposed resolution as well, besides identifying MRP and informing the team about an issue and possible way of solve it.

It is a cross-sectional, descriptive and qualitative (Pereira, et al., 2018), where the pharmacist was inserted in the routine of the NICU, accompanying the children at the bedside, being registered all the medicines used and their evolution. When a drug-related problem was detected, the pharmacist performed an analysis and discussed with the multidisciplinary team the possible intervention strategies, and the team made the best decision regarding the conduct to be performed.

Also when the team had doubts about the drugs, the pharmacist guided the member.In accordance with CNS Resolution Nº. 466 of 2012 from the National Health Council, this research was submitted to the Research Ethics Committee, through Plataforma Brasil and approved on December 3, 2018, by the Health Sciences Institute of the Federal University do Pará - ICS/UFPA (CAAE; 97704818.8.0000.0018 and opinion: 3.052.776).

3. Results

The way pharmaceutical activities were conceived in the NICU bedside team, was thought as a key element of care between the patient and the collaborative interprofessional practice, generating a proposal for the integration between pharmacist, patient, health professional team and newborn's family.

The following professionals were present at the multiprofessional team, exclusive to the NICU, in the Qualineo project: on-call doctors, assistant nurses, physiotherapists and nursing technicians, who must be available full-time to assist patients. Other professionals participated in the project, but not exclusively, among them were: psychologists, speech and occupational therapists. The pharmacist was inserted in the project and was present part-time

at the NICU, in the morning, afternoon or night. This hours scale was established with the team from different work shifts.

The pharmacist was inserted in the multiprofessional team and started to participate in workshops and meetings of the Ministry of Health (MS). The focus of these activities was: minimal handling of the newborn; breastfeeding and kangaroo method importance, how to weigh an intubated newborn and change a diaper, and understand how to guide the companions. Knowledge of these issues can facilitate dialogue with family members, who often do not know how to perform the procedure or unknown its importance.

It is important to highlight the pharmacist, in the discussion about the nonpharmacological treatment of the NB and minimal manipulation, discusses important points, such as the procedures and the clinical condition itself which can cause pain to the NB. In this scenario, all the professionals involved must know how to proceed when the newborn presents these signs. The pharmacist must be aware that excessive manipulation can cause pain in the newborn, leading to the need for analgesics.

Trough multiprofessional team meetings many questions were discussed and resolved by the team. The main question addressed was about the weaknesses found in neonatal care and the intervention strategies for overcoming the problems. In these meetings, analyzes were not performed, this evaluation was performed only at the bedside and recorded in the medical record.

In this NICU, the practice of “round” has not been established yet, making it difficult to disseminate knowledge to others team members, in order to try to promote the dissemination of pharmacist's information, the evolution process in medical records was started, as mentioned previously, there was no place for the pharmacist in this medical records before, a practice established in the current context.

One problem found was the insufficient number of syringe pumps to inject drugs, thus, these drugs were administered using a common infusion pump. This procedure, which leads to loss of 25mL of each medication, increases the medication cost per patient. The participation in management meetings, raised the awareness about the importance of appropriate pumps and in adequate quantities to guarantee a good NICU functionation

As a cost-effective example, for permanent use of syringe pump, we can mention the drug alprostadil. In the month before the pharmaceutical intervention, this medication consumption was about 220 ampoules/month. After consumption and purchase of new syringe pumps, consumption was 50 ampoules/month. It is important to highlight our annual guarantee license for 700 bottles/year, this guarantee the treatment for 4 months if the average

of 220/month was maintained; however, with a reduction to 50 ampoules/month, the stock is sufficient for 1 year, since consumption increases in some months and in other months 50 ampoules remain on average.

The purchase values, perceived as increased savings, include an ampoule costing of R$ 133.00 x 50 ampoules per month, generating a total of R $ 6,660.00, while R$ 133.00 x 220 ampoules per month, generated a total amount of R$ 29,260.00. This means savings of R$ 22,600.00 per month, which can be used to purchase others pharmaceutical supplies.

In the prescriptions performed in the morning and afternoon, the highest frequency of MRP repetition does not occur in 24 hours. It is important to highlight that the prescription system is not computerized and, many times, the doctor does not remember the intervention performed in discussions about readings and lost information, as it was not routinely and was not easily accessed in clinical studies of medical evolution.

About the acceptance of pharmaceutical interventions by the team, there were positive and negative points, which are exposed here. For nursing technicians the acceptance was practically total, as they had many doubts about the manipulation and administration of medications. The most frequent doubts were related to medication stability after dilution, how to perform dilution and reconstitution, types of pump that should be used and the access route, especially in the double lumen catheter (DLC). Getting closer to the pharmacist allowed access to this information and improved decision-making considering the advantages of proper use and disadvantages of processes that do not follow the guidelines. It was possible to perceive, as the days went by, that these professionals started to signal to the pharmacist the occurrence of problems, as they were also able to detect them, which is a great advance for care promotion, since in the absence of the pharmacist, they can also prevent some of these problems from occurring.

For nurses, acceptance was partial, these professionals, mostly, had doubts that ranged from scheduling to choosing the route and type of pump, especially considering the lack of material resources as insuficient amount of syringe pump available in this NICU and monolumen access in most patients. These types of changes were accepted almost in their totality, but in some points the interventions were not accepted, such as a withdrawal of a minimum stock of medicines in the unit.

Before the intervention, nurses had emergency medications in the cardiopulmonary arrest car (CPAR) and also an “extra” stock of different types of medications at the NICU medication preparation site, including antimicrobials and medications under special control

(MUSC). During the dialogue with the nurses, they showed great insecurity about not having the minimum number of medications accessible outside the emergency resuscitation car.

Trying to minimize this problem, the excess of medications was removed from the medication preparation site, but in a short time, its replenishment was noticed, a negative point that still needs to be worked on to reduce risks for the patient. This problem could probably be solved if the pharmacy team diluted the drug and the nursing team was responsible only for its administration or if the institution had a more effective system for dispensing and returning drugs.

The monthly control of CPAR performed by the pharmacist of the sector contributed to establish this relationship, as it allowed greater security in the use of standardized items in the car. The pharmacist insertion in this routine was a request from the sector heads, claiming that this control could contribute to the rational use of medicines. In this sense, it is worth mentioning that the audits in this sector performed by the hospital's staff, every 4 months, is considered by the team as a vague and time-consuming process.

The approach with the pharmacist at the unit, allowed access to information and improved decision-making. It contributed to the reflection of professionals about advantages of the appropriate use of medicines, and disadvantages if the guidelines are not followed. It was noticeable over time, these professionals did not repeat errors related to medications and also asked the pharmacist for help whenever necessary, they also started to signal other problems related to prescription, as they were already able to detect them. As a consequence, there was a promotion of improved care, since these professionals can also prevent the occurrence of part of these problems, especially in the absence of the pharmacist.

For doctors, acceptance was partial. These professionals were mostly afraid of pharmacist's interventions, because it was something new in this NICU and a large majority of interventions involved medical prescription. But as interventions were made as suggestions for improvement, without the obligation of acceptance or forcing changes, these professionals began to better understand the benefit and accept the suggestions, especially the ones regarding the reconstitution and dilution of drugs. Most of the suggestions were accepted and, over time, we observed good communication and changes on medical prescription, especially at night, time when the medical team evaluated the newborns and prescribed the medication for the next day.

The approximation between pharmacist and doctors, allowed the improvement in decision-making about drug therapy, with the transfer of information about available treatment, standardized medications, treatment time and observation of adverse drug reactions

(ADR). Over time, professionals started to call the pharmacist to discuss MRP and materials. As a consequence, there was a promotion of improved care for newborns, as these are the professionals who directly define the treatment and make the prescriptions.

A small number of mothers said they did not need pharmaceutical care and/or clarification of doubts, as they had medical staff in the unit. Religion was also a factor that interfered with this acceptance; in some cases parents said their child did not need other care because God knew why their babies were going through this situation. Those parents, who accept the pharmacist reception, understood the project objective and when they had doubts about the drug treatment during the hospitalization period they asked the pharmacist.

4. Discussion

This study demonstrated the pharmacist role at the bedside in an ICU and its importance in the exclusive intensive care team. A justification for pharmacist inclusion in the ICU exclusive team is that this professional can contribute with knowledge related to his expertise area. The sum of different knowledge can promote care for newborns under different prisms, thus, a broader and more qualified care. However, this is still a major challenge for managers, but its implementation can qualify health care (Backes & Azevedo, 2017).

> "The dynamics of teamwork, when based on the difference of each specialist, teaches or establishes the range of autonomy and the sharing of responsibilities. But an open and cooperative dialogue between them is essential for this. Nevertheless, conducting a case study also highlighted some obstacles that are imposed on teamwork. An existing hierarchy among the professionals who are part of the team represents one of these obstacles because involves the delimitation of the area of expertise and procedures that can be performed by each one, as a defense of won spaces and privileges acquired "(Peres, et al., 2011).

The pharmacist participation in multiprofessional training is essential, as it allows, in addition to the acquisition of new sabers, to understand the perception of other professionals about a specific problem. An example was the issue of minimal patient manipulation, as the NB receives about 50 to 150 potentially painful procedures per day in the NICU (Guinsburg, 1999). However, in preterm newborn (PTNB) the number of procedures is higher, varying 130 to 234 manipulations in 24 hours, many of which are painful (Aguiar, et al., 2004).

In addition, the NICU environment is totally different from the maternal uterus (Aguiar, et al., 2004), with loud noise, and strong and continuous lights (Brasil, 2004), that is, the PTNB is capable of feeling pain, differently from what is believed before due to the lack of myelinization in the central nervous system. Therefore, there is a need to deconstruct this thought about the "absence of pain in PTNB", in order to implement care to alleviate this discomfort. It is necessary to consider the pain subjectivity and the newborn inability to report it verbally, and pay attention to such a peculiar language, demonstrated by behavioral and physiological changes to promote comprehensive and safe care for premature babies (Calasans, 2006).

The prevention and control of pain and stress must use the appropriate nonpharmacological and pharmacological resources (Gaíva & Dias, 2002) and this process needs to be discussed by the clinical team involved in intensive care, to offer services with quality, safety and humanization (Santos, Ribeiro & Santana, 2012). Despite the importance of pharmacist in the prevention and treatment of NB hospitalized in the NICU, there is still a lake of studies that demonstrate professional involvement in this process.

The ICU multiprofessional team consists of nurses and nursing technicians involved in patient care and medication administration (Grou, et al., 2004). During the medication dilution and administration process, errors can occur, which may be related to: lack of knowledge about pharmacology; insufficient professional qualification; non-compliance with technical procedures; scarcity of material resources and lack of protocols in nursing care; among other aspects (Arcuri, 1991; Oliveira & Cassiani, 1997; Cassiani , Rangel & Tiago, 1998).

The interaction between the pharmacist and the nursing team can contribute to clarify doubts regarding the dilution and reconstitution of medications and possible pharmaceutical incompatibilities. It can also clarify the inputs available for patient care, and the best way to use the drugs. In relation to medications, the pharmacist can clarify doubts about pharmacokinetic aspects, drug interactions, ADR and toxic effects (Pinto, et al., 2013).

Studies evaluating the relationship between pharmacists and physicians are still scarce, although both work with drugs, with the physician being the prescriber and the pharmacist responsible for the selection, acquisition, storage, dispensing and pharmacotherapeutic segment. The lack of dialogue between them has consequences as the prescription of drugs not standardized by the hospital; in the case of the public service, where there is a demand for bidding processes, the pharmacy often does not have enough stock for the prescribed

treatment, and this problem can be minimized through a qualified conversation between these professionals.

The pharmacist, from a healthcare perspective, needs to develop ethical values, skills, responsibilities in disease prevention, health promotion and recovery, in an integrated way with the health team, patients and their families. This interaction aims to promote rational use of medicines, obtaining better therapeutic results and improving the patient's quality of life. In addition, this relationship must involve the subjects' conceptions, respecting their biopsychosocial specificities (Consenso Brasileiro de Atenção Farmacêutica, 2002; Pereira & De Freitas, 2008).

5. Conclusion

Patients admitted to the ICU, especially newborn children, use different classes of drugs and these can interact with each other, cause adverse drug reactions and other problems may occur. The early identification of these problems, as well as their resolution, is extremely important and, in general, pharmacists are the professionals responsible for handling the drugs. The inclusion of the pharmacist in the team contributes significantly to the improvement of care, as well as to the promotion of the rational use of the medication

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