



EL ESTÁNDAR DE ALTA EN ANESTESIA PEDIÁTRICA. CRITERIOS DE ALTA: AYUDA DE GRÁFICAS

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DEFINICIÓN DE ESTÁNDAR

La palabra estándar proviene del inglés “Standard”, que a su vez se originó en el francés “standort”, palabra integrada por “stand” que significa parado, y “ort” = lugar alto, que es donde los francos colocaban su bandera para que no la tomaran los enemigos en la época de las invasiones bárbaras. Este también es el origen del vocablo estandarte.



DEFINICIÓN DE ESTÁNDAR

Estándar pasó a significar un modelo, norma, regla o patrón a seguir, en referencia a esa bandera que guiaba a los ejércitos. Fijan pautas mínimas a lo que se deben ajustar las conductas o productos para ser eficaces, positivos, útiles o confiables.



DEFINICIÓN DE ESTÁNDAR

Para elaborar los modelos o estándares pueden considerarse experiencias pasadas que arrojen datos, y estos se llaman estándares estadísticos. Otros están efectuados de modo técnico, realizando estudios específicos, mientras el resto puede originarse en apreciaciones subjetivas y valorativas.



DEFINICIÓN DE ESTÁNDAR

Los estándares son construcciones culturales, efectuadas por quienes poseen autoridad ética, técnica, teórica o científica, según el caso, de público conocimiento que nos dan confianza en nuestro accionar, pues nos sirven de guía y referencia, y a posteriori permite controlar lo producido para realizar sobre ello un juicio de valor.



ESTÁNDAR

- ▣ ¿Qué? Modelo, norma, regla o patrón
- ▣ ¿Quién? Autoridad técnica o científica
- ▣ ¿Porqué? Conductas eficaces
- ▣ ¿Cómo? Experiencias pasadas, apreciaciones subjetivas o valorativas





ESTÁNDARES CUIDADOS POSTANESTESIA (ASA)

Estándar 1: Todo paciente tras anestesia debe ingresar en URPA

Estándar 2: El traslado de quirófano debe ser con monitorización y soporte adecuado al estado del paciente, acompañado por miembro del equipo de anestesia

Estándar 3: A su ingreso debe ser reevaluado junto a la transmisión verbal de la información

Estándar 4: El estado del paciente debe ser continuamente evaluado

Estándar 5: El anesthesiólogo es el responsable del alta del paciente



ESTÁNDAR REINO UNIDO



STANDARD

1.2.2.1 Patients and their carers are given adequate information upon which to base their decision regarding anaesthesia, postoperative care and pain relief

STANDARD

1.2.1.3 The appropriate level of postoperative care is planned and arranged preoperatively

STANDARD

1.2.4.2 The specific needs of children are considered at all stages of perioperative care including emergencies and carers accommodation

STANDARD

1.2.4.8 Children are separated from adult patients throughout their care pathway, including theatres, recovery, inpatient wards, day ward and critical care unit. These areas should be safe and accessible to parents and carers



ESTÁNDAR REINO UNIDO

STANDARD

1.3.1.2 When a child undergoes anaesthesia, all staff (operating department practitioners/assistants/anaesthetic nurses/recovery) have paediatric competencies and experience

STANDARD

1.4.2.1 The recovery room staff are appropriately trained and updated in all relevant aspects of postoperative care

STANDARD

1.4.3.2 There is a recognised process for the referral of patients requiring critical care, including paediatric and obstetric patients, to an appropriate facility

STANDARD

1.5.0.8 The specific needs of critically ill children are considered

STANDARD

1.2.4.9 Services and facilities take account of the physical and emotional needs of adolescents, where these are different from those of children and adults.

STANDARD

1.4.4.4 There is a dedicated acute pain nurse specialist service which also covers the needs of children and obstetric patients



GUIAS REINO UNIDO



10.3.28 Infants, children and young people should have their day surgery delivered to the same standards as inpatient care, but with additional consideration of measures to promote early discharge. In particular younger infants should be scheduled early in the day to allow sufficient time for recovery and discharge on the same day.

10.3.21 Infants and children who are likely to require intensive care following an operation should undergo their surgery in a hospital/unit with a designated PICU or NICU.

4.3.3 If this is not available, in the absence a dedicated post-anaesthesia care unit for children, a discrete segregated area in the general post-anaesthesia care unit should be available. The environment should be made as child-friendly as possible.

4.3.4 Children should never be left unattended in the recovery area.



GUIAS EN POSTOPERATORIO

REINO UNIDO



- 1.6 In the period immediately after anaesthesia, the child should be managed in a recovery area, staffed on a one-to-one basis at least until the child can manage their own airway. The staff in this area should have paediatric experience and current paediatric competencies, including resuscitation.^{8,9}
 - 1.7 A member of staff with advanced training in life support for children should always be available to assist where required.^{10,11,12}
 - 1.8 Wherever children undergo anaesthesia, there should be immediate access to a named consultant paediatrician with acute care responsibilities at all times. This includes a local agreement for those sites without inpatient paediatric beds.¹³
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- 2.19 Parents and carers should be allowed ready access to the recovery area or, if this is not feasible, children should be reunited with their parents or carers as soon as possible.



RECOMENDACIONES DE ALTA

- DISPONIBILIDAD DE PROTOCOLOS DE ALTA DE URPA
- 100% PACIENTE CON ALTA ACOMPAÑADO DE FAMILIAR
- 100% PACIENTES EVALUADOS SEGÚN PROTOCOLO
- 100% PACIENTES RECIBEN ALTA CON CRITERIOS CUMPLIDOS
- 100% PACIENTES QUE NO CUMPLEN SCORE DEBEN SER EVALUADOS POR ANESTESISTA
- 100% PACIENTES CON SCORE BAJO DEBEN PERMENER EN UN LUGAR APROPIADO Y SEGURO



UNIDADES DE RECUPERACIÓN

5. Long C: An account of the first use of sulphuric ether by inhalation as an anesthetic in surgical operations. South Med Surg J 5:705, 1849

Table 1. Original 1947 Contributing Factors in Postanesthesia Deaths

Inadequate patient management
Poor oxygenation
Excessive anesthesia agent
Error in judgment
Poor choice of anesthetic agent
Inadequate supervision
Error in technique
Problems with sedation
Intraoperative respiratory obstruction
Laryngospasm

12. Ruth H, Haugen F, Grove D: Anesthesia study commission. JAMA 135:881-884, 1947

MUERTES POSTCIRUGIA 50% PREVISIBLES

1. Charbon HG, Livingstone HM. Planning a recovery room for adequate postoperative care. Hospitals 1949; 23: 35-8.

- Personal médico y de enfermería experto
- Anestesiólogo responsable
- Relación enfermera/paciente 1/1 \leq 15 minutos
- Relación enfermera/paciente 1/1 \geq 15 minutos
- Relación 1,5 cama /quirófano
- Estación central enfermería
- Espacio abierto para visualización pacientes
- Buena ventilación (gases anestésicos)
- Monitorización,.....
- Acceso a rayos, banco de sangre, laboratorio,..

- Todos los pacientes tras AG o AR
- Traslado quirófano \rightarrow URPA : anestesiólogo
- Valoración al ingreso por enfermera
- Transmisión de información anestesiólogo \rightarrow enfermera
- Reevaluación continua
- Médico responsable del alta del paciente



RECUPERACIÓN POSTANESTESIA

Cuidado del paciente desde el final del intraoperatorio hasta el retorno al estado preoperatorio





CIRUGIA/ANESTESIA SEGURA

WHO Guidelines for Safe Surgery 2009

Safe Surgery Saves Lives



World Health Organization

Patient Safety

A World Alliance for Safe Health Care

Ninguna información

ENFERMERÍA

Can J Anesth/J Can Anesth (2010) 57:1027-1034
DOI 10.1007/s12630-010-9381-6

SPECIAL ARTICLE

International Standards for a Safe Practice of Anesthesia 2010

patient and be immediately present throughout each anesthetic (general, regional, or monitored sedation), and should be responsible for the transport of the patient to the post-anesthesia recovery facility and the transfer of care to appropriately trained personnel. An anesthesia professional should retain overall responsibility for the patient during the recovery period and should be readily available for consultation until the patient has made an adequate recovery. If responsibility for care is transferred from one anesthesia professional to another, a "handover protocol" should be followed, during which all relevant information about the patient's history, medical condition, anesthetic status, and plan should be communicated. An anesthesia professional should ensure, if aspects of direct care are

delegated before, during, or after an anesthetic, that the person to whom responsibility is delegated is both suitably qualified and conversant with relevant information regarding the anesthetic and the patient. Where it is impossible for this standard to be attained and the surgeon or other individual assumes responsibility for the

4. Post-anesthesia care

A. Facilities and personnel

All patients who have had an anesthetic affecting central nervous system function and/or a loss of protective reflexes should remain where anesthetized until recovered or be transported safely (with care and monitoring as indicated) to a specifically designated recovery location for post-anesthesia recovery. See General Standards, Section 7, for delegation of responsibilities to dedicated qualified recovery personnel.

B. Monitoring

All patients should be observed and monitored in a manner appropriate to the state of their nervous system

function, vital signs, and medical condition with emphasis on the adequacy of oxygenation, ventilation, circulation, and temperature. Supplementation of clinical monitoring with quantitative methods analogous to intra-anesthetic patient care described above is *RECOMMENDED*. Specifically, pulse oximetry is *HIGHLY RECOMMENDED* until consciousness has recovered (i.e. the patient is no longer anesthetized).

C. Pain relief

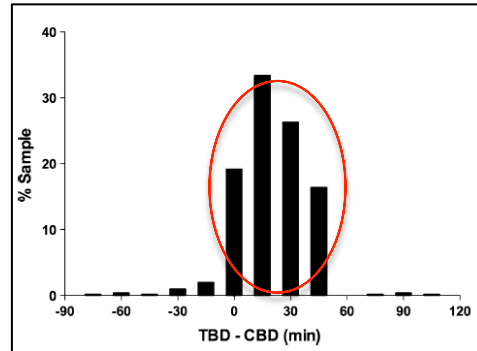
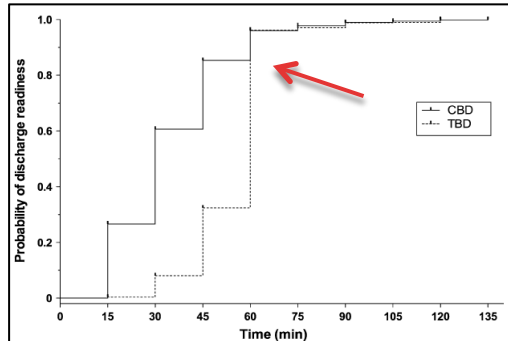
All patients are entitled to appropriate efforts to prevent and alleviate postoperative pain employing available appropriate medications and modalities; these efforts are therefore *HIGHLY RECOMMENDED*. Usually, the involved anesthesia professional assumes initial responsibility for this.



GRÁFICAS DE ALTA I

A prospective observational study comparing a physiological scoring system with time-based discharge criteria in pediatric ambulatory surgical patients

Can J Anesth/J Can Anesth (2015) 62:1082–1088



CRITERIOS CLÍNICOS DE ALTA

- Stable vital signs for at least one hour
- Alert and oriented to time, place, and person
- No excessive pain, bleeding, or nausea
- Ability to dress and walk with assistance
- Discharged home with a vested adult who will remain with the patient overnight
- Written and verbal instructions outlining diet, activity, medications, and follow-up appointments provided
- A contact person and circumstances that warrant seeking the assistance of a health care professional clearly outlined
- Voiding before discharge not mandatory, unless specifically noted by physician (ie, urological procedure, rectal surgery, history of urinary retention)
- Tolerating oral fluids not mandatory, unless specified by physician (ie, patient is diabetic, frail, and/or elderly; not able to tolerate an extended period of NPO status)



GRÁFICAS DE ALTA II

ALDRETE FASE I-II

ALDRETE 1971

Respiration	
Able to take deep breath and cough =	2
Dyspnea/shallow breathing =	1
Apnea =	0
O ₂ saturation	
Maintains >92% on room air =	2
Needs O ₂ inhalation to maintain O ₂ saturation >90% =	1
O ₂ saturation >90% even with supplemental oxygen =	0
Consciousness	
Fully awake =	2
Arousable on calling =	1
Not responding =	0
Circulation	
BP ± 20 mm Hg preop =	2
BP ± 20-50 mm Hg preop =	1
BP ± 50 mm Hg preop =	0
Activity	
Able to move 4 extremities =	2
Able to move 2 extremities =	1
Able to move 0 extremities =	0

PADSS FASE II-III CHUNG 1993

POSTANESTHETIC DISCHARGE SCORING SYSTEM)

Vital signs	
BP & pulse within 20% preop =	2
BP & pulse within 20-40% preop =	1
BP & pulse within >40% preop =	0
Activity	
Steady gait, no dizziness or meets preop level =	2
Requires assistance =	1
Unable to ambulate =	0
Nausea & vomiting	
Minimal/treated with p.o. medication =	2
Moderate/treated with parenteral medication =	1
Severe/continues despite treatment =	0
Pain	
Controlled with oral analgesics and acceptable to patient:	
Yes =	2
No =	1
Surgical bleeding	
Minimal/no dressing changes =	2
Moderate/up to two dressing changes required =	1
Severe/more than three dressing changes required =	0

≥ 9 NINGUNO 1

FAST- TRACKING FASE I-III

WHITE 1999

Level of Consciousness:	
Awake and oriented	2
Arousable with minimal stimulation	1
Responsive only to tactile stimulation	0
Physical Activity:	
Able to move all extremities on command	2
Some weakness in movement of extremities	1
Unable to voluntarily move extremities	0
Hemodynamic Stability:	
BP ± 15% of baseline	2
BP ± 30% of baseline	1
BP ± 50% of baseline	0
Oxygen Saturation:	
Maintains value >90% on room air	2
Requires supplemental oxygen to maintain oxygen saturation >90%	1
Saturation <90% with supplemental oxygen	0
Pain:	
None/mild discomfort	2
Moderate to severe, controlled with IV analgesics	1
Persistent to severe	0
Emetic Symptoms:	
None/mild nausea with no active vomiting	2
Transient vomiting controlled with IV antiemetics	1
Persistent moderate to severe nausea & vomiting	0

MÍNIMO 12 NINGUNO 1



GRÁFICAS DE ALTA III

Ped-PADSS

Original PADSS	Ped-PADSS
Vital signs 2 = Within 20% of preoperative value 1 = 20-40% of preoperative value 0 = > 40% preoperative value	Vital signs: heart rate and blood pressure must be stable according to the pre-operative values measured on arrival in the ambulatory surgical unit (in case of too upset children only heart rate is taken as reference) 2 = Variation < 20% with pre-operative constant 1 = Variation between 20 and 40% with pre-operative constant 0 = Variation > 40% with pre-operative constant
Activity and mental status 2 = Oriented x3 AND has a steady gait 1 = Oriented x3 OR has a steady gait 0 = Neither	Level of activity: patient must be able to walk or before the age of walking must have the same level of activity as same as preoperatively 2 = Constant gait without imbalance or same level of activity 1 = Walk with assistance or reduced level of activity 0 = Cannot walk or hypotonic
Pain, nausea and/or vomiting 2 = Minimal 1 = Moderate, having required treatment 0 = Severe, requiring treatment	Pain: patient must be painless before discharge; pain must be acceptable by the patient; pain must be controlled by oral analgesia (evaluated by CPS scale before six years and self-assessed for children over six years) 2 = Yes (VAS < 3 or OPS < 3) 1 = No (VAS > 3 or OPS > 3)
Surgical bleeding 2 = Minimal 1 = Moderate 0 = Severe	Surgical bleeding: post-operative surgical bleeding must be what we expect for the surgical procedure 2 = Minimal (no dressing change) 1 = Moderate (dressing change once or twice) 0 = Severe
Intake and output 2 = Has had PO fluids AND voided 1 = Has had PO fluids OR voided 0 = Neither	Nausea, vomiting 2 = Minimal (no need medication) 1 = Moderate (vomiting controlled by intra venous medication) 0 = Severe (persistent vomiting despite intra venous medication)
Three more conditions all required were included into the score: <ul style="list-style-type: none"> No breathing difficulty or hoarse voice No request from parents to see the anesthetist before discharge No requirement wish of the anesthetist to see parents or child before discharge 	

SCORE \geq 9/10

Y

VERIFICAR 3 CONDICIONES

- Deseo de los padres de ver A
- Deseo de A de valorar niño
- Ausencia de disfonia o disnea

Score de sortie pédiatrique en chirurgie ambulatoire

S. Biedermann et al./Annales Françaises d'Anesthésie et de Réanimation 33 (2014) 330-334

Evaluation of the pediatric post anesthesia discharge scoring system in an ambulatory surgery unit

Pediatric Anesthesia 25 (2015) 636-641



GRÁFICAS DE ALTA V

BENEFICIOS

- Si su diseño clínico es bueno son una guía segura para enfermería
- La seguridad de los scores es superior al alta según criterios clínicos
- La puntuación individualizada facilita la atención centrada en cada paciente
- La extensión de su uso proporciona una mayor confianza para su aplicación
- Evitan el retraso del alta por ingesta o diuresis
- Son fáciles de realizar y de repetir
- Puede cuantificarse y registrarse el progreso en el tiempo en la puntuación del paciente

LIMITACIONES

- No son una herramienta sensible al paciente, al procedimiento quirúrgico y a la técnica anestésica
- No incluyen criterios específicos de cada paciente; se precisan otras herramientas
- Los signos vitales pueden ser incorrectos si los valores del preoperatorio lo eran



IDENTIFICACIÓN DEL RIESGO PREOPERATORIO

APPENDIX (on line only material). NARCO-SS Preoperative Risk Assessment System for Children

	0	1	2
N	No neurologic abnormality, age appropriate development and behavior; Alert and oriented	Seizures, mild - moderate cognitive impairment, spasticity or hypotonia; depressed sensorium but arousable	Status epilepticus; severe cognitive impairment, spasticity or hypotonia; Unresponsive to painful stimulation? Active posturing, dysconjugate gaze.
A	Normal airway anatomy; Full range of neck mobility	Possible difficulty with ET intubation but mask ventilation expected to be easy e.g. microstomia, c/spine immobility, obesity; established tracheostomy	Known or likely difficult mask ventilation and/or ET intubation e.g. facial trauma, c/spine instability, maxillary or mandibular hypoplasia, laryngeal stenosis, asymmetry of the airway; fresh tracheostomy
R	No signs or symptoms of respiratory illness	Mild respiratory illness, current or recent URI; well-controlled asthma that is not active	BPD, COPD, restrictive pulmonary disease, lower respiratory infection, steroid dependent asthma; active X ray or auscultatory findings; sleep apnea; respiratory support
C	No cardiac disease	Non-complex CHD, corrected CHD, compensated CHF, well controlled HTN, stable non-sinus rhythm	Uncorrected/partially corrected CHD, poor ventricular function, CHF, PH, single ventricle physiology, significant dysrhythmia, poorly controlled HTN; requires vasoactive drugs
O	No hepato-renal or musculoskeletal abnormality; born at full term; no reflux or well-controlled.	Mild abnormality of hepatic and/or renal function or musculoskeletal system; controlled metabolic/endocrine disturbance; mild coagulation defect; born prematurely but >50 wk PCA; Mild-mod reflux w/freq spitting up or upper GI symptoms; BMI > 30	Severe hepatic and/or renal dysfunction severe musculoskeletal abnormality; uncontrolled metabolic/endocrine disease; profound anemia or severe coagulation defect; DIC; born prematurely and < 50 wk PCA; severe reflux w/assoc aspiration; Full stomach; BMI > 35
Surgical Severity Score:	A - Non-invasive diagnostic procedure, superficial or peripheral surgery with anticipated minimal blood loss.	B - Invasive diagnostic or therapeutic procedure, airway procedure, invasive procedure with anticipated moderate blood loss, emergent procedure	C - Major intra-abdominal, thoracic, intracranial, cardiac or airway procedure, anticipated excessive blood loss

Scoring instructions:

I	Total score 0-3 with no individual score >1	Low risk, suitable candidate for ambulatory surgery if procedure permits
II	Total score 4-5 with no individual score >1	Moderate risk, may not be suitable for ambulatory surgery, may need close observation in PACU or monitored hospital bed following surgery
III	Total score 6-8 or any individual score of 2	High risk, requires high degree of vigilance, may need invasive monitoring and/or ICU bed following surgery, balance need for optimization of clinical status vs. risk
IV	Total score of 9-10	Poor anesthetic risk, requires careful consideration of risk vs. benefit, May or may not survive surgery

ET = Endotracheal; URI = Upper Respiratory Infection; BPD = Bronchopulmonary dysplasia; COPD = Chronic Obstructive Pulmonary Disease; CHD = Congenital heart disease; CHF = Congestive heart failure; HTN = Hypertension; PH = Pulmonary hypertension; DIC = Disseminated Intravascular Coagulation; PCA = Post conceptual age; GI = Gastrointestinal; BMI = Body Mass Index; PACU = Post anaesthesia care unit; ICU = Intensive care unit

NARCO-SS Y ASA-PS ≥ II → MÁS CUIDADOS

NARCO ≥ III → ↑↑ EA Y MORTALIDAD

Does an objective system-based approach improve assessment of perioperative risk in children? A preliminary evaluation of the 'NARCO'



IDENTIFICACIÓN DEL RIESGO POSTOPERATORIO

Pediatric preoperative risk factors to predict postoperative ICU admission and death from a multicenter retrospective study

Pediatric Anesthesia 26 (2016) 637-643

EDAD < 1 AÑO (< 1 MES)
ASA ≥ 4
PREMATURIDAD < 37 SEM
NO AYUNO



Pediatric perioperative adverse events requiring rapid response: a retrospective case-control study

Pediatric Anesthesia 26 (2016) 734-741

TIPO:

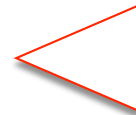
1° RESPIRATORIO 67%
LARINGOESPASMO
2° CARDIOVASCULAR 10,8%

EDAD media : 2,8 años

ASA ≥ 3

CX MÚLTIPLE

> 15.30 ↑↑ MORTALIDAD





IDENTIFICACIÓN DEL PACIENTE

Sensitivity of the Pediatric Early Warning Score to Identify Patient Deterioration

Pediatrics 2010;125:e763–e769

1. Cuantifica estado paciente
2. Reconoce temprano deterioro
3. Rápida comunicación
4. Lenguaje estandarizado

The Relevance of Modified Early Warning and Pediatric Early Warning Scores in the Postanesthesia Care Unit

★ **Pediatric Early Warning Score (PEWS)**

	0	1	2	3	Score
Behavior	Playing/ Appropriate	Sleeping	Irritable	• Lethargic/confused OR • Reduced response to pain	
Cardiovascular	Pink OR capillary refill 1-2 seconds	Pale or dusky OR capillary refill 3 seconds	• Grey or cyanotic OR • Capillary refill 4 seconds OR • Tachycardia of 20 above normal rate	• Grey or cyanotic AND mottled OR • Capillary refill 5 seconds or above OR • Tachycardia of 30 above normal rate OR • Bradycardia	
Respiratory	Within normal parameters, no retractions	• >10 above normal parameters OR • using accessory muscles OR • 30+%F _I O ₂ or 3+liters/min.	• >20 above normal parameters OR • Retractions OR • 40+%F _I O ₂ or 6+liters/min.	• ≥5 below normal parameters with retractions or grunting OR • 50+%F _I O ₂ or 8+liters/min.	

*Score by starting with the most severe parameters first.
*Score 2 extra for every 15-minute nebs (includes continuous nebs) or persistent post-op vomiting.
*Use "liters/minute" to score regular nasal cannula.
*Use "F_IO₂" to score a high flow nasal cannula.

Monaghan, A. (2005) Detecting and managing deterioration in children. *Pediatric Nursing*, 17, 32-35. Adapted for use at Children's of Minnesota.

★

Journal of PeriAnesthesia Nursing, Vol 28, No 5 (October), 2013: pp 298-299



CONCLUSIONES

1. RECOMENDACIONES Y GUÍAS MUY GENERALES
2. LOS SCORES PEDIÁTRICOS DEBEN CONTENER ASPECTOS DIFERENTES
3. IMPORTANTE IDENTIFICAR FACTORES DE RIESGO PREOPERATORIOS E INTRAOPERATORIOS
4. LA ESTANDARIZACIÓN DEL RIESGO PREOPERATORIO DEBE GUIAR LA VIGILANCIA
4. LA IDENTIFICACIÓN DEL PACIENTE DE RIESGO DEBE SER EL CENTRO DE NUESTRO CUIDADO

