

Aline Santa Cruz Belela<sup>1</sup>, Maria Angélica Sorgini Peterlini<sup>2</sup>, Mavilde da Luz Gonçalves Pedreira<sup>3</sup>

## Disclosure of medication error in a pediatric intensive care unit

*Revelação da ocorrência de erro de medicação em unidade de cuidados intensivos pediátricos*

1. Nurse, MSc by Universidade Federal de São Paulo - UNIFESP - São Paulo (SP), Brazil.

2. PhD, Adjunct Professor for Escola Paulista de Enfermagem of the Universidade Federal de São Paulo - UNIFESP - São Paulo (SP), Brazil.

3. PhD, CNPq Researcher, Adjunct Professor of the Escola Paulista de Enfermagem of the Universidade Federal de São Paulo - UNIFESP - São Paulo (SP), Brazil.

### ABSTRACT

**Objective:** To describe the frequency medication error disclosure to the team and to the family in an oncology pediatric patients' intensive care unit.

**Methods:** This was a descriptive and exploratory study performed between March 1 and May 31, 2008. A medication error report form was developed and implemented, to be completed by the professionals involved in the unit's medication process.

**Results:** The sample consisted of 71 forms collected over the 92 collection days. After medication error

detection, the event was not reported to the pediatric intensive care unit's team in 34 (47.9%) cases. In the 37 reported to the team cases, for most of them (48.7%) the physician was the professional communicated. The event was not disclosed to the patient/family in 95.8% of medication error reports.

**Conclusions:** Although the literature recommends disclosing the errors, this is not done in the studied pediatric intensive care unit.

**Keywords:** Medication errors; Patient safety; Pediatric intensive care units; Pediatric nursing

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### Author for correspondence:

Aline Santa Cruz Belela  
Rua Alceu Miranda, 178 - Bairro Olinda  
ZIP CODE: 38055-420 - Uberaba (MG), Brazil.  
Phone: +55 34 3313-8212/ +55 34 9972-9719  
E-mail: alinebelela@uol.com.br

### INTRODUCTION

A medication error is an avoidable event occurring at any phase of the medication use process, which may or not harm the patient. Medication error damage characterizes an avoidable adverse drug event, defined as harm or injury, either temporary or permanent, occurring from inappropriate use, including lack, of the medication.<sup>(1,2)</sup>

In the context of the patient safety, it is consensual that errors in health care practice regularly occur, and result from a collection of factors that are inherent to the human nature and system complexity.<sup>(3)</sup>

Although many errors cause no major consequences, others may result in serious harm to the patient and family, ranging from disabilities to death.<sup>(4)</sup>

Considering all possible types of health care errors, several studies evidence that medication errors are the most common, and also the most frequent cause of adverse events.<sup>(1,5)</sup>

Medication errors have been focused by professionals, institutions and health authorities due to their contribution to increased morbidity, hospital stay and health system costs, involve legal issues and compromise the

quality of patient's assistance.<sup>(6,7)</sup> This issue has been increasingly approached in several countries, including Brazil, aiming to assure the patientsafety.<sup>(8)</sup>

It is estimated that among all hospitalized patients about 3% will develop a serious adverse drug event during the hospitalization. Although the frequency is similar for both adults and children, the risk for potentially harmful errors is three times higher in pediatric patients.<sup>(9-10)</sup>

Literature data estimate the incidence of medication errors in pediatric intensive care units (PICU) as ranging between 22 and 59 errors/1000 doses, and 2.5% of children admitted to these units experience adverse drug events.<sup>(10)</sup>

Analyzing 68 medical charts of patients of three pediatric units of an university hospital in the city of São Paulo, including one PICU, the investigators found 1,717 recorded errors, corresponding to 21.1% of the total 8,152 prescribed drugs doses or solutions. The omission errors, defined as dose omission or lack of record of execution, was the most frequent type, corresponding to 75.7%.<sup>(11)</sup>

Historically, due to the trend to blame individuals health care professionals are instinctively reluctant and defensive regarding an error disclosure and discussion.<sup>(12)</sup> Although disclosing an error is a both moral and ethic obligation, little discussion is held on this issue due to uncertainty about the patient's reaction and the fear of disciplinary and legal actions.<sup>(13)</sup>

Unfortunately this long lasting culture of silence about errors resulted in lost opportunities both to learn from the events and promote the patient safety. Additionally, as health care professionals this behavior may be considered disloyal for the patients, families and the community, by not telling the truth and wasting a regrettable but valuable opportunity to improve the quality of health care.<sup>(12)</sup>

Currently, an open error discussion has been considered a foundation for the patient's safety movement. Professionals are being stimulated to communicate and discuss errors with their colleagues and institution, aiming that each event is analyzed and new errors prevented.<sup>(14)</sup>

With the objective to start and stimulate this discussion one of the most used data collection methods is the errors and adverse events reporting process. It involves a detailed report of the circumstances surrounding the error by the professionals directly involved to the process, being in this research the medication practice.

It is recommended that whenever a professional detects an error, a report form is completed, being subsequently classified and analyzed.<sup>(15)</sup> The reports act as information sources, allowing the identification of causes, types and relevant predisposing factors, indicating situations required to be changed both in the structure and process.<sup>(16)</sup>

From the above presented purposes, this study aimed to describe medication error disclosure to the health care team and family in a pediatric oncology intensive care unit.

## METHODS

Descriptive and exploratory study conducted in a PICU of a reference hospital for children and adolescents cancer patients in the city of São Paulo. The data were collected from March 1 to May 31, 2008, after the trial was approved by the institution's Ethics Committee under the number 1252/06.

This PICU has six beds for multidisciplinary intensive care of oncologic therapy patients with different severity levels, undergoing either clinical or surgical interventions. In addition to oncologic emergencies, are admitted to the PICU patients submitted to neurological, thoracic, gastrointestinal, genitourinary and orthopedic surgery. The yearly mortality rate is 10%. The patients proceed from Chemotherapy Outpatient Clinic, Regular Ward, Intermediate Care Unit, Bone Marrow Transplantation Unit and Operating Room.

The sample was composed by the medication error notification forms completed by the professionals involved in the unit's medication process during the collection period, after written informed consent was obtained. When a duplicated error notification was identified, only one notification for each event was considered.

The data collection tool, titled Medication Error Notification Form was developed by the authors to be used in this study, aiming to encompass all recommendations to allow an error notification process. To embrace the study variables and the literature recommendations the tool included aspects related to the patient, the moment of medication error occurrence, the medication, the errors' consequences, the procedures after the error identification and the professionals involved in the notification. A box was provided for free text description of the event, aiming a more reliable error description.

After the elaboration, the notification form was

evaluated by three acknowledged professionals, as evidenced by their bibliographic productivity in this area, being one nurse, one physician and one pharmacist. Once implemented the received suggestions, the final tool was implemented in the PICU for this study conduction.

To implement the data collection tool, a training session was held with the unit medication system professionals with the objective to promote understanding on questions related to patient safety, medication errors and form completion. The training session was conducted by one of the authors who was also a PICU's nurse. The health care team consisted of unit's intensive care physicians, residents, nurses, technicians and nurse assistants, and institution's pharmacists, reaching a participation that included 80% of the physicians, 83% of the nursing team, and 100% of the pharmacists. The reason why less than 100% of the medical and nursing teams participated in the training was because some were unavailable during the training days (although previously scheduled) and due to medical leaves during the study. The professionals were instructed to complete a notification whenever a medication error was identified.

It should be remarked that the notification was both anonymous and voluntary. This is considered fundamental to the notification process success, increasing the number of reports, evidencing details on the event and contributing for the development of a confidence environment.

After completed the forms were inserted into a sealed box and weekly collected by one of the investigators. The data were stored in electronic sheets, and descriptively presented in figures and tables.

The reported medication errors classification was conducted by type of error according to the National Coordinating Council for Medication Error Reporting and Prevention – NCC MERP, and the American Society of Hospital Pharmacists – ASHP criteria, as shown on Chart 1.<sup>(17-18)</sup>

The results were descriptively presented, and no statistical analysis was conducted.

## RESULTS

During the study period, 71 forms were received and 110 medication errors were reported.

The retrieved information showed that after the medication error identification, the event was not communicated to the team in 34 (47.9%) of the times.

In the 37 circumstances when the events were communicated, most of the communications were to physicians (48.7%), followed by communication to the nurses (43.2%). In two (5.4%) situations communication was reported, however not mentioning the professional category.

Of the 51 medication errors communicated to the team, the most frequently reported error was the omission error (29.4%). Among the errors not reported to the team the dose (22.0%) and administration (20.3%) errors were the most common, respectively (Table 1).

In 95.8% of the reports the medication errors were not disclosed to the patient and family. In the two cases (2.8%) reported as communicated to the family, the disclosure was made by the intensive care physician or the nurse. In one report (1.4%) the reporter was not able to tell if the error was disclosed to the patient and family.

## DISCUSSION

The notification system as a tool for errors and adverse events detection has been shown to be very important once it allows a detailed report of the event's circumstances by the directly involved professionals. We believe that the identification of adverse events during the patients' care is extremely relevant, aiming to improve patients' quality of care and safety and to enable the implementation of good professional practices.

During the study period several medication errors were computed. The variations in the units' characteristics and the different definitions and methodologies used in the studies on this subject render difficult comparing the results.

As this subject was not previously approached in the studied PICU, we couldn't compare the number of reported versus occurring errors. This is one limitation for this study. Specialists suggest that this analysis should be done by the simultaneous events record through direct observation methods, which could evidence the error notification reach and characteristics.<sup>(19)</sup>

Another limitation was the medication errors underreporting, the most important drawback of this data collection method. This can be changed through the development of a culture of safety toward a non-punitive environment and focused on analysis of the medication system failures, characterized by sharing

**Chart 1 – Classification of the reported medication errors, according to the type of error.**

Type of error	Definition
Prescription error	Wrong drug choice (based on indication, contra-indication, known allergies, availability of another more effective therapy); incorrect dose prescription; incorrect form of administration, infusion rate, or pharmaceutical form; illegible prescription; incomplete prescription.
Dispensing error	Incorrect distribution of the patient's prescribed medicinal product.
Omission error	The prescribed medicinal product was not dosed to the patient, or the administration was not recorded.
Wrong time error	Medicinal product given out of the time prescribed by the physician or nurse who scheduled the prescription. Is defined as error: administration in advance or delayed above 30 minutes for immediate action drugs (e.g., vasoactive drugs, analgesics); or administration in advance or delayed above one hour for long action drugs (e.g. antibiotics, antacids).
Unauthorized drug error	Giving a non-prescribed medicinal product; wrong product administration to the patient; administration of the product to the wrong patient; administration of a product not authorized by the physician; use of outdated prescription.
Dose error	Administration of a medicinal product in a dose above or below the prescribed dose; administration of an extra dose; administration of a double dose.
Wrong dosage-form error	Administration of a medicinal product in a pharmaceutical form that is different from the prescribed.
Wrong drug preparation error	Incorrectly formulated or manipulated medicinal product (incorrect reconstitution or dilution, association with physically or chemically incompatible drugs); inappropriate storage; aseptic technique failure; incorrect drug identification; inappropriate choice of infusion devices.
Administration error	Aseptic technique failure; technical administration fault; administration in a different way than the prescribed; product administration in a wrong site; incorrect infusion rate administration; association with physically or chemically incompatible drugs; devices failure or problems with infusion therapy devices; or incorrect administration of prescribed products.
Deteriorated drug error	Administration of an expired product, or with impaired physical or chemical integrity.
Monitoring error	Failure to monitor the clinical and laboratory data before, during and after a product administration to evaluate the patient's response to the prescribed therapy.
Compliance error	Inappropriate patient or caregiver behavior regarding the participation in the proposed therapy.
Other medication errors	Any other errors not described above.

**Table 1 – Type of medication errors reported in a pediatric intensive care unit, according to the error communication to the team**

Types of medication error	Error communicated to the team	
	Yes N (%)	No N (%)
Prescription error	10 (19.6)	8 (13.5)
Dispensing error	2 (3.9)	1 (1.7)
Omission error	15 (29.4)	10 (17.0)
Wrong time error	2 (3.9)	7 (11.9)
Unauthorized drug error	1 (2.0)	1 (1.7)
Dose error	5 (9.8)	13 (22.0)
Wrong drug preparation error	6 (11.8)	3 (5.1)
Administration error	8 (15.6)	12 (20.3)
Deteriorated drug error	1 (2.0)	3 (5.1)
Monitoring error	1 (2.0)	1 (1.7)
Total	51 (100.0)	59 (100.0)

results with all involved professionals and the institution's leaders involvement in the promotion of patient safety.<sup>(16)</sup>

The lack of communication to the team in 47.9% of the events corroborates the literature, evidencing a historical trend to conceal health care faults.<sup>(12)</sup> Although the studies emphasize the error as a consequence of a set of systemic failures, the culture of professional autonomy and individual responsibility still prevails. Thus, the fear of jeopardizing his/her reputation and of ethical and legal actions, prevent the events communication and their consequent analysis.<sup>(14)</sup>

We could not find any other Brazilian studies addressing the events communication to the team. It should be emphasized that overlooking an error leads to the implementation of interventions both aimed for prevention and treatment of patient's consequences and for its future recurrence prevention.

Communication to another professional was reported in 52.1% of the notifications, being physicians and nurses, respectively, the professionals informed in most of the times. This result can be ascribed both to their function within the medication process and their relevance in the studied unit. However, it should be highlighted the ethical fault involved in failing to communicate the medication error to the physician due to the events inherent risks and the medical attributions regarding drug therapy and the identification of measures to correct or reduce the error's harmful effects.

The most frequently notified type of medication error was the omission error. Dose and administration errors, respectively, were the most frequently not communicated to the team. The impossibility to confirm the drug administration can be the main reason for communication of omission to the team. The decision to dose or not the not checked drugs should be taken from analysis of the error circumstances.

The medication error was not disclosed to the patient and family in 95.8% of the cases, evidencing that this kind of communication is not a common practice in this studied unit.

The review of medication errors notification from a pediatric hospital in the United Kingdom evidenced that in 48% of the cases the parents were not informed, and this result was considered unexpectedly high by the investigators.<sup>(20)</sup>

Recent researches on the subject show that in such situations the patients expect explicit declarations

stating the error and an explanation of what happened and why the error occurred, and want to know the implications to their health, the actions to prevent its recurrence, in addition to apologies.<sup>(13,20)</sup>

Evaluating the parental preferences regarding disclosure, notification and legal actions in case of errors during their children care, a study evidenced that 99% of the respondents said that they would prefer the error disclosure, independently of its severity. These results suggest that the error disclosure could reduce the possibilities of legal actions against the professionals when compared to learning about the error by other means.<sup>(13)</sup>

From the healthcare professionals perspective, although the literature evidences that they agree with the relevance of disclosing an error,<sup>(21)</sup> three aspects are identified as obstacles: the difficulty of admitting the error, the fear of involving other professionals, and the possibility of suffering ethical or legal actions.<sup>(22)</sup>

Studies focused on the decision to disclosure or not an error to the patient and family evidence rates considered low of event disclosure, uncertainty on when and how to disclosure an error, trend to conceal the fault when there aren't consequences or those are not significant, in addition to divergences regarding the responsible professional for disclosing the error, being mentioned physicians, nurses or institution's responsible professionals.<sup>(23,24)</sup>

Errors, mainly when not resulting in harm or causing minimal injuries, are generally not perceived by the patient and family. Specialists suggest that when considering an error disclosure, the healthcare professionals should balance their potential personal and professional conflicts with the patient's interest. Should also consider his/her personal integrity protection, the professional obligation to prevent the error recurrence, the risk of impairment his/her relationship with the patient and family and the patient's right to know the truth. Additionally, there are situations where the potential error disclosure harms may exceed its benefits. Considering that the healthcare professional is responsible for promoting the patient's welfare and preventing harms and injuries, it becomes highly relevant a careful evaluation of what, when and how disclose, in addition to who should do it.<sup>(25)</sup>

Although the current literature recommends disclosing the errors, there are few evidences to guide the professionals on how to appropriately do it, i.e., to obtain the best outcomes. Therefore, more studies are warranted involving the decision to disclosure, the

disclosure process, and the possible consequences of either disclosing or not.<sup>(21)</sup>

## CONCLUSION

The results evidenced that medication error disclosure is not a common practice in the studied PICU.

## RESUMO

**Objetivo:** Descrever a ocorrência de comunicação do erro de medicação à equipe e família em uma unidade de cuidados intensivos pediátricos para atendimento de pacientes oncológicos.

**Métodos:** Estudo descritivo e exploratório, realizado no período de 1º de março a 31 de maio de 2008. Foi elaborada e

implantada na unidade de cuidados intensivos pediátricos uma ficha de notificação de erros de medicação. A ficha deveria ser preenchida pelos profissionais envolvidos no sistema de medicação da unidade no período definido para coleta de dados.

**Resultados:** A amostra foi composta por 71 fichas coletadas no período de estudo. Após a detecção do erro de medicação, a ocorrência não foi comunicada à equipe em 34 (47,9%) situações. Nos 37 casos nos quais os eventos foram comunicados, o médico (48,7%) foi aquele que mais recebeu a informação. Em 95,8% dos relatos a ocorrência não foi informada ao paciente e família.

**Conclusão:** Embora a literatura atual preconize a revelação do erro, tal prática não constitui atividade freqüente na unidade de cuidados intensivos pediátricos estudada.

**Descritores:** Erros de medicação; Segurança do paciente; Unidades de terapia intensiva pediátrica; Enfermagem pediátrica

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