



ADVERSE EVENTS IN THE INTENSIVE CARE UNIT
EVENTOS ADVERSOS NA UNIDADE DE TERAPIA INTENSIVA
EVENTOS ADVERSOS EN LA UNIDAD DE TERAPIA INTENSIVA

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ABSTRACT

Objective: to characterize the adverse events of an Intensive Care Unit. **Method:** quantitative, descriptive, retrospective study with patients admitted to the Intensive Care Unit. Data were collected through a questionnaire. The statistical analysis considered absolute and relative frequencies calculated through the MS Excel program and presented in tables and figures. **Results:** The occurrence of 152 adverse events was verified. The profile of the patients was highlighted as being male, young adults, with an average of 45 years. The main adverse events identified were: medication errors (29.6%), pressure injury (21%), unplanned extubation (17%), healthcare-associated infections (15.13%), 9.90%, among others. **Conclusion:** the need for continuing education of professionals, is reinforced in order to sensitize them to notify the events, and the capacitation, to reduce the rates of adverse events. **Descriptors:** Patient Safety; Quality Indicators, Health Care; Intensive Care Units; Critical Care; Nursery; Education, Continuing.

RESUMO

Objetivo: caracterizar os eventos adversos de uma Unidade de Terapia Intensiva. **Método:** estudo quantitativo, descritivo, retrospectivo, com pacientes internados na Unidade de Terapia Intensiva. A coleta de dados ocorreu por meio de questionário. A análise estatística considerou frequências absolutas e relativas calculadas por meio do programa MS Excel e apresentadas em tabelas e figuras. **Resultados:** constatou-se a ocorrência de 152 eventos adversos. O perfil dos pacientes destacou-se por ser do sexo masculino, adultos jovens, com média de 45 anos. Os principais eventos adversos identificados foram: erros de medicação (29,6%), lesão por pressão (21%), extubação não planejada (17%), infecções associadas aos cuidados de saúde (15,13%), perda de sonda (9,90%), entre outros. **Conclusão:** reforça-se a necessidade de educação permanente dos profissionais, a fim de sensibilizá-los para notificar os eventos, e da capacitação, para reduzir os índices dos eventos adversos. **Descritores:** Segurança do Paciente; Indicadores de Qualidade em Assistência à Saúde; Unidades de Terapia Intensiva; Cuidados Críticos; Enfermagem; Educação Continuada.

RESUMEN

Objetivo: caracterizar los eventos adversos de una Unidad de Terapia Intensiva. **Método:** estudio cuantitativo, descriptivo, retrospectivo, con pacientes internados en la Unidad de Terapia Intensiva. La recolección de datos se produjo por medio de un cuestionario. El análisis estadístico consideró frecuencias absolutas y relativas calculadas a través del programa MS Excel y presentadas en tablas y figuras. **Resultados:** se constató la ocurrencia de 152 eventos adversos. El perfil de los pacientes se destacó por ser del sexo masculino, adultos jóvenes, con promedio de 45 años. Los principales eventos adversos identificados fueron: errores de medicación (29,6%), lesión por presión (21%), extubación no planificada (17%), infecciones asociadas a la atención de salud (15,13%), pérdida de sonda (9,90%), entre otros. **Conclusión:** se refuerza la necesidad de educación permanente de los profesionales a fin de sensibilizarlos para notificar los eventos, y de la capacitación, para reducir los índices de los eventos adversos. **Descriptor:** Seguridad del Paciente; Indicadores de Calidad de la Atención de Salud; Unidad de Cuidados Intensivos; Cuidados Críticos; Enfermería; Educación Continua.

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INTRODUCTION

Patient safety has become one of the main goals of health services, both as a result of the impact on the expenses resulting from the lack of security and from damages suffered during care. About 42.7 million incidents of harm occur in patients around the world each year. Through these events, managers of health organizations have debated the issue in order to reduce the occurrence of such incidents.¹

In Brazil, Administrative Rule 529, was implemented on April 10, 2013, which instituted the National Patient Safety Policy (NPSP) and DRC 36, to promote safe practices and contribute to the quality of care in health institutions.²⁻³

The policy integrates a set of complex actions and efforts to improve environmental safety and risk management. One of the objectives of this policy is the reduction or minimization of Adverse Events (AE), which is an event or circumstance that would result in or compromise the structure or function of the body and / or any effect thereof, including permanent or temporary injuries, suffering, death, disability or dysfunction, regardless of the sphere of the client's well-being. These incidents are considered unnecessary harm to health that can be avoided. Generally, the material, technical and / or technical resources of the service organization.^{2,4}

AEs can be categorized into infectious (in-service infection-related infections) and non-infectious diseases related to health care and have a significant impact on health as it leads to increased morbidity and mortality.⁵ The investigation, in order to characterize the AE, is a measure that contributes to the understanding of the damages caused and directs the necessary changes to safer practices and the organization of protocols. It is recommended to propose solutions and evaluate them continuously through monitoring actions.⁶

Among the services most favorable to the occurrence of AE are Intensive Care Units (ICUs), which are characterized as services that have a technological arsenal, with materials of high complexity, for the purpose of attending serious patients.⁷⁻⁸ Communication of the AE occurring in the ICU should be clearly and accurately, guaranteeing improvement of the actions of this sector. This process should be through surveillance systems, medical records and other records that allow for consultation and the analysis.

It is worth mentioning that underreporting is an aggravating factor for the analysis of AE.⁹ The lack of incident reports are the main causes of health-related errors.⁹ In addition to clinical records in books and records, the use of reporting tools is essential.

Due to this problem, on July 31, 2014, the Health Surveillance and Management of Hospital Care Risks System, HSMHCRS, was launched by the Brazilian Hospital Services Company (BHSC). This system aims to facilitate the decision-making process in actions, through a bank of notifications, to improve the quality of services provided to patients.¹⁰

When considering the need for the quality of health care, the prevention of adverse events and the promotion of patient safety, there was an interest in deepening the issue in the ICU.

OBJECTIVE

- To characterize the adverse events of an Intensive Care Unit.

METHOD

Quantitative, descriptive, retrospective study, performed at the ICU of a university hospital in the city of Petrolina-PE. The ICU of the research hospital has 19 beds, of which 16 are active beds and three are deactivated beds. This sector serves a clientele from the municipalities of the interstate health care network of the São Francisco Valley, PEBA network, being composed of 53 municipalities. The care profile of this institution is the urgencies and emergencies that include polytrauma, neurology and neurosurgery (high complexity), traumatology-orthopedics (high complexity), general surgery, vascular surgery, bucco-maxillofacial surgery and medical clinic.¹¹

To collect data, an instrument was developed, based on patient safety protocols and publications on the subject in order to meet the objectives of the study. Thus, the AEs proposed for this research were: Errors Related to Medication ERM - omission of dose; Infections Associated with Health Care (IAHC); Pressure lesion (PL); Unplanned Extubation (UE); Phlebitis; Nursing failures in handling or lesions and externalizations of catheters and probes; patient falls; unscheduled withdrawals of catheters and drainage; exteriorization of nasal and nasogastric probes.¹²⁻³

Data were collected through secondary data: patient records, collected at the statistical medical archive service (SMAS);

data from the Patient Safety Commission of the service, through the health surveillance and management of hospital care risks system - HSMHCRS - software, incorporated in January 2016 by the hospital where the research was carried out.

The study sample consisted of patients admitted to the ICU from March to July 2016, comprising a total of five months. To define the sample of the study, the statistical formula was used: $N = X \cdot M$, such that the sample (N) is the result of the monthly average (X) of inpatients multiplied by the months (M) selected for the study. In the period from January 16 to April 16, 2016, 139 patients were hospitalized. The monthly average was 46 patients, being multiplied by the total of months selected by the research. Thus, a sample of 230 patients was estimated.

The inclusion criteria were: patients who remained for at least 24 hours in the ICU during the study period. The following were excluded from the study: adverse events and incidents that began before ICU admission, reports of incomplete adverse events and / or lack of information that made them unfit for the study, and patients whose medical records were not located in SMAS.

The collected data was entered into the MS Excel XP program. A detailed descriptive

analysis of the data that comprised the absolute and relative frequencies was performed. The data were presented through tables and graphs in said program to answer the research objectives.

The risks associated with the study, such as: loss / loss of medical records and disclosure of information, was minimized by ensuring that the damage would not occur and the information found in the course of the research was maintained in absolute and strict secrecy. The research project was approved by protocol number 1,707,068.¹⁴

RESULTS

In the period from March to July 2016, 241 patients were admitted to the ICU, however, in SMAS, only 138 charts that were in the sector were analyzed. Their analysis revealed 152 adverse events in the period.

Of the total number of patients admitted to the sector, 83 (34.4%) were affected by some AE; 33 (13.69%) patients had more than one class of AE; 39 (16.18%), more than one AE. The AE rate per patient / day was 6.67.

Table 1. Patient profile, categorization and distribution of AEs from March to July 2016. Petrolina (PE), Brazil, 2016.

Variables	Total	Categories	n	%
Sex	83	Male	63	76
		Female	20	24
Age	83	10 - 19 years	6	7.23
		20 - 29 years	16	19.27
		30 - 39 years	15	18.07
		40 - 49 years	12	14.46
		50 - 59 years	12	14.46
		60 - 69 years	12	14.46
		> 69 years	10	12.05
Reason for admission	83	Trauma	37	44.58
		Clinical	35	42.17
		Post-Surgical	11	13.25
Specialities	83	Neurology	57	68.67
		Clinical	12	14.46
		General surgery	7	8.43
		Vascular	4	4.82
		Orthopedics	2	2.41
		Buco-maxilo	1	1.21
Source	152	HSMHCRS	50	33
		Password	102	67
Notifier	50	Nurse	39	78
		Physiotherapist	11	22
Shift	94	Morning	32	34.04
		Afternoon	24	25.53
		Night	21	22.34
		Uninformed	17	18.09
Month	152	March	31	20.40
		April	39	25.66
		May	35	23.02

		June	26	17.11
		July	21	13.82
AE	152	Medication-related errors	45	29.60
		Pressure Injury	32	21
		Unplanned Extubation	26	17
		Infections related to health care	23	15.13
		Loss of probe	15	9.87
		Phlebitis	3	1.97
		Central venous access	1	0.66
		Others	7	4.61
Patient/AE	At least 1 AE	83	34.60	
	> 1 AE	39	16.18	
	> 1 AE Class	33	13.69	

Regarding gender, the majority of patients who suffered from AE were male 63 (76%), versus 20 (24%) female. Young adults were the range with the highest incidence, being the mean age of 45 years.

As for the profile of inpatients and patients with AE, 37 (44.58%) were victims of trauma. Neurology corresponded to 68.7% of the specialties of the patients who needed hospitalization in the ICU. The mean duration of the 83 patients was 15.8 days. For the appearance of the first AE, it was verified that, the mean was 10.3 days of hospitalization.

Regarding the professional category responsible for the notifications, it was observed that 39 (78%) were performed by nurses. Regarding the means of notification, 102 (67.1%) events were reported through medical records and 50 (32.9%) events reported through the HSMHCRS system of the service.

In relation to shifts of higher incidence of AE, the morning shift (34%). Then, the afternoon (26%) and night (22%) and was observed in (18%) the shift was not informed. When the month with the highest incidence of

AE was evaluated, the month of April was more prominent, with 39 (25.65%).

The ERM were the most incident AE, with 45 (29.6%), followed by LPP, 32 (21%); ENP, 26 (17%); IACS, 23 (15.13%); loss of gastric / enteral tube, 15 (9.90%); phlebitis, three (1.97%); loss of central venous access, one (0.65%); cephalic drainage loss, two (1.30%); removal of bladder catheter from patient delay, two (1.30%) and failures of identification of nasoenterals, two (1.30%),.

Regarding ERM, it was sought to quantify the omission of dose from the medical prescriptions, which corresponds to the administration step. The incidence for every 100 hospitalized patients / day was 1.97. Of the 138 charts surveyed, 23.18% showed a dose omission in prescriptions. Among the prescriptions, the omission of hydrates and sera (51.11%) were the most frequent (Table 2). The afternoon shift was the period that most occurred ERM.

Table 2. Distribution of missing drugs identified from the charts (n = 138), from March to July 2016. Petrolina (PE), Brazil. 2016.

Medication	n	%
Solutions and hydration	23	51.11%
Antiemetics	4	8.89%
Antibiotics	4	8.89%
Anticonvulsant	3	6.67%
Anti-inflammatory	3	6.67%
Analgesic	2	4.45%
Hypoglycemic	1	2.22%
Antihistamine	1	2.22%
Gastric protector	1	2.22%
Neuroleptic	1	2.22%
Antipsychotic	1	2.22%
Antihypertensive	1	2.22%
Total	45	100%

Regarding PL, the incidence was 13.27%. The main regions affected were calcaneus, with 20 (51.28%), followed by sacral, with ten

(25.64%); occipital, with four (10.26%); malleolus, with three (7.7%); with one (2.56%) and elbow, also with one (2.56%) (Figure 1).

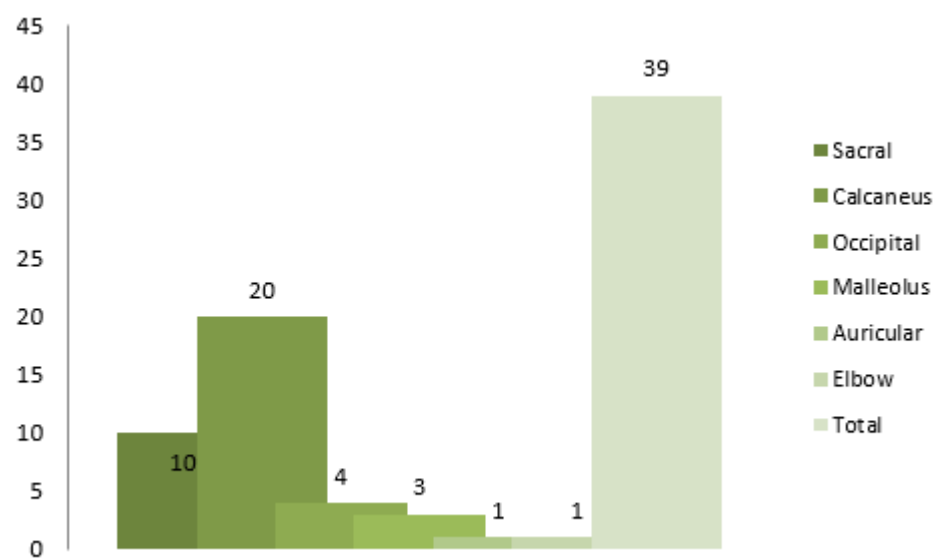


Figure 1. Distribution of regions affected by pressure lesions identified in the period from March to July 2016 (n = 39).

Regarding UE, the incidence was 1.55 for every 100 patients intubated/day. Out of the total number of patients, 7.88% suffered UE. Half of the patients who suffered UE were using sedoanalgesia and the majority of them, 69.23%, were disoriented. The 46.15% agitation, was mentioned as the main cause of the event, followed by self extubation, WITH

34.62%. However, only three patients used mechanical restraint (Figure 2). The mechanical ventilator alarm was the most frequent form of identification, in 88.46% of extubations. Five (26.31%) patients had more than one UE and 17 (65.38%) of the 26 patients had to be reintubated. However, there were no serious complications.

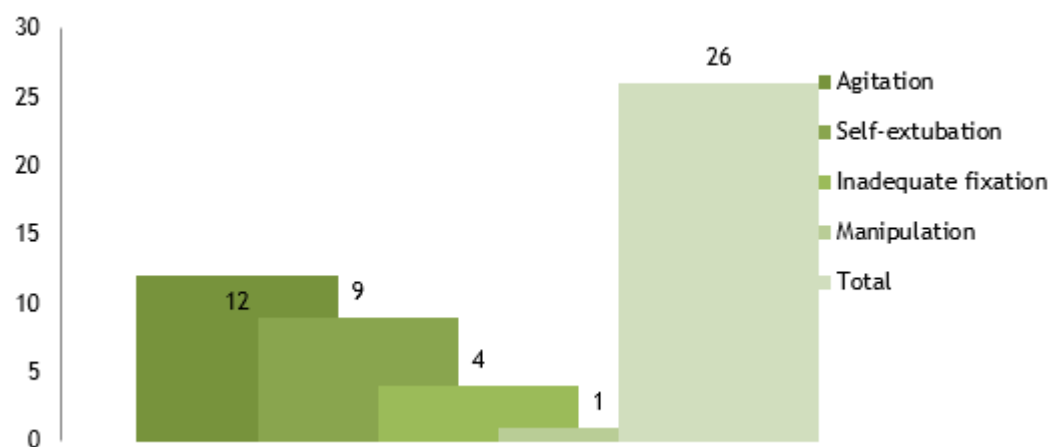


Figure 2. Distribution of the cause factors identified in unplanned extubation, in the period from March to July 2016 (n = 26).

Twenty-three (15.13%) IAHC cases, were identified from the total AE, and 15.21% of the medical records investigated showed that patients acquired hospital infections. The incidence of this condition was 1/100 patients hospitalized day. Ventilator-associated pneumonia (VAP) was the most present IAHC with 18 cases (78.26%); bloodstream-related infections, with four cases (17.39%) and a single case of UTI (4.34%). The diagnoses were clinical and identified in medical records.

Removal of probes corresponded to 4.98% of the patients. Of these, three patients had more than one incident. As determining factors for the occurrence of this event, the self-withdrawal of the enteral or gastric catheter by the patient stands out, with

93.33%; lack of restraint (66.67%); disorientation (73.33%) and absence of sedoanalgesia (80%). Only two patients did not require reintroduction of the probe. The prevalent shift occurred in the morning, with 46.67%.

DISCUSSION

When comparing the incidence and the rate of AE with a similar study, the values found were higher than the survey, 74.2% and 8.05%, respectively.¹⁵ Another study found a lower value, about 32.4% of the patients suffered some AE.¹⁶ AEs interfere with patient integrity, resulting in increased morbidity, mortality, treatment time and hospital costs.¹

The male young adult male was the most incident profile. It is attributed to the hospital profile, reference to the care of victims of trauma, these being the victims most involved in traffic accidents.¹⁷ The same result was obtained corroborating the study of patients who suffered AE, in which, about 51, 8% were male and 27.24%, were young adults.¹⁸

Adverse events are incidents, with damage that may result in prolonged hospitalization time. Research has observed that these same events prolonged hospitalization time, on average, in 19 days, and increased mortality.¹⁶ In another study, this time was even longer, 31 days.¹⁵

The Nursing team is constantly mentioned in the studies of patient safety and AE. Nursing professionals have the security and ability to perform the notifications. However, fears about punitive culture, issues such as work overload, ignorance, forgetfulness lead to underreporting of AE.¹³ Institutions that work on awareness raising, patient safety and AE have good responses from practitioners regarding records.¹

The morning shift was where the highest incidence of AE was observed. Incidents during the day shift can be attributed to the greater frequency of procedures. Already the records of the night were correlated with the number of hours of work being greater than the other shifts, consequently, leading to fatigue and stress. However, the nocturnal shift had lower indices than diurnal ones, which does not necessarily indicate that less AE occurs, and underreporting may be a factor.¹⁸

ERM is one of the most frequent events in health care. Among the undesirable effects related to this AE are hypotension, hypoglycemia and nausea / vomiting as the most frequent.¹⁶

ERMs are categorized into: prescription; omission; of time; administration of unauthorized drugs; of the dose; presentation; preparation; administration; Use of impaired medications; monitoring; and others. Dose omission, defined as the absence of prescribed medication administration, was the category previously selected to determine medication related errors.¹⁹

It is estimated that 43% of ICU hospitalized patients undergo, at least, one ERM, however, 82% of these errors are classified as totally preventable. According to the process or stage of drug administration, those occurring in the prescription phase have been the most reported, followed by administration of the reported total ERM, in one study. This second

stage is where the omission of dose is included.²⁰

The analysis of the factors related to the causes that lead to ERM are information that allows understanding and reducing its occurrence, such as: lack of knowledge about medications; lack of information about patients; failure to administer doses; problems related to infusion devices drugs attributed to poor understanding of prescription; verbal orders of medication without being prescribed.¹⁹

In a recent survey, PL was the most incident AE amongst others, with 48.2%, reaching 19.1% of patients. As for the incidence rate, it was 4.5 ulcers per 100 patients / day.¹⁶ Both values exceeded that of this study. The regions that usually develop lesions are the calcaneus, sacrum, scapula and ischium.¹² One curious fact is that 95% of lesions are estimated to be preventable.¹⁸

PL is a health problem that is difficult to treat, prolonged, and costly, which emphasizes the premise of prevention. The high incidence demonstrates the fragility of care. This illness is commonly associated with the failure of Nursing care. Nursing plays a key role in its prevention. However, the multiprofessional team must be involved in prevention measures. PL indicators are essential for the planning, organization, coordination, evaluation and control of activities developed, by providing a broader view of the phenomena involved, which leads to effective actions.²¹

The absence of devices to prevent them was one of the barriers with which the service encountered to reduce its rates. Although the PL is a notification grievance, there were no records in the surveillance systems. However, the ICU of this service uses the Braden Scale as a monitoring tool.

Another common adverse event in the ICUs is unplanned extubation (UE), defined as the early removal or inadequate misalignment of the endotracheal tube in the airway.²² The occurrence rate of UE ranges from three to 14% in ventilated patients/day. Thus, UE is a concern of hospital services.²³ The percentage of 7.88% of patients demonstrates what was expected according to the literature, however, reducing to the minimum possible, around 2%, is the desired.²³

About 65.38% of the patients who required reintubation were unable to perform spontaneous ventilation outside the mechanical ventilator due to their clinical condition. Consequently, they were exposed to the complications of this AE. Among the

main reasons for reintubation we mention hypoxia (33%) and the excess secretions (33%).

Removal of the endotracheal tube may be due to the patient's own action, inadequate handling by the professionals, inadequate fixation, selective positioning, replacement of the fixation, poor positioning of the patient, a circuit positioned to draw the tube, transport, obstruction of the endotracheal tube or defects in the cuff.²² The identification of this event is evidenced by means of signs and symptoms, requiring attention to them.

he difficult management of sedoanalgesia and the application of protocols that allow the management of the neurological level and the agitation of the patient are also punctuated as these factors put the event at risk.¹⁸ Some sedatives may lead the patient to present delusions that, in turn , generate agitation.²⁵

The percentage of IAHC affects 13 to 22% of ICU patients.^{18,25} Mechanical ventilation pneumonias (VAPs) are the most common type of respiratory infections among ICU infections, usually of aspiration origin of secretions of the upper airways.¹² Among the main measures, that may contribute to the reduction of VAP, are hygiene of the hands, high 30-45° decubitus, the aspiration of the airways, the maintenance of endotracheal cuff pressures and the oral hygiene with oral chlorhexidine.²⁶

Loss of enteral or gastric probes is one of the most common AEs in the ICU. Motor agitation, inadequate restraint, mental confusion, patient manipulation, inadequate fixation, and obstruction are the major causes of catheter loss. Their occurrence can be avoided by more effective measures.⁴ The percentage of transfer of probes for food makes evident the waste in relation to the costs in this incident.

In addition to the events mentioned, we identified other isolated incidents that are minimally related to care. Loss of stroke, that has as factors catheter infection, accidental withdrawal, poor fixation, obstruction and self-withdrawal.²⁷ Also, cephalic drain loss, withdrawal of SVD by the patient and failure to identify enteral probes.

CONCLUSION

This study detected the presence and estimated the occurrence of AE. The ICU had higher rates of AE, than is recommended by the World Health Organization (WHO). It is possible that this number is even greater, considering the possibility of underreporting and the occurrence of other AE that were not included in the research.

In addition, the research presented some limitations, such as the unavailability of medical records or incomplete medical records that were not in SMAS, remain in medical accounts or have not been filed. Another limitation was the absence of records of AEs in medical records by professionals.

HSMHCRS is a system whose implantation and incorporation, by professionals, occurred in a gradual way. However, it has been noticed that there is an underreporting and the unsatisfactory use of this surveillance system by professionals, requiring control measures so that this impasse can be circumvented.

The rate of damage and non-injury incidents, is used as an indicator of the quality of care. The results obtained reinforce the need for permanent education of professionals, in order to sensitize them to the notification, training from protocols, as measures to reduce their indices and continuous monitoring. For such events are preventable not only by the Nursing team, but, also, by the multiprofessional team involved in patient care.

This study reached the proposed objectives and it is hoped that the results obtained will contribute to the early recognition of patients vulnerable to AE, in order to develop preventive measures, monitoring and evaluation of the progress of safer care. In addition, it is expected that the data revealed will allow the monitoring and the development of actions to improve health practice, helping the institution to identify its weaknesses and providing better use of resources to ensure patient safety.

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REFERENCES

1. Françolin L, Gabriel CS, Bernardes A, Silva AEBC, Brito MFP, Machado JP. Gerenciamento da segurança do paciente sob a ótica dos enfermeiros. Rev Esc Enferm USP. 2015 Mar/Apr; 49(2):277-83. Doi: <http://dx.doi.org/10.1590/S0080-623420150000200013>

2. Ministério da Saúde (BR), Gabinete do Ministro. Portaria GM/MS nº 529, de 1 de abril

de 2013. Institui o Programa Nacional de Segurança do Paciente (PNSP) [Internet]. Brasília: Ministério da Saúde; 2013 [cited 2015 Oct 12]. Available from: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2013/prt0529_01_04_2013.html

3. Ministério da Saúde (BR), Agência Nacional de Vigilância Sanitária. RDC ANVISA/MS nº 36, de 25 de julho de 2015. Institui ações para a segurança do paciente em serviços de saúde e dá outras providências [Internet]. Brasília: Ministério da Saúde; 2015 [cited 2016 jan 13]. Available from: http://portal.anvisa.gov.br/documents/10181/2871504/RDC_36_2013_COMP.pdf/36d809a4-e5ed-4835-a375-3b3e93d74d5e

4. Lima CSP, Barbosa SFF. Ocorrência de eventos adversos como indicadores de qualidade assistencial em unidade de terapia intensiva. Rev Enferm UERJ. 2015 Jan/May;23(2):221-8. Doi: <http://dx.doi.org/10.12957/reuerj.2015.6076>

5. Ministério da Saúde (BR), Agência de Vigilância Sanitária. Assistência Segura: uma reflexão teórica aplicada à prática [Internet]. Brasília: Ministério da Saúde; 2013 [cited 2016 Jan 13]. Available from: http://www20.anvisa.gov.br/segurancadopaciente/images/documentos/livros/Livro1-Assistencia_Segura.pdf

6. Ministério da Saúde (BR), Agência de Vigilância Sanitária. Investigação de eventos adversos em serviços de saúde [Internet]. Brasília: Ministério da Saúde; 2013 [cited 2016 Jan 15]. Available from: <https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/investigacao-de-eventos-adversos-em-servicos-de-saude>

7. Cenedési MG, Bernardino E, Lacerda MR, Dallaire C, Lima K. Funções Desempenhadas pelo enfermeiro em unidade de terapia intensiva. Rev RENE [Internet]. 2012;13(1):92-102 [cited 2016 Jan 19]. Available from: <http://www.revistarene.ufc.br/revista/index.php/revista/article/view/21/17>

8. Versa GLGS, Inoue KC, Nicola AL, Matsuda LM. Influência do dimensionamento da equipe de enfermagem na qualidade do cuidado ao paciente crítico. Texto contexto-enferm. 2011 Oct/Dec; 20(4):796-802. Doi: <http://dx.doi.org/10.1590/S0104-07072011000400020>

9. Leitão IMTA, Oliveira RM, Leite SS, Sobral MC, Figueiredo SV, Cadete MC. Análise da comunicação de eventos adversos na perspectiva de enfermeiros assistenciais. Rev RENE. 2013 Nov/Dec;14(6):1073-83. Doi: <http://www.revistarene.ufc.br/revista/index.php/revista/article/download/1193/pdf>

10. Ministério da Educação (BR), Empresa Brasileira de Serviços Hospitalares. Plano de reestruturação hospital de ensino da Universidade Federal do Vale do São Francisco - Dr. Washington Antônio de Barros [Internet]. Brasília: Ministério da Educação; 2013 [cited 2016 Jan 15]. Available from: http://www.ebserh.gov.br/documents/15796/103444/plano_de_reestruturacao_hedwab_univasf.pdf/e8940436-ffd9-4811-be81-b22a36988836

11. Ministério da Educação (BR), Empresa Brasileira de Serviços Hospitalares. Vigihosp completa um ano de lançamento [Internet]. Brasília: Ministério da Educação; 2015 [cited 2016 May 19]. Available from: http://www.ebserh.gov.br/web/hc-ufm/noticia-aberta/-/asset_publisher/Zo21hrThpSTk/content/vigihosp-completa-um-ano-de-criacao

12. Pedreira LC, Brandão AS, Reis AM. Evento adverso no idoso em Unidade de Terapia Intensiva. Rev Bras Enferm. 2013 May; 66(3):429-36. Doi: <http://dx.doi.org/10.1590/S0034-71672013000300019>

13. Claro CM, Krocokcz DVC, Toffolletto MC, Padilha KG. Eventos adversos em Unidade de Terapia Intensiva: percepção dos enfermeiros sobre a cultura não punitiva. Rev Esc Enferm USP. 2011 Mar;49(1):167-72. Doi: <http://dx.doi.org/10.1590/S0080-62342011000100023>

14. Ministério da Saúde (BR), Conselho Nacional de Saúde. Resolução nº 466, de 12 de dezembro de 2012. Institui as diretrizes e normas que regulamentam o desenvolvimento de pesquisas envolvendo seres humanos [Internet]. Brasília: Ministério da Saúde; 2012 [cited 2016 Jan 18]. Available from: <http://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf>

15. Novaretti MCZ, Santos EV, Quitério LM, Daud-Gallotti RM. Sobrecarga de trabalho da Enfermagem e incidentes e eventos adversos em pacientes internados em UTI. Rev Bras Enferm. 2015 Sept/Oct;67(5):692-9. Doi: <http://dx.doi.org/10.1590/0034-7167.2014670504>

16. Roque KE, Tonini T, Melo EC. Adverse events in the intensive care unit: impact on mortality and length of stay in a prospective study. Cad Saúde Pública. 2016 Oct; 32(10):e00081815. Doi: [10.1590/0102-311X00081815](https://doi.org/10.1590/0102-311X00081815)

17. Moura JC, Rangel BLR, Creôncio SCE, Pernambuco JRB. Perfil clínico-epidemiológico de traumatismo cranioencefálico do Hospital de Urgências e Traumas no município de Petrolina, estado de Pernambuco. Arq Bras de

Souza RF de, Alves AS, Alencar IGM de.

Adverse events in the intensive care unit.

Neuroc [Internet]. 2011 [cited 2016 Jan 18]; 30(3):99-104. Available from:

<http://files.bvs.br/upload/S/0103-5355/2011/v30n3/a2709.pdf>

18. Saldaña DA, Rodríguez SM, Díaz, JC, Cavallo, E, Zarate GR, Vargas TR, Salas R. Estudio de eventos adversos, factores y periodicidad en pacientes hospitalizados en unidades de cuidado intensivo. *Enferm Glob* [Internet]. 2016 Apr [cited 2016 Jan 25];42(15):324-40. Available from: <http://revistas.um.es/eglobal/article/viewFile/215791/192481>

19. Ferreira PC, Dantas ALM, Diniz KD, Ribeiro KRB, Machado RC, Tourinho FSV. Evento adverso versus erro de medicação: percepções da equipe de enfermagem atuante em terapia intensiva. *J res fundam care*. 2014 Apr/June;6(2):725-34. Doi: 10.9789/2175-5361.2014v6n2p725

20. Merino P, Martín MC, Alonso A, Gutiérrez I, Álvarez J, Becerril F. et al. Medication errors in Spanish intensive care units. *Med Intensiva*. 2013 Aug/Sept;37(6):391-9. Doi: [10.1016/j.medin.2012.11.002](http://dx.doi.org/10.1016/j.medin.2012.11.002)

21. Silva MRV, Dick NRM, Martini AC. Incidência de úlcera por pressão como indicador de qualidade na assistência de enfermagem. *Rev Enferm UFSM*. 2012;2(2):339-346. Doi: <http://dx.doi.org/10.5902/217976925238>

22. Silva PS, Fonseca MC. Unplanned endotracheal extubations in the intensive care unit: systematic review, critical appraisal, and evidence-based recommendations. *Anesth Analg*. 2012 May; 114(5):1003-14. Doi: [10.1213/ANE.0b013e31824b0296](http://dx.doi.org/10.1213/ANE.0b013e31824b0296)

23. Oliveira PCR, Cabral LA, Schettino RC, Ribeiro SNS. Incidência e principais causas de extubação não planejada em unidade de terapia intensiva neonatal. *Rev Bras Ter Intensiva*. 2012 July/Dec; 24(3):230-35. Doi: <http://dx.doi.org/10.1590/S0103-507X2012000300005>

24. Tanios M, Epstein S, Grzeskowiak M, Nguyen HM, Park H, Leo J. Influence of sedation strategies on unplanned extubation in a mixed intensive care unit. *Am J Crit Care*. 2014 July; 23(4):306-14. Doi: [10.4037/ajcc20144446](http://dx.doi.org/10.4037/ajcc20144446)

25. Oliveira AC, Garcia PC, Nogueira LS. Carga de trabalho de enfermagem e ocorrência de eventos adversos na terapia intensiva: revisão sistemática. *Rev Esc Enferm USP*. 2016 July/Aug; 50(4):683-694. Doi: <http://dx.doi.org/10.1590/S0080-623420160000500020>

26. Ministério da Saúde (BR), Agência de Vigilância Sanitária. Medidas de prevenção de

infecções relacionada à assistência a saúde. Brasília: Ministério da Saúde; 2017 [cited 2017 Aug 13]. Available from: <http://portal.anvisa.gov.br/documents/33852/271855/Medidas+de+Preven%C3%A7%C3%A3o+de+Infec%C3%A7%C3%A3o+Relacionada+%C3%A0+Assist%C3%A2ncia+%C3%A0+Sa%C3%BAde/6b16dab3-6d0c-4399-9d84-141d2e81c809>

27. Lima NP, Silva GMC, Park M, Pires-Neto RC. Realização de fisioterapia motora e ocorrência de eventos adversos relacionados a cateteres centrais e periféricos em uma UTI brasileira. *J Bras Pneumol*. 2015 May/June; 41(3):225-30. Doi: [10.1590/S1806-37132015000004338](http://dx.doi.org/10.1590/S1806-37132015000004338)

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