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Evaluation of Third-Year Anesthesiology Residents Knowledge on Patient Safety: Descriptive Study

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Abstract

Since anesthesiologists deal with a wide range of patients, they need to acquire knowledge, abilities, and attitudes in their daily activities and should be prepared and trained to offer safety to their patients. To investigate third-year anesthesiology residents' knowledge about patient safety. A cross-sectional descriptive study with quantitative approach was carried out between June and August 2020, using a questionnaire with 17 questions divided into 7 topics (general knowledge on patient safety and 6 topics related to the international goals on patient safety established by the World Health Organization). The results were compiled in a Microsoft Office Excel spreadsheet, processed and analyzed by the statistical program R Version 4.0.2 and presented in tabular and descriptive form. The questionnaire was answered by 297 residents (40.8% of the total population). The topics related to WHO (World Health Organization) goals 4 (Safe Surgery) and 7 (Prevention of falls and pressure injuries) achieved the highest number of correct answers (84%). The topics related to goal 1 (Correct patient identification) had the highest number of mistakes (31%). The data found suggest a gap in the knowledge of third-year anesthesiology residents about the studied theme. Since only the knowledge competence was evaluated, further studies are necessary to analyze all other competencies necessary for anesthesia training related to patient safety.

Keywords: *Anesthesiology, Competency, Patient Safety*

Introduction

Patient safety, recognized as a global priority at the 72nd Annual World Health Assembly in Geneva, is defined, according to the World Health Organization (WHO), as reducing the risk of unnecessary harm associated with health care to an acceptable minimum [1].

Knowing that human error is inevitable [2] and that at least half of the complications and deaths that occur in the hospital environment could be preventable and avoidable if basic safety measures were followed [3]. it is necessary that doctors acquire knowledge, skills and attitudes related to patient safety, recognize acts considered unsafe in care processes and use the best practices described in order to achieve the best possible results, making patient care safer [3,4].

Aiming to propose solutions to a specific problem and strengthen safety practices, the WHO, together with the Joint Commission International, established some simple and effective strategies searching for the prevention of adverse events and patient safety [5]. These strategies started to be implemented by specific protocols and checklists, creating steps for the implementation of a safety process and barriers, making professionals aware of the safety culture, the importance of continuing education, and the ethical commitment in the management and identification of risks and care planning [5,6,7]. Until the time of the research, 6 were the International Patient Safety Goals established by the WHO: correct patient identification, effective communication, improvement in the safety of high surveillance drugs, safe surgery, reducing the risk of infections associated with health

care and reducing the risk of damage resulting from falls and ulcers.

The operating room is a stress-dominated environment that involves complex tasks, which are subject to uncertainty, change and error.

Anesthesiology is a specialty that coexists with the risk of adverse events, and the acquired skills, constant vigilance, and state of readiness are fundamental to avoid failures [8]. The need for precision and agility in patient-related activities makes the anesthesia professional the key in patient care and safety [8].

Anesthesia residents are countless delegated attributions of an assistential and educational nature, allowing the acquisition of cognitive competencies and the development of skills and attitudes relevant to their specialty [9].

Aiming to define what would be the necessary training profile for the medical professional, international research-based institutions started a project to identify and standardize the competencies and skills that should be acquired during the physician's training [10]. From these definitions, the National Commission of Medical Residency with the assistance of the Brazilian Society of Anesthesiology (SBA), on April 8, 2019, adapted and established the competence matrix of the medical residency programs in anesthesiology in Brazil [11]. The objective of the matrix is to allow the anesthesia resident, at the end of his/her residency, to be able to perform anesthesia to the several diagnostics, therapeutic, and surgical procedures with quality and safely [11].

Many of the criteria related to the competency matrix of anesthesiology do not include, clearly and directly, the goals related to patient safety stipulated by the WHO.

Understanding the anesthesiologist's responsibility during the perioperative period and the importance of learning about patient safety during residency, the following question was formulated for this study: What is the knowledge of the third-year anesthesiology resident about patient safety? To answer this question, the objective of the study was to investigate this knowledge based on general knowledge and the 6 international goals of patient safety established by the WHO.

Method

The study was a descriptive survey with a cross-sectional quantitative approach, conducted online between June and August 2020, through a questionnaire created in Google Forms and sent to residents attending the third year of anesthesiology in Brazilian centers of education and training linked to the SBA (Brazilian Society of Anesthesiology) and/or MEC (Ministry of Education and Culture).

The questionnaire (Appendix 1) included 17 questions based on general concepts of patient safety and the 6 international patient safety goals established by the WHO. Correct patient identification (Goal 1); 3. Effective communication (Goal 2); 4. Improving the safety of high surveillance drugs (Goal 3); 5. Safe surgery (Goal 4); 6. Reducing the risk of infections (Goal 5); 7. Preventing harm from falls and pressure injuries (Goal 6).

The questionnaire was previously applied to four fourth-year residents of pediatric anesthesia who were in practical activity with the researcher to verify its applicability. The questionnaire was validated by two members of the anesthesia team from the hospital where the researcher works, and both showed unanimity on the applicability of the instrument for the purposes of the study.

Preliminarily to the execution of the study, the project was forwarded to the Research Ethics Committee of the “Faculdades Pequeno Príncipe” and, only after obtaining a favorable opinion, verbal consent from the coordinators of the residency in anesthesiology and the signature of the informed consent form by the residents, the data were collected (Appendix 2).

The questions were grouped within the topics indicated, and each item marked correctly was considered a hit, regardless of whether the respondent had hit or not the other items of the question, which totaled 74 items in 17 questions analyzed.

The discrimination index was used to verify the quality of the questionnaire, the validity of its content and the characterization of the items.

To demonstrate the reliability of the instrument, the classification of Cronbach's alpha coefficient proposed by Freitas and Rodrigues [12] was considered, where reliability is considered: very low ($\alpha \leq 0.30$); low ($0.30 < \alpha \leq 0.6$); moderate ($0.60 < \alpha \leq 0.75$); high ($0.75 < \alpha \leq 0.90$) and very high ($\alpha > 0.90$). The results were presented in tabular and descriptive form.

Results

A total of 131 CET`s in anesthesiology were contacted. One hundred and five (105) coordinators agreed for their residents to participate in the survey. Of these, one CET had closed the residency and two did not present third-year residents. Twenty-six did not return telephone calls and were excluded from the study. One coordinator refused to participate in the

study.

A total of 356 questionnaires were answered. However, 59 were excluded, 55 for duplicate answers, and 4 for not corresponding to the year of residency under analysis. The sample was composed of 297 residents of the 727 who were in their third year of anesthesiology in 2020 (40.8% of the total population).

When applying the Cronbach's alpha coefficient for the entire questionnaire, its value corresponded to 0.895, demonstrating a high reliability, being considered sufficient for the proposed measurement.

In the analysis of the results, 76.3% of the residents got at least one item of the 74 items analyzed right.

When analyzing the percentage of correct answers for each of the items for each of the topics studied, different degrees of knowledge were found (TABLE).

Topic 1 (General Knowledge)

The level of correctness for these questions was greater than 80% in 14 of 25 items.

Of the items analyzed, 94% of residents recognized that "to minimize risks to the patient, it is necessary, as part of the institutional process, to implement standardized and systematized strategies" [13,14]. And 85% that "the patient can and should be encouraged to contribute to the quality of care to his health"[15].

Effective communication as a reciprocal process that should be part of the processes for patient safety were confirmed by 89% of residents [14].

They recognized that "reporting adverse events is a tool that serves to assess the patient safety situation at a given moment, without a punitive nature" [16,17] (85%).

Only 19% knew the safety strategies that act as barriers to the occurrence of adverse events approved by the WHO7: hand hygiene, prevention of pressure injury, safe surgery, fall prevention, patient identification and safety in the prescription, use and administration of medications.

When questioned about hospital accreditation, although 56.2% reported that their institutions worked with some kind of accreditation program, 67% did not understand that "accreditation is a process in which an entity, separate and independent from the institution, evaluates the institution in order to determine if it meets the requirements created to improve the safety and quality of patient care through previously established standards [17]. Eighty-one percent did not know that "the accreditation process is a voluntary evaluation process that occurs according to the demand of the institution" [17,18].

Topic 2 (Goal 1 - Patient Identification)

The first WHO goal related to patient safety is considered an indispensable practice and the starting point for the correct execution of the various safety steps before each patient care action [19]. Regarding this topic, 72% of residents recognized that "the patient identification process must ensure that care is provided to the person for whom it is intended and is intended to reduce the occurrence of incidents" [20]. Seventy-three percent recognized that "all professionals involved with the patient, before the beginning of any care, should actively participate in the process of identification, admission and/or transfer of the patient [20] ". And 79% that "the identification of the patient should be performed using at least two data, leaving to the discretion of each institution the standardization of the items to be checked.

Topic 3 (Goal 2 - Effective communication)

In the Reference Document for the National Program of Patient Safety published by the Ministry of Health, the authors emphasize that it is essential to monitor the adverse effects in order to allow the early identification of possible risks, to establish relevant measures so that the risk is interrupted or minimized [21]. Some assumptions are considered fundamental in the notification process.

More than half of the items related to knowledge about the correct form for a notification to be filled out were answered correctly by 80% of the residents.

Eighty-nine percent (89%) of residents recognized that "damage is the impairment of the structure or function of the body and/or any effect arising from it, which can be physical, social or psychological" [22]. And 99% to be "necessary to describe the place where the event occurred and the agents that may have participated in the origin or development of an incident". Only 28% knew that "regarding patient information, the patient should remain anonymous, and the data collected should not compromise the patient's privacy" [21].

Topic 4 (goal 3 - High surveillance drugs)

When addressing WHO goal 3, 75% agreed on the definition of high surveillance medications, 99% recognized some ways to increase safety during medication administration: "identify high-risk processes, correctly identify the patient; establish protocols and standardized procedures; conduct training; standardize prescriptions, preparation, access, dispensing, storage, checking, and

administration of medications; establish improved access to information; separate high surveillance medications from common medications; identify errors before they reach the patient" [14,23]. And only 42% recognized that "each institution can define its list of high surveillance medications".

Topic 5 (goal 4 - Safe Surgery)

The checklist is considered a tool that brings numerous advantages, helping the healthcare team to reduce the possibility of occurrence of harm to the patient in the perioperative period [24].

When analyzing separately each of the items related to this topic, 75% of the residents recognized that the "safe surgery checklist is considered a tool that helps the healthcare team to reduce the possibility of patient harm occurring in the perioperative period" [21,24], that "it may be adaptable to the particularities of the service" and that "it should be applied by the entire team responsible for patient care at three moments: before induction of anesthesia, before the surgical incision, and before the patient leaves the operating room" [21,24].

Topic 6 (goal 5 - risk of infection)

Knowing that the hands of professionals have been implicated in the transmission of microorganisms during patient care, the topic of hand hygiene has been treated as a priority by the WHO [25].

Seventy percent (70%) understood the purpose of simple hand hygiene, as well as the washing time; 84% understood that "wearing gloves does not replace the need for hand hygiene"; 64% recognized that "removing adornments is considered a prophylactic measure against infections" [26]. And 89% correctly signaled the 5 moments for hand hygiene established by the WHO [25,26].

Regarding the Regulatory Standard 32 published by the Ministry of Health [26], 88% of residents recognized that it "provides for the prohibition of the use of adornments by workers who maintain contact with biological agents". Seventy-eight percent (78%) understood that this norm "prohibits the use of open footwear, the consumption of food and beverages at workstations and the storage of food in places not intended for this purpose". And 67% knew that "workers should not leave the workplace with the personal protective equipment and clothing used in their work activities".

Of the residents, 52% reported having received theoretical and practical training related to care of patients suspected or positive for COVID-19, 20% only received theoretical training, 9% only received practical training, and 19% did not receive any training. When analyzing this data with the specific question on knowledge related to safety in facing COVID-19, 78% pointed out that "individual protection is a priority and that prior care planning is important so that the team has enough time to wear PPE (personal protective equipment) and adopt protective precautions" [26,27].

Topic 7: Goal 6 - Risk of pressure injuries and falls

Only 54% of residents recognized that "stage I and II pressure ulcers are considered one of the most common complications in surgical patients and can rapidly progress to stage III and IV injury" [28].

On the other hand, 99

Discussion

Inserting the concept of patient safety in the knowledge of an anesthesiologist aims to reduce errors to an acceptable minimum [8,9].

Anesthesiologists play leadership roles at several points in the safety goals, whether in prescribing and administering a variety of medications in a short period of time, laboratory test review, case discussion, patient management, team organization in crisis situations, minimizing infection risks, proper patient positioning, and intersectoral handoff.

Although the evaluation was specifically performed for residents in the last year of anesthesiology, a moment in their training when they have already acquired technical training, knowledge, abilities, and attitudes inherent to their profession, only two of the 7 topics on patient safety knowledge had a correct score higher than 80% (safe surgery and risk of fall and pressure injury), which suggests a lack of knowledge of these professionals on the studied topic.

With the outbreak by the new coronavirus 2019 (COVID-19) the high demand for health services culminated in a critical situation where elective surgeries were suspended, as well as in-person classes and internships of residents in several teaching institutions in Brazil. At the time the questionnaire was answered, 5 months after the beginning of the first cases of COVID-19 infected in Brazil, only 52.2% of the interviewees highlighted that they had received theoretical and practical training related to care in the care of suspected or positive patients for COVID-19 and 18.2% had not received any type of training. These data, associated with the probable fear of the uncertain, conflicts between professional and personal life, and family distance

may have hindered the learning and assimilation of new knowledge during the study period and interfered with the results of this research.

Conclusions

Patient safety has become one of the most debated subjects in the health area in recent years and represents one of the greatest challenges for excellence in quality of care. By revisiting the objectives of this study to investigate the knowledge of third-year anesthesiology residents about patient safety, one can affirm that the investigation made it possible to understand that, although it is a globally discussed topic, it is still little involved in the daily routine of anesthesiology residents.

Further studies should be conducted to analyze all competencies required for anesthesia training related to patient safety, identify possible gaps in the teaching of these physicians and provide subsidies to solve doubts before they acquire the specialist title.

As future leaders and service providers for health care, all anesthesiologists must be involved in and prepared for safe practices. Although health professions curricula are constantly changing to encompass new and frequent discoveries, new knowledge and for patient safety to become a reality in our environment there is a need for improved professional training as well as a culture of communication and transparency. The knowledge about patient safety still needs to be better explored.

The role of the continuous teaching-learning process in in-service training as well as the increase in institutional and governmental collection should be able to insert different teaching methodologies in order to propitiate the participation of residents in the aspects considered by the WHO, providing even more positive and safe results for the health system.

Table 1: Percentage of correct answers, mean and dp by topic studied

Topics	Hit (%)	Mean (dp)
General knowledge, concepts and legislation on Patient Safety	*72*	*1.72 (0.45)*
Goal 1: Correct patient identification	*69*	*1.84 (0.37)*
Goal 2: Effective communication	*76*	*1.79 (0.4)*
Goal 3: Safety of discharge medication surveillance	*74*	*1.84 (0.37)*
Goal 4: Safe Surgery	*84*	*1.74 (0.44)*
Goal 5: Risk of infection associated with health care	*79*	*1.76 (0.43)*
Goal 6: Risk of pressure injury and falls.	*84*	*1.69 (0.46)*

ANNEX 1

Patient Safety Knowledge Questionnaire

1.1 When we talk about patient safety, it can be stated that:

a. According to WHO data, for everyone hundred hospitalized patients in the world, on average 14 patients will suffer some infection associated with health care. This happens due to some error or adverse event.

b. Complex attitudes and the involvement of the medical community, the general population and the patient himself are necessary to prevent many adverse events.

c. Safety means guarantee of fully qualified care being considered one of the pillars that underpin quality in health.

d. The practices aimed at favoring safe patient care are diverse, ranging from the promotion of organizational culture favorable to this asset, to the identification of problems, the establishment of goals, measures and specific protocols, in order to reduce the risks associated with care.

1.2 With respect to patient safety, select the correct alternatives:

a. To minimize the risks to the patient, it is necessary, as part of the institutional process, the implementation of strategies. These strategies do not need to be standardized or systematized, but only put into practice.

b. Effective communication is a reciprocal process and should be a mandatory part of the processes for patient safety.

c. The patient can and should be encouraged to contribute to the quality of care to his health, providing important information about himself, questioning the assistance provided, answering questions and interacting with health professionals.

d. The reporting of adverse events is increasingly seen in the patient safety community as a tool that serves to assess the patient safety situation at a given moment. The sharing of information related to the safety incident should be disseminated to all professionals and should have a punitive character, since disclosure and punishment are considered part of a continuous learning process.

1.3 Mark the correct alternatives: The National Program for Patient Safety (PNSP) created by WHO and implemented in 2013 by the Ministry of Health has the following objectives:

a. Broaden society's access to information regarding patient safety.

b. Promote and support the implementation of initiatives aimed at patient safety in different areas of care, organization and management of health services.

c. Involve patients and families in actions related to patient safety.

d. Involve health professionals in issues related to patient safety without involving or co-responsibility of patients and families who are vulnerable at the time of their care.

e. Encourage the inclusion of the patient safety topic only in postgraduate education in the health area.

1.4. Safety culture is related to 5 characteristics that must be operationalized by the institution's safety management. Mark the correct alternatives:

a. Culture of responsibility of each of the professionals about their own safety, in addition to the safety of their colleagues and patients.

b. Culture that prioritizes financial and operational targets.

c. Culture that, from the occurrence of incidents, encourages and rewards the notification of incidents and promotes punishment to those responsible in order to assist and strengthen learning.

d. Culture that provides resources, structure and accountability for effective maintenance of safety.

1.5. Some safety strategies can prevent the occurrence of adverse events acting as barriers, minimizing the risks that may reach the patient. The WHO, according to Ordinances 1377.2013 and 2095.2013, in order to insert protocols for patient safety in Brazil, approved some safety strategies. They are as follows:

a. Safe surgery, safe administration of blood and blood products, safe use of equipment, patient monitoring, hand hygiene.

b. Patient identification, effective communication between health professionals, hand hygiene, safe medication administration, safe surgery, prevention of falls and pressure ulcers.

c. Hand hygiene, pressure injury prevention, safe surgery, fall prevention, patient identification and safety in the prescription, use and administration of medications.

d. Patient monitoring, hand hygiene, and effective communication.

1.6. Mark only the alternatives that are true:

a. According to the Ministry of Health, hospital accreditation is a process in which the institution itself performs a self-assessment of all its areas in order to verify if they meet the safety criteria and improve the quality of patient care through previously established standards.

b. According to the Ministry of Health, hospital accreditation is a process in which an entity, separate and independent from the health institution, evaluates the institution with the objective of determining if it meets the requirements created for the improvement of safety and quality of patient care through previously established standards.

c. Accreditation is a voluntary evaluation, that is, it occurs through the demand of the institution.

d. Accreditation is a mandatory evaluation that must be performed at all patient care organizations

2.1 Based on the patient identification protocol, mark the correct alternatives:

a. The identification process should ensure that care is provided to the person for whom it is intended and is intended to reduce the occurrence of incidents.

b. To ensure that the patient is correctly identified, all staff shall actively participate in the identification process, the admission, transfer or receipt of patients from another unit or institution, prior to the initiation of care, any treatment or procedure, and the administration of medications and solutions.

c. Prior identification of the patient is essential for the performance of any procedure. The identification check may be performed only by checking the patient's full name.

d. Every health institution should standardize the patient identification, such as: the data to be filled in, the positioning member of the bracelet or placement of the identification tag, use of colors for risk identification, bed signs.

e. The "mere" use of the wristband by the patient does not guarantee patient safety, since professionals should check it before performing any procedure in order to avoid errors and achieve the purpose of the wristband, i.e.: patient safety.

3.1 Since patient safety is a movement of worldwide concern, it has become necessary to establish a single language for effective communication. Thus, mark only the correct alternatives:

a. non-injury incident is an event that did not strike the patient and caused no discernible harm.

b. Adverse event is an event or circumstance that happens sporadically, without resulting in harm to the patient.

c. Error is defined as a failure to execute an action plan as intended or application of an incorrect plan.

d. Damage is the impairment of the structure or function of the body and or any effect arising therefrom, which may be physical, social or psychological

e. Patient safety is the act of preventing, avoiding, or reducing to an acceptable minimum the risk of unnecessary harm associated with health care.

3.2 When an adverse event occurs, it should be reported. Indicate the correct alternatives related to the form in which the notification should be made:

a. Patient Information: The patient must remain anonymous, and the data collected must not compromise their privacy. Therefore, the only attributes that can be recorded are "gender" and "age.

b. Timing of the incident: the date and time the event occurred should be recorded for the formulation of the timeline.

c. Agents involved: agents used before, during or after the incident, without inferring any causal relationship to the incident, shall be identified. The 'Agent' category indicates any product, device, person or item involved in the incident.

d. It is not necessary to describe the location where the event occurred nor the actors that may have participated in the origin or development of an incident, or that may increase the risk of an incident occurring.

4.1 One of the international patient safety goals created by WHO with Joint Commission International is to improve the safety of high surveillance medications. Tick the correct alternatives:

a. High surveillance medications refer to medications that have an increased risk of causing significant harm to patients as a result of failure in the utilization process.

b. High surveillance medications refer to any medication to be administered to the patient, since all medications can present adverse effects.

c. Each institution may define its own list of high surveillance medications, which usually include electrolytes, insulin, heparin, vasoactive drugs.

d. Some ways to increase medication safety are standardization of prescriptions, preparation, dispensing, storage and administration; improved access to information on medications; restricted access; separation of high surveillance medications from common medications, using specific labels; conducting double-checks.

5.1. Mark the correct alternatives: The safe surgery checklist recommended by the WHO:

a. It is considered a tool that brings numerous advantages, helping the health team to reduce the possibility of harm to the patient in the perioperative period.

b. A single Safe Surgery Checklist, developed by WHO and not adaptable to the particularities of the service, which applies at three points in time: before induction of anesthesia, before the surgical incision, and before the patient leaves the operating room.

c. A single checklist of Safe Surgery, established by WHO, but adaptable to the particularities of the service, which should be applied in two main moments: before the induction of anesthesia and before the patient leaves the operating room, having as professionals responsible for its application the nursing and the anesthesiologist.

d. A Safe Surgery Checklist, established by the WHO, adaptable to the particularities of the service, which should be applied at three moments: before induction of anesthesia, before the surgical incision and before the patient leaves the operating room by the entire team responsible for patient care (nursing, anesthesiologist and surgeon).

e. A single checklist, adaptable to the particularities of the service, which should be applied at four moments: before surgical induction, before the skin incision, before the patient leaves the operating room and after the patient returns to the room.

6.1 Attention to patient safety involving hand hygiene has been treated as a priority by the WHO, since the hands of professionals have been implicated in the transmission of microorganisms during patient care. Select the correct alternatives:

a. Simple hand hygiene aims to remove microorganisms that colonize the surface layers of the skin, sweat, oil and dead cells, removing the dirt that allows them to remain and proliferate. It should last 40 to 60 seconds, and water and liquid soap should be used for this purpose.

b. Antiseptic rubbing with alcoholic preparations (70% alcohol gel or glycerin) should be performed after using the sponge, with moist hands and for at least 40 to 60 seconds to be considered effective in reducing the microbial load of hands.

c. The removal of adornments, as well as artificial nails, although there are controversies about it, is considered a prophylactic measure against infections.

d. Wash hands with soap and water, with antiseptic or sanitize them with an alcoholic formulation before and after performing procedures.

e. The use of gloves does not replace the need for hand hygiene.

6.2 What are the times for hand hygiene according to the World Health Organization?

a. Before touching patient, before performing clean and aseptic procedures, after risk of exposure to bodily fluids.

b. Before touching the patient, before performing clean and aseptic procedures, after risk of exposure to bodily fluids, after contact with the patient, and after contact with surfaces near the patient.

c. Before patient contact, before performing procedures that have contact with body fluids, and before procedures with soiling.

d. Before and after contact of patients in isolation, if gloves were not used for protection.

6.3 The NR32, is a Regulatory Standard, published by the Ministry of Health, which aims to establish the basic guidelines for the implementation of protective measures to the safety and health of workers in health services, as well as those who exercise health promotion and assistance activities in general. Of the protection measures, check the correct alternatives:

a. NR 32 prohibits the use of adornments by workers, especially those in contact with biological agents. For the National Permanent Tripartite Commission, which regulates NR 32, the following are considered adornments: rings, rings, bracelets, watches for personal use, necklaces, earrings, brooches, exposed piercings, ties and badges hanging with a string.

b. NR 32 provides for the prohibition in the operating room also of adornments such as glasses and hearing aids.

c. It is forbidden to wear open shoes, consume food and beverages at workstations and keep food in places not intended for this purpose, in addition to handling contact lenses in the sector.

d. Workers shall not leave the work site with the personal protective equipment and clothing used in their work activities.

6.4 With several documented cases of person-to-person transmission, COVID-19 represents a high risk for all health care workers in the perioperative environment. Thinking about the care that we, anesthesiologists, should take during the handling of a patient, it is correct to state that:

a. Your personal protection is the priority. Advance care planning is important so that staff have sufficient time to put on PPE and adopt protective precautions.

b. Personal protective equipment must be worn, on a mandatory basis, only on patients confirmed or suspected to be infected with COVID-19

c. N95 masks meet the National Institute for Occupational Safety and Health (NIOSH) filtration criteria and are approved for protection against airborne and droplet transmission of 95% of the particles larger than 0.3 microns.

d. All staff involved with patient care in the intraoperative period (anesthesiologists, surgeons, instrumentalist and room assistant) should remain in the operating room during the entire preparation of anesthesia, including during intubation/extubating, avoiding circulation outside the operating room

7.1 Tick the correct alternatives regarding pressure ulcers:

a. It is defined as any injury to the skin and/or underlying tissues, usually developed over a bony prominence, as a result of pressure alone, or pressure in combination with friction and shear, not necessarily leading to complete loss of tissue thickness.

b. All surgical patients should be considered as high risk for the development of pressure ulcers. Its incidence increases proportionally to the combination of risk factors, including advanced age and bed constraint.

c. It is defined as injury to the skin and/or underlying tissues, usually developed over a bony prominence, as a result of pressure alone, or pressure in combination with friction and shear, leading necessarily to complete loss of tissue thickness, with exposure of bone, tendon and/or muscle.

d. It is not possible to assess the risk of pressure ulcer development by means of scales, and only the daily physical examination of the patient is recommended.

e. Stages I and II pressure ulcers are considered one of the most common complications in surgical patients that can quickly evolve to stages III and IV of injury or be observed a few days after surgery.

7.2 A fall may be defined as a situation in which the patient unintentionally goes to the floor or some lower plane in relation to his/her initial position. The purpose of the Fall Prevention Protocol is to reduce the occurrence of patient falls at the point of care and the resulting damage. In this regard, it can be stated that:

a. Fall risk assessment is performed only upon patient admission with the use of a scale appropriate to the institution's patient profile.

b. The risk of falling in the operating room is not significant and, for this reason, the fall prevention protocol does not encompass this sector.

c. Fall risk assessment scales are universal, for all patient groups, e.g., adult and pediatrics.

d. The Morse scale is the most used scale. It assesses the degree of factors predisposing to falling and allows classifying the patient's degree of risk of falling, thus allowing guiding the necessary interventions to prevent the occurrence of falls.

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None of the authors has a financial or proprietary

interest in any material or method mentioned.

Conflict of interest

The author declares no conflict of interest.

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