

# DEATH OF INTENSIVE CARE PATIENT IN THE POST-ANESTHESIA CARE UNIT: A DECONTEXTUALIZED EXPERIENCE

*Óbito do paciente intensivo na recuperação pós-anestésica: uma experiência descontextualizada*

*Óbito del paciente intensivo en la recuperación pos-anestésica: una experiencia descontextualizada*

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**ABSTRACT: Objectives:** To identify and characterize the profile of intensive care patients who progressed to death during their stay in the post-anesthesia care unit (PACU), and list the difficulties faced by the nursing staff. **Method:** This is a retrospective study that uses the medical records and PACU record books of five years (from July of 2012 to July of 2017) from a public hospital in Rio Grande do Sul as information source. **Results:** In the period under study, 30 intensive care patients died in the PACU, most of them male, with a mean age of 50.97 years, who remained in bed, on average, for 14.8 hours, and belonged to the neurosurgery specialty. The most frequent cause of death was cardiorespiratory arrest. **Conclusion:** The admission of intensive care patients in the PACU requires adjustments in the physical and operational structure of the unit, staff in sufficient numbers and with appropriate technical training to ensure safe and humanized assistance to intensive care patients, as well as other patients in the postoperative period.

**Keywords:** Recovery room. Anesthesia recovery period. Postanesthesia nursing. Perioperative nursing. Critical care.

**RESUMO: Objetivos:** Identificar e caracterizar o perfil de pacientes intensivos que evoluíram a óbito durante sua permanência na recuperação pós-anestésica (RPA) e elencar as dificuldades enfrentadas pela equipe de enfermagem. **Método:** Trata-se de um estudo retrospectivo, tendo como fonte de informação os prontuários e os livros de registros da RPA de cinco anos (de julho de 2012 a julho de 2017), em um hospital público do Rio Grande do Sul. **Resultados:** Durante o período estudado, 30 pacientes intensivos foram a óbito na RPA, sendo a maior parte do sexo masculino, com idade média de 50,97 anos, que permaneceram no leito, em média, por 14,8 horas, pertencentes à especialidade de neurocirurgia, sendo a causa de óbito mais frequente a parada cardiorrespiratória. **Conclusão:** A admissão de pacientes intensivos na RPA requer a adequação da unidade em sua estrutura física e operacional, com uma equipe adequada em número e capacitação técnica para garantir uma assistência segura e humanizada aos pacientes intensivos, bem como aos demais pacientes em pós-operatório. **Palavras-chave:** Sala de recuperação. Período de recuperação da anestesia. Enfermagem em sala de recuperação. Enfermagem perioperatória. Cuidados intensivos.

**RESUMEN: Objetivos:** Identificar y caracterizar el perfil de pacientes intensivos que evolucionaron a óbito durante su permanencia en la recuperación pos-anestésica (RPA) y enumerar las dificultades enfrentadas por el equipo de enfermería. **Método:** Se trata de un estudio retrospectivo, teniendo como fuente de información los prontuarios y los libros de registros de la RPA de cinco años (de julio de 2012 a julio de 2017), en un hospital público de Rio Grande do Sul. **Resultados:** Durante el período estudiado, 30 pacientes intensivos fallecieron en la RPA, siendo la mayor parte del sexo masculino, con edad promedio de 50,97 años, que permanecieron en el lecho, en promedio, por 14,8 horas, pertenecientes a la especialidad de neurocirugía, siendo la causa de óbito más frecuente el paro cardiorrespiratorio. **Conclusión:** La admisión de pacientes intensivos en la RPA requiere la adecuación de la unidad en su estructura física y operacional, con un equipo adecuado en número y capacitación técnica para garantizar una asistencia segura y humanizada a los pacientes intensivos, así como a los demás pacientes en pos-operatorio.

**Palabras claves:** Sala de recuperación. Periodo de recuperación de la anestesia. Enfermería posanestésica. Enfermería perioperatoria. Cuidados críticos.

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## INTRODUCTION

Death is an inevitable fact for all, a part of the natural cycle of life. However, nursing professionals are not properly prepared to deal with it, using their academic training as a basis for life care<sup>1-3</sup>.

There are some areas in the hospital where professionals are more used to dealing with death, as in the case of the intensive care unit (ICU), indicated for people in a critical state of health, who depend on technological resources for the maintenance of life and, in many cases, without therapeutic possibilities<sup>1,3,4</sup>.

Currently, the increase in demand of critical patients is inversely proportional to the rise in number of ICU beds, an issue that has forced institutions to assist intensive care patient in other areas while waiting for a bed to be available.

In this regard, the post-anesthesia care unit (PACU) has become an alternative increasingly present to admit and care for critical surgery patients, due to the unavailability of UCI beds<sup>5-7</sup>. This type of admission does not reflect the main aspect of this area, recognized as a transition unit for patients between awakening after anesthesia and recovering their vital signs, followed by their transfer to a hospitalization unit or discharge<sup>8</sup>.

On a daily basis, the care provided in the PACU differs a lot from the ICU's one, due to the high turnover and the need for agility in decision-making in the care of postoperative complications<sup>9</sup>. Nonetheless, the PACU can ensure quality care for intensive care patients, since necessary adjustments are made regarding the number and staff preparation, material, and equipment<sup>5</sup>.

The assistance context for intensive care patients involves the possibility of severe, and sometimes fatal, complications. Death is not a common event in the postoperative care offered in the PACU, thus, its occurrence becomes a decontextualized experience and brings some difficulties to the team, that needs to handle the patient's death in a particular way, as well as manage others in immediate postoperative period (IPOP), who could already be in a state of full consciousness.

The scarcity of scientific production related to death in PACU demonstrates the importance of this study, which could collaborate with the reflection and elaboration of measures for structural and personnel preparation in institutions that are experiencing this situation.

## OBJECTIVES

- To identify and characterize the profile of intensive care patients who progressed to death during their stay in the PACU;
- To list the difficulties faced by the nursing staff when an intensive care patient dies in the PACU.

## METHOD

We conducted a retrospective study, with data collection held in December of 2017, using PACU patient admission record books of five years (from July of 2012 to July of 2017) as the primary information source. These records provided profile data on all intensive care patients who progressed to death in the PACU in this period, including: gender, age, surgical specialty, and length of stay in the unit. The profile also contained the cause of death found in their medical records.

The research was carried out in a large public hospital with 264 beds, a reference in care for multiple-trauma patients in Rio Grande do Sul. It has six operating rooms (OR) in the main surgical center (SC) and one OR in the outpatient SC, where, on average, 525 surgeries are performed every month in the following specialties: neurosurgery, general surgery, orthopedics, plastic surgery, vascular, oral and maxillofacial. The PACU has 12 active beds and receives non-critical patients in IPOP, as well as intensive care patients who are waiting for an available ICU bed.

We organized the research data in an Excel spreadsheet, analyzed them through descriptive statistics and calculation of summary measures, and used tables and graphs to present the results<sup>10</sup>.

This research was approved by the Research Ethics Committee of the institution under study, via Plataforma Brasil, under the number CAAE 78636917.8.0000.553, according to recommendations of Resolution no. 466/2012 of the National Health Council, which addresses researches involving human beings.

## RESULTS

In the period of study, 717 intensive care patients, who should have been admitted to the ICU, were sent to the PACU, due to lack of beds available. From this group, 30 patients

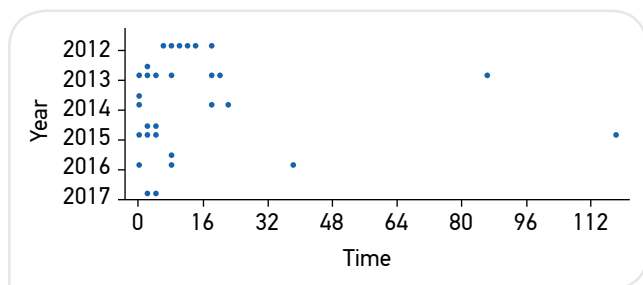
died in the PACU before a bed in the ICU became available. Figure 1 shows the annual distribution of patients' deaths in the PACU and demonstrates that the percentage of deaths has decreased over time.

Patients' age ranged between 16 and 83 years, with an average of 50.97 years and standard deviation of 18.41 years. Among these 30 patients, 21 (70.0%) were male.

Intensive care patients' length of stay in the PACU varied from 25 minutes to 117 hours. Table 1 and Figure 1 indicate that in the years of 2013, 2015 and 2016, some patients' length of stay was too high (86, 117 and 37 hours, respectively). Except for these patients, the mean length of stay has not changed over the years.

Neurosurgery was the most representative surgical specialty responsible for intensive care patients who progressed to death in the PACU (13 patients; 43.3%), as shown in Table 2.

The most frequent causes of death in each surgical specialty, according to data from patients' medical records were: cerebral hemorrhage (53.8%), brain death (30.7%), and cardiorespiratory arrest (CRA) (30.7%) in neurosurgery;



**Figure 1.** Length of stay distribution of intensive care patients who progressed to death according to year.

CRA (70.0%) and hypovolemic shock (30.0%) in general surgery; and CRA (100.0%) in orthopedic and vascular surgeries. Therefore, CRA was the main cause of death. However, in some cases, it was preceded by another cause, such as hypovolemic shock or hemorrhagic shock, both described in Figure 2.

In relation to patients' length of stay in the PACU according to specialty, neurosurgery was the most representative (mean=85.5h), followed by vascular (mean=13.4h), orthopedic (mean=6.8h), and general (mean=6.3h) surgeries.

While assisting an intensive care patient undergoing a serious complication, such as CRA, or in need of resuscitation procedures, PACU's nursing team faces some care and structural difficulties, as presented in Chart 1.

## DISCUSSION

The care for severe and fatal complications is not part of the PACU original context but has become increasingly common

**Table 2.** Profile of intensive care patients who progressed to death in the post-anesthesia care unit, according to medical specialty.

Specialty	n	%
Neurosurgery	13	43.3
General surgery	10	33.3
Orthopedic surgery	5	16.7
Vascular surgery	2	6.7
Total	30	100.0

**Table 1.** Patients admitted to the post-anesthesia care unit, intensive care patients, number of deaths per year, average and standard error for post-anesthesia care unit length of stay.

Year	Patients admitted to the PACU	Total of intensive care patients	Total of intensive care patients who died		Average length of stay (hours)	Standard error for length of stay (hours)
			n	%		
2012	2,322	58	6	10.3	11.72	1.86
2013	4,642	148	8	5.4	17.80	10.20
2014	4,144	89	4	4.4	10.69	5.78
2015	4,585	169	6	3.5	21.40	19.10
2016	4,398	177	4	2.2	13.75	8.27
2017	2,242	76	2	2.6	3.17	1.41
Total	22,333	717	30	4.1	14.84	4.66

PACU: Post-anesthesia care unit.

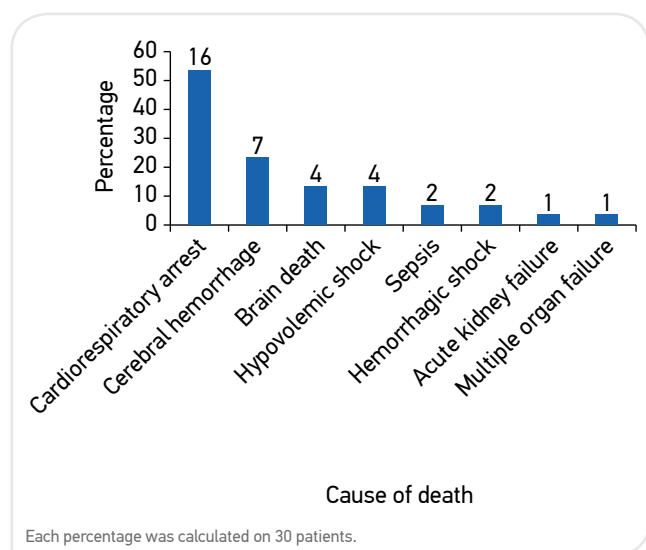
due to the need of using its area as backup beds for ICU. Death in the PACU, although a decontextualized experience, needs to be handled and, to accomplish that, the difficulties it causes must be overcome.

In this study, from the 30 patients who died, most of them were male adults, corroborating findings in the literature regarding age and gender of patients assisted in the PACU<sup>9</sup>.

The mean PACU length of stay in IPOP is 111.2 minutes<sup>9</sup>, which demonstrates high bed turnover, a characteristic of this unit. The length of stay of intensive care patients showed large variation, which also happened in another study with even wider variance — between 3 and 384 hours<sup>5</sup>. The mean length of stay of 14.8 hours in this study was lower than that of a study conducted in 2015, which presented an average of 41.4 hours<sup>5</sup>. The average length of stay in hours of intensive care patients is significantly higher when compared to patients in other categories<sup>11</sup>.

The shortest time an intensive care patient had to wait for an ICU bed was only 25 minutes, that is, just enough time to admit the patient to the PACU, give the shift report and adjust bed, material, and equipment required for care. In this case, the patient could leave the OR and go straight to the ICU. Therefore, the communication between SC and ICU must be well aligned to avoid unnecessary strain for PACU's team and provide patient's immediate admission and transfer.

On the other hand, the highest PACU length of stay was 117 hours, resulting in more than 4 days of bed blocking. Death after so much care time is frustrating to the team. After all, death causes



**Figure 2.** Cause of death of intensive care patients in the post-anesthesia care unit.

**Chart 1.** Difficulties for the nursing team in relation to death in the post-anesthesia care unit.

Care and operational difficulties
<ul style="list-style-type: none"> <li><i>Medical care:</i> there is no physician on duty in the unit on weekends and during night shifts. In emergency situations during these periods, the nurse sends a message, through pager, to the specialty area responsible for the patient, requesting the presence of a doctor and, in extreme circumstances, calls the ICU physician on duty. In both cases, the doctor's arrival in the PACU takes time, causing stress to the nursing team and risks to the patient.</li> <li><i>Nursing care:</i> there are no PACU exclusive nurses in night shifts (after 1 a.m.) and on weekends, periods when only one nurse supervises all SB. It is also necessary to adjust technicians' shifts, according to the admission of intensive care patients in the PACU, in order to ensure a proper distribution of professionals and, consequently, quality of care.</li> <li><i>Body care:</i> after the confirmation of death, the nursing staff must prepare the body, the identification, and transfer to the appropriate location. In addition, they must fill specific forms, according to the institution's routine, and locate the family so the team responsible for the patient can communicate the death. These procedures demand time for the nurse, who leaves the PACU patients or even all SB unassisted.</li> <li><i>Environment reorganization:</i> after removing the body, it is important to clean the equipment used with the patient, sanitize the unit — done by the cleaning staff —, and reorganize the bed for the next patient. The time spent in this procedure affects the bed turnover in the PACU.</li> </ul>
Difficulties related to infrastructure and support services
<ul style="list-style-type: none"> <li><i>Physical space:</i> PACU's physical space is insufficient to care for intensive care patients. It requires additional space for the CRA trolley and professionals involved in emergency care. Only a curtain separates the beds, and the bed front remains open, allowing the patients in IPOP, often awake and aware, to witness the whole care and death.</li> <li><i>Medicine supply:</i> for the supply of medicines that are not in the CRA trolley, such as controlled drugs, a nurse must leave the unit to get them, disrupting the quality of care.</li> <li><i>Tests:</i> delays in carrying out tests and delivering their results. For an arterial-blood gas test, the nurse collects the sample, which is processed on equipment located in the ICU or the central laboratory, in another unit of the hospital complex, depending on the day/time of the event. If the use of X-ray equipment is necessary, the radiology technician is contacted by phone and asked to come to the PACU. The professional uses the SC equipment, then leaves to process the film and returns when it is ready to deliver the results.</li> </ul>

ICU: intensive care unit; PACU: post-anesthesia care unit; SB: surgical block; CRA: cardiorespiratory arrest; IPOP: immediate postoperative period; SC: surgical center.

feelings of pain, sadness, grief, fear, helplessness and failure, which could be the result of academic training geared to treatment and cure of diseases, leading professionals to believe that healing is always possible<sup>2</sup>. Thus, it is important to understand death as therapy, an outcome necessary to alleviate the suffering of an individual who does not have chances of surviving<sup>1</sup>.

Neurosurgery was responsible for most of the patients in this research, a reflection of the institution's core, which is a reference for multiple-trauma patients.

The main cause of death in this study was CRA, considered the most common form of life constraint in critical and terminal patients, resulting in a sudden and unexpected lack of ventricular mechanical activity. This activity is a serious complication and the fastest way to reverse it is through cardiopulmonary resuscitation (CPR)<sup>1</sup>.

CRA can influence patients' survival as once it happens in the hospital, a faster CPR start is expected, as well as the return of spontaneous circulation on the patient<sup>12</sup>. This study, however, indicates that delay in medical care is a difficulty during the night and on weekends, when there is no intensivist on duty in the PACU. In this regard, we emphasize how important it is for the institution to fix this scenario and adapt to the PACU demands during its 24 hours of care.

Another important factor for a successful PACU is the training of its team<sup>12</sup>. Therefore, training and updates for the PACU nursing team become necessary for effective assistance in CRA situations and in other intensive care needed to aid ICU patients. In the literature, PACU nursing staff indicates that handling mechanical ventilation, administering drugs by infusion pump, bed baths and constantly changing diapers are the main difficulties when assisting intensive care patients<sup>5,7</sup>.

In addition to training, the institution needs to adjust the number of members of the PACU nursing staff, another difficulty found in this study. The Brazilian Association of Surgical Center, Anesthesia Recovery, and Material and Sterilization Center Nurses (Associação Brasileira de Enfermeiros de Centro-Cirúrgico, Recuperação Anestésica e Centro de Material e Esterilização — SOBECC)<sup>13</sup> recommends a ratio of one nurse to three or four patients who depend on a ventilator and a nursing technician for every three patients.

As shown above, there are no PACU exclusive nurses in night shifts and on weekends, an issue that the institution under study needs to rectify, in addition to modifying technicians' shifts according to presence and number of intensive care patients in each shift. This adjustment will require effort from the coordinator nurse, since admissions of intensive care patients are unpredictable.

Assistance difficulties also include care of the body after death. Although considered a simple procedure, it carries a strong emotional charge for employees and decontextualizes the type of care provided in the area. We emphasize that this care must be performed not only with technique, but, mainly, with respect and consideration because patient care does not depend on vital status<sup>2</sup>.

Other institutions described in the literature experienced difficulties related to the limitation of PACU physical space and access to material, equipment, and tests<sup>5,7</sup>. These issues required readjustments of the environment so there could be enough space between beds to provide secure and private assistance, protecting other patients in IPOP from embarrassing and/or traumatic situations. These institutions also had to realign their internal procedures to collaborate with the proper care of critical patients.

Similarly, administrative processes — considered difficulties by the nursing staff of this and other studies<sup>5,7</sup> — need to be simpler in order to demand less time and effort from an already overworked care team. The presence of an administrative professional in the PACU, with experience in ICU, is valuable, as he or she could expedite the completion of forms and organization of these patients' medical records.

It is also necessary to reflect on death in the PACU from nursing workers' psychosocial point of view. They should look at death with a somewhat calm since it is part of human existence and must be understood as part of the life cycle, and offer the patient a good death, that is, one in which the person is free of pain<sup>4</sup>.

A major concern of the nursing team is to offer support, attention, and affection also to the family of critical patients, allowing intersubjective exchanges in the last moments<sup>4</sup>. The visit of relatives is not a common event in the PACU in normal care conditions. However, due to the presence of intensive care patients, some adjustments are made in this unit to allow visits in a pre-established period once a day, which makes significant exchange between the team and the patient's family impossible.

Thus, it is important to value the reception of the family, relaxing hospital rules and routines related to visits to allow more interaction between hospitalized patients and their families, considering their affective bonds. As a result, emotional training becomes necessary to the multi-professional team, so they can deal with suffering and provide comfort<sup>3,4</sup>.

It is essential that nursing staff understands death as part of the vital cycle and reconsiders care/caring as the essence of nursing, discussing the topic of death, both in academy and in daily practice<sup>3</sup>.

The limitations of this study relate to it being conducted in a single public institution with a reduced number of patients. Nonetheless, it reflects the fact that death is not an event pertaining to PACU. Therefore, sharing this experience can benefit other professionals who are starting to deal with death in their postoperative care.

## CONCLUSION

This study demonstrated that, between July of 2012 and July of 2017, 30 intensive care patients died in the PACU while

waiting for an available ICU bed in a public hospital in southern Brazil. Most of them were male, with a mean age of 50.97 years. These patients remained in bed, on average, for 14.8 hours. Most of them belonged to neurosurgery specialty, and the most frequent cause of death was CRA.

Due to the need of admitting ICU patients to the PACU, institutions must adapt their physical structure to provide proper space, material, and tests. In addition, PACU must count with medical and nursing teams in sufficient number and appropriate training, 24 hours a day, in order to guarantee quality assistance that ensures humanization of care and safety for both intensive care patients and other patients who are in IPOP in the PACU.

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