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# Adverse events: analysis of a notification instrument used in nursing management\*

EVENTOS ADVERSOS: ANÁLISE DE UM INSTRUMENTO DE NOTIFICAÇÃO UTILIZADO NO GERENCIAMENTO DE ENFERMAGEM

EVENTOS ADVERSOS: ANÁLISIS DE UN INSTRUMENTO DE NOTIFICACIÓN UTILIZADO EN LA ADMINISTRACIÓN DE ENFERMERÍA

Miriam Cristina Marques da Silva de Paiva<sup>1</sup>, Sergio Alberto Rupp de Paiva<sup>2</sup>, Heloisa Wey Berti<sup>3</sup>

## ABSTRACT

The nursing management board of a tertiary university hospital located in Central-South São Paulo state implemented an Adverse Events Notification Instrument in January 2004 aiming at patient safety and at establishing a means of communication between the team and the administration board. The aim of this study was to analyze the use of the referred communication instrument and identify the frequency, type, nature and period of the incident/adverse events. A descriptive data analysis was performed on 826 instruments completed between January 2004 and June 2006. There was compliance to using the instrument. There was predominance of notifications regarding health care services, although there was an increase in reports on administrative issues in the referred period. The most frequent adverse events concerned medications, falls, catheters, probes and drains, and skin integrity. The practicality of the instrument made it feasible for use among nursing aides and technicians. Systematic analysis and follow-up of the adverse events associated with this means of communication appeared as fundamental issues for patient safety.

## KEY WORDS

Communication.  
Nursing.  
Quality assurance, health care.  
Quality Indicators, health care.

## RESUMO

A direção de enfermagem de um hospital universitário terciário da região Centro-Sul do Estado de São Paulo, visando a segurança do paciente e o estabelecimento de meio de comunicação entre equipe e direção, implementou em janeiro de 2004 o Boletim de Notificação de Eventos Adversos. O objetivo deste estudo foi analisar a utilização deste instrumento de comunicação e identificar: frequência, tipo, natureza e período dos incidentes/eventos adversos. Realizou-se análise descritiva dos dados de 826 boletins elaborados no período de janeiro/2004 a junho/2006. Verificou-se adesão à utilização do instrumento. Predominaram notificações de ocorrências assistenciais, embora notificações administrativas tenham apresentado número crescente de registros. Eventos adversos mais frequentes relacionaram-se à medicação, quedas, cateteres, sondas/drenos e integridade da pele. A praticidade do instrumento viabilizou sua utilização também por auxiliares e técnicos de enfermagem. A análise sistematizada e acompanhamento dos eventos adversos associados aos recursos de comunicação mostraram-se fundamentais para a segurança do paciente.

## DESCRIPTORES

Comunicação.  
Enfermagem.  
Garantia da qualidade dos cuidados de saúde.  
Indicadores de qualidade em assistência à saúde.

## RESUMEN

La dirección de enfermería de un hospital universitario terciario de la región Centro-Sur del Estado de São Paulo, apuntando a la seguridad del paciente y el establecimiento de un medio de comunicación entre equipo y dirección, implementó en enero de 2004 el Boletín de Notificación de Eventos Adversos. El objetivo de este estudio fue analizar la utilización del nombrado instrumento de comunicación e identificar: frecuencia, tipo, naturaleza y período de los incidentes/eventos adversos. Se realizó un análisis descriptivo de los datos de 826 boletines elaborados en el período de enero/2004 a junio/2006. Se verificó la adhesión a la utilización del instrumento. Predominaron notificaciones de ocurrencias asistenciales, aunque las notificaciones administrativas presentaron un número creciente de registros. Los eventos adversos más frecuentes fueron aquellos relacionados con la medicación, caídas, catéteres, sondas/drenajes e integridad de la piel. La practicidad del instrumento viabilizó su utilización también por parte de los auxiliares y técnicos de enfermería. El análisis sistematizado y el seguimiento de los eventos adversos asociados a los recursos de comunicación se mostraron fundamentales para la seguridad del paciente.

## DESCRIPTORES

Comunicación.  
Enfermería.  
Garantía de la calidad de atención de salud.  
Indicadores de Calidad de la Atención de Salud.

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## INTRODUCTION

The care to people involves the articulation of knowledge and actions that relate to different services and types of professionals. The existence of various levels of specialization and their interdependence characterize health institutions as high risk environments for adverse events and incidents. Adverse events are defined as unintentional offenses resulting from the health care, not related to the natural evolution of the base disease, which cause measurable lesions to the affected patients and/or the extension of the hospitalization time and/or death<sup>(1)</sup>. Incidents or near-loss also refer to the complications resulting from the health care, which, however, do not cause measurable lesions or the extension of the hospitalization time<sup>(1)</sup>.

A recent report on the health care quality showed that, at least, 44,000 Americans die every year as a result of medical error and this number may get to 98,000 deaths a year<sup>(2)</sup>. The presence of incidents and adverse events, which compromise the safety of the patient, currently constitutes a great challenge for the improvement of the quality in the health area<sup>(3)</sup>. Aimed at a program for the continuous improvement of the institution, it is necessary to guarantee the existence of mechanisms for the prevention and minimization of errors, among them, indicating how to perform the notification and analysis of the errors, how to establish corrective and preventive actions, and how professionals are reported about the development of these analysis<sup>(4)</sup>.

The nursing service, considering its characteristics and purposes, must decide for the types of techniques and instruments it will use, aimed at the promotion of the patient's safety and the establishment of communication among the team, patients and institutions. Notification reports of adverse events, also constituted in database, are an important source of information and alert, promoting safety in the hospital environment and contributing to the management of nursing care.

The purpose of this study was to analyze the use of the Notification Report of Adverse Events as a means of communication among nursing professionals and their administrators, as well as to identify the frequency, type, nature and period of the reported adverse events and incidents.

## METHOD

This is a retrospective descriptive study that analyzed data collected from 826 Notification Reports of Adverse Events (NRAE), which were filled in by health professionals from a tertiary school hospital, in the south region of the state of São Paulo, and sent to the nursing management in the period from January 2004 to June 2006. These second-

ary data were used after the authorization of the Hospital Administration and the approval of the local Committee of Ethics in Research (no. 496/2006-CEP).

The NRAE was developed in order to establish an instrument of communication between nursing professionals and their respective administrators regarding adverse events with patients treated at the hospital. Its purposes and the instructions for filling in and sending it were explained to the units of the nursing division through official written communication and in meetings. The report presents the following fields: identification of the patient and unit; types of occurrences; space for the description of the notifier's behavior in face of the fact. The occurrences were separated into two types: adverse event/incident and administrative occurrence (occurrence that did not involve the patient directly). For later analysis, the adverse events/incidents and administrative occurrences were classified by the authors in: institutional events; failure to comply with the routine; conflicts; failure in communication; adverse events related to the medication; falls; adverse events related to catheters, tubes and drains; adverse events related to the skin integrity; delay/non-treatment of the patient; failure in the transportation of patients, companions, equipment and material; escape; hospital infection/phlebitis; occurrences related to robbery; adverse events related to hemotransfusion; precarious hygiene condition of the patient; suicide attempt; other events.

Data were processed by the program SPSS 12.0 for Windows and classified data were presented in absolute and relative frequencies. The total number of adverse events/incidents was also presented through rates: adverse events and incidents/100 admissions per unit. The adverse events and incidents related to falls were presented according to the indicator<sup>(5)</sup>:

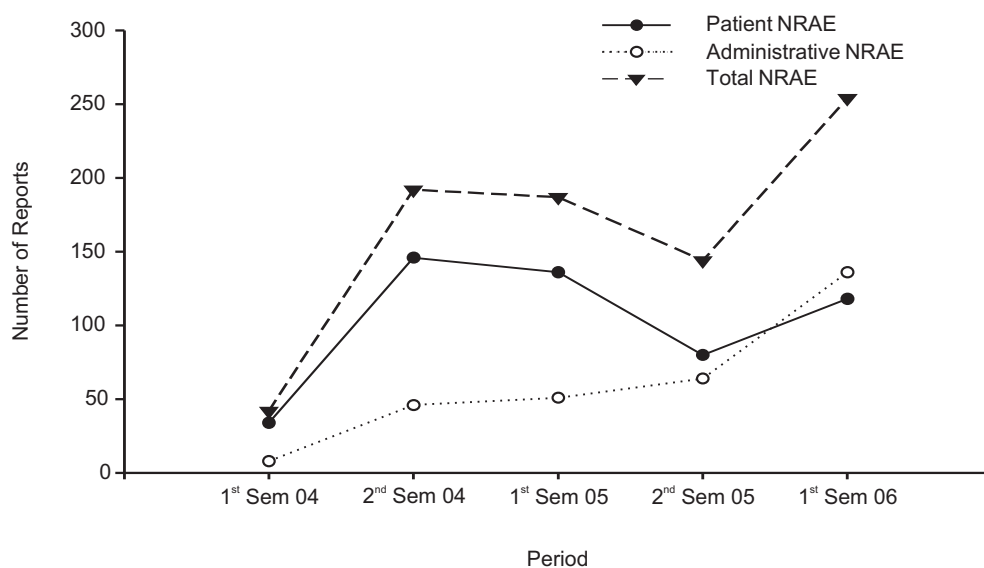
Incidence of falls of the patient = no. of falls/no. of patients-day x 1000.

## RESULTS

Reports had records of 1,219 adverse events/incidents and administrative occurrences, with an average of 1.47 per report. A higher number of events was observed at the General Medical Service (12.8%), Surgical Center (12.2%) and the Adult Intensive Care Unit (Adult ICU) (6.8%). The first reports resulted from the Outpatient Surgery Unit, the Ophthalmology/Otolaryngology Nursing Unit and the Pediatrics Unit, which had sent them in the first bimester of 2004. The units of escort for hospitalized patients, orthosis and prosthesis and coronary ICU sent their first reports between 16 and 30 months after the implementation of the system. The units of Outpatient Clinic and Psychiatry Day Hospital did not send any reports in the studied period.

Figure 1 shows the total number of reports registered per semester and according to their type. There were more reports related to adverse events/incidents, except in the year of 2006 when there was a higher number of administrative notifications. It shows that the notification process started in the first semester of 2004, with 50 reports; and most of them were related to events with patients. In the subsequent periods, there was an expressive increase in the total number of NRAE, even though the records of adverse events/incidents decreased in the second semester of 2005. Among the 127 NRAE sent by the General Medical Service, 73.2% related to adverse events/incidents; in the case of the Adult and Coronary ICUs, 85.5% out of the 76 NRAE sent corresponded to adverse events/incidents. On

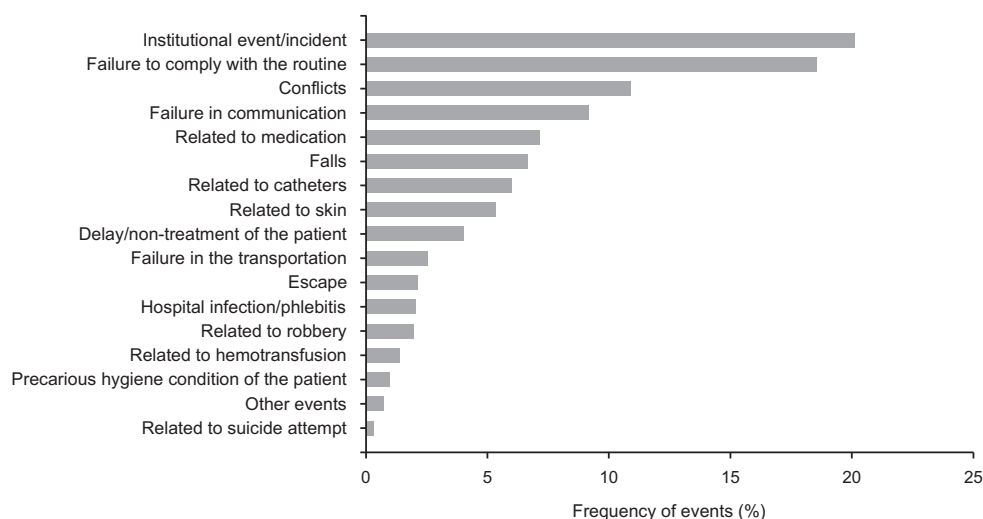
the other hand, at other units, such as the Nursing Supervision, the Obstetrics Center and the Surgical Center, the NRAE related basically to administrative questions. It was observed that the highest number of administrative occurrences and adverse events/incidents took place during the day (403 cases – 48.8%), both those that involved patients (60%), and the administrative ones (40%). During the night (30.4%), 66.9% of the reports related to patients and 33.1% had administrative nature. It was also possible to observe that most of the reports were registered during the day, both reports about patients and administrative occurrences. In 605 reports, the time of the adverse event/incident and/or the administrative occurrence and the time of notification are corresponding.



**Figure 1** - Evolution of the number of NRAE related to adverse events/incidents and administrative occurrences and total per semester/year - Clinical Hospital, Medical School of Botucatu - 2006

Figure 2 presents the distribution of frequency of the adverse events/incidents ( $n = 750$ ) and the administrative occurrences ( $n = 469$ ). Regarding their type, it is possible to observe that 20.1% of them corresponded to institutional events. Following them, the most frequent events were failure to comply with the routine (18.5%), personal conflicts (11%) and failure in communication (9%). Regarding the institutional events, it was possible to observe that among the 245 registered events, 67 (27.3%) directly involved the patient. Considering the total number of events, 31.9% were related to equipment, 17.1% refer to failure in the physical infrastructure of the hospital building, 11% to the lack of personnel, 15.1% to the lack or failure of consumption

material and 4.1% to the loss of documents. The item failure to comply with the routine occurred with more frequency at the Surgery Center (26.5%), the Center of Material and Sterilization (11.1%) and the General Medical Nursing Unit (9.7%). Regarding the failure in communication, there were higher percentages in five units: the Surgery Center (20.5%), the Center of Material and Sterilization (8%), the General Medical Service (8%), the Adult and Coronary ICU (8%) and the Emergency Unit (5.4%). The frequency of conflicts was higher at the General Medical Service (15%), the Surgery Center (9%), the Pediatrics Unit (8.3%), the Obstetrics Center (8.3%) and the Neurology Nursing Unit (7.5%).



Other events: cardiac arrest, alcohol ingestion, patient with psychiatric affection, authorization of the companion, document request.

**Figure 2** - Distribution of the administrative occurrences and adverse events/incidents registered at the NRAE according to their type - Clinical Hospital, Medical School of Botucatu - 2006

Regarding adverse events/incidents, higher frequencies were observed in the items: failure to comply with the routine (12.8%), adverse events/incidents related to medication (11.3%), to falls (10.7%), to catheters (9.7%) and to the integrity of the skin (8.7%). The frequency of adverse events, by place and for every 100 admissions, was higher at the Adult and Coronary ICU (5.4) and consecutively at the General Medical Nursing Units (3.0), the Infectious and Parasitic Diseases and the Dermatology Units (2.4 and 2.3). Regarding the medication, 85 adverse events/incidents were notified in the period. Out of those, 29 (34.1%) related to extravasation of medication from the intravascular area to the subcutaneous tissue, 19 (22.4%) referred to medication reactions and 15 (17.6%) events, to the non-administration of the medication. The data regarding the 65 events related to the integrity of the skin referred to: pressure ulcers (69.2%), other lesions (24.6%) and burn (6.2%). There were 80 reports registered about events related to falls. Falls from the bed were more frequent (55%), followed by falls from their own height (38.8%). During the studied period, there were also 73 notified events related to catheters, 27.4% of them referred to the loss of the central venous catheter and 27.4% to the loss of the nasoenteral tube.

NRAE were mostly written by nurses. The percent distribution was 89.3% for nurses and 10.0% for nursing assistants and technicians. In addition, 0.7% was written by other groups. The data from the 83 reports elaborated by nursing assistants and technicians, and sent in the first semester of 2006, referred to administrative issues in 71.1% of the cases. Regarding the nature of the administrative occurrences, there were records of: failure to comply with the routine (45%); institutional events (22.5%); failure in communication (13.2%) and personal conflicts (11.6%).

Table 1 indicates that the units that presented a higher frequency of adverse events/incidents and occurrences were the General Medical Service (12.8%), the Surgery Cen-

ter (12.2%) and the Intensive Care Unit (6.8%). Most of the reports were also generated at these units (respectively 15.3%, 9.9% and 9.2%). At 68.7% of the NRAE, the locations where the fact and the notification took place were the same. Regarding the period, notifications and adverse events/incidents and occurrences were more frequent during the day (92.8% and 77.1%, respectively).

**Table 1** - Frequency of the NRAE by unit according to the place of occurrence and the place of notification - Clinical Hospital, Medical School of Botucatu - 2006

| Units                                | Place      |            |              |            |
|--------------------------------------|------------|------------|--------------|------------|
|                                      | Occurrence |            | Notification |            |
|                                      | N          | %          | N            | %          |
| General Medical Service I and II     | 106        | 12.8       | 127          | 15.3       |
| Surgery Center                       | 101        | 12.2       | 82           | 9.9        |
| Adult and Coronary ICU               | 56         | 6.8        | 76           | 9.2        |
| Gastroenterological Surgery          | 46         | 5.6        | 54           | 6.3        |
| Neurology                            | 45         | 5.5        | 52           | 6.5        |
| Center of Material and Sterilization | 43         | 5.2        | 49           | 5.9        |
| Orthopedic/Plastic Surgery           | 41         | 5.0        | 65           | 7.9        |
| Emergency                            | 37         | 4.5        | 0            | 0          |
| Infectious and Parasitic Diseases    | 30         | 3.6        | 27           | 3.3        |
| Dermatology                          | 28         | 3.4        | 33           | 4          |
| Ophthalmology/Otolaryngology         | 28         | 3.4        | 26           | 3.1        |
| Pediatrics                           | 26         | 3.1        | 31           | 3.8        |
| Cardiothoracic Surgery               | 25         | 3.0        | 22           | 2.7        |
| Others                               | 214        | 25.9       | 182          | 22.1       |
| <b>Total</b>                         | <b>826</b> | <b>100</b> | <b>826</b>   | <b>100</b> |

Others: Hemodialysis, Mother-child Outpatient Unit, Orthopedics and insurances in general, Outpatient pain therapy and palliative care, High cost outpatient pharmacy, Center of Imaging Diagnosis, Outpatient Surgery, Patient Escort Service, Hospital Pharmacy, Hemotherapy Service, Hemodynamics, Nutrition and Dietetics Service, Transportation, Pediatric ICU, Neonatology, Pathology, Gynecology Nursing, Urology, Insured Patients, Pediatrics, Obstetric Center, Nursing Supervision, Reception, Registration, Radiology, Parking lot, Vaccine room.



Regarding immediate behaviors, in 51% of the administrative occurrences and adverse events/incidents the professional considered that the measures taken in face of the examination of the fact at the moment and the orientation to the people involved were enough. In 46.3% of the cases, they needed to ask for the help of others in order to take a safer direction, when they requested the evaluation of other professional, other service, the participation of the family or even sent it to a higher authority in order to find a solution that was out of their reach or that was more comprehensive. In 2.7% of the reports, the information about the immediate behavior was not registered.

As for the behavior of the nursing management when they became aware of the adverse events/incidents and administrative occurrences, they considered their intervention was necessary in 30.3% of the cases, for systemic examination, complementation or reinforcement of the orientations. In 52.3% of the notifications, the adverse events/incidents and administrative occurrences were sent to a higher authority, since they involved other services for the solution, prevention of recurrence or were considered to be of their interest. In 17.4% of the notifications the administration did not intervene. The feedback to the notifier was given in 56.5% of the reports.

## DISCUSSION

The relevance of the NRAE stands on promoting the identification of such adverse events and incidents, providing the nursing team with a practical means of communication about these unexpected and unwanted facts, enabling the exploration of the situations, the construction of a database about risks and problem-situations and enabling the execution of the necessary and appropriate changes in the care process. It also contributes to the management for the planning of safer work processes, enabling the prevention of future adverse events.

Regarding the characteristics of the instrument use, it is possible to state that the NRAE was used by most of the units in the Nursing Division, with different frequencies. The units of General Medical Service, Surgery Center and Adult Intensive Care were the ones that mostly used the reports and have in common the fact that they have patients in critical condition, where there are several professionals from different teams executing several simultaneous procedures. One outpatient unit and one unit of daily hospitalization, despite of being constituted by multiprofessional teams in which the most varied procedures are executed, did not register any adverse event/incident or administrative occurrence. This fact may be explained by the difficulty of the team to identify, during the care service, the incidents and/or adverse events as harmful to the patient; by the non-incorporation of the methodology of notification in the work routine; or even by insecurity, due to the culture of punishment in face of the committed error, existing in institutions, and the resulting tendency to omit facts<sup>(6)</sup>. In this

same line, observing the places where the events happened (Table 1) and the places where the notifications were registered, it is possible to notice that the unit where the event happened was not always the one to notify the fact to the administration.

The time that the units took to start using the report has varied; most of the units sent their first report in the first semester. Data show that the compliance with the instrument increased after that. The small quantity of notifications in the first semester of the implementation may indicate insufficient promotion or instructions, but also the lack of habit, insecurity, or even resistance to change their behavior in face of the adverse events and incidents. This situation changed as time went by, in part due to the perception of the administration's behavior, which focused on the correction of the processes and minimization of the errors. The decrease in the number of reports about adverse events/incidents, observed in the second semester of 2005 (figure 1), may be explained by the transition of positions in the administrative area of nursing. It is possible that this transition influenced the decrease of emphasis related to the notifications.

First introduced in order to report adverse events/incidents, the notification report could also be used to communicate administrative occurrences, and this study observed its continuously increasing frequency for this type of notification, which may mean the acknowledgement of the instrument as a means of communication, the confirmation of its practical character or the observation of its results.

There were units that used the NRAE basically for adverse events/incidents. Others used it for administrative problems, for instance the Surgery Center, possibly as an effect of the period of adjustment to the new routines, due to the change in the physical environment in the hospital building. The Nursing Supervision, which works in the afternoon, at night and on weekends, also presented a high number of records of administrative occurrences. The overload of administrative service keeps the care practice away and complicates the detection of adverse events that may be happening to the patient<sup>(7)</sup>.

The highest number of adverse events/incidents was observed during the day, which corresponds to a moment when several actions are executed such as medical appointments, procedures, care service, exams, and medical and nursing visits. In this period, there is a higher exposure of the patient to adversity. However, during the night and the change of shifts there were also records of notifications that characterize the continuous exposure of the patient to the risks of the care process and the multidisciplinary work. The higher number of administrative occurrences during the day is, possibly, due to the higher number of professionals in the unit, the intense activity of the teams and the higher demand of the resources available in the hospital. Since there is a higher number of nurses working dur-

ing the day and they are in charge of the notifications, it is also possible to explain the higher frequency of notifications that happens in this period.

Regarding the most frequent occurrences, the *institutional events*, both those involving patients directly, and the others, appeared in this study as the most frequently notified occurrences, indicating the complexity of the hospital organization. Problems related generically to equipment, failure in the physical structure of the building and lack of personnel appear as the main causes of adversity in the work environment of the institution. The fact that the institution does not have enough equipment to meet the needs and requests possibly contributes to the high frequency of notification of the events, as it imposes high alternation for the existing equipment and their exposure to a high number of users, which interferes in their maintenance and functioning. Built in the 50's, despite of several renovations and additions, the hospital building has serious problems related to the engineering and conservation of the building, which may justify the high frequency of failures in its infrastructure. This is another cause that imposes the diversity of the nursing work, and also involves the need for notification.

Notifications related to the *failure to comply with the routine, failure in communication and conflicts*. At the hospital, work is divided horizontally among several professionals and executed collectively and in cooperation. The establishment of flowcharts, procedures, guidelines and routines are necessary for the organization, lower care costs, prevention and minimization of errors, and results that benefit patients. These resources of the organizational structure allow the quality control of the services, help the execution of the practice and contribute to the good relationship of the team, being a favorable factor to reduce the stress in the work environment<sup>(8)</sup>. As in every large organization, the communication in the hospital environment is complicated by its complexity and size. The problems in the organizational structure, in communication, added to the individual behavior of the professionals are the most common sources of conflict. Internal disagreements, which are frequent in the hospital environment, are considered, however, as something positive as long as they are well administered, since they may produce growth in the organization. Reports about failure of professionals to comply with the routine and failure in communication were mainly observed in the units of Surgery Center, Center of Material and Sterilization, General Medical Service and Adult and Coronary ICUs, areas of critical activities where large multidisciplinary teams work. Conflicts were not only frequent in the units above mentioned, but also at the units of Pediatrics and Obstetrics Center, which have in common large teams, the presence of the companion and the high alternation of patients. The nursing group constituted the greatest involvement in the occurrences, followed by the interns, doctors and professors. Possible explanations for these results are: a) the institution did

not have, during the studied period, a service for permanent education, area that develops educational processes to meet the needs demanded by the work in the care process; b) force of deficient personnel, mainly of nurses, causing overload and favoring the exposure of the patient to errors; c) the institution has a communication system with new technology in implementation process, which still has deficiencies in the structure and coverage; d) high alternation of nurses in the institution, which interferes in the quality of this professional's activity; e) the institution is a training field for medical and nursing students, who work in several units and often do not know the details of its organization, needing constant orientation about its functioning.

There were 1.85 adverse events notified for every 100 admissions. These numbers are lower than those observed in work based on reviewing medical records, in which the observed frequency was between 2.9 to 16.6 for every 100 medical records<sup>(9)</sup>. In order to evaluate the services executed by the nursing area, it is important to define, comprehend and quantify the denominated quality indicators. The most frequent adverse events in this work, related to quality indicators, referred to medication, falls of patients, catheters, tubes and drains, and the integrity of the skin.

**The most frequent adverse events in this work, related to quality indicators, referred to medication, falls of patients, catheters, tubes and drains, and the integrity of the skin.**

The frequency of elaboration of reports related to medication was low – 85 events in 30 months. This may be possibly due to the fact that the professionals from most of the hospital units handle integral care to the patient, including their medication. This work system may reduce the frequency of adverse events. This low frequency may be also related to underreporting, which was also verified by other study<sup>(10)</sup>. The NRAE, however, provided the information that preventable adverse events in medication were happening. This alert led to the development of a

project for continuing education on the subject, offered to the nursing team in the second semester of 2005. Another study found similar results in intensive and semi-intensive therapy<sup>(11)</sup>. The fact that the institution implemented the electronic medical prescription and the distribution of individual doses of medication, in 2003, may have also favored the low frequency of events<sup>(12)</sup>.

In the period of 30 months, 80 falls were notified, with an average of 2.6 falls per month. Calculating the rate of fall per patient-day<sup>(4)</sup>, in the total of 265,092 patients-day in the studied period, the result was 0.302 per 1000. Another study about this subject registered that among 181 patients with history of falls, 124 were alert and/or oriented and, among those, 49% fell from their bed, 18% while they were walking around, 25% while they were going to the bathroom and 8% fell from a chair, which indicates similar data to those obtained by this study<sup>(13)</sup>.

The NRAE notified 73 events related to catheters, drains and tubes. As these procedures are frequently used in the hospital routine, and commonly followed by, the frequency

of events notified in the present study seems to be relatively low. Nevertheless, after analyzing the different studied periods, a higher number of notifications was found in the first three semesters. In fact, the frequency of adverse events/incidents throughout the periods presented a peak in the second semester of the report, in 2004, followed by a fall in the second semester of 2005, and kept similar frequencies in the other semesters. The repeated observations, promoted by the implementation of the notifications, may have possibly attracted the attention to these events, and caused the establishment of preventive measures that contributed to the decrease of the frequency.

In the studied period, 65 events were notified regarding the integrity of the skin. This study only considered pressure ulcers in stages II, III and IV, according to the classification system of pressure ulcers, since there may be difficulties in the classification of the stage I and because the NRAE does not present the classification stages of ulcer<sup>(14)</sup>. In this period, 40,464 patients were hospitalized in the Clinical Hospital, with exception of the Emergency Service Unit. Therefore, the frequency of pressure ulcers, in the period, was 0.11%. Another study found high incidences that varied from 1.85% to 25%<sup>(15)</sup>. It was considered that the characteristics of the studied populations contributed to the difference found between the results of the mentioned author and the present study, since the population of the studied hospital includes from newborn to older patients. The underreporting may have happened as well.

*Authorship of the reports* – As the nurse follows up the journey of patient in the hospital and answers for the coordination of the nursing care, he has an important role in the promotion of safety to the patient during the care process, and, whenever it is not possible to prevent or avoid adverse events, he must assist the patient in his needs<sup>(16)</sup>. Therefore, the nurse integrates the information regarding the permanence and the activity of the patient in the unit, besides being a reference to the other professionals, which turn to them to report adverse events/incidents and administrative occurrences and to make requests<sup>(17)</sup>. This study considered appropriate the fact that the NRAE were elaborated and sent by nurses. That explains the low number of reports sent by nursing assistants and technicians in the first four semesters. Changing this orientation, there was a discussion regarding the fact that the NRAE could also be filled in by nursing assistants and technicians from the Surgery Center and the Center of Material and Sterilization, which resulted in a significant participation of this group in the notification of adverse events/incidents and occurrences mainly related to administrative and organizational aspects. The involvement of this category in the use of the NRAE as an official instrument of communication promoted their enthusiasm and motivation, and better knowledge of the management regarding the quantity and quality of the available material resources and equipment, inadequacy of routines and procedures, unwanted occurrences and adverse events. It also enabled the introduction of new

strategies for the integration of the teams and subsidies for the modification of processes and other administrative decisions. Besides, it allowed to perceive the level of satisfaction of the professionals and the improvement of work conditions in this area.

The maintenance of the notification system by NRAE must be supported by the mutual relation of trust and respect among professionals, institutions and patients, by the systemic treatment of analysis oriented to the event and by the presented results. The necessary emphasis must be given to the importance of the information that will lead to changes in the structure and processes, promoting the safety of the patient. Reporting the notifier about the measures taken in face of the notification is part of this relation. The low frequency of feedback to the notifier is possibly due to the fact that there were no instructions regarding these or any other notes in the report, and that the report does not have an appropriate field for this information.

## CONCLUSION

The NRAE was considered a useful instrument of communication, indicating a high number of events that were not previously detected, due to the lack of an appropriate means. It also became an important source of information and alert for the promotion of safety in the hospital environment and for the management of the nursing care service. The team complied with the use of the instrument, which was evaluated by the gradual increase of notifications as of its introduction, even though two units did not issue any reports in the studied period. Reports of adverse events/incidents were prevalent, but after some time, the frequency of administrative reports also increased. Despite of the fact that it is the nurse's duty to make this record, the practical character of the instrument made its use also feasible by nursing assistants and technicians and other professionals. Institutional events (failure in the physical infrastructure, lack of personnel, lack of material, among others) and those related to the behavior of professionals, such as failure to comply with the routines established in the institution, conflicts and failure in communication were the most frequent occurrences reported among those analyzed in this study. Regarding the events related to patients, that is, adverse events/incidents, the most frequent were related to medication, falls, catheters, tubes, drains and the integrity of the skin. The NRAE was considered limited to provide data regarding the administrative behavior in face of the events and the feedback to notifiers, as it did not offer an appropriate space for these records.

## FINAL CONSIDERATIONS

It was concluded that the NRAE complied with its purpose to be designed and implemented, which is to establish a practical means of communication of events between nursing professionals and the hospital administration. It is



possible, however, that it did not capture the totality of adverse events/incidents that took place in the institutions, due to underreporting. Nevertheless, the maintenance of the policy to encourage the notification is considered necessary, which may be assisted by the use of the instrument by professionals from several areas of the institution.

The means of communication of events is expected to be fast, enabling the immediate action of the administration. Therefore, the development of the electronic system

of notification is important, as it may make the communication process and the database construction faster.

In addition, it is important to disclose precise and clear concepts about all types of events and to understand that adverse events are, generally, caused rather by failure in the system than by human failure. It is also important to guarantee that the feedback is given to the notifier, which feeds the system. Finally, it is necessary to emphasize the continuing education oriented to the promotion of the patient's safety.

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