

Mass Critical Care Guidelines Document

Hospital and ICU Triage Guidelines

for PEDIATRICS

Purpose:

To provide a triage protocol to allocate scarce healthcare resources (intensive care services, including ventilators) to those who are most likely to benefit medically during a **pandemic respiratory crisis or other emergency situation** that has the potential to overwhelm available intensive care resources. Application of these guidelines will require physician judgment at the point of patient care.

Basic premises:

- ☞ **Graded guidelines** should be used to control resources more tightly as the severity of a pandemic increases.
- ☞ **Priority should be given to patients for whom treatment would most likely be lifesaving.** Such patients should be given priority over those who would likely die even with treatment and those who would likely survive without treatment.
- ☞ Under a declared state of emergency, the governor maintains the authority to supersede healthcare regulations or statutes that may come into conflict with these guidelines.

Scope:

- ☞ **These triage guidelines apply to all healthcare professionals, clinics, and facilities.**
- ☞ **The guidelines apply to all patients 13 years and younger.** Please see *Hospital and ICU Triage Guidelines for Adults* for patients 14 years and older.

When activated:

Guidelines should be activated in the event the governor declares a pandemic respiratory crisis or other public health emergency that has the potential to overwhelm available intensive care resources.

Hospital and medical staff planning:

- ☞ **Each hospital should:**
 - **Establish a triage committee** for the review and support of compliance with this policy when implemented. Consider a team of at least 3 individuals, including an intensivist and 2 or more of the following: the hospital medical director, a nursing supervisor, a board member, a member of the hospital ethics committee, a pastoral care representative, a social worker, and 1 or more independent physicians.
 - **Institute a supportive and/or palliative care team** to provide symptom management, counseling, and care coordination for patients, and support for families of patients who do not receive intensive care unit services.
- ☞ **Medical staff** should establish a method of providing peer support and expert consultation to physicians making these decisions.

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OVERVIEW OF PANDEMIC TRIAGE LEVELS

Triage Level 1	Triage Level 2	Triage Level 3
Early in the pandemic	Worsening pandemic	Worst-case scenario
<ul style="list-style-type: none"> As the threat of the activation of the triage protocol increases, all licensed health care professionals and all licensed health care facilities shall postpone all surgeries and procedures that are not immediately medically necessary to correct a serious medical condition of, or to preserve the life of, a patient who without immediate performance of the surgery or procedure would be at risk for serious adverse medical consequences or death, as determined by the patient's physician. Note: In the event of a severe and rapidly progressing pandemic, start with Triage Level 2. 	<ul style="list-style-type: none"> Hospitals have surged to maximum bed capacity, and emergency departments are overwhelmed. There are not enough beds to accommodate all patients needing hospital admission and not enough ventilators to accommodate all patients with respiratory failure. Hospital staff absenteeism is 20% to 30%. 	<ul style="list-style-type: none"> Hospitals and physicians have adopted clinical care protocols and norms regarding nurse/patient ratios and have expanded capacity by adding patients to occupied hospital rooms. Hospital staff absenteeism is 30% to 40%.

PRE-HOSPITAL SETTINGS

Initial Triage

Applies to: Patients who appear for care in physician offices or clinics, or in pre-evaluation spaces for emergency departments

Implemented by: Physicians, clinic staff, pre-screening staff

Other uses: Publish in newspapers, place on Web sites for self-use by public

ALL Triage Levels: Use **INITIAL TRIAGE TOOL** (*Appendix A*) to provide initial triage screening, as well as instructions and directions for patients who need additional care or medical screening.

EMS, Physician Offices and Clinics

Applies to: Patients who present for care or call for guidance for where to go or how to care for ill family members

Implemented by: Primary care staff, hospital help lines, community help lines, and health department help lines

Triage Level 1:

- Use **INITIAL TRIAGE TOOL** (*Appendix A*) to evaluate patients before sending to hospital ED or treating in an outpatient facility.

Triage Levels 2 and 3:

- Continue to use **INITIAL TRIAGE TOOL** (*Appendix A*).
- Initiate **EXCLUSION CRITERIA for Hospital Admission** (page 5) to evaluate patients. Do not send patients meeting **EXCLUSION CRITERIA** to the hospital for treatment. Send home with care instructions (*Appendices pending*).

Home Care, Long-term Care Facilities, and Other Institutional Facilities (e.g., mental health, correctional, handicapped)

Applies to: Patients in institutional facilities

Implemented by: Institutional facility staff

ALL Triage Levels:

- Ensure that all liquid oxygen tanks are full.
- Limit visitation to control infection.

Triage Levels 2 and 3:

- Use **EXCLUSION CRITERIA for Hospital Admission** (page 5) to evaluate patients. Do not transfer patients meeting exclusion criteria to the hospital for treatment.
- Give palliative and supportive care in place.

HOSPITAL SETTINGS

Hospital Administrative Roles – General

(Refer to page 8 for definitions of elective surgery categories.)

Triage Level 1:

1) Preserve bed capacity by:

- Canceling all Category 2 and 3 elective surgeries, and advising all Category 1 elective surgery patients of the risk of infection.
- Canceling any elective surgery that would require postoperative hospitalization.

Note: Use standard operation and triage decision for admission to ICU since there are still adequate resources to accommodate the most critically ill patients.

2) Preserve oxygen capacity by:

- Phasing out all non-acute hyperbaric medicine treatments.
- Ensuring that all liquid oxygen tanks are full.

3) Improve patient care capacity

by transitioning space in ICUs to accommodate more patients with respiratory failure.

4) Control infection by limiting

visitation (follow hospital infection control plan).

Triage Level 2:

1) Preserve bed capacity by:

- Canceling all elective surgeries unless necessary to facilitate hospital discharge.
- Evaluating hospitalized Category 1 elective surgery patients for discharge using same criteria as medical patients.

2) Improve patient care capacity by

implementing altered standards of care regarding nurse/patient ratios and expanding capacity by adding patients to occupied hospital rooms.

3) Institute a supportive and/or

palliative care team to provide symptom management, counseling and care coordination for patients, and support for families of patients who do not receive intensive care unit services.

Triage Level 3:

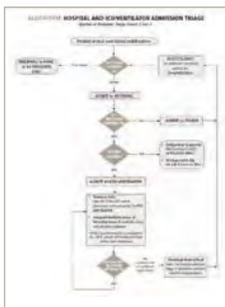
1) Preserve bed capacity by limiting

surgeries to patients whose clinical conditions are a serious threat to life or limb, or to patients for whom surgery may be needed to facilitate discharge from the hospital.

Emergency Department, Hospital and ICU – Clinical Triage

Use **HOSPITAL AND ICU/VENTILATOR ADMISSION TRIAGE** algorithm and tools (pages 4 and 5) to determine which patients to send home for palliative care or medical management and which patients to admit or keep in hospital or ICU. Note that the *lowest* priority for admission is given to patients with the lowest chance of survival with *or* without treatment, and to patients with the highest chance of survival *without* treatment.

Physician judgment should be used in applying these guidelines.



See pages 4 and 5 for triage algorithm and supporting tools.

Triage Level 2:

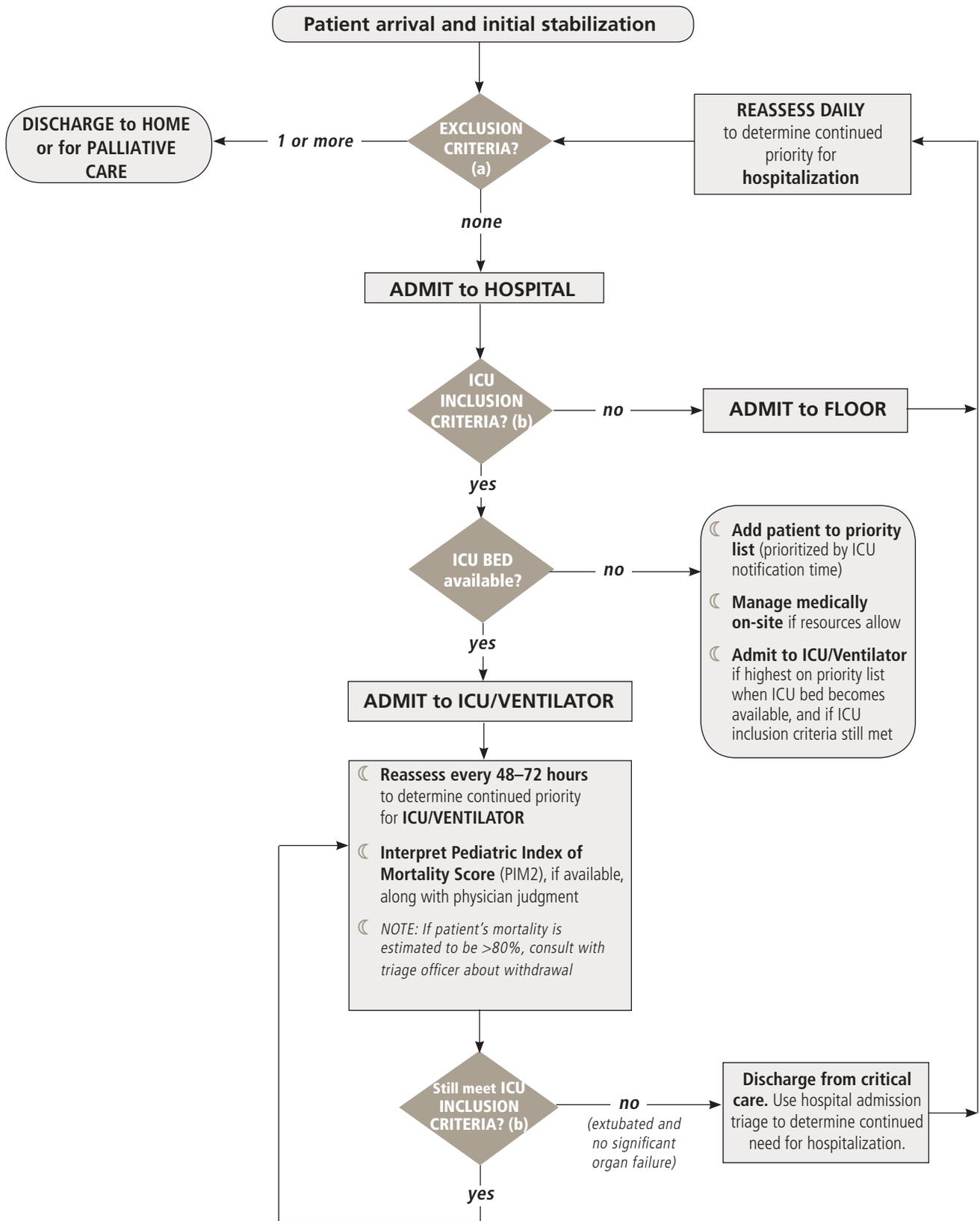
- Initiate **HOSPITAL AND ICU/ VENTILATOR ADMISSION TRIAGE** algorithm (page 4) to determine priority for ICU admission, intubation and/or mechanical ventilation.
- Reassess need for ICU/ventilator treatment daily after 48–72 hours of ICU care.

Triage Level 3:

- Continue to use **HOSPITAL AND ICU/ VENTILATOR ADMISSION TRIAGE** algorithm (page 4) to determine priority for ICU, intubation and/or mechanical ventilation.

ALGORITHM: HOSPITAL AND ICU/VENTILATOR ADMISSION TRIAGE

Applies at Pandemic Triage Levels 2 and 3



TRIAGE TOOLS AND TABLES

(a) EXCLUSION CRITERIA for Hospital Admission:

The patient is excluded from hospital admission or transfer to critical care if ANY of the following is present:

- (1) **Persistent coma or vegetative state.**
- (2) **Severe acute trauma with a REVISED TRAUMA SCORE <2 [see (d) and (e) on following pages].**
GCS: ____ SBP: ____ RR: ____
Revised trauma score: ____
- (3) **Severe burns with <50% anticipated survival** [patients identified as "Low" or worse on the TRIAGE DECISION TABLE FOR BURN VICTIMS (f)]. Burns not requiring critical care resources may be cared for at the local facility.
- (4) **Cardiac arrest not responsive to PALS interventions within 20–30 minutes.**
- (5) **Short anticipated duration of benefit, e.g.,** underlying condition with >80% mortality rate at 18–24 months:
 - a) Known chromosomal abnormalities such as Trisomy 13 or 18
 - b) Known metabolic diseases such as Zellweger syndrome
 - c) Spinal muscular atrophy (SMA) type 1
 - d) Progressive neuromuscular disorder, e.g., muscular dystrophy and myopathy, with inability to sit unaided or ambulate when such abilities would be developmentally appropriate based on age
 - e) Cystic fibrosis with post-bronchodilator $FEV_1 < 30\%$ or baseline $PaO_2 < 55$ mm Hg
 - f) Severe end-stage pulmonary hypertension

OTHER CONSIDERATIONS:

- Resuscitation of extremely premature infants with anticipated mortality rates greater than 80% should not be offered. See http://www.nichd.nih.gov/about/org/cdbpm/pp/prog_epbo/
- The use of ECMO will be decided on an individual basis by the Chief Medical Officer (with input from attending physician, nursing supervisor and ECMO representative) based on prognosis, suspected duration of ECMO run, and availability of personnel and other resources. Patients should have an estimated survival of >70% with an estimated ECMO run of <7–10 days.

(b) ICU/Ventilator INCLUSION CRITERIA

- Applies to all patients except those infants not yet discharged from the NICU
- Patients must have NO EXCLUSION CRITERIA (a) and at least one of the following INCLUSION CRITERIA:

(1) Requirement for invasive ventilatory support:

- Ⓢ Refractory hypoxemia ($SpO_2 < 90\%$ on non-rebreather mask or $FIO_2 > 0.85$)
- Ⓢ Respiratory acidosis ($pH < 7.2$)
- Ⓢ Clinical evidence of impending respiratory failure
- Ⓢ Inability to protect or maintain airway

(2) Hypotension* with clinical evidence of shock** refractory to volume resuscitation, and requiring vasopressor or inotrope support that cannot be managed in a ward setting.

- * **Hypotension** = Systolic BP < 90 mm Hg for patients age > 10 years old, < $70 + (2 \times \text{age in years})$ for patients ages 1 to 10, < 60 for infants < 1 year old, or relative hypotension
- ** **Clinical evidence of shock** = altered level of consciousness, decreased urine output or other evidence of end-stage organ failure

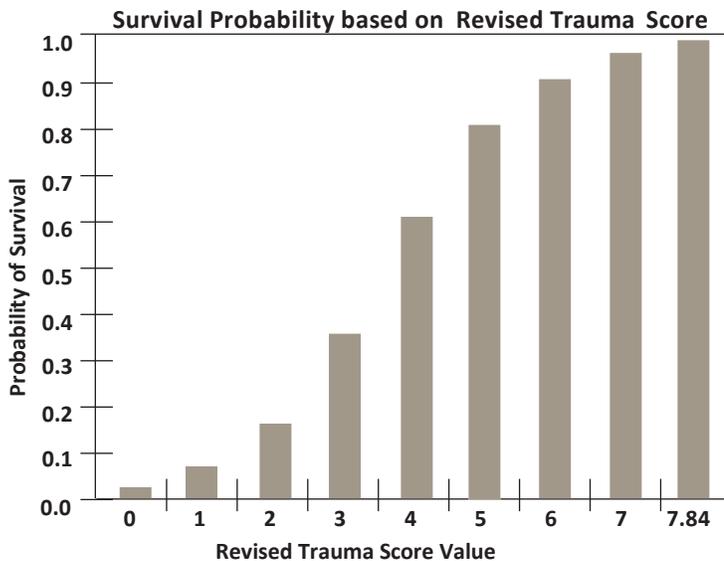
(c) GLASGOW COMA SCORE (GCS)

The GCS is used as part of the REVISED TRAUMA SCORE (RTS) in determining exclusion criteria for hospital admission in the case of pandemic flu at triage levels 2 and 3.

Glasgow Coma Scoring Criteria				
Criteria	Adults and Children	Infants and Young Toddlers	Score	Criteria Score
Best Eye Response (4 possible points)	No eye opening	No eye opening	1	_____
	Eye opens to pain	Eye opens to pain	2	
	Eye opens to verbal command	Eye opens to speech	3	
	Eyes open spontaneously	Eyes open spontaneously	4	
Best Verbal Response (5 possible points)	No verbal response	No verbal response	1	_____
	Incomprehensible sounds	Infant moans to pain	2	
	Inappropriate words	Infant cries to pain	3	
	Confused	Infant is irritable and continually cries	4	
	Oriented	Infant coos or babbles (normal activity)	5	
Best Motor Response (6 possible points)	No motor response	No motor response	1	_____
	Extension to pain	Extension to pain	2	
	Flexion to pain	Abnormal flexion to pain	3	
	Withdraws from pain	Withdraws from pain	4	
	Localizes to pain	Withdraws from touch	5	
	Obeys commands	Moves spontaneously or purposefully	6	
Total Score (add 3 subscores; range 3 to 15):				_____

(d) REVISED TRAUMA SCORE (RTS)

Values for the REVISED TRAUMA SCORE (RTS) range from 0 to 7.8408. The RTS is heavily weighted toward the GLASGOW COMA SCORE (GCS) to compensate for major head injury without multisystem injury or major physiological changes. The RTS correlates well with the probability of survival. A Revised Trauma Score of <2 is an exclusion criterion for hospital admission during a pandemic flu at triage levels 2 and 3.



Revised Trauma Score Calculation				
Criteria	Score	Coded value	Weighting	Adjusted Score
Glasgow Coma Score	3	0	x 0.9368	_____
	4 to 5	1		
	6 to 8	2		
	9 to 12	3		
	13 to 15	4		
Systolic Blood Pressure (SBP)	0	0	x 0.7326	_____
	1 to 49	1		
	50 to 75	2		
	76 to 89	3		
	>89	4		
Respiratory Rate (RR) in breaths per minute (BPM)	0	0	x 0.2908	_____
	1 to 5	1		
	6 to 9	2		
	>29	3		
	10 to 29	4		
Revised Trauma Score (add 3 adjusted scores):				_____

(e) TRIAGE DECISION TABLE FOR BURN VICTIMS

A burn score of "Low" or worse on this table is an exclusion criterion for hospital admission in the case of pandemic flu at triage levels 2 and 3.

Age (yrs)	Burn Size (% total body surface area)									
	0–10%	11–20%	21–30%	31–40%	41–50%	51–60%	61–70%	71–80%	81–90%	91%+
0–1.9	Very high	Very high	Very high	High	Medium	Medium	Medium	Low	Low	Low/expectant
2.0–4.9	Outpatient	Very high	Very high	High	High	High	Medium	Medium	Low	Low
5.0–19.9	Outpatient	Very high	Very high	High	High	High	Medium	Medium	Medium	Low
20.0–29.9	Outpatient	Very high	Very high	High	High	Medium	Medium	Medium	Low	Low
30.0–39.9	Outpatient	Very high	Very high	High	Medium	Medium	Medium	Medium	Low	Low
40.0–49.9	Outpatient	Very high	Very high	Medium	Medium	Medium	Medium	Low	Low	Low
50.0–59.9	Outpatient	Very high	Very high	Medium	Medium	Medium	Low	Low	Low/expectant	Low/expectant
60.0–69.9	Very high	Very high	Medium	Medium	Low	Low	Low	Low/expectant	Low/expectant	Low/expectant
70.0+	Very high	Medium	Medium	Low	Low	Low/expectant	Expectant	Expectant	Expectant	Expectant

Outpatient: Survival and good outcome expected, without requiring initial admission; **Very high:** Survival and good outcome expected with limited/short-term initial admission and resource allocation (straightforward resuscitation, LOS <14–21 days, 1–2 surgical procedures); **High:** Survival and good outcome expected (survival ≥90%) with aggressive and comprehensive resource allocation, including aggressive fluid resuscitation, admission ≥14–21 days, multiple surgeries, prolonged rehabilitation; **Medium:** Survival 50–90% and/or aggressive care and comprehensive resource allocation required, including aggressive resuscitation, initial admission ≥14–21 days, multiple surgeries and prolonged rehabilitation; **Low:** Survival <50% even with long-term aggressive treatment and resource allocation; **Expectant:** Predicted survival ≤10% even with unlimited aggressive treatment.

DEFINITIONS USED IN THIS DOCUMENT

- ☞ **Emergency patients:** Those patients whose clinical conditions indicate that they require admission to the hospital and/or surgery within 24 hours.
- ☞ **Elective surgery:**
 - **Category 1:** Urgent patients who require surgery within 30 days.
 - **Category 2:** Semi-urgent patients who require surgery within 90 days.
 - **Category 3:** Non-urgent patients who need surgery at some time in the future.
- ☞ **Long-term Care Facility:** A residential program providing 24-hour care, to include: Nursing Homes, Skilled Nursing Facilities, Assisted Living 1 and 2, Residential Care Facilities, and Intermediate Care for the Mentally Retarded (ICFMR) facilities.
- ☞ **Palliative care:** In the setting of an overwhelming medical crisis, palliative care helps improve patient symptoms such as shortness of breath, pain and anxiety. Palliative care teams also support patient and family spiritual and/or emotional pain.

REFERENCES

This document was developed following review and partial adaptation of the following articles:

- ☞ Christian MD, Hawryluck L, Wax RS, et al. Development of a triage protocol for critical care during an influenza pandemic. *CMAJ*. 2006;175(11):1377–1381.
 - *Commentary:* Melnychuk RM, Kenny NP. Pandemic triage: the ethical challenge. *CMAJ*. 2006;175(11):1393.
- ☞ Hick JL, O’Laughlin DT. Concept of operations for triage of mechanical ventilation in an epidemic. *Acad Emerg Med*. 2006;13(2):223–229.
- ☞ Champion HR, Sacco WJ, Carnazzo AJ, Copes W, Fouty WJ. Trauma score. *Crit Care Med*. 1981;9(9):672–676.
- ☞ Champion HR, Sacco WJ, Copes WS, Gann DS, Gennarelli TA, Flanagan ME. A revision of the Trauma Score. *J Trauma*. 1989;29(5):623–629.
- ☞ Teasdale G, Jennett B. Assessment of coma and impaired consciousness. A practical scale. *Lancet*. 1974;2(7872):81–84.
- ☞ Slater A, Shann F, Pearson F. PIM2: a revised version of the Paediatric Index of Mortality. *Intensive Care Med*. 2003; 29:278–285.