

## Elaboration and application of an evaluation instrument in the immediate postoperative period, based on the Advanced Trauma Life Support protocol\*

*Elaboração e aplicação de um instrumento de avaliação no pós-operatório imediato com base no protocolo do Advanced Trauma Life Support*

*Elaboración y aplicación de un instrumento de evaluación en el post operatorio inmediato con base en el protocolo del Advanced Trauma Life Support*

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### ABSTRACT

**Objective:** Elaborating and applying a patient evaluation instrument in the immediate postoperative period (IPOP) after general anesthesia, based on the Advanced Trauma Life Support protocol. **Methods:** An instrument was created, based on the Trauma ABCDE and applied in the post-anesthetic recovery room in all adult patients submitted to surgeries under the effect of general anesthesia, from September to November, 2007. **Results:** 93.5% of the patients were observed to have pervious airways; however, 92.2% of them needed oxygen supplementation. There were alterations in pulmonary auscultation in 15.6% of the patients, hypotension in 16.9% and hypothermia in 23.4%. A statistically significant difference was also observed, suggesting that women have better recovery conditions than men. **Conclusion:** The physical exam in the sequence proposed by the Trauma ABCDE allowed for the identification of the main physiological alterations in the IPOP, contributing for nursing care.

**Keywords:** Postoperative period; Nursing Care; Wounds and injuries

### RESUMO

**Objetivo:** Elaborar e aplicar um instrumento de avaliação do paciente no pós-operatório imediato (POI) de anestesia geral baseado no protocolo do Advanced Trauma Life Support. **Métodos:** Foi criado um instrumento baseado no ABCDE do Trauma e aplicado na Sala de Recuperação Pós-Anestésica em todos os pacientes adultos submetidos a cirurgias sob efeito de anestesia geral no período de setembro a novembro de 2007. **Resultados:** Observou-se que 93,5% dos pacientes tinham vias aéreas pervias, porém 92,2% necessitaram de oxigênio suplementar. Houve alteração na ausculta pulmonar de 15,6% dos pacientes, hipotensão em 16,9% e hipotermia em 23,4%. Observou-se também uma diferença estatisticamente significativa sugerindo que as mulheres apresentam melhores condições de recuperação que os homens. **Conclusão:** O exame físico na seqüência proposta pelo ABCDE do Trauma permitiu identificar as principais alterações fisiológicas no POI contribuindo para a assistência de enfermagem.

**Descritores:** Período pós-operatório; Assistência de Enfermagem; Ferimentos e lesões

### RESUMEN

**Objetivo:** Elaborar y aplicar un instrumento de evaluación del paciente en el post operatorio inmediato (POI) de anestesia general basado en el protocolo do Advanced Trauma Life Support. **Métodos:** Fue creado un instrumento fundamentado en el ABCDE del Trauma y aplicado en la Sala de Recuperación Post-Anestésica a todos los pacientes adultos sometidos a cirugías que se encontraban bajo efecto de la anestesia general en el período de setiembre a noviembre del 2007. **Resultados:** Se observó que el 93,5% de los pacientes tenían vias aéreas permeables, sin embargo el 92,2% necesitó de oxígeno suplementario. Hubo alteración en la auscultación pulmonar del 15,6% de los pacientes, hipotensión en el 16,9% e hipotermia en el 23,4%. Se observó también una diferencia estadísticamente significativa, sugiriendo que las mujeres presentan mejores condiciones de recuperación que los hombres. **Conclusión:** El examen físico en la secuencia propuesta por el ABCDE del Trauma permitió identificar las principales alteraciones fisiológicas en el POI contribuyendo, por tanto, a la asistencia de enfermería.

**Descriptores:** Peíodo postoperatorio; Atención de enfermería; Heridas y traumatismo

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## INTRODUCTION

The purpose of post-anesthetic recovery room (PARR) is to receive patients immediately after surgical procedures have been concluded, still under the effect of anesthesia, where they are intensively controlled until the possibilities of developing complications related to the cardiorespiratory, neurologic and osteomuscular systems are absent<sup>(1)</sup>.

The period known as immediate postoperative period (IPOP) begins at the discharge of the patient from the operation room until up to 12 to 24 hours after the surgery. However, patients are known to present the main complications in the first hours after the surgical-anesthetic procedures, and thus need continuous observation and specific care, justifying the necessity of being referred to the anesthetic recovery room<sup>(2)</sup>.

This period is characterized by physiological changes, including unconsciousness and cardiorespiratory depression in patients submitted to general anesthesia, and absence of sensitivity and sympathetic tonus in those submitted to regional anesthesia<sup>(3)</sup>.

Other complications include neurological and kidney alterations, pain, hypothermia, nausea and vomiting, abdominal distensions and hiccups<sup>(4)</sup>.

In an exploratory descriptive study performed with children and adults in a PARR, 32 complications were found in adults and five in children. The main complications analyzed were related to anesthesia, which suggests the implementation of nursing care directed to prevention and early detection of such complications<sup>(5)</sup>.

A safe and efficient evaluation about this patient is necessary, in which endocrine and metabolic alterations, consequent of the surgical-anesthetical trauma, can be considered. Also, the creation of evaluation standards and criteria for the care provided to the patient in this period, as well as their validation<sup>(6)</sup>.

Currently, the scale known as Aldrete & Kroulik's index is the most widely used criterion to assess the patients in IPOP at the PARRs. This scale considers the assessment of physiological conditions, and was inspired in Apgar's scale for the evaluation of newborns. This scale was changed in 1995, when it started to evaluate oxygen saturation instead of skin coloration, as predicted in the original scale. Its scores can vary from 0 to 10, and it analyzes the following aspects of the patient: muscular activity, breathing, circulation, consciousness and oxygen saturation. The score indicated for intra-hospital discharge lies between 8 and 10<sup>(7)</sup>. The institution where the present study was performed also uses Aldrete & Kroulik's index.

Even though it is widely used, questions and suggestions have been made to Aldrete & Kroulik's index since its inception. Some authors<sup>(6,8)</sup> concluded that this index does not guarantee a safe evaluation, because it has

an isolated evaluation of some parameters, which yields a score higher than seven. This would result in discharging patients who do not present a stable condition from the PARR.

Another relevant aspect is the difference of recovery in the IPOP when the patient's gender is considered. A 2001 Australian study shows that women have faster recoveries when separate analysis are performed on recoveries from general anesthesia<sup>(9)</sup>.

Therefore, the goal of this study was to elaborate and apply an instrument of patient evaluation in the general anesthesia IPOP at the PARR, based on the protocol recommended by the Advanced Trauma Life Support (ATLS), known as Trauma ABCDE.

The Trauma ABCDE protocol was elaborated in the United States of America by the American College of Surgeons with the purpose of improving the care for polytrauma patients, in order to detect early the physiological alterations that put the person at risk of death<sup>(10)</sup>.

The Trauma ABCDE is a systematization of service for trauma victims proposed by ATLS with the goal of standardizing the actions that will be performed for this patient, and it is divided in two stages: primary approach or primary ABCDE, which aims to stabilize the vital signs and identify injuries that jeopardize the patient's life, and secondary approach or secondary ABCDE, more thorough, where a physical cephalic-caudal exam is performed, and the vital signs are constantly monitored<sup>(11)</sup>.

The mnemonic ABCDE method arose because traumas were seen to kill people according to a predictable chronology. For example, obstruction of the airways kills faster than the loss of breathing ability, which kills faster than the reduction of the circulating amount of blood, with the next most lethal problem being the presence of massive expansive intra-cranial injuries. Therefore, the method is as follows: A – Airways, protecting the cervical region of the spine; B – Breathing and ventilation; C – Circulation, with hemorrhage control; D – Disability, neurological state; E – Exposure (undressing) and environmental control (temperature)<sup>(10)</sup>.

The proposal of an instrument to evaluate the patient in IPOP at the PARR is justified by the necessity of early interventions, aiming at lowering the incidence of complications<sup>(3-4,6)</sup> in this period, following the same logic of the Trauma ABCDE.

## METHODS

This is a cross-section, exploratory, quantitative study performed at the PARR of a university hospital in the city of Londrina-PR, after the research project was approved by the Review Board of the institution. Data collection occurred from September to November, 2007,

by a resident nurse and a nurse working regularly at the PARR.

The PARR in this hospital has six beds, receiving patients of all ages and surgical specialties in secondary and tertiary levels and performing an average of 454 surgeries each month, according to data from the Statistical and Medical Archive Service – *Serviço de Arquivo Médico e Estatístico (SAME)*. Of these, 143 (31.5%) are performed in adults, using general anesthesia.

The study sample was selected at random, determined by the time of data collection, from 7 AM to 7 PM during two months. It consisted of 77 adult patients of both genders, submitted to general anesthesia, and who, during the pre-operative visit, agreed to sign the term of consent.

Three nurses were chosen to evaluate the instrument contents<sup>(12)</sup>, with knowledge in the area of anesthetic recovery and trauma, with the purpose of refining the definition of the items and evaluate their pertinence. After the adjustments performed according to the nurses' judgment, the instrument acquired a new format, being pre-tested next. This procedure evaluated the difficulties in the application of the instrument, interpretation and conception of the scoring system for the results, being performed by the authors, who started data collection after making the changes suggested at this stage.

Data collection was performed by adopting the routine of the service: evaluation immediately at the arrival of the patient at the PARR, at every 15 minutes in the first hour and every 30 minutes in the second hour, yielding approximately 6 evaluations per admitted patient.

The data collection instrument consisted of two parts: sociodemographic characterization of the patients and post-anesthetic evaluation protocol in the immediate postoperative period (Appendix A). The protocol was made up of the five phases of evaluation: airways (A), breathing and ventilation (B), circulation and hemorrhage control (C), neurological evaluation (D) and body exposure with hypothermia control (E)<sup>(10)</sup>. Phases B and C have sub-items, with B consisting of oxygenotherapy, pulmonary auscultation and respiratory frequency. C consists of oxygen saturation, blood pressure, heart rate, skin characteristics and presence of bandages or injuries.

Scores were assigned to each phase of the evaluation. The scores were distributed according to the theoretical reference used in this study<sup>(8)</sup>, where phase A is more important than phase B, because the patient is more susceptible to death, and so on.

Therefore, phase A consists of five items of assessment that sum up to 30 points. Phase B consists of 13 items of assessment that sum up to 25 points, phase C consists of 21 items of assessment that sum up to 20 points, phase D consists of three items that sum up to 15 points, and phase E also has three items that sum up to 10 points. At the end of the evaluation, the results obtained

in each of the stages, A, B, C, D and E (total score), with the highest possible score being 58 points and the worst possible score being 11 points.

The data were entered into a spreadsheet (*Excel for Windows*<sup>®</sup>) and ported into the software *Statistical Package for the Social Science (SPSS) version 11.5 for Windows*, being then analyzed through descriptive analysis.

Kruskal Wallis' non-parametric test was used for the comparative analysis of the differences found among the scores for admission and discharge in the PARR for the variables gender and age. Wilcoxon's T test was used to compare the averages at the moment of admission and discharge from the PARR. The adopted level of significance was 0.05.

## RESULTS

Seventy-seven patients were evaluated, who had been submitted to different types of surgical-anesthetic actions from the following areas: Gynecology and Obstetrics (GO), Urology (URO), Orthopedics (ORTHOP), Neurosurgery (NEURO), Otorhinolaryngology (OTORHINO), Digestive tract surgery (GASTRO), Plastic surgery, Vascular surgery, Thoracic surgery, Bucamaxilo-facial surgery (BUCO) and General surgery. Of these 77 patients, 39 (50.6%) were female and 38 (49.4%) were male, aged 41 on average (SD 17.44) and median 40 years old.

The surgeries from the GO and GASTRO clinics were most frequent, with 15 (19.5%) and 13 (16.9%) occurrences respectively, while the BUCO procedures were the less frequent (1.3%).

The data collected in the admission (first 15 minutes) were compared with those collected at the discharge. In phase A, 93.5% (72) of the patients admitted in the PARR had pervious airways, and 5.2% (5) needed the Guedal pattern airway to maintain their airways free, while 100% (77) had pervious airways at the moment of discharge.

The three sub-items were analyzed in phase B: oxygenotherapy, pulmonary auscultation and respiratory frequency. For oxygenotherapy, it was verified that 88.3% (68) of the patients needed continuous nebulization oxygen supplementation during the first 15 minutes; 7.8% (6) maintained acceptable environmental air saturation and 3.9% (3) used high-flow masks.

For pulmonary auscultation, 84.4% (65) patients presented no adventitious sounds in the first 15 minutes of the evaluation, and 15.6% (12) had ronchi, hissing or stridors, with ronchi being the most frequent alterations. There were no alterations in these data through pulmonary auscultation at the moment of discharge from the PARR.

As for the respiratory frequency, 76.6% (59) of the patients were eupneic during the first 15 minutes, and 23.4% (18) were either tachypneic or bradypneic. At

discharge, these values were changed to 98.7% (76) eupneic patients and only one (1,3%) with tachypnea.

The sub-items oxygen saturation, blood pressure, heart rate, skin characteristics, presence of catheters, bandages/injuries compose phase C. At the moment of admission in the PARR, 50 patients (64.9%) needed oxygen supplementation in order to maintain a saturation > 90%; 24 (31.2%) saturated 92% or more from the air of the environment, and only three (3.9%) presented saturation < 90% with oxygen supplementation. At the moment of discharge, 70 (90.9%) could saturate 92% or more from the air of the environment, and only seven (9.1%) needed oxygen supplementation for saturation > 90%.

Blood pressure at the moment of admission was at normal levels (up to 20% of the pre-aneshtetic value) in 79.2% (61) of the patients, with 16.9% (13) presenting hypotension and 3.9% (3) hypertension. At discharge, 90.9% (70) were normotensive, and hypertension was evident in 9.1% (7) of the sample. Regarding heart rate, most patients, 81.8% (63), were normocardic in the first 15 minutes, and an equal number of patients, 9.1% (7), presented either bradycardia or tachycardia. At discharge, the normocardic patients were 92.2% (71), while 5.2% (4) maintained bradycardia and 2.6% (2) maintained tachycardia.

Regarding skin characteristics, 55 (71.4%) had normal coloration and 22 (28.6%) were pale. Bandages were either clean and dry or were absent in 70 (90.9%) patients at admission, and seven (9.1%) presented bleedings. At discharge, clean and dry bandages were still the norm (84.4%), but in lower amounts than in the first 15 minutes. Those with bleedings increased to 12 (15.6%).

Phase D consists of the neurological evaluation performed with the Glasgow Coma Scale (GCS)<sup>(10)</sup>. This, in turn, evaluates the patients' eye, verbal and motor responses, with a score varying from 3 to 15. For the eye opening item, we observed that 79.2% (61) of the patients opened their eyes in response to voice at admission; 10.4% (8) opened their eyes spontaneously, 5.2% (4) opened their eyes only in response to painful stimuli, and another 5.2% (4) did not open their eyes at all. At discharge, these values were altered to 96.1% (74) patients opening their eyes spontaneously, and 3.9% (3) in response to painful stimuli.

For verbal responses at admission, 35 (45.5%) patients were oriented, and four (5.2%) had no verbalization at all. At discharge, 76 (98.7%) were oriented, and only one (1.3%) was still confused.

For the motor response item, 63.6% (49) obeyed commands issued during the first 15 minutes of the evaluation, while 3.9% (3) had no motor response. At discharge, 100% of the patients obeyed commands and requests.

The average ECG score obtained by patients at admission was 12.16 (SD 2.75), median was 13 and

maximum and minimum values of 3 and 15, respectively. At 30 minutes, the average was 13.36 (SD 1,80), median was 14, minimum value 6 and maximum value 15. And, at discharge, the average was 14.94 (SD 0.22), median was 15, minimum score was 14 and maximum score was 15.

The last phase of the instrument, phase E, evaluates body exposure with hypothermia control. In the first 15 minutes, 76.6% (56) of the patients were normothermic while 23.4% (18) were hypothermic. At discharge, all 77 (100%) patients had reached normal temperatures (35.5°C to 37.7°C).

From the total scores (the sum of the five phases) obtained by the patients at admission, we found an average score of 47.91 (SD = 5.06), and median of 48. For discharge, these values were: average of 54.12 (SD = 1.69) and median of 55, concluding that there was a significant increase ( $p < 0.05$ ) of the scores obtained from the instrument at the moment of discharge from the PARR.

In the analysis of the scores obtained by the application of the instrument during admission at the PARR and at discharge, when these were related to the gender of the patients, they were observed to present a statistically significant difference ( $p < 0.05$ ) for the scores obtained by females at both moments, suggesting that women presented better conditions in the IPOPOP when compared to men.

Regarding age, no statistically significant difference was observed between the scores obtained in both instruments ( $p > 0.05$ ), showing that age did not influence the patients' recovery in this study.

## DISCUSSION

The post-anesthetic recovery period has its own particularities, due to the effects of the surgical-anesthetic act in our organism<sup>(3)</sup>, and it is considered critical, a reason why the nursing care must be increased and documented, preferably in instruments that are adequate for this type of patient.

Authors<sup>(13)</sup> state that the nursing evolution must contain these items: name of the surgery, type of anesthesia, level of consciousness, venous infusions, aspect of the bandages, peripheral perfusion, presence of catheters, tubes and drains. As seen, all these data are important for the assessment of the patient are present in the instrument in question.

It is important to remember that the most common postoperative complications are: cardiorespiratory depression, neurological and renal alterations, pain, hypothermia, nausea, vomiting, abdominal distension and hiccups<sup>(3-4)</sup>. Among these, the respiratory tract disorders are the most common<sup>(14)</sup>. When we use an evaluation instrument with the Trauma ABCDE as its base, the first

item to be evaluated is the respiratory tract (phase A), thus preventing its respective complications.

The method used in this study allowed for an ample, in-depth view of the general state of the patient in IPOP through the physical cephalic-caudal examination suggested by the Trauma ABCDE, which enables the early identification of complications made evident during the presentation of the results, and that will be discussed next.

One proposal similar to the Trauma ABCDE was named "Recovery ABC"<sup>(15)</sup>. It evaluates three clinical parameters: airways, behavior and consciousness. The author examined over 2,000 patients and concluded that this scale is an adequate and easy to use guide to monitor the patient at the PARR. However, in this study, aspects that are also very important in the evaluation of the patient in the IPOP, such as breathing and ventilation, circulation and body temperature were not evaluated, which set limits to it.

In phase A, it was observed that 5.2% (4) of the patients needed a Guedal pattern airway to keep their airways pervious in the first 15 minutes of assessment, and 1.3% (1) required maneuvers to open the airways.

Airway obstruction, laryngospasm, accumulation of secretions and inadequate gaseous exchanges can be present in the IPOP, resulting in hypoxemia, which constitutes a serious threat. Most respiratory complications happen in the first hour after surgery, i.e., at the PARR<sup>(16)</sup>.

In the evaluation of the phase B item oxygenotherapy, 88.3% (68) of the patients needed oxygen supplementation through continuous nebulization to maintain oxygen saturation, and 3.9% (3) used high flow masks, totaling 92.2% (71) patients needing oxygen supplementation to be administered at the PARR.

Hypoventilation is commonly observed after anesthesia, during the depression of the central nervous system due to residual effects of potent anesthetics and analgesics<sup>(16-17)</sup>. The actual volume is lowered, the vital capacity and the forced respiratory volume are lowered and coughing is restricted by pain. The saturation is observed to decrease, with the administration of oxygen to almost all patients in the PARR being recommended, except in cases when this action is not advisable<sup>(16)</sup>.

15.6% (12) of the patients presented ronchi, hissing or stridors. The auscultation of ronchi and hissing, associated to hypoxia, may suggest the diagnostic of aspiration of gastric contents<sup>(17)</sup>.

Blood pressure evaluated in phase C made hypotension evident in 16.9% (13) of the patients in the first 15 minutes. This is a common and worrying complication in the postoperative period. Any factor that lowers the heart debt or peripheral resistance significantly, or both, can lead to a significant drop in the systolic blood pressure<sup>(17)</sup>.

At admission, tachycardia and bradycardia were also observed to be present in similar frequencies, 9.1% (8). Skin pallor was verified in 28.6% (22) of the patients. Clinical signs such as tachycardia, oliguria, alterations in the mental state, cyanosis, pallor or cold skin are warnings of hypotension, or even shock<sup>(17)</sup>.

In the neurological evaluation through ECG (phase D), the average score obtained by the patients was 12.16 (SD 2.75) at admission and 14.94 (SD 0.22) at discharge. We observed that 79.2% (61) were admitted with no eye opening in response to voice, 45.5% (35) were oriented and 63.6% (49) obeyed the commands issued.

These symptoms are associated to the effects of anesthetic agents on the central nervous system. The patients showed changes in the sensorial perception, apathy, changes in the usual responses to stimuli, characterized by drowsiness and changes in behavior, manifested through restlessness<sup>(18)</sup>.

Using evaluation criteria of consciousness recovery and psychomotor activity similar to ECG, Saraiva<sup>(19)</sup> determined the "Clinical stages of regression from anesthesia", with the first stage being "reacts to pain", the second "obeys commands", the third "answers simple questions" and the fourth "is well-oriented in time and space".

In phase E, hypothermia was observed in 23.4% (18) of the patients admitted at the PARR. This value is relatively low when compared to those found in literature<sup>(20-21)</sup>, where over 60% of the patients presented this diagnosis in the IPOP. Hypothermia is related to exposure to a cold environment and altered metabolism, secondary to the use of anesthetic drugs, age and vasodilatation<sup>(20)</sup>.

When the patients' total score (the sum of the five phases) at admission is analyzed, we found an average score of 47.91 (SD 5.06). At discharge, this value increases to an average of 54.12 (SD 1.69), a statistically significant increase ( $p < 0.05$ ). This increased score at discharge is related to the cessation of the effects produced by anesthetic agents and reestablishment of the vital functions of the organism.

From an anesthetic viewpoint, the patient can be discharged from the PARR if: he is capable to maintain adequate alveolar ventilation and unblock his airways; he is awake, alert, well-oriented in space and time; is capable of maintaining adequate tissue perfusion without pharmacological support; and does not require continuous surveillance of the cardiovascular system and being able to urinate<sup>(17)</sup>.

As for the score of the female patients at both moments, admission and discharge, women were observed to present better conditions in the IPOP when compared to men, according to the results in the Kruskal Wallis' non-parametric test with a 0.05 level of

significance. Authors<sup>(9)</sup> corroborate this result, in a study that showed that women have speedier recoveries after general anesthesia.

It should be noted that surgical-anesthetic actions at the GO clinic were the most frequent in this study, at 19.5% (15). Of these, 40% (six) of the patients were submitted to curettage. To perform curettage, patients are submitted to general anesthesia through inhalation, and this one, compared to or combined with endovenous anesthesia is associated to faster anesthetic recovery. This fact may justify the results found in this study, which suggest that women recover faster than men do during the IPOP. However, other studies must be conducted in the sense of confirming this result, since this analysis was not part of our main goal.

## FINAL CONSIDERATIONS

The goal of the study was the creation of an instrument based on the ATLS protocol, using the Trauma ABCDE, which aims to aid in reducing the incidence of complications at the PARR through early detection of physical alterations, which were achieved through a

comprehensive cephalic-caudal physical examination, as required by the instrument (Appendix A).

This instrument also contributed for the systematization and documentation of the care provided to the patient in IPOP.

It is worth noting that even being submitted to reformulation, the authors concluded, at the end of the study, that some items should have been included in the instrument, such as pain assessment, presence of nausea and vomiting and abdominal distension, which are highly important topics in patients in the IPOP.

The results found, such as the necessity of oxygen supplementation for 92.2% of the patients at admission into the PARR for saturation maintenance; the presence of adventitious noise in 15.6% of the admitted patients; the lowered level of consciousness evaluated by the 12.16 average ECG score in the first 15 minutes, gender-related results, scores at admission and discharge from the PARR, and, particularly, the analysis of differences between both moments, prove the efficiency of the instrument.

This study is expected to contribute to the optimization of nursing care provided at PARR, resulting in more safety in the anesthetic recovery postoperative period.

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**APPENDIX A**

Instrument of assessment of patients in the immediate postoperative period, based on the ATLS protocol

**Identification Data:**

Name: \_\_\_\_\_ Gender: \_\_\_\_\_ Age: \_\_\_\_\_

Type of surgery: \_\_\_\_\_ Clínica: \_\_\_\_\_

<b>A – Airways (30)</b>										
Score	Activity/time	15'	30'	45'	60'	90'	120'			Alta
12	Pervious									
8	Airway opening maneuvers									
5	Guedel									
3	Orotracheal intubation									
2	Cricothyroidotomy / Tracheostomy									
<b>B – Breathing and ventilation (25)</b>										
Score	Activity/time	15'	30'	45'	60'	90'	120'			Alta
	<b>Oxygenotherapy</b>									
5	Environmental air									
4	Continuous nebulization									
3	Venturi's mask									
1	High-flow mask									
	<b>Pulmonary auscultation</b>									
3	No adventitious noise									
1	Ronchi									
1	Hissing									
1	Stridors									
0	Bronchospasm									
	<b>Respiratory frequency</b>									
3	Eupnea									
1	Tachypnea (over 20rmm)									
1	Bradypnea									
1	Thoracic Asymmetry									
<b>C – Circulation with hemorrhage control (20)</b>										
Score	Activity/time	15'	30'	45'	60'	90'	120'			Alta
	<b>O<sub>2</sub> Saturation</b>									
2	> 92% relative to environmental air									
1	Needs O <sub>2</sub> for saturation > 90%									
0	Saturation < 90% with O <sub>2</sub> supplementation									
	<b>Blood pressure</b>									
2	Normotensive (up to 20% of the pre-anesthetic level)									
1	Hypertensive									
0	Hypotensive									
	<b>Heart rate</b>									
3	Normocardic (60 to 100 bpm)									
0	Tachycardic									
0	Bradycardic									
	<b>Skin characteristics</b>									
3	Normal coloration									
2	Pallor									

1	Sweaty / Cold / Sticky									
0	Cyanotic									
<b>Catheters</b>										
1	Nasogastric tube									
1	Urethral									
1	Other: tube or drain									
1	Central venous catheter									
1	Peripheral venous catheter									
<b>Presence of bandages / injuries</b>										
1	No bandages									
1	Clean and dry									
0	Bleeding									
<b>D – Neurologic assessment (15)</b>										
<b>Score</b>	<b>Activity/time</b>	<b>15'</b>	<b>30'</b>	<b>45'</b>	<b>60'</b>	<b>90'</b>	<b>120'</b>			<b>Alta</b>
4	Best eye response									
5	Best verbal response									
6	Best motor response									
<b>E – Body exposure wuth hypothermia control (10)</b>										
<b>Score</b>	<b>Activity/time</b>	<b>15'</b>	<b>30'</b>	<b>45'</b>	<b>60'</b>	<b>90'</b>	<b>120'</b>			<b>Alta</b>
	<b>Body temperature</b>									
5	Normothermic (35.5 °C to 37.7°C)									
3	Hypothermic									
2	Hyperthermic									