AMERICAN ACADEMY OF PEDIATRICS

Committee on Drugs

Emergency Drug Doses for Infants and Children

This guideline for emergency drug dosing has been prepared for physicians requiring assistance with drug doses for pediatric patients. The drugs included are not intended to be exhaustive; therefore, this guideline should not be construed as an endorsement of the drugs selected. Information on drug indications and side effects has been purposely limited. In anticipation of future updates of this guideline, the Committee on Drugs invites comments and suggestions.

ABBREVIATIONS. SC, subcutaneous; q, every; po, oral.

The following list has been prepared by the Committee on Drugs, with the assistance of the Committee on Pediatric Emergency Medicine. It represents the opinion of the Committees and may differ from information in package inserts of drugs. Doses should be individualized depending on patient response. These are general guidelines only. Physician judgment should be involved in the use of this emergency drug dose information.

Atropine Sulfate

Dose: SC—0.04 mg/kg
IV or intratracheal—0.01–0.02 mg/kg per dose

WARNING: 0.04 mg/kg or 2 mg maximum total dose, whichever is smaller (except for antichol-inesterase poisoning which may require larger doses)

Bicarbonate

Dose: IV—1 mEq/kg (Note: use only 0.5-mEq/mL solution for newborns

Note: The use of sodium bicarbonate should be based on documented metabolic acidosis; routine use in cardiac arrest is not recommended

Calcium Chloride

Dose: IV—0.15–0.3 mL/kg per dose (0.2–0.4 mEq/kg per dose). Inject slowly. Stop if bradycardia occurs

WARNING: Not to be given SO or IM

Form: 100 mg/mL, in 10-mL ampule or syringe; each 1 mL contains 1.36 mEq of elemental calcium

Note: Calcium is recommended for cardiac resuscitation only in cases of documented hypocalcemia

Diazepam (Valium)

Dose: (Anticonvulsant) IV—infuse 0.1–0.3 mg/kg q 2 min up to total initial dose of 1.0 mg/kg

WARNING: Be prepared to provide respiratory support if necessary

Diazoxide (Hyperstat)

Dose: (Hypertensive crisis) IV—1–2 mg/kg given during 15–30 seconds
Maximum total initial dose 5 mg/kg

Digoxin (Lanoxin)

Digitalizing dose*: Infants—20–40 μg/kg IV given in 2–3 divided doses during 24–36 h (maximum dose = 1 mg)

The recommendations in this statement do not indicate an exclusive course of treatment or procedure to be followed. Variations, taking into account individual circumstances, may be appropriate.

PEDIATRICS (ISSN 0031 4005).

Maintenance dose*: Infants—2.5–5 μg/kg q 12 h IV or PO
Children—5 μg/kg q 12 h IV or PO

WARNING: Do not exceed maximum recommended adult dose

Diphenhydramine (Benadryl)

Dose: IV 1–2 mg/kg slow infusion (5 min)

Dopamine (Intropin)

Dose: IV infusion—2–30 μg/kg/min
Preparation of infusion solution: 6 × body wt (kg) equals mg of drug to be added to IV solution to make 100 mL. Infusion of 1 mL/h will deliver 1 μg/kg/min

Dobutamine (Dobutrex)

Dose: IV infusion—5–20 μg/kg/min. Preparation of infusion solution same as Dopamine.

Epinephrine (Adrenalin)

Dose: (Systemic anaphylactic shock) SC—0.01 mg/kg per dose (use 1:1,000 dilution = .01 mL/kg per dose)
IV—0.1 μg/kg/min (maximum, 1 μg/kg/min)
Preparation of infusion solution: 0.6 × body wt (kg) equals mg of drug to be added to IV solution to make 100 mL. Infusion of 1 mL/h will deliver 0.1 μg/kg/min
(Cardiac resuscitation) IV or intratracheal—0.01 mg/kg per dose (use 1:10,000 dilution = 0.1 mL/kg)
Infusion: Start at 0.1 μg/kg/min (see above for preparation)
WARNING: Never use undiluted 1:1,000 IV, intratracheal, or intracardiac

Furosemide (Lasix)

Dose: IV, IM—1 mg/kg

Glucagon

Dose: SC, IM, IV—0.03 mg/kg
WARNING: Do not exceed 1 mg as the initial dose

Glucose

Dose: IV—2–5 mL/kg (0.2–0.5 g/kg) of 10% dextrose in water and/or constant infusion of 10% dextrose in water at a rate of 100 mL/kg/24 h (8 mg of glucose/kg/min). Blood glucose level should be determined following administration

Hydralazine (Apresoline)

Dose: IV—0.1–0.5 mg/kg, up to a maximum of 2 mg/kg IV q 3–6 h

Insulin (Regular Insulin)

Dose: (Diabetic ketoacidosis) IV infusion dose 0.05–0.1 U/kg/h

Isoproterenol (Isuprel)

Dose: IV infusion—starting dose 0.05–0.1 μg/kg/min, increase dose to 1 μg/kg/min or to desired effect on heart rate and/or improved vascular perfusion (Preparation of infusion solution same as epinephrine)

Lidocaine (Xylocaine)

Dose: IV—0.5–1 mg/kg as a single dose slowly, repeat every 5–10 min to desired effect or until maximum dose of 5 mg/kg given

IV infusion—10–50 μg/kg/min
Preparation of infusion solution: place 100 mg (5 mL) in 500 mL of 5% dextrose in water. Infusion of 3 to 15 mL/kg/h will deliver 10 to 50 μg/kg/min
WARNING: Be prepared for bradycardia and hypotension. Contraindicated in severe heart block. Widening of QRS interval by more than 0.02 seconds or significant ventricular slowing suggests toxicity

Mannitol

Dose: IV—0.25 g/kg; may repeat × 1 to maximum dose of 1–2 g/kg during 2–6 h

Morphine Sulfate

Dose: IV (slowly) or IM—0.1 mg/kg (avoid IM if patient is hypotensive or in shock)

Naloxone (Narcan)

Dose: IV, intratracheal—0.01*–0.1 mg/kg
*For newborns with suspected intoxication with opiates, a minimum of 0.5 mg of naloxone should be used. For children and adolescents, the minimum dose is 2 mg of naloxone. Repeat as necessary for patients depressed with opiate overdose

Note: There are different preparations containing varying concentrations of naloxone.

Nitroprusside (Nipride)

Dose: (Antihypertensive) IV infusion starting dose at 1 μg/kg/min

WARNING: Toxicity can result from large doses and/or prolonged infusions

Norepinephrine (Levophed, Levarterenol bitartrate)

Dose: IV infusion—start at 0.1 μg/kg/min, increase dose to 1 μg/kg/min or to desired effect (preparation of infusion solution same as epinephrine)

Pancuronium (Pavulon)

Dose: IV (Inducing paralysis)—0.1 mg/kg

WARNING: Ventilatory support will be necessary

Paraldehyde

Dose: (Anticonvulsant) Rectal—0.3 mL/kg of paraldehyde up to a maximum dose = 7 mL. Make up to 1:1 solution with mineral oil. IM is contraindicated

Phenobarbital

Dose: (Anticonvulsant) IV—10–20 mg/kg (loading dose). Maximum loading dose 30–40 mg/kg

Maintenance dose: 2–4 mg/kg/dose IV, IM or PO q 12 h

WARNING: Maximal loading dose may cause respiratory depression

Estimate of Body Weight and Surface Areas for Major Age Groups

Age (yr)	Average Wt (kg)	Average Surface Area (m^2)
Newborn	3.5	0.10
0.5	7.0	0.38
1	10.0	0.50
2	12.5	0.55
4	16.5	0.67
5	20.0	0.75
7	24.5	0.85
10	30.0	1.00
12	40.0	1.20
16	55.0	1.60
Adult	65.0	1.70

Phenytoin (Dilantin)

Dose: (Anticonvulsant) IV—10–20 mg/kg* (loading dose); maintenance dose: 2–4 mg/kg IV q 12 h

(Antiarrhythmic) IV—1–5 mg/kg*

*Rate of infusion should not exceed 0.1 mL of undiluted preparation/kg/min. Heart rate should be monitored with rate of infusion slowed if it decreases by 10 beats per minute. Maximum initial dose: 1,000 mg

Procainamide (Pronestyl)

Dose: IV—15 mg/kg per dose given during 30 minutes diluted in 5% dextrose

IV infusion—20–80 μg/kg/min

WARNING: Be prepared for bradycardia and hypotension. Contraindicated in severe heart block. Widening of QRS interval by more than 0.02 seconds or significant ventricular slowing suggests toxicity

Propranolol (Inderal)

Dose: (Arrhythmias) IV—0.01–0.2 mg/kg per dose during 10 minutes in 5% dextrose

Average Weights and Endotracheal Tube Sizes

Age	Average Wt Range (kg)	Endotracheal Tube Size (mm)
Premature and small newborn	1.0–2.5	2.5, 3.0
Newborn–3 mo	2.5–6.0	3.0, 3.5
4–18 mo	6.0–12.0	4.0, 4.5
1.5–3 yr	12.0–15.0	4.0, 4.5
3–5 yr	15.0–20.0	4.5, 5.0
5–7 yr	20.0–25.0	5.5, 6.0
8–10 yr	25.0–35.0	6.0 cuffed
11–12 yr	35.0–45.0	7.0 cuffed
>12 yr	—	7.5 cuffed

in water; maximum initial dose = 1 mg for infants or 10 mg for children.

VOLUME EXPANSION (SHOCK)

Dose: IV—Rapid IV infusion of 20 mL/kg of crystalloid (normal saline, Lacated Ringers) or 10 mL/kg of colloid (5% albumin or plasmanate) or 10 mL/kg of blood or blood products. Repeat dose as appropriate

DC DEFIBRILLATOR SETTINGS FOR INFANTS AND CHILDREN

1 W-s (joules)/kg for tachyarrhythmia conversion
2 W-s (joules)/kg for defibrillation
Double dose if ineffective
Paddle diameter (suggested)
4.5 cm for infants
8 cm for children weighing more than 10 kg

Emergency Drug Doses for Infants and Children
Pediatrics 1988;81;462

Emergency Drug Doses for Infants and Children
Pediatrics 1988;81;462