

PALS

Vital Signs in Children

Normal Heart Rates* (beats/min)

Age	Awake Rate	Sleeping Rate
Neonate	100-205	90-160
Infant	100-180	90-160
Toddler	98-140	80-120
Preschooler	80-120	65-100
School-aged child	75-118	58-90
Adolescent	60-100	50-90

Normal Blood Pressures

Age	Systolic Pressure (mm Hg) [†]	Diastolic Pressure (mm Hg) [†]	Mean Arterial Pressure (mm Hg) [‡]
Birth (12 h, <1000 g)	39-59	16-36	28-42 [§]
Birth (12 h, 3 kg)	60-76	31-45	48-57
Neonate (96 h)	67-84	35-53	45-60
Infant (1-12 mo)	72-104	37-56	50-62
Toddler (1-2 y)	86-106	42-63	49-62
Preschooler (3-5 y)	89-112	46-72	58-69
School-aged child (6-9 y)	97-115	57-76	66-72
Preadolescent (10-12 y)	102-120	61-80	71-79
Adolescent (12-15 y)	110-131	64-83	73-84

*Always consider the patient's normal range and clinical condition. Heart rate will normally increase with fever or stress.

[†]Systolic and diastolic blood pressure ranges assume 50th percentile for height for children 1 year and older.

[‡]Mean arterial pressures (diastolic pressure + [difference between systolic and diastolic pressure/3]) for 1 year and older, assuming 50th percentile for height.

[§]Approximately equal to postconception age in weeks (may add 5 mm Hg).

Reproduced from Hazinski MF. Children are different. In: Hazinski MF, ed. *Nursing Care of the Critically Ill Child*. 3rd ed. St Louis, MO: Mosby; 2013;1-18, copyright Elsevier. Data from Gemelli M, Manganaro R, Mami C, De Luca F. Longitudinal study of blood pressure during the 1st year of life. *Eur J Pediatr*. 1990;149(5):318-320; Versmold HT, Kitterman JA, Phibbs RH, Gregory GA, Tooley WH. Aortic blood pressure during the first 12 hours of life in infants with birth weight 610 to 4,220 grams. *Pediatrics*. 1981;67(5):607-613; Haque IU, Zaritsky AL. Analysis of the evidence for the lower limit of systolic and mean arterial pressure in children. *Pediatr Crit Care Med*. 2007;8(2):138-144; and National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents. *The Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents*. Bethesda, MD: National Heart, Lung, and Blood Institute; 2005. NIH publication 05-5267.

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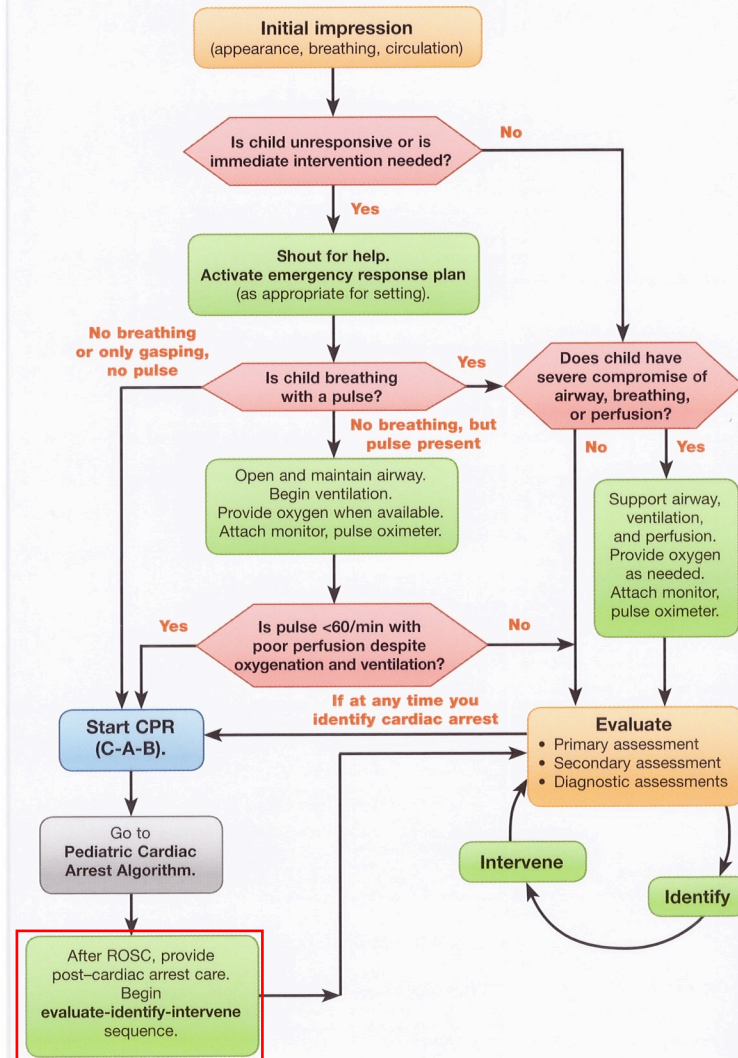
Normal Respiratory Rates (breaths/min)

Age	Rate
Infant	30-53
Toddler	22-37
Preschooler	20-28
School-aged child	18-25
Adolescent	12-20

NOUVEAUTES dans le PALS en 2018:

- 1) Attention au **surremplissage dans sepsis**: 20 cc/kg puis ajusté avec précautions en surveillant la tolérance (râles respiratoires, turgescence jugulaire, hépatomégalie)
- 2) Atropine- **Pas systématique pour intubation en urgence** chez patients critiques (non néonatal) et CI si bradycardie !
- 3) Atropine 20 mcg/kg- **pas de dose minimale**
- 4) **Contrôle agressif de la fièvre** chez enfant comateux post arrêt cardiaques (maintenir T° entre 36° et 37,5°)
- 5) **Amiodarone (ad 3x) ou Lidocaine (2x)** interchangeable en ACR avec TV ou FV

PALS Systematic Approach Algorithm



Pediatric Bradycardia With a Pulse and Poor Perfusion Algorithm

Identify and treat underlying cause

- Maintain patent airway; assist breathing as necessary
- Oxygen
- Cardiac monitor to identify rhythm; monitor blood pressure and oximetry
- IO/IV access
- 12-Lead ECG if available; don't delay therapy

Cardiopulmonary compromise?

- Hypotension
- Acutely altered mental status
- Signs of shock

No

Yes

CPR if HR <60/min
with poor perfusion despite
oxygenation and ventilation

No

Yes

Bradycardia persists?

- Epinephrine
- Atropine for increased vagal tone or primary AV block
- Consider transthoracic pacing/transvenous pacing
- Treat underlying causes

If pulseless arrest
develops, go to Cardiac
Arrest Algorithm

- Support ABCs
- Give oxygen
- Observe
- Consider expert consultation

Doses/Details

Epinephrine IO/IV dose: 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration). Repeat every 3-5 minutes. If IO/IV access not available but endotracheal (ET) tube in place, may give ET dose: 0.1 mg/kg (0.1 mL/kg of the 1 mg/mL concentration).

Atropine IO/IV dose: 0.02 mg/kg. May repeat once. Minimum dose 0.1 mg and maximum single dose 0.5 mg.

ETIOLOGIES

6H & 5T

- Hypoxémie
- Hypoglycémie
- Hyper H+ (acidose)
- Hypo/hyperKaliémie
- HypoThermie
- HypoVolémie
- Tamponnade
- Tension pneumothorax
- Thromboses (pulmonaire ou coronaire)
- Toxines (sepsis.intoxications)

CHOC NEUROGENIQUE

Mecanisme: Déséquilibre SNS (sortie bulbaire) <--> SNS (sortie le long de la moelle) sur trauma

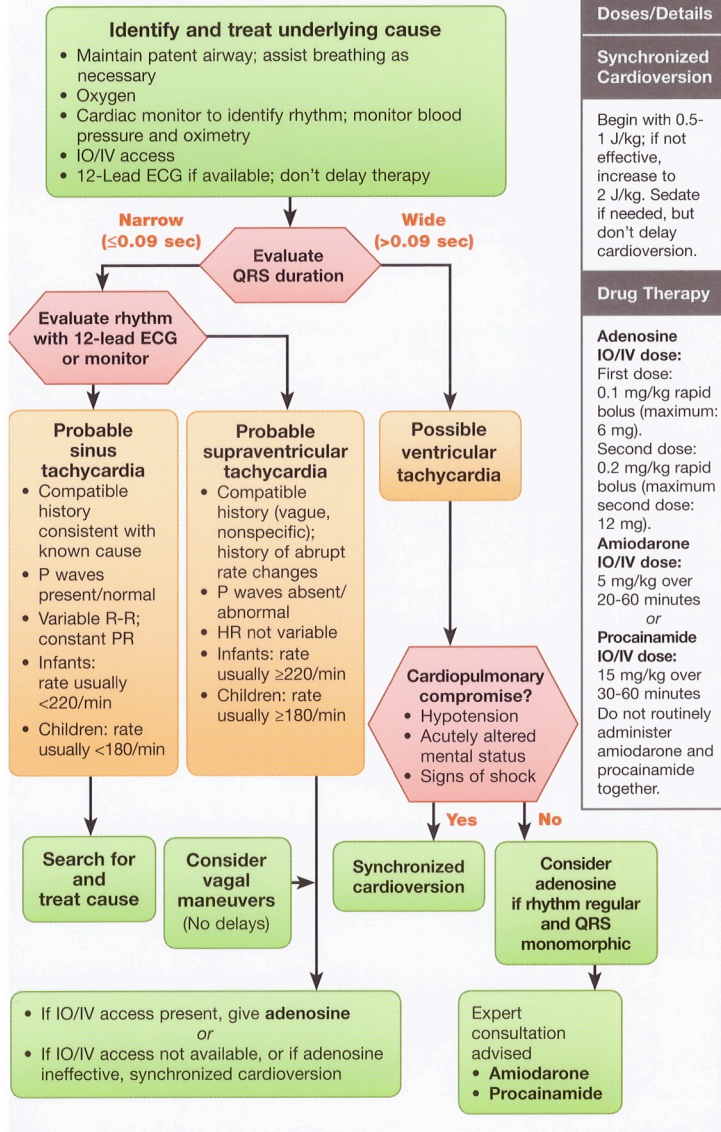
Signes d'appels:

- Hypotension sur vasoplégie --> diastolique basse et TRC long
- Bradycardie relative par sympathicotomie (FC trop basse)
- Possible perte du CTRL respiratoire (C2-C8=sterno-cleido-mastoidien; C3-C5 = phrénique; T1-11=intercostaux)
- Perte de la thermorégulation sur incapacité de frissonner

Traitement:

- Protéger la colonne
- Assurer la ventilation
- Ephédrine, Noradrénaline, volume (NaCl 0,9%)

Pediatric Tachycardia With a Pulse and Poor Perfusion Algorithm



Doses/Details

Synchronized Cardioversion

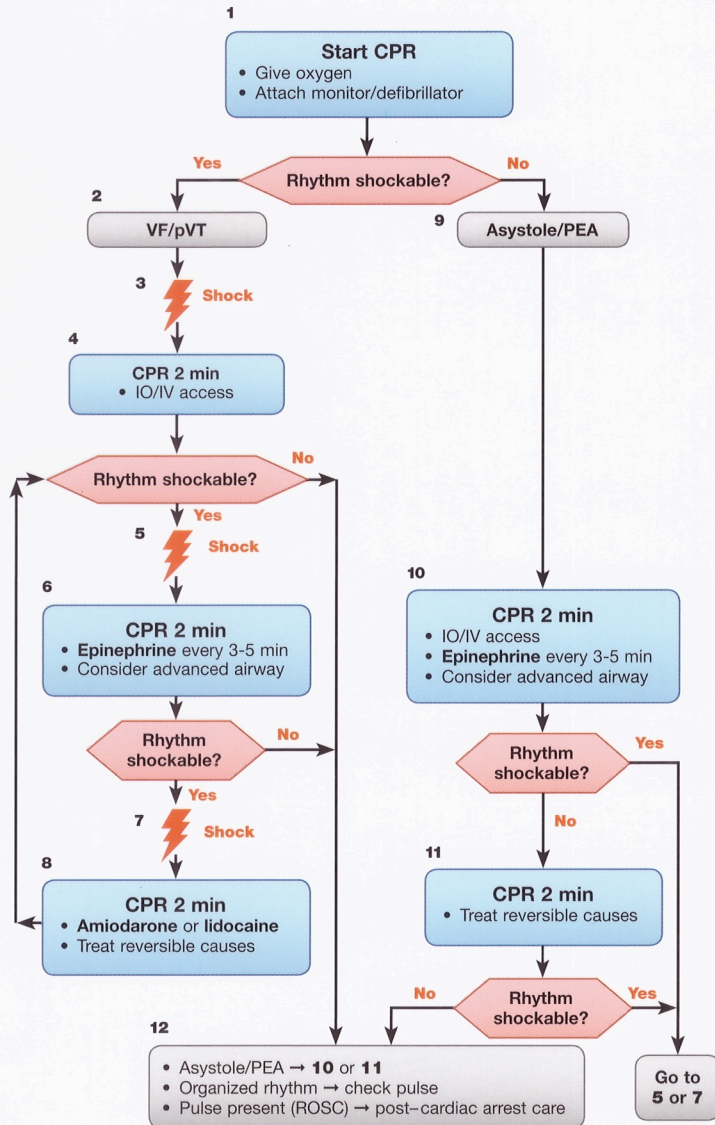
Begin with 0.5-1 J/kg; if not effective, increase to 2 J/kg. Sedate if needed, but don't delay cardioversion.

Drug Therapy

Adenosine IO/IV dose:
 First dose: 0.1 mg/kg rapid bolus (maximum: 6 mg).
 Second dose: 0.2 mg/kg rapid bolus (maximum second dose: 12 mg).
Amiodarone IO/IV dose:
 5 mg/kg over 20-60 minutes
 or
Procainamide IO/IV dose:
 15 mg/kg over 30-60 minutes
 Do not routinely administer amiodarone and procainamide together.

Pediatric Cardiac Arrest Algorithm—2015 Update

Doses/Details for the Pediatric Cardiac Arrest Algorithm



CPR Quality <ul style="list-style-type: none"> • Push hard ($\geq 1/3$ of anteroposterior diameter of chest) and fast (100-120/min) and allow complete chest recoil. • Minimize interruptions in compressions. • Avoid excessive ventilation. • Rotate compressor every 2 minutes, or sooner if fatigued. • If no advanced airway, 15:2 compression-ventilation ratio. 	Advanced Airway <ul style="list-style-type: none"> • Endotracheal intubation or supraglottic advanced airway • Waveform capnography or capnometry to confirm and monitor ET tube placement • Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions
Shock Energy for Defibrillation <p>First shock 2 J/kg, second shock 4 J/kg, subsequent shocks ≥ 4 J/kg, maximum 10 J/kg or adult dose</p>	Return of Spontaneous Circulation (ROSC) <ul style="list-style-type: none"> • Pulse and blood pressure • Spontaneous arterial pressure waves with intra-arterial monitoring
Drug Therapy <ul style="list-style-type: none"> • Epinephrine IO/IV dose: 0.01 mg/kg (0.1 mL/kg of the 0.1mg/mL concentration). Repeat every 3-5 minutes. If no IO/IV access, may give endotracheal dose: 0.1 mg/kg (0.1 mL/kg of the 1 mg/mL concentration). • Amiodarone IO/IV dose: 5 mg/kg bolus during cardiac arrest. May repeat up to 2 times for refractory VF/pulseless VT. • Lidocaine IO/IV dose: Initial: 1 mg/kg loading dose. Maintenance: 20-50 mcg/kg per minute infusion (repeat bolus dose if infusion initiated >15 minutes after initial bolus therapy). 	Reversible Causes <ul style="list-style-type: none"> • Hypovolemia • Hypoxia • Hydrogen ion (acidosis) • Hypoglycemia • Hypo-/hyperkalemia • Hypothermia • Tension pneumothorax • Tamponade, cardiac • Toxins • Thrombosis, pulmonary • Thrombosis, coronary

Estimating Endotracheal Tube Size

The formula for estimation of proper endotracheal tube size (internal diameter [i.d.]) for children 2 to 10 years of age, based on the child's age:

Uncuffed endotracheal tube size (mm i.d.) = (age in years/4) + 4

The formula for estimation of a cuffed endotracheal tube size is as follows:

Cuffed endotracheal tube size (mm i.d.) = (age in years/4) + 3.5

Typical cuffed inflation pressure should be <20 to 25 cm H₂O.

Cuffed --> 1/2 taille en dessous

Pediatric Septic Shock Algorithm

Pediatric Septic Shock Algorithm (continued)

Initial stabilization

First hour

Identify Signs of Septic Shock
(as below or per protocol)

- Altered **mental status** (irritability or decreased level of consciousness)
- Altered **heart rate** (tachycardia or, less commonly, bradycardia)
- Altered **temperature** (fever or hypothermia)
- Altered **perfusion** (prolonged or “flash” capillary refill; cool or very warm extremities; plethoric appearance, mottled color or pallor; possible ecchymosis or purpura; decreased urine output)
- Hypotension:** May or may not be present

Immediate (10-15 min)

Initial Stabilization

- Monitor and support **airway, breathing, and circulation**
- Monitor heart rate, blood pressure, and pulse oximetry
- Establish vascular access (IV or IO); draw blood for culture and additional laboratory studies, including glucose and calcium—do not delay antibiotic or fluid therapy
- Antibiotics:** Give broad-spectrum antibiotics
- Fluid boluses:** Give 20 mL/kg isotonic crystalloid boluses (10 mL/kg for neonates and those with pre-existing cardiovascular compromise). Assess carefully after each bolus. Repeat as needed to treat shock. Stop if rales, respiratory distress, or hepatomegaly develops.
- Give antipyretics if needed

Goals of therapy: Improved mental status, normalization of heart rate and temperature, adequate systolic and diastolic blood pressure, improved perfusion (see box above)

Do signs of shock persist?
(see box above)

No

Consider critical care consultation

Yes

- Obtain expert/critical care consultation
- Initiate and titrate **vasoactive drugs:**
 - Cold extremities, delayed capillary refill, and/or low blood pressure:** Epinephrine (use dopamine if epinephrine is not available)
 - Warm extremities, “flash” capillary refill, and/or low (typically diastolic) blood pressure:** Norepinephrine (use higher dose of dopamine if norepinephrine is not available)

Therapies intended for the critical care environment and expertise

- Establish central venous and intra-arterial pressure monitoring
- Continue epinephrine/norepinephrine (as above) and bolus fluid therapy as needed to treat shock
- Verify adequate airway, oxygenation, and ventilation
- Evaluate cortisol if at risk for relative adrenal insufficiency; consider stress-dose hydrocortisone

Critical care goals of therapy: ScvO₂ ≥70%, adequate BP, normalized HR, adequate cardiac output/index and organ perfusion

Is ScvO₂ ≥70%?

No

ScvO₂ <70%
With poor perfusion and **cold** extremities despite epinephrine administration

- Provide additional fluid boluses as needed
- Transfuse if Hgb <10 g/dL
- Continue epinephrine therapy
- If BP low:** Add norepinephrine if *diastolic* BP low; consider additional inotropic and vasoactive drug therapy as needed
- If BP adequate:** Add milrinone and/or additional vasodilator therapy; consider adding inotropic drug
- Support organ function

Goals of care: Improved ScvO₂, normalized HR and BP, adequate cardiac output/index and organ perfusion

Yes

ScvO₂ ≥70%
With poor perfusion and **warm** extremities despite norepinephrine administration

- Provide additional fluid boluses as needed
- Continue norepinephrine therapy
- Add additional vasopressor therapy and inotropic therapy as needed
- Support organ function

Goals of care: Improved ScvO₂, normalized HR and BP, adequate cardiac output/index and organ perfusion

ScvO₂ ≥70%
Signs of shock resolved

- Monitor in ICU
- Support organ function
- Treat infection source
- Evaluate septic shock prevention, detection, and therapy

Modified from Brierley J, Carrillo JA, Choong K, et al. Clinical practice parameters for hemodynamic support of pediatric and neonatal septic shock: 2007 update from the American College of Critical Care Medicine. *Crit Care Med*. 2009;37(2):666-688.

PALS Management of Shock After ROSC Algorithm

Optimize Ventilation and Oxygenation

- Titrate FiO_2 to maintain oxyhemoglobin saturation 94%-99% (or as appropriate to the patient's condition); if possible, wean FiO_2 if saturation is 100%.
- Consider advanced airway placement and waveform capnography.
- If possible, target a PCO_2 that is appropriate for the patient's condition and limit exposure to severe hypercapnia or hypocapnia.

Assess for and Treat Persistent Shock

- Identify and treat contributing factors.*
- Consider 20 mL/kg IV/IO boluses of isotonic crystalloid. Consider smaller boluses (eg, 10 mL/kg) if poor cardiac function suspected.
- Consider the need for inotropic and/or vasopressor support for fluid-refractory shock.

***Possible Contributing Factors**

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypoglycemia
Hypo-/hyperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary
Trauma

Hypotensive Shock

- Epinephrine
- Dopamine
- Norepinephrine

Normotensive Shock

- Dobutamine
- Dopamine
- Epinephrine
- Milrinone

- Monitor for and treat agitation and seizures.
- Monitor for and treat hypoglycemia.
- Assess blood gas, serum electrolytes, and calcium.
- If patient remains comatose after resuscitation from cardiac arrest, maintain targeted temperature management, including aggressive treatment of fever.
- Consider consultation and patient transport to tertiary care center.

Estimation of Maintenance Fluid Requirements

• **Infants <10 kg:**
4 mL/kg per hour

Example: For an 8-kg infant, estimated maintenance fluid rate
 = 4 mL/kg per hour \times 8 kg
 = 32 mL per hour

• **Children 10-20 kg:**
40 mL per hour + 2 mL/kg per hour for each kg above 10 kg

Example: For a 15-kg child, estimated maintenance fluid rate
 40 mL per hour
 + (2 mL/kg per hour \times 5 kg)
 = 50 mL per hour

• **Children >20 kg:** 60 mL per hour + 1 mL/kg per hour for each kg above 20 kg

Example: For a 28-kg child, estimated maintenance fluid rate
 60 mL per hour
 + (1 mL/kg per hour \times 8 kg)
 = 68 mL per hour

After initial stabilization, adjust the rate and composition of intravenous fluids based on the patient's clinical condition and state of hydration. In general, provide a continuous infusion of a dextrose-containing solution for infants. Avoid hypotonic solutions in critically ill children; for most patients, use isotonic fluid such as normal saline (0.9% NaCl) or lactated Ringer's solution with or without dextrose, based on the child's clinical status.

ROSC:

- 1) SpO2 4-99%
- 2) PCO2 dans la norme (35-45 mmHg) --> capnographe
- 3) T° dans la norme (36-37,5°C)
- 4) Maintenir une TA normale (volume, inotrope, vasopresseur)
- 5) 6H & 6T--> corriger ce qui est anormal
- 6) Surveiller et traiter les convulsions
- 7) Transport rapide dans un centre tertiaire

Drugs Used in PALS

Drug	Indications/Dosages
Adenosine	SVT <ul style="list-style-type: none"> 0.1 mg/kg IV/IO <i>rapid</i> push (max 6 mg), second dose 0.2 mg/kg IV/IO <i>rapid</i> push (max 12 mg)
Albuterol	Asthma, anaphylaxis (bronchospasm), hyperkalemia <ul style="list-style-type: none"> MDI: 4 to 8 puffs via inhalation q 20 minutes PRN with spacer (<i>or</i> ET if intubated) Nebulizer: 2.5 mg/dose (wt <20 kg) <i>or</i> 5 mg/dose (wt >20 kg) via inhalation q 20 minutes PRN Continuous nebulizer: 0.5 mg/kg per hour via inhalation (max 20 mg/h)
Amiodarone	SVT, VT (with pulses) <ul style="list-style-type: none"> 5 mg/kg IV/IO <i>load</i> over 20 to 60 minutes (max 300 mg), repeat to daily max 15 mg/kg (2.2 g in adolescents) Pulseless arrest (ie, VF/pulseless VT) <ul style="list-style-type: none"> 5 mg/kg IV/IO <i>bolus</i> (max 300 mg), repeat to daily max 15 mg/kg (2.2 g in adolescents)
Atropine sulfate	Bradycardia (symptomatic) <ul style="list-style-type: none"> 0.02 mg/kg IV/IO (max single dose 0.5 mg), may repeat dose once in 3 to 5 minutes, max total dose child 1 mg, max total dose adolescent 3 mg 0.04 to 0.06 mg/kg ET Toxins/overdose (eg, organophosphate, carbamate) <ul style="list-style-type: none"> <12 years: 0.05 mg/kg IV/IO initially; then repeated and doubling the dose every 5 minutes until muscarinic symptoms reverse >12 years: 1 mg IV/IO initially; then repeated and doubling the dose every 5 minutes until muscarinic symptoms reverse
Calcium chloride 10%	Hypocalcemia, hyperkalemia, hypomagnesemia, calcium channel blocker overdose <ul style="list-style-type: none"> 20 mg/kg (0.2 mL/kg) IV/IO <i>slow</i> push during arrest, repeat PRN
Calcium gluconate	Hypocalcemia, hyperkalemia, hypomagnesemia, calcium channel blocker overdose <ul style="list-style-type: none"> 60 mg/kg (0.6 mL/kg) IV/IO <i>slow</i> push during arrest; repeat PRN
Dexamethasone	Croup <ul style="list-style-type: none"> 0.6 mg/kg PO/IM/IV (max 16 mg)
Dextrose (glucose)	Hypoglycemia <ul style="list-style-type: none"> 0.5 to 1 g/kg IV/IO (D₂₅W 2 to 4 mL/kg; D₁₀W 5 to 10 mL/kg)
Dobutamine	Heart failure, cardiogenic shock <ul style="list-style-type: none"> 2 to 20 mcg/kg per minute IV/IO infusion; titrate to desired effect
Dopamine	Cardiogenic shock, distributive shock <ul style="list-style-type: none"> 2 to 20 mcg/kg per minute IV/IO infusion; titrate to desired effect
Epinephrine	Pulseless arrest, bradycardia (symptomatic) <ul style="list-style-type: none"> 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration) IV/IO q 3 to 5 minutes (max single dose 1 mg) 0.1 mg/kg (0.1 mL/kg of the 1 mg/mL concentration) ET q 3 to 5 minutes Hypotensive shock <ul style="list-style-type: none"> 0.1 to 1 mcg/kg per minute IV/IO infusion (consider higher doses if needed) Anaphylaxis <ul style="list-style-type: none"> IM autoinjector 0.3 mg (for patient weighing ≥30 kg) <i>or</i> IM junior autoinjector 0.15 mg (for patient weighing 10 to 30 kg) 0.01 mg/kg (0.01 mL/kg of the 1 mg/mL concentration) IM q 15 minutes PRN (max single dose 0.3 mg) 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration) IV/IO q 3 to 5 minutes (max single dose 1 mg) if hypotensive 0.1 to 1 mcg/kg per minute IV/IO infusion if hypotension persists despite fluids and IM injection Asthma <ul style="list-style-type: none"> 0.01 mg/kg (0.01 mL/kg of the 1 mg/mL concentration) subcutaneously q 15 minutes (max 0.3 mg <i>or</i> 0.3 mL) Croup <ul style="list-style-type: none"> 0.25 to 0.5 mL <i>racemic</i> solution (2.25%) mixed in 3 mL NS via inhalation 3 mg (3 mL of the 1 mg/mL concentration) epinephrine mixed with 3 mL NS (which yields 0.25 mL <i>racemic</i> epinephrine solution) via inhalation

Pour ACR avec TV/FV:
- Amiodarone ad 3 doses
- Lidocaine = alternative

- Pas de dose minimale

- Pas indispensable pour intubation (hors néonate)

Drugs Used in PALS (continued)

Drug	Indications/Dosages
Etomidate	RSI <ul style="list-style-type: none"> 0.2 to 0.4 mg/kg IV/IO infused over 30 to 60 seconds (max 20 mg) will produce rapid sedation that lasts for 10 to 15 minutes
Hydrocortisone	Adrenal insufficiency <ul style="list-style-type: none"> 2 mg/kg IV bolus (max 100 mg)
Ipratropium bromide	Asthma <ul style="list-style-type: none"> 250 to 500 mcg via inhalation q 20 minutes PRN x 3 doses
Lidocaine	VF/pulseless VT, wide-complex tachycardia (with pulses) <ul style="list-style-type: none"> 1 mg/kg IV/IO bolus Maintenance: 20 to 50 mcg/kg per minute IV/IO infusion (repeat bolus dose if infusion initiated >15 minutes after initial bolus) 2 to 3 mg/kg ET
Magnesium sulfate	Asthma (refractory status asthmaticus), torsades de pointes, hypomagnesemia <ul style="list-style-type: none"> 25 to 50 mg/kg IV/IO <i>bolus</i> (max 2 g) (pulseless VT) <i>or</i> over 10 to 20 minutes (VT with pulses) <i>or</i> <i>slow</i> infusion over 15 to 30 minutes (status asthmaticus)
Methyl-prednisolone	Asthma (status asthmaticus), anaphylactic shock <ul style="list-style-type: none"> Load: 2 mg/kg IV/IO/IM (max 60 mg); only use acetate salt IM Maintenance: 0.5 mg/kg IV/IO q 6 hours (max 120 mg/d)
Milrinone	Myocardial dysfunction and increased SVR/PVR <ul style="list-style-type: none"> Loading dose: 50 mcg/kg IV/IO over 10 to 60 minutes followed by 0.25 to 0.75 mcg/kg per minute IV/IO infusion
Naloxone	Narcotic (opiate) reversal <ul style="list-style-type: none"> Total reversal required (for narcotic toxicity secondary to overdose): 0.1 mg/kg IV/IO/IM/subcutaneous bolus q 2 minutes PRN (max 2 mg) Total reversal <i>not</i> required (eg, for respiratory depression associated with therapeutic narcotic use): 1 to 5 mcg/kg IV/IO/IM/subcutaneously; titrate to desired effect Maintain reversal: 0.002 to 0.16 mcg/kg per hour IV/IO infusion
Nitroglycerin	Heart failure, cardiogenic shock <ul style="list-style-type: none"> Initiate at 0.25 to 0.5 mcg/kg per minute IV/IO infusion; titrate by 1 mcg/kg per minute q 15 to 20 minutes as tolerated. Typical dose range 1 to 5 mcg/kg per minute (max 10 mcg/kg per minute) In adolescents, start with 5 to 10 mcg <i>per minute</i> (not per kilogram per minute) and increase to max 200 mcg <i>per minute</i>
Nitroprusside	Cardiogenic shock (ie, associated with high SVR), severe hypertension <ul style="list-style-type: none"> 0.3 to 1 mcg/kg per minute initial dose; then titrate up to 8 mcg/kg per minute PRN
Norepinephrine	Hypotensive (usually distributive) shock (ie, low SVR and fluid refractory) <ul style="list-style-type: none"> 0.1 to 2 mcg/kg per minute IV/IO infusion; titrate to desired effect
Procainamide	SVT, atrial flutter, VT (with pulses) <ul style="list-style-type: none"> 15 mg/kg IV/IO load over 30 to 60 minutes (do not use routinely with amiodarone)
Prostaglandin E ₁ (PGE ₁)	Ductal-dependent congenital heart disease (all forms) <ul style="list-style-type: none"> 0.05 to 0.1 mcg/kg per minute IV/IO infusion initially; then 0.01 to 0.05 mcg/kg per minute IV/IO
Sodium bicarbonate	Metabolic acidosis (severe), hyperkalemia <ul style="list-style-type: none"> 1 mEq/kg IV/IO <i>slow</i> bolus Sodium channel blocker overdose (eg, tricyclic antidepressant) <ul style="list-style-type: none"> 1 to 2 mEq/kg IV/IO bolus until serum pH is >7.45 (7.50 to 7.55 for severe poisoning) followed by IV/IO infusion of 150 mEq NaHCO₃/L solution titrated to maintain alkalosis
Terbutaline	Asthma (status asthmaticus), hyperkalemia <ul style="list-style-type: none"> 0.1 to 10 mcg/kg per minute IV/IO infusion; consider 10 mcg/kg IV/IO load over 5 minutes 10 mcg/kg subcutaneously q 10 to 15 minutes until IV/IO infusion is initiated (max single dose 0.4 mg)
Vasopressin	Catecholamine-resistant hypotension <ul style="list-style-type: none"> 0.0002 to 0.002 unit/kg per minute (0.2 to 2 milliunits/kg per minute) continuous infusion

Pour ACR avec TV/FV:
- Lidocaine (max. 2 doses)
- Amiodarone: alternative ad max 3 doses

Pediatric Color-Coded Length-Based Resuscitation Tape

Equipment	GRAY*	PINK	RED	PURPLE	YELLOW	WHITE	BLUE	ORANGE	GREEN
	3-5 kg	Small infant 6-7 kg	Infant 8-9 kg	Toddler 10-11 kg	Small Child 12-14 kg	Child 15-18 kg	Child 19-23 kg	Large Child 24-29 kg	Adult 30-38 kg
Resuscitation bag		Infant/child	Infant/child	Child	Child	Child	Child	Child	Adult
Oxygen mask (NRB)		Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric/adult
Oral airway (mm)	50	50	50	60	60	60	70	80	80
Laryngoscope blade (size)		1 Straight	1 Straight	1 Straight	2 Straight	2 Straight	2 Straight or curved	2 Straight or curved	3 Straight or curved
ET tube (mm) [†]		3.5 Uncuffed 3.0 Cuffed	3.5 Uncuffed 3.0 Cuffed	4.0 Uncuffed 3.5 Cuffed	4.5 Uncuffed 4.0 Cuffed	5.0 Uncuffed 4.5 Cuffed	5.5 Uncuffed 5.0 Cuffed	6.0 Cuffed	6.5 Cuffed
ET tube insertion length (cm)	3 kg 9-9.5 4 kg 9.5-10 5 kg 10-10.5	10.5-11	10.5-11	11-12	13.5	14-15	16.5	17-18	18.5-19.5
Suction catheter (F)		8	8	10	10	10	10	10	10-12
BP cuff	Neonatal #5/infant	Infant/child	Infant/child	Child	Child	Child	Child	Child	Small adult
IV catheter (gag)		22-24	22-24	20-24	18-22	18-22	18-20	18-20	16-20
IO (gag)		18/15	18/15	15	15	15	15	15	15
NG tube (F)		5-8	5-8	8-10	10	10	12-14	14-18	16-18
Urinary catheter (F)	5	8	8	8-10	10	10-12	10-12	12	12
Chest tube (F)		10-12	10-12	16-20	20-24	20-24	24-32	28-32	32-38

Abbreviations: BP, blood pressure; ET, endotracheal; F, French; IO, intraosseous; IV, intravenous; NG, nasogastric; NRB, nonrebreathing.

*For Gray column, use Pink or Red equipment sizes if no size is listed.

[†]Per 2010 AHA Guidelines, in the hospital cuffed or uncuffed tubes may be used (see Estimating Endotracheal Tube Size on the reverse side of this card).

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