Brazilian Journal of Anesthesiology 2022;72(2):200–206

Sociedade Brasileira de Anestesiologia

Brazilian Journal of ANESTHESIOLOGY

ORIGINAL INVESTIGATION

Development of a recovery-room discharge checklist (SAMPE checklist) for safe handover and its comparison with Aldrete and White scoring systems

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Received 14 March 2020; accepted 2 July 2021
Available online 26 July 2021

KEYWORDS
Anesthesia recovery period;
Recovery room;
Models;
Statistical

Abstract
Background: The postoperative care transition from the postanesthetic recovery room (PACU) to the common ward or even home discharge represents a critical step of the surgical patients' handover. Although some systems have been proposed to measure the ability to discharge after an anesthetic-surgical procedure effectively, there is no consensus defining which variables should necessarily be evaluated by these instruments. The instruments routinely used do not evaluate important domains for discharge and are laborious to fill, which compromises the professionals' adhesion. The objectives are to describe the creation of a new recovery room discharge tool (SAMPE checklist) and determine the degree of agreement of the new tool with two classical scales.
Methods: In a cross-sectional observational study, 997 patients were selected from the general population undergoing a wide range of surgical procedures in a quaternary care hospital. At 90 minutes after leaving the operating room (OR), patients were evaluated and information was collected to fill out the new SAMPE checklist and two other scores (Aldrete and White) to examine the degree of agreement between them.
Results: SAMPE checklist has presented a satisfactory agreement with the White score and lower agreement with Aldrete modified score.
Conclusion: This new instrument, as demonstrated in this study with nearly 1000 patients from different contexts, is easy to apply, has high adhesion potential, and can be considered a new option to formalize the discharge from the recovery room.

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https://doi.org/10.1016/j.bjane.2021.07.004

Introduction

Safety surgical handovers are essential to maintain continuity, to avoid adverse events and preventable errors.[1] The postoperative care transition from the postanesthetic recovery room (PACU) to the common care ward or even to home discharge represents a critical step of the surgical patients' handover. However, handing over information on many patients, with particular clinical scenarios, submitted to different severity of procedures can be complex, challenging, and staff demanding. Recovery is an ongoing process that lasts from the end of the intraoperative care until the patient returns to his/her preoperative physiological state.[2] The lack of standard strategies in moving patients from one care setting to another can result in patient harm, increased costs, and patient dissatisfaction.

The implementation of policies and procedures to ensure the safe recovery of patients after procedures is demanded by regulatory societies and accreditation committees around the world.[3,4] Although some systems have been proposed to measure the ability to discharge after an anesthetic-surgical procedure effectively, there is no consensus defining which variables should necessarily be evaluated by these instruments. Besides, to be useful, any instrument must be practical, simple, easy to apply by different caregivers, and applicable to any postanesthesia setting.[5]

Some discharge scores that have been used in the formal postoperative evaluation include domains related to hemodynamic stability, consciousness, airways, ventilation, and recovery from regional anesthesia. Meantime, some of these scales are compound with inessential unfoldings in each domain, which clouds the picture and avoids the caregiver's adhesion. Also, some scales do not include other fundamental domains for safety discharge, such as the presence of pain, bleeding, nausea, or vomiting. These fragilities can sometimes lead to a false readiness, which could result in an unsafe handover.

With the idea of helping caregivers and providing a safe assessment of the general conditions of patients in PACU, Aldrete and Kroulik proposed, in 1970, an index based on the assessment of the physiological conditions of the newborns (APGAR).[6] Thus, the authors scored from zero to two the evaluation of pulse rate, respiratory rate, blood pressure, state of consciousness, motor activity, and, recently, oxygen saturation, considering these clinical parameters as markers of the physiological systems compromised by the anesthetic procedure. The maximum score is ten and the patient needs a score of at least nine points to be discharged. This scale was not designed to be used for outpatient procedures, although it is also used for this purpose and has its limitations because it does not take into account frequent complications in post-surgical patients that make it impossible to discharge, such as nausea and vomiting, pain, and bleeding in the surgical site.

The White and Song scale[7] incorporated the evaluation of emetic symptoms and pain in Aldrete's, especially intending to evaluate outpatient discharge. This scale also adopts scores of zero to two for each evaluated item, being fourteen the maximum score. The patient is considered fit for discharge when it reaches at least twelve points, in which no item can score less than one. The Aldrete and White scores are widely used as parameters for discharge in different PACUs.

We have two main goals with this study. First, we intend to describe the creation of a new recovery room discharge tool (SAMPE-Recovery Checklist) which provides a practical assessment of the recovery dimensions, being brief enough and easy to administer. Second, we look to determine the degree of agreement of the new Checklist SAMPE with two classical scales, the Aldrete and White scales. Our hypothesis is that the SAMPE checklist has a reasonable degree of agreement with the traditionally used scores, with the advantage of being more easily applicable and with a high potential of adherence by caregivers.

Methods

Conceptual development

First version of checklist SAMPE

In the quaternary hospital where this study was carried out, about 15,000 surgeries are performed each year. The SAMPE checklist construction was driven by the hospital demand for an instrument to guide efficiently patient's discharge from four different PACUs. An extensive review of the literature and consensus of senior anesthesiologists and nurses from the recovery room staff supported the instrument's first version, which contemplated eight domains considered utmost important for safe discharge. The domains were categorized, and the final sum configured a score, where 13 was the minimum score for discharge and 16 was the maximum. In addition, some conditions signalized in bold were contraindication for discharge. This instrument's first version (Table 1) was routinely used in our institution from 2013 to 2015. However, frequent audits had revealed checklist completeness and items' sum in less than 30% of the cases.

Second version of SAMPE checklist discharge: focusing on a lean process

To improve adhesion to the checklist documentation we applied some principles of Quality Improvement.[8] First, we verified the checklist content and semantic in regular discussions with professionals who work in the area: anesthesiologists, nurses, anesthesia residents, and technicians. Second, we looked for the reasons for the low adhesion to form filling, in spite of the adequate patients' evaluation at the bedside. The main reason was the difficulty in dealing with alternatives in each domain and to sum the final score. Then, we decided to simplify the instrument, since all of the items should be checked to consider patient readiness for discharge. The suppression of the final sum and the binary transformation of all items were carried out to improve the adhesion to the instrument. The same domains were maintained since all of them were considered determinants of recovery room stay if not solved.

Patients might have these following eight domains present to be considered for discharge: (1) Stability of vital signs, (2) Awake and oriented or with the prior sensory pattern, (3) Spontaneous ventilation, (4) SpO_2 > 90%, (5) Controlled pain, (6) Absence of nausea and vomiting, (7)

Table 1 The first version of the Recovery Room Discharge SAMPE Checklist.

Parameters	Score
Stable vital signs	2
Significant change in blood pressure	***1***
Need for hemodynamic support	***0***
Fully awake and oriented	2
Awake when called	***1***
No responding	***0***
Breathes deeply	2
Needs ventilatory assistance	***1***
SpO_2 > 90% on room air	2
SpO_2 < 90% with oxygen	***1***
Controlled pain	2
Moderate to severe pain	***1***
Absence of nausea and vomiting	2
Presence of nausea or vomiting	***1***
No bleeding	2
Presence of bleeding	***1***
Move all extremities	2
Residual paresthesia after blockade[a]	1
Unable to move extremities	***0***
Total score: 16 Discharge with score ≥ 13	

PACU, postanesthetic recovery room.
Items in bold/italic counter-indicate discharge.
[a] Patients who will be referred to the common ward with paresthesia in regression may be discharged from the PACU and followed by the Anesthesia Postoperative Team.

Absence of bleeding, (8) Absence of motor block. The SAMPE checklist definitions are shown in Table 2.

Third, the new checklist was inserted in the program of communication team training of the Anesthesia and Perioperative Service Residence Program. All residents and anesthesia PACU staff participated in sessions of simulation of communication handover training and postoperative patient's safety, where the checklist items importance was reinforced.

Lastly, the new checklist was compared to classical instruments of PACU discharge described in the following section.

Comparison of SAMPE checklist recovery room discharge with Aldrete and White scores

We chose a cross-sectional study to compare the new checklist with the other two scores. In- and outpatients were selected from the general population undergoing a wide range of surgical procedures from November 2016 to February 2017 at HCPA by two anesthesia residents from the Anesthesia and Perioperative Service (SAMPE). Only patients who went to the Critical Care Unit or those who remained overnight in the recovery room were excluded, all other patients admitted to the PACU were included.

To compare the agreement between the instruments, we chose to evaluate all patients in a fixed moment, at 90 minutes after leaving the operating room (OR), independently of the surgical procedure or the patient's readiness for discharge. Information was collected to fill out the new SAMPE checklist and the modified Aldrete[6] and White Fast-Track scores[9] at the same time. The complete instrument formulary is in supplementary data. Demographic data, Americam Society of Anesthesiologists (ASA) physical status, surgical and anesthesia details, and final time to reach the discharge criteria according to the SAMPE checklist were also evaluated.

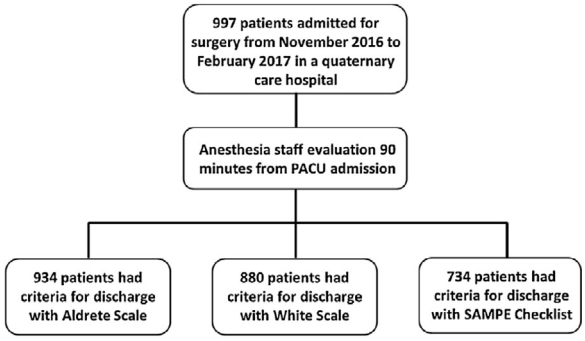

Figure 1 Comparison of discharge readiness in 90 minutes after PACU admission. PACU, postanesthetic recovery room.

Statistical analysis

The sample size was calculated to evaluate the degree of agreement between the three discharge tools two by two by estimating the Kappa coefficient. For the calculation, an expected Kappa index equal to 0.4 (representing a reasonable agreement) with an accuracy of 0.1 (generating a lower limit equal to 0.3 and an upper limit equal to 0.5 for the confidence interval), a discharge prevalence of equal to 80% and a 95% confidence interval were considered. The calculated sample size was 490 subjects. The KappaSize, version 1.2, of R. was used.

This study aimed to examine the degree of agreement among the three instruments of recovery room discharge. We used the Bennett's Kappa measure[10,11] to verify the agreement between the scales. The Kappa coefficient is used to describe the agreement between two or more judges when performing a nominal or ordinal evaluation of the same sample. The value of the Kappa coefficient of agreement can vary from zero to one. The closer to one, the greater is the indication that there is a concordance between the judges and the closer to zero, the greater the indicative that the agreement is purely random.

In a second analysis, we focused exclusively on the cases of discordance between the instruments, specifically those that obtained criteria for discharge with Aldrete modified and/or with White but did not meet all the requirements for discharge with the SAMPE checklist. All the analyses were done with SPSS 22.0.

Results

A total of 997 patients admitted to the PACUs of the HCPA were evaluated over four months. Demographic and surgical characteristics are detailed in Table 3.

Figure 1 shows the number of patients ready to discharge according to each scale in 90 minutes. It was observed that 88% of the cases were discharged with the White scale, 92.7% with the Aldrete scale, and 73.6% with the checklist

Table 2 The SAMPE checklist criteria.

Check	Condition	Parameters definition
(Y))	**Stable vital signs**	There should be stability of the cardiovascular system. The values of heart rate and blood pressure should approach the preoperative levels, or systolic blood pressure should be above 90 mmHg and below 180 mmHg.
(N)		
(Y)	**Awake and oriented or with prior sensory pattern**	Patient should be alert and oriented in time and space, recovered from the effect of anesthetic drugs or with their usual level of sensory.
(N)		
(Y)	**Spontaneous ventilation**	Spontaneous and deep breath and reflexes of coughing and swallowing should be present. The ventilatory pattern should be the usual.
(N)		
(Y)	**SpO_2 > 90%**	The saturation should be satisfactory, above 90%. If necessary, oxygen therapy should be prescribed for discharge to hospitalization unit.
(N)		
(Y)	**Controlled pain**	Pain should be controlled (Verbal Pain Scale $\leq$ 3) and adequate analgesic regimen should be prescribed.
(N)		Postanesthetic Care team visit is required if neuroaxial anesthesia with opioids, epidural catheter or another advanced analgesia technique was applied.
(Y)	**Absence of nausea and vomiting**	Nausea and vomiting should be controlled, and multimodal regimen should be prescribed.
(N)		
(Y)	**Absence of bleeding**	Any bleeding at the surgical site other than usual patterns contraindicates discharge and must be reported to the surgical team.
(N)		
(Y)	**Absence of motor block**	Patients who underwent anesthesia in the neuraxis who remained hospitalized should have sensory and motor block in visible regression. Ambulatory patients submitted to neuroaxial anesthesia should be able to deambulate and urinate before discharge.
(N)		

under study. The median time of conditions for discharge was 90 minutes (p25 – 90 min, and p75 – 120 min).

The agreement indexes of Bennett's Kappa are shown in Table 4, and the strength of agreement is classified as follows: slight (0.00–0.20), fair (0.21–0.40), moderate (0.41–0.60), substantial (0.61–0.80) and almost perfect (0.81–1.00).

Comparing the three instruments at 90 minutes, the SAMPE checklist had the most conservative approach, avoiding the discharge of 263 patients. From these, 146 could be discharged according to the White score, and 200 would be discharged according to the modified Aldrete score.

Domains and frequency that had avoided the patients' discharge from PACU, despite reaching readiness conditions according to White and Aldrete modified scores are summarized in Table 5.

Discussion

In our study, we presented a new recovery room discharge checklist from its conception to its prospective comparison with other instruments. Our main finding is the conceptualization of a feasible instrument with a good index of correspondence with the White scale and moderate agreement with Aldrete. It also demonstrated a conservative approach, since with SAMPE checklist criteria 26% of patients did not achieve conditions for discharge, in spite of being ready with White or Aldrete scales.

The substantial but not perfect agreement of the new checklist with White scale were expected results since our proposed checklist was a conservative instrument. The absence of alternatives or items in each dominium is the main difference between our instrument and the others. This approach prevented the discharge until complete recovery from each dominium, turning the process of discharge and handover more understandable and more precise by the different caregivers.

There is no uniform definition of which variables should be evaluated to determine if a patient is eligible for discharge from PACU. The domains most commonly evaluated are vital signs, pain, level of consciousness, and nausea

Table 3 Demographic and surgical characteristics.

Item	Description	Number (%)
Gender	Male	468 (46.94%)
	Female	529 (53.05%)
Age	< 1 year	9 (0.9%)
	1–12 years	131 (13.14%)
	12–18 years	51 (5.11%)
	18–65 years	621 (62.29%)
	> 65 years	185 (18.56%)
ASA	I	225 (22.57%)
	II	540 (54.16%)
	III	224 (22.47%)
	IV	8 (8.02%)
Procedure	Elective	973 (97.59%)
	Urgency / Emergency	24 (2.41%)
Anesthesia	Sedation	93 (9.33%)
	General	637 (63.89%)
	Regional	193 (19.36%)
	Combined	74 (7.42%)
Surgical	Minor / Intermediate	647 (64.89%)
	Major	50 (35.11%)
Surgical specialty	Urology	149 (14.94%)
	General	111 (11.13%)
	Gynecological	102 (10.23%)
	Ophthalmology	101 (10.13%)
	Otolaryngology	81 (8.12%)
	Digestive	73 (7.32%)
	Orthopedics	69 (6.92%)
	Pediatric	60 (6.02%)
	Mastology	46 (4.61%)
	Thoracic	36 (3.61%)
	Vascular	35 (3.51%)
	Coloproctology	35 (3.51%)
	Head and neck	23 (2.31%)
	Plastic	20 (2.01%)
	Cardiac	12 (1.20%)
	Neurosurgery	7 (0.70%)
	Others	29 (2.91%)

Table 4 Agreement on discharge from Recovery Room Scales.

	KAPPA STATISTIC (PABAK)		
	Kappa	Confidence interval	
SAMPE *vs* White	0.69	0.65	0.74
SAMPE *vs* Aldrete	0.58	0.53	0.63
Aldrete *vs* White	0.48	0.39	0.57

Bennett's formula produces a result also known as the Prevalence-adjusted Bias-adjusted Kappa (PABAK).

and vomiting, with variations in the way of assessing them between the instruments.

Our instrument encompasses eight significant parameters, including nausea and vomiting, pain and surgical bleeding, that were not evaluated in Aldrete criteria. These differences are crucial to increase the quality of care. These parameters, even not life threatening, must be routinely evaluated and fully controlled before ward or home discharge, especially considering the great hiatus at about 4–6 hours between vital signs evaluation in the common ward. Furthermore, uncontrolled pain, unavoidable nausea and vomiting or surgical bleeding are associated to readmission in ambulatory patients.[12] The main parameters associated to the PACU stay after 90 minutes in our study were uncontrolled pain (45%), sensory pattern not recovered (36%), residual block (15%), and nausea or vomiting (13%).

Circulatory and respiratory systems are also compromised by most anesthetic procedures and their instability brings life-threatening complications. Most instruments use blood pressure and oxygen saturation as objective markers of these systems. However, different parameters and combinations can be used. Gartner et al.[13] proposed the inclusion of respiratory rate, systolic blood pressure and heart rate, all with predetermined objective values, without considering previous patient measures. Song et al.[14] considered necessary to have no blood pressure difference greater than 30% in relation to preoperative levels and respiratory stability was evaluated by frequency and presence of cough reflex. Most of the studies consider oxygen saturation greater than 94% in room air suitable for discharge, being a parameter of easy evaluation and standardization, which provides essential information about the cardiopulmonary system. There is no evidence suggesting which combinations of vital signs would be superior to assess safe discharge conditions for PACU patients, but it seems reasonable that similar preoperative values will be reached in the postoperative period before discharge. There are also recent studies showing the deleterious effect of intraoperative[15] and postoperative hypotension,[16] and its association with renal and cardiac injury. For example, the POISE 2 substudy[17] demonstrated that clinically important postoperative hypotension (defined as systolic blood pressure less than 90 mmHg requiring intervention) was significantly associated with a composite of myocardial infarction and death even after adjustment for previous hypotension.

Also, a consensus published by the Perioperative Quality Initiative (POQI)[18] reviewed the relationships between postoperative arterial pressure and postoperative outcomes, and stated that there is evidence of harm associated with postoperative systolic arterial blood (SBP) pressure less than 90 mmHg and higher with preoperative hypertension.

This recommendation is based on studies which concluded that high postoperative MEWS scores (modified early warning systems) are strongly associated with postoperative outcomes. Systolic blood pressure below 90 mmHg, respiratory rate below 8 and saturation below 91% are the levels considered to segregate normal physiologic changes from pathologic vital variation. Patients presenting high MEWS scores had an increased risk of complications.[19] Furthermore, Roshanov et al.[20] showed that levels of systolic blood pressure below 90 mmHg of any duration until the end of postoperative day 3 were associated with cardiovascular events regardless presence or of the degree of coronary artery disease. These findings corroborate the recommendation of our checklist that established systolic blood pressure above 90 mmHg for all patients to be discharged. In an observational study, Stephenson[21] evaluated postoperative pain, and this experience was reported by patients as the most stressful factor associated with the surgical procedure. Pain is usually assessed with questionnaires that take into

Table 5 Agreement on which domains patients were ready for discharge as a function of White and Aldrete scores, but not ready by SAMPE Checklist.

Checklist SAMPE item that prevented discharge in 90 minutes	Cases disagree with White criteria for discharge in 90 minutes (n = 146)	Cases disagree with Aldrete criteria for discharge in 90 minutes (n = 200)
(1) Stable vital signs	7 (4.8%)	7 (3.5%)
(2) Wake and oriented or sensory pattern as usual	53 (36.3%)	83 (41.5%)
(3) Spontaneous ventilation	0	0
(4) Saturation above 90%	2 (1.4%)	1 (0.5%)
(5) Controlled pain (verbal pain scale < 3)	66 (45%)	96 (48%)
(6) Absence of motor block, or residual block in regression	23 (15.8%)	27 (13.5%)
(7) Absence of nausea or vomiting	19 (13%)	31 (15.5%)
(8) Absence of bleeding in operative field	6 (4.1%)	5 (2.5%)
Total	146	200

account symptom intensity through scales with definitions of ''mild'', ''moderate'' and ''severe'', or with scores ranging from zero to ten. Some instruments allow only mild pain and others allow even moderate pain at the time of PACU discharge. Aggressive and satisfactory pain control in the PACU setting is one of the ways to provide good care and reduce patient suffering in any anesthetic-surgical setting, with a great repercussion on the unpleasant sensation experienced by the patients. It is desirable that a complaint so valued and feared by the majority of patients should be well controlled in the PACU, with the professionals used to this care, with resources for effective and aggressive management of pain.

Nausea and vomiting are highly unpleasant postoperative symptom, and most authors agree that these symptoms, when present, should be controlled prior to discharge from PACU. The most frequently used forms for assessing this dyad are to classify it as ''light'', ''moderate'' or ''severe'',[12,13] or as ''absent'', ''transitory'' or ''persistent''.[14] It is imperative to monitor and control these symptoms in the PACU, given the high frequency and discomfort caused, especially in the postoperative context.

Some psychomotor tests are available for assessment of postanesthetic recovery.[22] These tests are adapted from other areas, such as tests that evaluate time for reaction and attention. Unfortunately, most of these tests are very complex and impractical in the context of a PACU. In addition, discrete impairment of psychomotricity does not appear to compromise the safety of discharge.

The assessment of the level of consciousness was responsible for a large number of disagreements between the instruments tested. This is because the SAMPE checklist allows discharge only for awake and oriented patients, or with their previous baseline pattern. Opting for safety and to be used in different settings, such as outpatient procedures, and in patients with different comorbidities, the SAMPE checklist does not tolerate any change in the state of consciousness at discharge.

Patients submitted to neuroaxial anesthesia are also submitted to the same criteria for discharge, along with the regression evaluation of the sensory, motor, and sympathetic blocks.[23] It seems reasonable to grant discharge for patients with peripheral nerve block prior to complete regression of motor and sensory block, requiring that they receive verbal and written guidance of care to be taken with the limb blocked, including use of types, crutches, and the need for early use of analgesics.[5]

In 2017, Resolution 2174 was published in Brazil by the Federal Medical Council.[24] One of its articles attribute responsibility for discharge to anesthesiologists on duty at the unit and provide that during the stay in the recovery room up to the time of discharge, patients should be monitored and clinically evaluated for: circulation (including blood pressure and heart rate measurement, and continuous monitoring by cardioscopy), breathing (including determination continuous monitoring of hemoglobin peripheral saturation), state of consciousness, pain monitoring, movement of lower and upper limbs after regional anesthesia, control of body temperature, and nausea and vomiting. The SAMPE checklist includes all these safety proposal parameters, except for temperature.

Our study has some limitations. First, the evaluation was limited to one admeasurement at 90 minutes. We did not look to the postoperative outcomes, rates of complications or staff interventions, but it is not probable to have increased rates of complication with our simplified checklist because of its conservative approach.

Nevertheless, our objective was to develop a friendly and consistent instrument to overcome what would otherwise be a considerable challenge: the universal adoption of a handover instrument to improve surgical patient's safety during their in-hospital journey.

Second, our population consisted basically of low-risk patients from one single institution. It is utmost important to consider the lack of specificity of any instrument to the patient's risk. To overcome this issue, we are implementing strategies targeting better care to high-risk surgical patient, and some new items such as conference of fluid balance, urine debt and laboratories will be added to the recovery room checklist discharge of this vulnerable group (https://clinicaltrials.gov/ct2/show/NCT04187664).

Conclusion

We presented a simplified and feasible checklist that contains all domains considered necessary for safety ward or home discharge. The SAMPE discharge checklist encompasses satisfactory agreement with the White score, though with few and assertive items, which seems to offer advantages over the current instruments adopted.

Conflicts of interest

The authors declare no conflicts of interest.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.bjane.2021.07.004.

References

1. Advani R, Stobbs NM, Killick N, et al. ''Safe handover saves lives'': results from clinical audit. Clin Gov. 2015;20:21–32.
2. Marshall SI, Chung F. Discharge criteria and complications after ambulatory surgery. Anesth Analg. 1999;88:508–17.
3. Merchant R, Chartrand D, Dain S, et al. Guidelines to the practice of anesthesia — revised edition 2016. Can J Anaesth. 2016;63:86–112.
4. Scott AM, Li J, Oyewole-Eletu S, et al. Understanding facilitators and barriers to care transitions: insights from Project ACHIEVE Site Visits. Jt Comm J Qual Patient Saf. 2017;43:433–47.
5. Awad IT, Chung F. Factors affecting recovery and discharge following ambulatory surgery. Can J Anaesth. 2006;53:858–72.
6. Aldrete JA, Kroulik D. A postanesthetic recovery score. Anesth Analg Curr Res. 1970;49:924–34.
7. White PF, Song D. New criteria for fast-tracking after outpatient anesthesia. Anesth Analg. 1999;88:1069–72.
8. Massoud M, Nielsen G, Nolan K, et al. A framework for spread: from local improvements to system-wide change. Cambridge: Institute for Healthcare Improvement; 2006.
9. White PF, Song D. New criteria for fast-tracking after outpatient anesthesia: a comparison with the modified Aldrete's scoring system. Anesth Analg. 1999;88:1069–72.
10. Bennett EM, Alpert R, Goldstein AC. Communications through limited response questioning. Public Opin Q. 1954;18:303–8.
11. Landis JR, Koch GG. The measurement of observer agreement for categorical data. Biometrics. 1977;33:159–74.
12. Fortier J, Chung F, Su J. Unanticipated admission after ambulatory surgery — a prospective study. Can J Anaesth. 1998;45:612–9.
13. Gärtner R, Callesen T, Kroman N, et al. Recovery at the post anaesthetic care unit after breast cancer surgery. Dan Med Bull. 2010;57:A4137.
14. Song D, Chung F, Ronayne M, et al. Fast-tracking (bypassing the PACU) does not reduce nursing workload after ambulatory surgery. Br J Anaesth. 2004;93:768–74.
15. Salmasi V, Maheshwari K, Yang D, et al. Relationship between intraoperative hypotension, defined by either reduction from baseline or absolute thresholds, and acute kidney and myocardial injury after noncardiac surgery. Anesthesiology. 2017;126:47–65.
16. Futier E, Lefrant JY, Guinot PG, et al. Effect of individualized vs standard blood pressure management strategies on postoperative organ dysfunction 6among high-risk patients undergoing major surgery: a randomized clinical trial. JAMA. 2017;318:1346–57.
17. Sessler DI, Meyhoff CS, Zimmerman NM, et al. Period-dependent associations between hypotension during and for four days after noncardiac surgery and a composite of myocardial infarction and death: a substudy of the POISE-2 trial. Anesthesiology. 2018;128:317–27.
18. McEvoy MD, Gupta R, Koepke EJ, et al. Perioperative quality initiative consensus statement on postoperative blood pressure, risk and outcomes for elective surgery. Br J Anaesth. 2019;122:575–86.
19. Hollis RH, Graham LA, Lazenby JP, et al. A role for the early warning score in early identification of critical postoperative complications. Ann Surg. 2016;263:918–23.
20. Roshanov PS, Sheth T, Duceppe E, et al. Relationship between perioperative hypotension and perioperative cardiovascular events in patients with coronary artery disease undergoing major noncardiac surgery. Anesthesiology. 2019;130:756–66.
21. Stephenson ME. Discharge criteria in day surgery. J Adv Nurs. 1990;15:601–13.
22. Hannington-Kiff JG. Measurement of recovery from outpatient general anaesthesia with a simple ocular test. Br Med J. 1970;3:132–5.
23. Pflug AE, Aasheim GM, Foster C. Sequence of return of neurological function and criteria for safe ambulation following subarachnoid block (Spinal anaesthesic). Can Anaesth Soc J. 1978;25:133–9.
24. Conselho Federal de Medicina. Resolução CFM no 2174, de 14 de dezembre de 2017. Diário Oficial da União. 2017;39(Seção 1):75–84.