

EFFECTIVENESS OF CLINICAL RISK MANAGEMENT IN INTENSIVE CARE

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ABSTRACT: The present study aimed to measure the effectiveness of clinical risk management in intensive care. Cross-sectional study with quantitative approach conducted in a philanthropic hospital in the city of Caxias do Sul. The sample was composed of patients admitted to the intensive care unit included in the risk management assessment form in the period of January 2013 to December 2014. The risks analyzed in this study were fall; skin lesion; unplanned extubation; accidental removal of nasoenteral feeding tube and nasogastric tube and accidental catheter removal for central venous catheter. The sample was composed of 51,220 patients-day. According to the results obtained, the effectiveness of the management of the risks investigated in this study was above 99%. It is concluded that nursing plays a key role in risk management, an activity that requires continuing training of nurses, with focus on care quality and safety.

DESCRIPTORS: Nursing; Risk Management; Intensive Care Unit.

EFETIVIDADE DO GERENCIAMENTO DE RISCOS CLÍNICOS NA TERAPIA INTENSIVA

RESUMO: Objetivou-se mensurar a taxa de efetividade do gerenciamento de riscos clínicos na terapia intensiva. Trata-se de um estudo transversal, com uma abordagem quantitativa, realizado em um hospital filantrópico do município de Caxias do Sul. A amostra foi composta pelos pacientes internados na terapia intensiva inclusos no formulário de gerenciamento de riscos no período de janeiro de 2013 a dezembro de 2014. Os riscos que foram analisados nesta pesquisa foram: queda; lesão de pele; extubação acidental; perda acidental de sonda nasoentérica e sonda nasogástrica; e perda acidental de cateter venoso central. O total da amostra foi de 51220 pacientes-dia. Os resultados encontrados evidenciaram que a taxa de efetividade nos riscos pesquisados, em sua maioria, permaneceu acima de 99%. Conclui-se que a enfermagem tem papel fundamental no gerenciamento de riscos, atividade essa que exige do enfermeiro aperfeiçoamento constante, com foco na qualidade e segurança da assistência.

DESCRIPTORIOS: Enfermagem; Gestão de Riscos; Unidade de Terapia Intensiva.

EFFECTIVIDAD DE LA GESTIÓN DE RIESGOS CLÍNICOS EN LA TERAPIA INTENSIVA

RESUMEN: Fue la finalidad de este estudio mensurar la tasa de efectividad de la gestión de riesgos clínicos en la terapia intensiva. Trasversal y con abordaje cuantitativo, el estudio fue realizado en un hospital filantrópico del municipio de Caxias do Sul. La muestra fue compuesta por los pacientes internados en la terapia intensiva inclusos en el formulario de gestión de riesgos en el periodo de enero de 2013 a diciembre de 2014. Los riesgos analizados en esta investigación fueron caída; lesión de piel; extubación accidental; pérdida accidental de sonda nasoentérica y sonda nasogástrica; y pérdida accidental de catéter venoso central. El total de la muestra fue de 51220 pacientes al día. Los resultados evidenciaron que la tasa de efectividad de la mayoría de los riesgos investigados resultó en más de 99%. La conclusión es que la enfermería tiene papel fundamental en la gestión de riesgos, la cual es una actividad que exige al enfermero constante perfeccionamiento, con énfasis en la calidad y seguridad de la asistencia.

DESCRIPTORIOS: Enfermería; Gestión de Riesgos; Unidad de Terapia Intensiva.

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● INTRODUCTION

Health organizations perform critical activities that involve greater risks to patients, resulting in the onset of adverse events (AE): incidents that cause harm to the patient⁽¹⁾. There is currently a high incidence of such events, which have become a matter of concern among health professionals and managers, since they reflect inconsistency between ideal and real models of care. Thus, patient safety is a key aspect in the delivery of higher quality care to users⁽²⁾.

Safe care is a frequently addressed subject in the healthcare area worldwide. The report Institute of Medicine, of the United States, included studies that show the precarious situation of health care in the country. According to data from the referred report, of the 33.6 million individuals hospitalized, approximately 44,000 to 98,000 died due to different adverse events⁽³⁾.

In view of the aforementioned results, it was estimated that 180,000 deaths occurred in the United States were related to such events. One report of the Institute of Medicine of the United States informed that 7% of hospitalized patients were admitted because of medication errors. In Intensive Care Units (ICU), a complex area subject to various risks, 17% of the patients had suffered a serious adverse event⁽³⁾. Therefore, the World Health Organization (WHO) has set this issue to high priority⁽⁴⁾.

Such concern with the quality of patient care and mitigation of care risks, and the management of these risks, may contribute to reduce adverse events to patients. Risk management helps hospital managers to make decisions in and set the priorities of their actions. Also, health institutions will be more capable of planning patient safety through monitoring of adverse events and reduction of adverse events to patients, as well as the prevention of incidents⁽⁵⁾.

Nursing plays a key role in risk management, since these professionals spend the greatest amount of time with the patients, compared to other health workers, and are more able to recognize potential risks and implement preventive measures⁽⁶⁾.

In order to facilitate the organization of risk management, risks can be classified as clinical and non-clinical. Clinical risk management is aimed to detect, on an early basis, situations that might cause harm to patients, hospitals and the environment. It comprises the use of several measures aimed to prevent, identify and minimize the occurrence of events that often cause irreversible harm to the patient⁽⁷⁾.

Clinical risk is any risk associated to a direct or indirect action taken by a healthcare professional, resulting from ineffective health care policies and actions. Some examples of clinical risks are unsafe surgery, misidentification of patient; unsafe drugs; acquisition of infection and risks of fall⁽⁸⁾.

Non-clinical risk is the risk related to the safety of healthcare facilities or to the care delivered to patients, in addition to the risks generated by poor work conditions. Some examples of non-clinical risks include lack of proper maintenance of elevators; radiological protection, occupational accidents, lack of preventive maintenances, among others⁽⁸⁾.

Risks of adverse events and failures may occur in any sector of health institutions, particularly in ICUs, which are high-risk health care environments where it is often necessary that intensive care is provided quickly, involving several procedures, equipment and people, due to the severe condition of the patients. In view of the aforementioned, intensive care may be very stressful, as it is directly related to situations of life or death, where decisions must be made quickly. Thus, skilled and well-trained professionals are required, and nurses play a key role in the recognition, management and prevention of risks⁽⁹⁾.

In a study conducted in a teaching hospital, the incidence of several adverse events in ICU patients was investigated. The rates of incidence of adverse events and incidents per 1,000 patients-day were respectively 80.5 and 149.7, and in 13% of these cases, these adverse events resulted in serious or fatal illnesses. Of the total number of patients, 20.2% suffered at least one event, a higher incidence compared to findings of studies not focused on intensive care⁽²⁾.

One study that addressed the financial costs of adverse events in intensive care revealed that each adverse event represents an additional cost of around 4,000.00 dollars to the affected patient and increases the length of stay in one day. The same study reported an increase of 31 days in the length of

stay for patients who suffered an adverse event when admitted to the ICU⁽¹⁰⁾.

Thus, the guiding question of the study was: What is the effectiveness of clinical risk management in intensive care? The objective of the study was to measure the effectiveness of clinical risk management in intensive care.

● METHOD

Cross-sectional study with a quantitative approach. The study was conducted by a philanthropic organization where more than 60% of the patients are assisted by the Unified Health System (SUS) in adult intensive care units, with a total of 30 beds.

The study sample was composed of patients included in the daily risk management form of the institution from January 2013 to December 2014, totaling 51,220 patients-dia. Only patients exposed to risks were included in the form.

The inclusion criteria were patients admitted to adult intensive care units from January 2013 to December 2014 and inclusion in the daily risk management form. The exclusion criteria were patients admitted to adult ICU for less than 24 hours.

Data was obtained through the risk management forms, which are filled by the nurse of the unit everyday. In these forms, nurses record the total number of patients/day exposed to risks and the number of patients who developed adverse events. The forms are monthly submitted to the organization's quality sector where they are recorded, assessed and discussed in the risk management committee. The risks are also classified into clinical and non-clinical risks. The adverse events are arranged in electronic tables using Microsoft Excel spreadsheets.

The risks analyzed in the present study are fall; skin lesion; unplanned extubation; accidental removal of nasoenteral feeding tube (SNE) and nasogastric tube (SNG), and accidental catheter removal for central venous catheter (CVC). We decided to assess the effectiveness of the management of these risks due to the large number of patients/day exposed to them in the hospital where this study took place, and because these risks are considered very serious in intensive care units.

For data collection, ICU management forms were first sorted and then the total number of patients exposed to risks/day were recorded for the three ICUs of the health institution. In the third stage, the number of adverse events that occurred every month in the three ICUS was collected. Then, based on the data obtained, the calculation for measuring the effectiveness of risk management was performed. This calculation is used to obtain the percentage value of compliance rates with the barriers established to prevent risks. In order to determine the compliance rate for each risk, it is necessary to determine the total number of patients exposed to a given risk, subtracting from this number the number of adverse events occurred, i.e. the number of times that failures occurred in the barriers implemented for each risk. Thus, the following formula was used to obtain this percentage value: $(\text{number of patients/day} - \text{adverse events occurred} / \text{total number of patients/day for each risk} \times 100)$.

The study was submitted to the appreciation of the Research Ethics Committee of the institution where it was conducted under number 1.205.253 and approved by the Research Ethics Committee of Faculdade da Serra Gaúcha (FSG) under number 1180.964.

● RESULTS

After recording of the total number of patients exposed to risk/day and the number of notified events, calculation of the effectiveness of risk management in the years 2013 and 2014 is performed.

According to Table 1, in 2013, 4,560 patients exposed to risk of fall/day were recorded, and only three cases of fall were notified in the ICUs. Concerning the risk of skin lesion, 4,147 patients/day were recorded, and six events were notified. Regarding the risk for unplanned extubation, 1,528 patients/day were recorded, and 18 events were notified. Regarding the risk of accidental removal of SNE and

SNG, 3,362 patients/day were recorded and 32 events were notified. Concerning the risk for accidental catheter removal for central venous catheter, 3,788 patients/day were recorded and five events were notified. These results showed that effectiveness (compliance rate) with risk management, in 2013, remained above 90% for the risks explored.

In 2014, according to Table 2, 8,626 patients/day were recorded for the risk of fall, with four notifications. As for the risk of skin lesion, 7,179 patients/day were recorded, with 17 events. And 3,446 patients/day were exposed to the risk of unplanned extubation, with 26 notifications. Regarding the risk for accidental removal of SNE and SNG, 7,034 patients/day were recorded and 93 events were reported. Also, 7,550 patients/day were subjected to the risk of accidental removal of catheter for central venous catheter, and 18 events were reported. The effectiveness (rate of compliance) with risk management, in 2014, was higher than 98% for the analyzed risks, as shown below.

Table 1 – Number of patients subjected to risk/number of patients who developed adverse events in 2013. Caxias do Sul, RS, 2015

Month	Risk of fall/ Adverse event	Risk of skin lesion/ Adverse event	Risk of accidental extubation/ Adverse event	Risk of Sine Sang/ Adverse event	Risk of civic/ Adverse event
January	0 /0	7 /0	3-Jan	14 /0	6 /0
February	104 /1	10 /0	5-Feb	15 /0	2-Jan
March	0 /0	7 /0	3-Jan	34 /1	0 /0
April	18 /0	20 /0	10 /0	28 /0	16 /0
May	725 /0	684 /0	279 /0	490 /1	634 /0
June	643 /1	645 /0	211 /1	524 /0	589 /0
July	602 /0	583 /1	234 /4	529 /6	541 /2
August	299 /0	302 /2	94 /4	247 /3	290 /0
September	554 /0	547 /0	184 /2	276 /7	548 /2
October	520 /1	511 /1	214 /1	388 /5	461 /1
November	253 /0	261 /0	51 /0	281 /7	200 /0
December	842 /0	570 /2	240 /2	536 /2	501 /0
Percentage of effectiveness	99.88%	99.88%	90.37%	98.98%	99.95%

L: lesion; Ext: extubation; ace: unplanned (accidental); Sine: nasoenteral feeding tube; Sang: nasogastric tube; Civic: central venous catheter

Table 2 – Number of patients subjected to risk/number of patients who developed adverse events in 2014. Caxias do Sul, RS, 2015

Month	Risk of fall/ Adverse event	Risk of skin lesion/ Adverse event	Risk of accidental extubation/ Adverse event	Risk of Sne Sng/ Adverse event	Risk of cvc/ Adverse event
January	791 /1	858 /0	297 /3	624 /8	596 /3
February	420 /0	833 /0	235 /1	769 /4	600 /3
March	821/0	762 /0	285 /1	568 /5	712 /1
April	500 /3	297 /2	153 /1	256 /7	337 /4
May	596 /0	335 /7	335 /3	648 /4	670 /1
June	849 /0	318 /2	309 /4	675 /9	724 /0
July	851 /0	624 /0	315 /5	646 /15	700 /2
August	561 /0	648 /3	237 /0	416 /2	525 /2
September	791 /0	577 /0	318 /3	577 /14	661 /1
October	849 /0	596 /1	381 /5	671 /4	672 /0
November	813 /0	670 /1	321 /0	674 /11	658 /0
December	784 /0	661 /1	260 /0	510 /10	695 /1
Percentage of effectiveness	99.93%	99.79%	99.28%	98.59%	99.70%

L: lesions; Extu: extubation; acc: accidental; Sne: nasoenteral feeding tube; Sng: nasogastric tube; Cvc: central venous catheter

● DISCUSSION

The culture of patient safety is essential within a health organization because it is where all health workers, including professionals involved in care activities and managers take responsibility for their own safety, and for the safety of their peers, patients and families⁽¹⁾.

The results of this study demonstrate that, over time, the culture of safety of professionals who work in ICUs has possibly been consubstantiated into a safety practice, due to the increased number of records of patients exposed to risks and reporting of adverse events.

The health teams may have become aware of the importance of patient safety practices because it is essential to identify the main risks and the consequent events in order to prevent them. The identification of the origin of these events allows taking measures to ensure such events no longer occur. Thus, risk management was established to obtain a better control and monitoring of the processes⁽¹¹⁾.

In health organizations where there is a strong culture of safety, the employees are treated fairly and without being blamed to learn from their mistakes. This culture of safety is directly related to management and team values, as well as to the establishment of priorities in health care and on the appropriate actions to be taken by the members of the health care team regarding patient safety processes⁽¹²⁾.

Scientific knowledge on this subject must be available first in the ICUs, since patients are exposed to higher risks in these units due to the high complexity of the care delivered, the serious conditions of these patients and the large number of procedures and processes performed⁽¹²⁾.

Analysis of the results obtained showed that the most prevalent risk during the research years was accidental removal of SNE and SNG, with a total of 125 reported events. In turn, the least effective risk management concerned unplanned extubation, with an average rate of compliance of 94.82%.

Unplanned extubation is a frequent concern in ICUs, affecting 3 to 22% of the patients. It is defined as premature removal of the endotracheal tube by patient's action, or as a result of patient handling by the healthcare staff. Unplanned extubation is caused by patient agitation, inadequate fixation of ventilation device, lack of adequate sedation, bored or empty cuff of the endotracheal tube, traction or excessive weight of the ventilation device, as well as inappropriate handling of patient by the healthcare staff, characterizing an adverse event of care⁽¹³⁾.

However, there are other factors related to the occurrence of this event in patients subjected to mechanical ventilation in ICU, such as low professional experience, lack of staff, lack of attention and poor technical and scientific knowledge by the healthcare staff and problems associated to the materials and equipment used in care to critically ill patients⁽¹³⁾.

Unplanned extubation may cause several consequences to the patients, because reintubation must always be performed, leading to prolonged ventilation, prolonged hospital stay and higher hospital costs, as well increase risk of hypoxemia, atelectasis, pneumonia associated to mechanical ventilation, airway trauma, potential hemodynamic instability, arrhythmias, cardiopulmonary arrest and brain injury, or even death of the patient⁽¹³⁾.

Some barriers used in the prevention or extubation include early identification of patient with this potential risk; assessment of the level of patient consciousness, clarification of the need for the device; check cuff pressure every 12 hours; if the patient is sedated, check the level of sedation, correct tube fixation and patient agitation management, in case of unrest⁽¹⁴⁾.

In view of the aforementioned, nursing professionals must be capable of dealing with patient under mechanical ventilation. Knowledge of these technologies is essential to ensure safety and provide high quality care to the patients, since nursing care is aimed to prevent complications associated to the use of this device. Unplanned extubation is considered an important indicator of care quality of nursing in intensive care, and although this issue is widely known, there is still concern on the association of unplanned extubation to the care delivered by the ICU nursing staff⁽¹⁵⁾.

Through systematization of care, nurses may provide adequate, good and individualized assistance to patients. Nevertheless, some professionals may be operating in an unsystematic way, due to resistance in changing the fragmented and technical care of their daily practices. It is recommended that nurses get more involved with the quality of care, rather than be restricted to meeting all their daily demands, which may contribute to the occurrence of unplanned extubations in ICU ⁽¹⁵⁾.

The most prevalent adverse event observed in this study was accidental removal of SNE and SNG, which is a very common risk in these units. All the patients that use mechanical ventilators and other devices are exposed to risks. Some barriers used to prevent the occurrence of these incidents are correct tube fixation and patient agitation management, as well as careful patient handling ⁽¹⁶⁾.

The use of enteral tubes has benefits, but also poses risks and maximizes adverse events, which may occur when the patient deliberately removes these devices due to agitation, sedation, mental confusion, neurological disorders, among other causes. AEs may also occur during nursing care, e.g. in dressing change, improper fixation of tube, during bath or intimate hygiene, in the administration of drugs, in position changes, in bed-stretcher transport or stretcher-bed transport ⁽¹⁷⁾.

Nursing plays a key role in patient management, maintenance and nutritional control, and the nursing professional is responsible for installing and maintaining the enteral device ⁽¹⁶⁾. Thus, it is essential that the nursing team provides care in a well-coordinated manner, in order to ensure greater safety to patients and, consequently, reduce this adverse event.

Errors and adverse events are common in healthcare. One study showed that the healthcare staff is not well informed on the occurrence of errors and adverse events and on the changes implemented as a result of care failures. The number of errors and adverse events reported is still small, and one reason for this, according to many workers, is that the management still punishes the individuals responsible for the events ⁽¹⁸⁾.

The present study showed a compliance rate over 99% in most of the investigated risks, and the rate of these events was below 10%, considering the number of patients-day. This result reflects a safe and high-quality care, and appropriate risk management in the institution where the study took place. Some studies showed that the frequency of adverse events in hospitalized patients may vary from 10 to 60%, and in ICU patients, 20%. Thus, the occurrence of adverse events in the present study is lower than the one observed in most health organizations ⁽¹⁹⁻²⁰⁾.

The possible occurrence of underreporting of EAs should be considered. Reporting and identification of the main adverse events is necessary to reduce their occurrence, through the implementation of actions aimed to improve patient care and prevent the occurrence of similar errors. One possible reason why many of these events are underreported is the fear of health professionals of being punished, humiliated and lose prestige ⁽¹⁸⁾.

These results demonstrate that the hospital managers are getting more concerned with patient safety and encouraging their teams to experience a safety culture, through constant training activities. This will contribute to reduce the occurrence of adverse effects, as well as the costs of the institutions, which will be able to provide safer and higher quality care.

● FINAL CONSIDERATIONS

The present study met the proposed objectives. During the planning of the study, it was hypothesized that the effectiveness (rate of compliance) of risk management in ICUs would be higher than 90% , which has been confirmed.

The effectiveness of risk management for the five risks investigated in 2013 and 2014 was obtained, and for most of them, it was above 99%. Therefore, compared to other studies, the occurrence of adverse events in the institution where this study took place, is lower than the one observed in most institutions, since in most of them adverse events in ICU occurred in 20% of the patients compared to only 10% of the patients in our study.

The least effective risk management concerned unplanned extubation, with an average compliance

rate of 94%. Extubation occurs in 3 to 22% of the patients, and in intensive care units it may result in serious complications. Thus, nursing plays a key role in reducing its occurrence.

The most frequent event was accidental removal of SNE and SNG, with 125 events observed in the study period, compared to the frequency of occurrence in other studies. Analysis of these figures indicate that underreporting of these events may have occurred in the institution, as it is reporting is not compulsory.

Also, the concept of safety culture has possibly been disseminated more widely over time and its importance has been perceived by healthcare workers, because of the increased reporting of patients exposed to risks and adverse events. One limitation found were forms incorrectly completed during some parts of 2013, which has not interfered with data analysis, though, and the lack of studies on the subject.

However, we stress the key role of nurses in this regard, as these workers spend most of their time with the patients and are more able to recognize potential risks. Also, nurses propose actions to prevent the occurrence of adverse events, Thus, when properly trained for the identification and prevention of AEs, nurses are in a more advantageous position to perform risk management activities compared to other health workers.

Also, awareness of the multidisciplinary teams on the importance of AE's reporting should be awakened.

We suggest that further studies are conducted on the effectiveness of risk management to contribute to the decrease in AEs and improve the care services delivered.

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