

Validation of the Italian version of the White Fast-track Scoring Criteria: a prospective, observational study

Paola Casati¹, Claudia Maria Sansone²

¹ Operating Theatre, San Raffaele Hospital, Milan, Italy

² Neonatal Intensive Care Unit, Policlinico San Matteo hospital, Pavia, Italy

Findings:

- *A tool for early detection of the risk of post-operative complications is translated and validated.*
- *A modified version of the previous tool is produced and validated to achieve a more comprehensive assessment of major surgery.*

ABSTRACT

BACKGROUND: Patients undergoing surgery are subject to adverse events, in the hours immediately after discharge from the operating theatre. The White Fast-Track scoring criteria scale is suitable for early detection of the risk of postoperative complications, but it has not been validated into Italian. Moreover, it should be completed with additional parameters, to allow complete postoperative surveillance.

AIM: This study is aimed to translate and validate into Italian the White fast-track scoring criteria and to produce a modified version, to obtain a more complete assessment of major surgery operations.

METHODS: Quantitative, observational, prospective, monocentric study, on a non-randomized sample of patients aged 18 or more, undergoing general, thoracic, vascular, urological, orthopedic, gynecological, endocrinological, breast, nose-throat, or facial surgery, in the recovery room of a teaching hospital in Milan.

RESULTS: 250 patients were enrolled. The original scale showed good inter-rater reliability, internal consistency, and test-retest reliability. The same applied to the modified version. The original scale allowed identifying 18 patients at risk; the modified version identified 20, who could have been discharged according to the original criteria, who actually developed postoperative complications

CONCLUSION: The Italian White fast-track scoring criteria is a valid tool, and it can be used by nurses to perform appropriate postoperative surveillance, as well as to prevent early postoperative complications. The modified version reflects the real surveillance performed in a recovery room, and shows satisfactory reliability, sensitivity, and specificity compared to the original tool.

KEYWORDS: *adult, critical care, perioperative care, postoperative complications, surgical procedures,*

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy

28



Milano University Press
Via Festa del Perdono 7, 20122 Milan, Italy

Submission received: 11/07/2022
End of Peer Review process: 25/07/2022
Accepted: 25/07/2022

STUDIO OSSERVAZIONALE

Validazione della versione italiana della White Fast-track Scoring Criteria: uno studio prospettico osservazionale

Paola Casati¹, Claudia Maria Sansone²¹ Comparto Operatorio, Ospedale San Raffaele, Milano² Unità di Terapia Intensiva Neonatale, Policlinico San Matteo, Pavia

Riscontri:

- Viene tradotto e validato uno strumento per rilevare precocemente il rischio di complicanze post-operatorie.
- Viene realizzato e validato una versione modificata dello strumento precedente per ottenere una valutazione più completa degli interventi di chirurgia maggiore.

ABSTRACT

INTRODUZIONE: Nelle ore immediatamente successive alla dimissione dalla sala operatoria i pazienti sottoposti a intervento chirurgico sono soggetti a eventi avversi. La scala “White Fast-Track” è adatta a rilevare precocemente il rischio di complicanze postoperatorie, tuttavia, non risulta esser validata in italiano. Inoltre, per consentire una sorveglianza post-operatoria completa, dovrebbe essere completata con parametri aggiuntivi.

OBIETTIVO: Questo studio si propone pertanto di tradurre e validare in italiano la scala “White fast-track scoring criteria” e di realizzarne una versione modificata per ottenere una valutazione più completa degli interventi di chirurgia maggiore.

METODI: Studio quantitativo, osservazionale, prospettico, monocentrico, su un campione non randomizzato di pazienti di almeno 18 anni, sottoposti a chirurgia generale, toracica, vascolare, urologica, ortopedica, ginecologica, endocrinologica, mammaria, naso-gola o facciale, nella sala di rianimazione di un ospedale universitario di Milano.

RISULTATI: Sono stati arruolati 250 pazienti. La scala originale ha mostrato una buona affidabilità inter-rater, consistenza interna e affidabilità test-retest; lo stesso vale per la versione modificata. La scala originale ha permesso di identificare 18 pazienti a rischio; la versione modificata ne ha identificati 20 che avrebbero potuto essere dimessi secondo i criteri originali e che in realtà hanno sviluppato complicanze postoperatorie.

CONCLUSIONI: La versione italiana della “White fast-track scoring criteria” sembra attestarsi come uno strumento valido e può essere utilizzato dal personale infermieristico per effettuare un'adeguata sorveglianza postoperatoria finalizzata a prevenire le complicanze postoperatorie precoci. La versione modificata riflette la reale sorveglianza effettuata in recovery room e mostra affidabilità, sensibilità e specificità soddisfacenti rispetto allo strumento originale.

KEYWORDS: *Continuità dell'assistenza, passaggio di consegne, comunicazione, consegne infermieristiche*

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy

29



Milano University Press
Via Festa del Perdono 7, 20122 Milan, Italy

Submission received: 11/07/2022

End of Peer Review process: 25/07/2022

Accepted: 25/07/2022



DISSERTATION NURSING

JOURNAL HOMEPAGE: [HTTPS://RIVISTE.UNIMI.IT/INDEX.PHP/DISSERTATIONNURSING/](https://riviste.unimi.it/index.php/dissertationnursing/)



BACKGROUND

Surgical patients are subject to alterations of their physiological functions, which continue in the postoperative period, because of anesthesiology and surgery (1-3).

In literature (4,5) it is known that adverse events occur in 5-30% of the cases, in the hours immediately after discharge from the operating theatre. Continuous surveillance as well as patient assessment after the operation are crucial to prevent potential complications and critical situations.

Expert personnel, in a dedicated recovery room (4), must carry out such surveillance, which includes (but is not limited to) vital signs (6), hemostasis and signs of shock (7), temperature (2,3), type and quantity of drained material, urine volume (8, 9), pain (10), and postoperative nausea and vomiting (11-13). Several scoring systems have been proposed, to assess the risk of early postoperative complications; such tools allow objective assessment and comparison, as well as to document the vital parameters over time (6,7).

Among the scales validated in literature, White and Song have proposed the White fast-track scoring criteria in 1999 (14), which derives from previous tools (15) is suitable for postoperative surveillance, but has not been translated into Italian so far. This tool has originally been used for outpatients surgery (4) and for this reason needs to be integrated with further parameters (blood losses, urine volume) to obtain a complete scale. We aimed to translate into Italian and validate the White Fast-track scoring criteria, to assess the risk of early postoperative complications. To modify and integrate the scale, in order to obtain a complete assessment of patients after major surgery; to validate the new tool, in terms of sensitivity, specificity, and internal consistency.

METHODS

We conducted a prospective, observational study, on a non-randomized sample of patients aged 18 or more, undergoing scheduled or emergency surgery, in

general, thoracic, vascular, urological, orthopedic, gynecological, endocrinological, senological, nose-throat, or facial surgery, in the recovery room of the San Paolo teaching hospital in Milan (Italy) during two consecutive months. This study was originally a project related to a bachelor's degree thesis in Nursing; the period of data collection, and therefore the sample size, were dictated by the academic calendar.

Data were collected by two persons (a Nursing student in her final year, and a nurse working in the recovery room). The White fast track scoring criteria was translated into Italian by two independent translators, then back-translated by a teacher of English; the original authors approved the back-translated version. We assessed the characteristics of internal consistency (Cronbach's alpha), inter-rater reliability (Spearman's rho coefficient), test-retest stability (Mann-Whitney Test), face and content validity (Content validity index), sensitivity, specificity, positive and negative predictive value regarding early postoperative complications. The study was conducted according to the principles of the Declaration of Helsinki, and to the Italian regulations on data privacy. We complied with the rules of the local ethical committee, and obtained the approval of the institutional review board. The authors of the original scale gave their permission to use the tool. All participants gave their informed consent. This study was registered in the Research Registry website (Unique Identification Number researchregistry2534).

We enrolled patients coming from surgical units (including day surgery), as well as persons coming directly from the Emergency Department, and then transferred to one of the abovementioned wards. Assessment was performed at their admission to the recovery room, and then every 15 minutes until discharge, in order to assess and prevent early postoperative complications. Data collection was performed by means of a form, through analysis of

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy



Milano University Press
Via Festa del Perdono 7, 20122 Milan, Italy



DISSERTATION NURSING

JOURNAL HOMEPAGE: [HTTPS://RIVISTE.UNIMI.IT/INDEX.PHP/DISSERTATIONNURSING/](https://riviste.unimi.it/index.php/dissertationnursing/)

patients records and anesthesiology documentation. Data including administrative information regarding admission, clinical data, anesthesiology, and surgical technique. In major surgical operations, blood loss and urine volume need evaluation, but the original scale does not include such parameters; at the end of data collection, we performed statistical validation of the back-translated scale, with the original items only. After that, the analysis was repeated taking into consideration the additional parameters, thus obtaining a revised scale and its complete validation. Sensitivity and specificity of the new scale were assessed by concurrency with the original White fast-track scoring criteria as a gold standard. Several cutoffs were used to maximize the predictive values of the new scale. Preliminary meetings with nurses working in recovery rooms showed that the original White fast track scoring criteria was suitable for general postoperative surveillance; the content validity index (16), based on the evaluation expressed by 5 nurses experienced in surgery, was 0.92. However, in several real situations, it is often necessary to investigate further aspects, as well as to establish additional criteria, in order to determine severity of potential clinical complications that patients may encounter.

Based on literature findings, we decided to integrate the scale with blood losses (7) and urine volume (17-19) thus obtaining a modified tool. As regards blood losses, we adopted the criteria proposed in the PADSS scale (20), another validated tool: the patient scored 2 points in case of minor hemorrhage, 1 in case of mild hemorrhage, and 0 in case of severe hemorrhage. As regards urine volume, we considered the criteria used by urologists to identify oliguria or anuria (10): 2 points in case of urine production over 1 ml/kg/h, 1 point between .5 and .9 ml/kg/h, and 0 points if volume was less than .5 ml/kg/h. Not all operations required assessing all parameters: for instance, minor surgery hardly ever requires drainage. In such situations, the item of the scale was simply

excluded from the final score. During statistical analysis, several cutoff values were taken into consideration, in order to maximize the balance between sensitivity and specificity. Table 1 and 2 (in the Appendices section) show the modified scale in English and Italian respectively.

RESULTS

250 patients were assessed for eligibility and enrolled, 137 males (54.8%) and 113 (45.2%), aged 57 ± 17 , with mean BMI of 25 ± 4 kg/m². 243 patients (97,2%) underwent scheduled surgical operations, the remaining 7 (2.8%) were operated in urgency. No patients dropped out; we had no missing data. Video laparoscopy and laparotomy were most frequent (respectively 104 and 96 cases) followed by orthopedic osteosynthesis (n=18), laparotomic prostesys (n=16), non-laparotomic prostesys (n=14) and thoracotomy (n=2). Table 3 shows the number of patients undergoing each type of operation.

TYPE OF SURGERY	N.	%
Abdominal	53	21,2%
Thoracic	6	2,4%
Facial	18	7,2%
Orthopedics	30	12%
Gynecology	15	6%
Urology	37	14,8%
Endocrinology/senology	15	6%
Vascular	8	3,2%
Nose-throat	23	9,2%
Day Surgery	45	18%
Total	250	100%

Table 3: number and type of the surgical procedures

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy



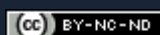
Via Festa del Perdono 7, 20122 Milan, Italy

31

Submission received: 11/07/2022

End of Peer Review process: 25/07/2022

Accepted: 25/07/2022





DISSERTATION NURSING

JOURNAL HOMEPAGE: [HTTPS://RIVISTE.UNIMI.IT/INDEX.PHP/DISSERTATIONNURSING/](https://riviste.unimi.it/index.php/dissertationnursing/)

General anesthesia was used in 74.8% of the cases (n=187), loco-regional in 12.8% (n=32) and local associated with sedation in 12.4% (n=31). According to the ASA classification (American Society of Anesthesiology), 76 patients had risk 1, 132 had risk 2, 39 had risk 3, and 3 had risk 4.

After the operation, 239 patients (95.6%) were transferred to non-intensive surgical units. 8 patients (3.2%) had been identified as “dischargeable” but were transferred to intensive care units, differently from the original plan. Finally, 3 patients (1.2%) had the need for a second operation, to confront complications. One of them returned to a surgical ward, the other was transferred to the intensive care unit.

Since not all patients required assessment of all parameters, we decided how to assign scores with both the original White scale and the modified version. In the first case, we maintained the criteria originally adopted by the authors: the patient was considered not at risk with a score less than 12, with no null partial score, and without chill or hypothermia. For patients assessed with the new scale, the cutoff was still 12 as in the original, but a score of 2 in both urine losses and urine volume was needed, in order to define the patient as dischargeable. Patients evaluated with the modified scale were 130 out of 250 (52%). In such group, both additional parameters were measured in 53 cases, only urine volume in 36, and blood loss for the remaining 41. Table 4 illustrates the characteristics of patients at the admission to the recovery room.

Content validity of both scales was assessed by asking a qualitative judgement to the nurses involved in data collection. Their opinion was positive in terms of ease of use and time required for the application. Actually, both tools allowed surveillance every 15 minutes.

PARAMETER	C.	P.C.	NoA.	TOTAL
Level of conscience	9	94	147	250
Activity	27	99	124	250
Pain	1	109	140	250
Arterial pressure	7	47	196	250
Breathing	3	11	236	250
Oxygen saturation	5	60	185	250
Postoperative nausea and vomiting	0	11	239	250
Hemorrhage	1	2	91	94*
Urine	5	3	81	89*
Hypothermia	176	74	/	250**
Chill	168	82	/	250**

C = Complications PT = Potential Complications

NoA = No Alterations

* The final count is less than 250, because the parameters need assessment in some operations only

** Only 2 possible values: 0=absence, 1=presence

Table 4: characteristics of patients at the admission to the recovery room

Content validity was assessed by comparing the parameters in the scales with data coming from the literature, as well as with real monitoring activities carried out in recovery room. Internal consistency of the original scale was assessed by means of Cronbach's alpha coefficient, which resulted .61. This value can be considered acceptable, considering that not all parameters occur simultaneously. The modified scale had alpha coefficient of .61. As regards sensitivity and specificity, the original scale identified 18 patients at risk out of 250 (7.2%) while the modified scale identified 20 out of 130 (15.3%). Two patients who could have been discharged according to the original scale, had surgical site hemorrhage and acute urine retention; the modified scale had correctly identified the as patients at risk for complications.

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy



Milano University Press
Via Festa del Perdono 7, 20122 Milan, Italy

DISSERTATION NURSING

JOURNAL HOMEPAGE: [HTTPS://RIVISTE.UNIMI.IT/INDEX.PHP/DISSERTATIONNURSING/](https://riviste.unimi.it/index.php/dissertationnursing/)



However, these complications are not related to specific risk factors, thus making it necessary to continuously assess vital parameters during the immediate postoperative period. Test-retest stability did not point out statistically significant differences, in presence of the same clinical situation (table 5).

Scale	Data collection #1	Data collection #2	P-value
Original	Me = 12 IQR = [11;13]	Me = 12 IQR = [11;13]	p = 0.07
Modified	Me = 14 IQR = [13;15]	Me=15 IQR = [13;16]	p = 0.20

Table 5 – Test-retest stability of the two scales

As regards inter-rater reliability, the two raters produced scores without significant differences, as shown in table 6.

Scale	Student	Nurse	p-value
Original	Me=12 IQR=[11;13]	Me=12 IQR=[11;13]	p = 0.99
Modified	Me=14 IQR=[13;15]	Me=14 IQR=[13;15]	p = 0.99

Table 6 – Inter-rater reliability

ROC analysis, carried out by taking the original scale as a gold standards, produced an area under curve of 97.9% (Figure 1), thus accounting for good characteristics of sensitivity and specificity of the modified scale.

The positive predictive value of the original scale was .50, the negative predictive value was .99.

The positive predictive value of the modified scale was .55, the negative predictive value was 1. Therefore, the new scale had better predictive capacity if compared to the original White fast-track scoring criteria.

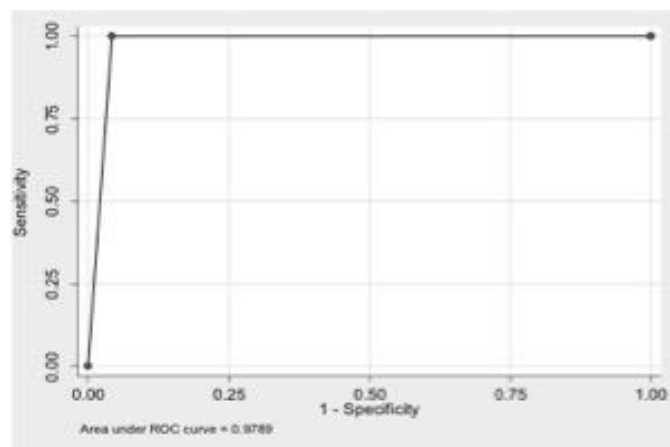


Figure 1: area under ROC curve

DISCUSSION

Our results show that the modified scale correctly identified all the patients indicated as being at risk by the original scale, plus two more, who actually had postoperative complications, but were not correctly identified by the original White scoring criteria.

In both cases, the complications could not be prevented; this makes early recognition even more important, and points out the usefulness of blood losses and urine volume as additional clinical parameters for postoperative assessment.

In conclusion, the original scale has been translated into Italian and validated, with satisfactory results. The modified White fast-track scoring criteria, presented in this paper, seems even more reliable and compliant with actual monitoring carried out in recovery rooms.

A limitation of this study is the non-randomized nature of the sample; the study might be repeated in the future with probabilistic sampling techniques.

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy



Via Festa del Perdono 7, 20122 Milan, Italy



DISSERTATION NURSING

JOURNAL HOMEPAGE: [HTTPS://RIVISTE.UNIMI.IT/INDEX.PHP/DISSERTATIONNURSING/](https://riviste.unimi.it/index.php/dissertationnursing/)



However, giving the sample size and characteristics, we think that the White fast-track scoring criteria can be safely adopted in the type of surgical operations described in this paper.

CONCLUSIONS

In this paper, we prepared and validated the Italian version of the White fast-track scoring criteria, which showed good properties of sensitivity and specificity, the modified version we prepared, led to further improvement of such characteristics, with excellent negative predictive value and better capacity of identifying patients at risk for early postoperative complications.

In recovery room, regardless to the use of assessment tools, nurses must be able to recognize early the onset of complications, as well as to identify situations at risk for complications, in order to avoid major damages to the patients. Assessment tools are certainly useful in this context; both the original and the modified White fast-track scoring criteria are suitable for this purpose, and can be easily used by nurses in recovery rooms. Using this type of scales makes it easier to conduct clinical audits and surveys regarding surgical outcomes and early detection of complications. Even though the present study is non-randomized, the sample size and the characteristics of patients in terms of surgical operations and clinical situation, account for good generalizability of the results obtained. The White scoring system, in both version, is easy to use and can be actually used by nurses in recovery rooms.

REFERENCES

- Leykin Y, Costa N, Gullo A. [Analysis and comparison of the guidelines regarding recovery-room management]. *Minerva Anesthesiol.* 2001;67(7–8):563–71.
- Yamasaki H, Tanaka K, Funai Y, Suehiro K, Ikenaga K, Mori T, et al. The impact of intraoperative hypothermia on early postoperative adverse events after radical esophagectomy for cancer: a retrospective cohort study. *J Cardiothorac Vasc Anesth.* 2014 Aug;28(4):943–7.
- Lenhardt R. Monitoring and thermal management. *Best Pract Res Clin Anaesthesiol* [Internet]. 2003;17(4):569–81. Available from: <https://www.sciencedirect.com/science/article/pii/S152168960300048X>
- Celotto S, Nesci M, Lucchini A, Bellani S, Bombino M. [Vital signs of hemodynamic monitoring]. *Minerva Anesthesiol.* 2003 Apr;69(4):289–96.
- McAlister FA, Bertsch K, Man J, Bradley J, Jacka M. Incidence of and Risk Factors for Pulmonary Complications after Nonthoracic Surgery. *Am J Respir Crit Care Med* [Internet]. 2005 Mar 1;171(5):514–7. Available from: <https://doi.org/10.1164/rccm.200408-1069OC>
- Burke B, Kyker M. Speeds Criteria vs. Modified Aldrete and Fast-Track Criteria for Evaluating Recovery in Outpatients. *Open J Anesthesiol.* 2013;03(07):309–14.
- Neveleff DJ, Kraiss LW, Schulman CS. Implementing Methods to Improve Perioperative Hemostasis in the Surgical and Trauma Settings. *AORN J* [Internet]. 2010 Nov 1;92(5):S1–15. Available from: <https://doi.org/10.1016/j.aorn.2010.08.006>
- Lau H, Lam B. Management of postoperative urinary retention: a randomized trial of in–out versus overnight catheterization. *ANZ J Surg* [Internet]. 2004 Aug 1;74(8):658–61. Available from: <https://doi.org/10.1111/j.1445-1433.2004.03116.x>

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy



Via Festa del Perdono 7, 20122 Milan, Italy



DISSERTATION NURSING

JOURNAL HOMEPAGE: [HTTPS://RIVISTE.UNIMI.IT/INDEX.PHP/DISSERTATIONNURSING/](https://riviste.unimi.it/index.php/dissertationnursing/)

9. Keita H, Diouf E, Tubach F, Brouwer T, Dahmani S, Mantz J, et al. Predictive factors of early postoperative urinary retention in the postanesthesia care unit. *Anesth Analg*. 2005 Aug;101(2):592–6.
10. Practice guidelines for acute pain management in the perioperative setting: an updated report by the American Society of Anesthesiologists Task Force on Acute Pain Management. *Anesthesiology*. 2012 Feb;116(2):248–73.
11. Gan TJ, Meyer TA, Apfel CC, Chung F, Davis PJ, Habib AS, et al. Society for Ambulatory Anesthesia guidelines for the management of postoperative nausea and vomiting. *Anesth Analg*. 2007 Dec;105(6):1615–28, table of contents.
12. McCracken G, Houston P, Lefebvre G. Guideline for the Management of Postoperative Nausea and Vomiting. *J Obstet Gynaecol Canada* [Internet]. 2008;30(7):600–7. Available from: [http://dx.doi.org/10.1016/S1701-2163\(16\)32895-X](http://dx.doi.org/10.1016/S1701-2163(16)32895-X)
13. Fernández-Guisasola J, Gómez-Arnau JI, Cabrera Y, del Valle SG. Association between nitrous oxide and the incidence of postoperative nausea and vomiting in adults: a systematic review and meta-analysis. *Anaesthesia* [Internet]. 2010 Apr 1;65(4):379–87. Available from: <https://doi.org/10.1111/j.1365-2044.2010.06249.x>
14. White PF, Song D. New criteria for fast-tracking after outpatient anesthesia: a comparison with the modified Aldrete's scoring system. *Anesth Analg*. 1999 May;88(5):1069–72.
15. Aldrete JA, Kroulik D. A postanesthetic recovery score. *Anesth Analg*. 1970;49(6):924–34.
16. Polit DF, Beck CT. The content validity index: Are you sure you know what's being reported? critique and recommendations. *Res Nurs Health* [Internet]. 2006 Oct 1;29(5):489–97. Available from: <https://doi.org/10.1002/nur.20147>
17. Barretto de Carvalho Fernandes M do C, Vieira da Costa V, Saraiva RA. Postoperative urinary retention: evaluation of patients using opioids analgesic. *Rev Lat Am Enfermagem*. 2007;15(2):318–22.
18. Verhamme KMC, Dieleman JP, Van Wijk MAM, van der Lei J, Bosch JLHR, Stricker BHC, et al. Nonsteroidal anti-inflammatory drugs and increased risk of acute urinary retention. *Arch Intern Med*. 2005 Jul;165(13):1547–51.
19. Australian and New Zealand College of Anaesthetists & the Faculty of Pain Medicine. PS04(A) Position statement on the post-anaesthesia care unit. 2020;04:1–9. Available from: [https://www.anzca.edu.au/getattachment/7045495a-0f12-4464-852c-b93c0453e1ed/PS04\(A\)-Position-statement-on-the-post-anaesthesia-care-unit-\(PS04\)#page=](https://www.anzca.edu.au/getattachment/7045495a-0f12-4464-852c-b93c0453e1ed/PS04(A)-Position-statement-on-the-post-anaesthesia-care-unit-(PS04)#page=)
20. Ead H. From Aldrete to PADSS: Reviewing discharge criteria after ambulatory surgery. *J perianesthesia Nurs Off J Am Soc PeriAnesthesia Nurses*. 2006 Aug;21(4):259–67.

Corresponding author:

Paola Casati: p.casati91@gmail.com
 San Raffaele Hospital
 Via Olgettina 60, 20132 Milan, Italy



Milano University Press
 Via Festa del Perdono 7, 20122 Milan, Italy

35

Submission received: 11/07/2022

End of Peer Review process: 25/07/2022

Accepted: 25/07/2022





DISSERTATION NURSING

JOURNAL HOMEPAGE: [HTTPS://RIVISTE.UNIMI.IT/INDEX.PHP/DISSERTATIONNURSING/](https://riviste.unimi.it/index.php/dissertationnursing/)

APPENDICES

Table 1 – Modified White scale (English)

PARAMETER	SCORING
Level of conscience	Awake = 2 Responsive to verbal stimulation = 1 Responsive to pain = 0
Activity	Moves any extremity at command = 2 Weakness in moving extremities = 1 Unable to voluntarily move extremities = 0
Hemodynamic stability	Systolic blood pressure (SBP) \pm 15% of preoperative values = 2 SBP \pm 30% of preoperative values = 1 SBP > 30% of preoperative values = 0
Respiratory stability	Able to breath deeply = 2 Tachypnoea with ability to cough = 1 Dyspnea and weak cough = 0
Pulse oxymetry	>92% without oxygen therapy = 2 \geq 90% with oxygen therapy = 1 <90% with oxygen therapy = 0
Postoperative pain (numerical rating scale)	NRS \leq 3 = 2 points 4 \leq NRS \leq 7, controlled with analgesics = 1 point NRS \geq 8: 0 points
Postoperative vomiting	Absent, or slight nausea = 2 Transient vomiting, or retching = 1 Severe/persistent vomiting or nausea = 0
Blood losses (including drainage tubes), to be assessed according to the type of operation	Absent = 2 Moderate = 1 Severe = 0
Urine volume	\geq 1 ml/kg/hour = 2 points 0.5-0.9 ml/kg/hour = 1 point <0.5 ml/kg/hour = 0 points
Total score	(sum of the above partial scores)
Chill <input type="checkbox"/> Hypothermia <input type="checkbox"/>	

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy

36



Milano University Press
Via Festa del Perdono 7, 20122 Milan, Italy

Submission received: 11/07/2022
End of Peer Review process: 25/07/2022
Accepted: 25/07/2022





DISSERTATION NURSING

JOURNAL HOMEPAGE: [HTTPS://RIVISTE.UNIMI.IT/INDEX.PHP/DISSERTATIONNURSING/](https://riviste.unimi.it/index.php/dissertationnursing/)**Table 2 – Modified White scale (Italian)**

PARAMETRO	PUNTEGGIO
Livello di coscienza	Sveglio e orientato = 2 Risponde agli stimuli verbali = 1 Risponde agli stimuli dolorosi = 0
Attività fisica	Muove tutte le estremità a comando = 2 Debolezza nel muovere le estremità = 1 Incapace di muovere volontariamente le estremità = 0
Stabilità emodinamica	Pressione arteriosa sistolica (PAS) \pm 15% rispetto al preoperatorio = 2 PAS \pm 30% rispetto al preoperatorio = 1 PAS > 30% rispetto al preoperatorio = 0
Stabilità respiratoria	In grado di respirare profondamente = 2 Respiro superficiale (tachypnea) con capacità di tossire = 1 Dispnea con debole capacità di tossire = 0
Saturazione di ossigeno	> 92% in aria ambiente = 2 \geq 90% con ossigenoterapia = 1 < 90% con ossigenoterapia = 0
Dolore postoperatorio (Numerical Rating Scale)	NRS \leq 3 = 2 punti 4 \leq NRS \leq 7, controllato con analgesici = 1 punto NRS \geq 8: 0 punti
Vomito postoperatoria	Assente o lieve nausea = 2 Vomito transitorio o conati = 1 Nausea o vomito severi e persistenti = 0
Perdite ematiche (da valutare in base al tipo di intervento)	Assenti o lievi = 2 Moderate = 1 Severe = 0
Quantità urine	\geq 1 ml/kg/ora = 2 punti 0.5-0.9 ml/kg/ora = 1 punto < 0.5 ml/kg/ora = 0 punto
Punteggio totale	(somma dei punteggi parziali sopra riportati)
Brivido <input type="checkbox"/> Ipotermia <input type="checkbox"/>	

Corresponding author:

Paola Casati: p.casati91@gmail.com
San Raffaele Hospital
Via Olgettina 60, 20132 Milan, Italy

37



Milano University Press
Via Festa del Perdono 7, 20122 Milan, Italy

Submission received: 11/07/2022
End of Peer Review process: 25/07/2022
Accepted: 25/07/2022