



Created by the **Division of Pediatric Emergency Medicine**
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CPR BASICS - PUSH HARD! PUSH FAST!

Minimize Interruptions, Avoid Hyperventilation
 1/3 AP diameter of chest – ~4cm in infants, ~5-6cm in children
100 compressions/min – 15:2 infants and children, 30:2 adolescents
 Rescue breaths: Infants/children = 1 breath / 3-5 sec
 Adolescents = 1 breath / 5-6 sec

Advanced airway – continuous compressions w/ 1 breath / 6-8 sec
Consider OP airway if unresponsive w/o gag reflex; NP airway if gag present

RHYTHM DISTURBANCES

FAST (Infants - HR > 220 bpm, Child – HR > 180 bpm)

ABC's/Oxygen/Monitor/12-lead ECG

Unstable: Immediate cardioversion 0.5 J/kg; repeat at 1 J/kg

Stable:

Narrow QRS (<0.08 sec) Confirm it is not sinus. If not sinus:

Consider Vagal Maneuvers
 Adenosine 0.1 mg/kg; then 0.2 mg/kg, may repeat x2 (max 12mg)
 Consider: Amiodarone 5 mg/kg IV; if no pulse – PUSH
 W/ pulse, give over 15-20min (Max dose 300mg)
 Procainamide 15 mg/kg IV over 30-60 min

Wide QRS (assume VTach) (>0.08 sec)

Cardioversion 0.5-1 J/kg, increase to 2 J/kg
 Amiodarone 5 mg/kg IV PUSH if no pulse; with pulse, over 15-20 min
 May repeat up to 15mg/kg, Max single dose 300mg
 Procainamide 15 mg/kg IV over 30-60 minutes

Consider Causes of Tachycardia: Hypoglycemia, Hypovolemia, Hypoxemia, Hyperthermia, ↑ Kalemia, Acidosis, Tension PTX, Toxins, PE/MI, Trauma

SLOW (HR < 60 bpm) - ABC's/Oxygen/Monitor/12-lead ECG

Unstable (poor perfusion): Initiate CPR/Chest compressions

Epinephrine 0.01mg/kg (0.1ml/kg) **1:10,000 IV/IO** q3-5min; max 1mg/dose
 0.1mg/kg (0.1ml/kg) of **1:1,000 ETT** q3-5min
 Atropine 0.02mg/kg IV/IO, 0.04-0.06mg/kg ETT; Min=0.1mg
 Max single dose 0.5mg, Max total dose 1mg (child), 3mg (adolescent)

Consider external cardiac pacing

Stable (adequate perfusion)

Observe, support ABC's, prepare for external pacing
Consider causes of Bradycardia: Hypertglycemia, Hypovolemia, Hypoxemia, Hyperkalemia, Head injury, Hypothermia, Toxins/Poisons/Drugs, Heart block/transplant

PULSELESS ARREST – CPR/Secure airway/Obtain access

V Fib/Pulseless V Tach

Rapid defibrillation: 2J/kg → **CPR (2 min)** → check rhythm
 If indicated, give 2nd shock (4J/kg) → **CPR (2 min, minimize interruptions)**
 Epinephrine 0.01mg/kg (0.1ml/kg) **1:10,000 IV/IO** q3-5min; max 1mg/dose
 0.1mg/kg (0.1ml/kg) of **1:1,000 ETT** q3-5min

Check Rhythm: If indicated, Shock 4J/kg, then **CPR (2 min)**
 Consider: Amiodarone 5 mg/kg IV/IO bolus (PUSH), Max dose 300mg *or*
 Lidocaine 1mg/kg IV/IO, 2-3mg/kg ETT bolus *or*
 MgSO₄ 50mg/kg IV/IO bolus, max dose 2g (IF torsades)

Repeat cycle (**CPR→shock→Epi→CPR→shock→antiarrhythmic**)

Asystole/PEA

CPR (2 min, minimize interruptions)

Epinephrine 0.01mg/kg (0.1ml/kg) **1:10,000 IV/IO** q3-5min; max 1mg/dose
 0.1mg/kg (0.1ml/kg) of **1:1,000 ETT** q3-5min

CPR (2 min, minimize interruptions) → check rhythm

Consider causes of Arrest: Hypovolemia, Tension PTX, Hypoxemia, ↑ Kalemia, Toxins/Drugs, Hypothermia, Tamponade, PE/MI, Metabolic

NEONATAL RESUSCITATION

Warm/dry/position/suction/stimulation
 Blow-by O₂ → BVM → intubate
HR <100, Cyanosis, Poor Tone → PPV @ rate of 40-60
 After 60 sec: If HR 60-100 → continue PPV
 If HR < 60 → Chest compressions, epi if not responding
 Epinephrine 0.01-0.03 mg/kg (0.1-0.3 ml/kg) – **1:10,000** IV/ETT
 Meconium present **BUT** Vigorous = no tracheal suctioning necessary

RAPID SEQUENCE INTUBATION

PRETREATMENT

SOAP ME = Suction, O₂, Airway eq., Pharmacy, Mechanical Equipment

Open Airway and Oxygenate (*High flow NC* + Facemask or BVM)

Avoid Hyperventilation

Get Access! 2 peripheral IV attempts (max) → proceed to IO

Consider continuous Nasal Cannula O₂ during apneic period

Pretreatment medications are not necessary!

Atropine 0.02 mg/kg IV/IO, 0.04-0.06 mg/kg ETT; Min=0.1mg
 Max single dose 0.5 mg (child), 1 mg (adolescent)
 Max total dose 1 mg (child), 2 mg (adolescent)

Consider for pts <5yo & before 2nd dose of Succ

Lidocaine 1 mg/kg IV/IO, 2-3 mg/kg ETT bolus

Blunts ↑ ICP response

INDUCTION

Etomidate 0.3 mg/kg IV *Less Hypotension than some sedatives*

Not FDA approved in <10yo

Fentanyl 1-4 mcg/kg IV → Neonate/younger infant

1-2 mcg/kg IV → Older infant/child

Can cause chest wall rigidity if given rapidly

Ketamine 1-2 mg/kg IV *Safe in patients with Acute Head Injury*

Preferred in presence of bronchospasm

Preferred agent in Septic shock

Propofol 2.5-3.5 mg/kg IV → >3y – 16 years

2-2.5 mg/kg IV → >16 years

Versed 0.05-0.3 mg/kg IV *Causes low BP, HR, RR*

PARALYSIS (GIVE SEDATIVE/ANALGESIA FIRST)

Cisatracurium 0.1mg/kg IV → 2-12 years

0.15-0.2mg/kg IV → >12 years

Onset 2-3 min; Duration 35-45 min (*used in liver failure pts*)

Rocuronium 0.6-0.12mg/kg IV

Onset 30-60 sec; Duration 30-60 min

Vecuronium 0.1mg/kg

Onset 1-3 min; Duration 30-90 min

Succinylcholine 1-2mg/kg IV

Onset 30-60 sec; Duration 3-10 min

Pretreat with atropine in <5 yo

Avoid if suspect ↑K⁺, Renal failure, Malignant hyperthermia, Neuromuscular disorders

SEDATION – POST-INTUBATION

Dexmedetomidine IV Drip: 0.3-0.7 mcg/kg/hr

Midazolam IV Bolus: 0.05-0.1mg/kg (max 0.6mg/kg – 6mg) → 6m-5y

0.025-0.05mg/kg (max 0.4mg/kg-10mg) → 6-12y

1-5mg/dose (max 10mg/dose) → >12 years

IV Drip: 0.02-1mg/kg/hr

IV Bolus: 0.2-1mg/kg (repeat q2-4 min) – ≥3 years

IV Drip: 0.1-0.3mg/kg/hr (*not appropriate for long term ICU*)

VENT PEARLS – Pressure limited if patient under 10kg

RR: 30-40 for neonates, otherwise use age appropriate

I:E ratio: 1:2 normally, 1:3 for asthma Avoid peak pressures >35

TVL 6-8ml/kg PEEP: 3-5 Avoid plateau pressure >30

Use End Tidal CO₂ Monitoring to adjust settings. Check ABG

Troubleshooting DOPE: Dislodged, Obstructed, Pneumothorax, Equipment failure
TAKE PATIENT OFF OF VENTILATOR IF BECOMES UNSTABLE

Age	Wt (kg)	HR	RR	SBP	Blade	ETT	Defib (mono-biphasic)	NG/Foley	Chest tube	Fem. Cath (F/length)
<1m	3.5	130-150	40	70	00 to 1	2.5-3.5	7J / 3.5J	5-8 F	10-12 F	3F / 5-12cm
3m	6	140	30	80	1	3.5	12J / 6J	5-8 F	10-12 F	3-4F / 5-12cm
6m	8	130	30	90	1	3.5-4	16J / 8J	5-8 F	14-20 F	3-4F / 5-12cm
1y	10	120	26	90	1	4	20J / 10J	8-10 F	14-24 F	3-4F / 5-12cm
2y	12	115	26	90	1 to 2	4-4.5	24J / 12J	10 F	20-24 F	4-5F / 5-25cm
3y	15	110	24	90	2	4.5	30J / 15J	10 F	20-24 F	4-5F / 5-25cm
4y	17	100	24	90	2 to 3	5	34J / 17J	10 F	20-32 F	4-5F / 5-25cm
6y	20	100	20	95	3	5-5.5	40J / 20J	10 F	20-32 F	4-5F / 5-25cm
8y	25	90	20	95	3	5.5-6	50J / 25J	10-12 F	28-38 F	5-8F / 5-30cm
10-12y	30-40	85	18	100	3	6-7	70J / 35J	12 F	28-38 F	5-8F / 5-30cm
15y	50	70	16	110	3 to 4	7	100J / 50J	12 F	28-40 F	5-8F / 5-30cm

ANTIMICROBIALS (All have age related doses also)

Acyclovir 10-20 mg/kg IV q8hr (use ideal body weight in obese)
 Amoxicillin 20-45 mg/kg PO q12hrs, Max 4g/day
 Amphotericin B (conv) 0.5-1 mg/kg IV q24hr (test dose 0.1mg/kg up to 1mg)
 Ampicillin 50-75 mg/kg IV/IM q6-8hrs, Max 12g/day (Adult - 2g q6hrs)
 Amp/Sulbact. 50-75 mg/kg IV/IM q6hr – amp dosing (Adult - 3g q6)
 Azithromycin 10 mg/kg IV/PO q24hr (Adult 500 mg daily)
 Bactrim (SMZ/TMP) >2mo: 3-6mg TMP/kg PO q12hrs
 Cefazolin 10-25mg/kg IV/IM q8hrs (Adult - 1-2 g q8hrs)
 Cefepime 50 mg/kg IV q8hrs, Max 6g/day
 Cefotaxime 50-75 mg/kg IV q6hrs (Adult - 2 g q8hrs)
 Ceftazidime 50 mg/kg q8hrs (Adult - 2g q8hrs)
 Ceftriaxone 50 mg/kg IV/IM q24hrs, Max 4g/day
Meningitis dose: 100 mg/kg IV divided q12hrs
 Cefuroxime 15 mg/kg PO q12hrs (Adult – 250mg)
 20-50 mg/kg IV/IM q8hrs, Max 9g/day
Meningitis dose: 70-80 mg/kg IV q8hrs
 Cephalaxin 15-25mg/kg PO q6-12hrs, Max 4 g/day (Adult – 500mg)
 Clindamycin 5-10mg/kg PO q6-8hrs, Max 1.8 g/day (Adult - 500mg)
 6-10 mg/kg IV/IM q6-8hrs, Max 4.8 g/day
 Ciprofloxacin 10-20 mg/kg PO q8-12hr, Max 1.5g/day (Adult 400 mg q12)
 6-10mg/kg IV q8hrs, Max 1.2g/day
 Doxycycline (>8yo) 1-2 mg/kg PO q12-24hrs, Max 200 mg/day (Adult - 100mg)
 Ertapenem 15 mg/kg IV q12hrs, Max 1g/day
 Ganciclovir 5 mg/kg IV q12hrs
Further dosing depends on level
4 mg/kg IV q24hrs for neonates
 Imipenem 2.5 mg/kg IV q6-8hrs, Max 4g/day (Adult - 500 mg q6hrs)
 <1 mo - 20 mg/kg IV q12
 Linezolid 10 mg/kg IV q12hrs (Adult -600 mg q12hrs; q8hr if <12y)
 Meropenem 20 mg/kg IV q8hrs, Max 3g/day (Adult - 2 g q8rs)
Meningitis dose: 40 mg/kg IV q8hrs
 Metronidazole 7.5-10 mg/kg PO/IV q6-8hrs (Adult - 500 mg q8)
 Oseltamivir 1y-15kg: 30mg PO q12hrs 15-23kg: 45mg PO q12hrs
 23-40kg: 60mg PO q12hrs >40kg: 75mg PO q12hrs
 10-15 mg/kg PO q8hrs, Max 3 gms/Day
 Penicillin VK *For Prevention of Rheumatic Fever:* 250mg-500mg PO q12hrs x 10 days
 Penicillin G (benzathine/procaine)
For Prevention of Rheumatic Fever: <27kg: 0.6 million U; ≥27kg: 1.2 million U IM
 Pip/tazo 100 mg/kg (Pip) q8hrs (Adult - 3.375 g q6)
 Tobramycin 2.5 mg/kg IV q8hrs - *Further dosing depends on level*
 15mg/kg IV q8hrs (*can be dosed q6hr, but total dose same*)
 Vancomycin *Meningitis dose:* 20 mg/kg IV q8rs; Max 1g/dose

ANTIDOTES (Carolinas Poison Center 1-800-222-1222)

Toxicant	"Antidote"	Dosing
Acetaminophen	N-Acetylcysteine	Load of 150 mg/kg over 1 hr, then 12.5 mg/kg/hr for 4 hours then 6.25 mg/kg/hr for 16 hours
Anticholinergics	Physostigmine	0.01-0.03 mg/kg <i>slow</i> , q10-20 min
	<i>Have atropine/glycopyrrolate available</i>	Max 2mg IV
Benzodiazepines	Flumazenil	0.01 mg/kg IV q 1min, up to 1 mg total
Beta Blockers	Glucagon	≤20kg: 50-150 mcg/kg IV or 0.5mg >20kg: 1mg (<i>bolus over 3-5 minutes</i>)
Ca ²⁺ Channel Blockers	CaGlucuronate Glucagon	0.6 mL/kg of 10% solution IV ≤20kg: 50-150 mcg/kg IV or 0.5mg >20kg: 1mg (<i>bolus over 3-5 minutes</i>)
Cyanide	Nitrite (3%) Thiosulfate	Assuming Hgb = 12gm; 0.3 ml/kg IV 1.65 ml/kg of 25% solution
Digoxin	Hydroxocobalamin	70 mg/kg IV over 15 min, Max 5g
Ethylene glycol	Digibind	(based on level or amount ingested)
	Fomepizole	15 mg/kg IVx1, then 10 mg/kg q12hrx4 then 15mg/kg q12hr until level <20mg/dl
Iron	Deferoxamine	15 mg/kg/hr IV
Isoniazide	Pyridoxine	For Unknown Amount: 25mg/kg IV Repeated until Sz stops or 70 mg/kg
Methanol	Fomepizole	15 mg/kg IVx1, then 10 mg/kg q12hrx4 then 15mg/kg q12hr until level <20mg/dl
	Folate	1-2 mg/kg IV, up to 50 mg/dose q 4 hrs
Methemoglobin	Methylene Blue	1-2mg/kg IV over 5-10 min
Organophosphates	Atropine	0.02-0.05mg/kg IV may repeat q2-10 min
	Pralidoxime	20-50mg/kg IV <i>slow</i> , Max 2g
Opiates	Naloxone	0.1 mg/kg IV/IO/SQ/ETT
Tricyclic Anitdep.	NaHCO ₃	1-2 meq/kg IV push, <i>repeat until QRS narrow</i>
Misc.	Charcoal (w/o sorbitol)	1-2 g/kg PO

MODIFIED INFANT GCS SCORE

Motor	Verbal	Eye opening
6-15L/spontaneous		
5-W/d to touch	5-Coo's/babbles	
4-w/d to pain	4-Irritable/confused	4-Spontaneous
3-Abn flexion	3-Cries to pain	3-To speech
2-Abn Extension	2-Moans to pain	2-To pain
1-None	1-None	1-None

ANALGESIA

Acetaminophen	10-15 mg/kg PO/PR q4-6 hrs, Max 4 g/ day
Fentanyl	<1yr → 1-4 mcg/kg/dose IV/IM q2-4hours
	1-12yr → 1-2 mcg/kg/dose IV/IM q30-60min
	>12yr → 0.5-1 mcg/kg/dose IV/IM q30-60min
Drip:	Init: 0.5-1 mcg/kg/hour, range 1-3 mcg/kg/hour
Ibuprofen	10 mg/kg/dose q6-8 hrs, Max 40mg/kg/Day
Ketorolac	IV: 0.5 mg/kg (max: <50kg=15mg; >50kg=30mg);
	IM: 1 mg/kg (max : <50kg=30mg, >50kg=60mg)
Methadone	0.1 mg/kg/dose PO/IV q8
Morphine	0.05-0.2 mg/kg IV/IM/SubQ q2-4hrs PRN;
	infuse 0.1mg/kg/hr; Increase by 0.1 mg/kg/hr
	0.1-0.2 mg/kg PO q4-6 hours, Max 5-10 mg/dose
Oxycodone	0.1-0.2 mg/kg PO q4-6hr Max: <2y – 1.25mg
Hydrocodone/APAP	Remember max APAP dosing 2-12yrs – 5mg
	75 mg/kg/day or 4,000mg/day >12yrs – 10mg

LOCAL ANESTHETICS

Lidocaine	Max SubQ Dose = 5 mg/kg/dose (up to 300mg)
Lidocaine w/ Epi.	Max SubQ Dose = 7 mg/kg/dose (up to 500mg)
Bupivacaine	Max SubQ Dose = 2 mg/kg/dose (up to 175mg)
Bupivacaine x/ Epi	Max SubQ Dose = 3 mg/kg/dose (up to 225mg)

SEDATION (Also Reference your local Protocols)

Chloral hydrate	50-100mg/kg/dose PO/PR q4-8 (Adult 1g)
Diazepam	0.1-0.3 mg/kg/dose slow IV
	0.2 mg/kg/dose PO q6-8h
Ketamine	0.5-2 mg/kg IV or 3-7 mg/kg IM
Drip:	5-20 mcg/kg/min, start low and titrate
Lorazepam	Load 0.1 mg/kg IV; infuse 0.1 mg/kg/hr
	Inc with 0.1 mg/kg bolus & by 0.1 mg/kg/hr
	Max 5 mg/hr
Midazolam	IV: 6mos-5yrs: 0.05-0.1 mg/kg IV; Max 0.6mg/kg (6mg)
	6yrs-12yrs: 0.025-0.05 mg/kg IV; Max 0.4mg/kg (10mg)
	>12yrs: 0.5-2 mg/dose IV; Max 10mg
IM:	>6mos: 0.1-0.15 mg/kg IM; Max 10mg
PO:	>6mos: 0.25-0.5 mg/kg PO; Max 20mg
Intranasal:	0.2 – 0.3 mg/kg/dose, q5-15 min; Max 0.5 mg/kg
Drip:	0.02-1 mg/kg/hr
Pentobarbital	1-3 mg/kg IV; 2-6 mg/kg IM, Max 100mg/dose
Drip:	10-15 mg/kg over 1-2 hours, then 1-2 mg/kg/hour
Precedex	0.2-1 mcg/kg/hr; titrate by 0.2 mcg/kg/hr
Propofol	0.2-1 mg/kg IV, repeat q2-4 min (only for ≥3yrs)
Drip:	0.1-0.3 mg/kg/min

CARDIAC RX & TX

Alprostadil (PG E1)	0.03-0.4 mcg/kg/min (monitor for apnea and seizure)
Bicarb (HCO ₃)	1-2 mEq/kg IV
CaCl	20-30 mg/kg IV
CaGlucanate	100 mg/kg slow IV

CARDIOVERSION/DEFIBRILLATION

SVT or VT (sync)	0.5 – 1.0 J/kg, then 1 – 2 J/kg
VFib/Pulseless VTach	2 – 4 J/kg, then 4 J/kg

DYSRHYTHMIA RX

Adenosine	0.1mg/kg IV/IO PUSH
	May repeat twice @ 0.2 mg/kg (Max 12mg)
Amiodarone	5 mg/kg IV/IO, May repeat up to 15 mg/kg (Max 300mg)
Drip:	0.2 - 0.6 mg/kg/hr
Atropine	0.02 mg/kg IV/IO, 0.04-0.06mg/kg ETT; Min dose 0.1 mg
	Max 0.5mg (child), 1mg (adolescent)
Diltiazem	0.25 mg/kg bolus; Drip: 5-15 mg/hr (≥Adolescents)
	1.5-2.0 mg/kg/day PO divided TID
Lidocaine	1 mg/kg IV/IO; 2-3 mg/kg ETT
Drip:	20-50 mcg/kg/min - for VT/VF (drip after conversion)
Procainamide	15mg/kg load over 15 minutes <i>or</i>
	2 mg/kg/dose IV q3-5 minutes (Max 500mg over 30 minutes)
Drip:	20-80 mcg/kg/min *stop if QT prolongation occurs*

PRESSORS (CONTINUOUS DRIPS)

Dobutamine	2-20 mcg/kg/min	Pure β1 (minimal β2) effect
Dopamine	2-20 mcg/kg/min	As dose ↑s: renal, β1, α > β
Epinephrine	0.03-1.5 mcg/kg/min	α and β; β > α as dose ↑s
Isoproterenol	0.05-1.0 mcg/kg/min	β1 and β2
Milrinone	25-75 mcg/kg load then 0.25-0.75 mcg/kg/min	
Norepinephrine	0.05-2 mcg/kg/min	α and β; α > β
Phenylephrine	bolus 5-20 mcg/kg	α agonist
	infuse 0.1-1.2 mcg/kg/min	
Vasopressin	<i>Shock:</i> 0.02-0.12 units/kg/hr	
	<i>DI:</i> 0.0005 units/kg/hr **double q 30 min to max. 0.01units/kg/hr	

Rate (ml/hr) = [dose(mcg/kg/min) x kg x 60 min/hr] / concentration

ANTIHYPERTENSIVES (ALL IV UNLESS SPECIFIED)

Amlodipine	2.5-5 mg PO q day (ages 6-17)
Atenolol	0.25mg-1mg/kg/dose q12h, Max 100mg/day
Captopril	Infants 0.1-0.3 mg/kg/dose PO q8
	Children 0.3-0.5 mg/kg/dose PO q8
Clonidine	5-10 mcg/kg/day PO div q8 for HTN
	3-5 mcg/kg/day PO div q6 for withdrawal
Digoxin IV	30 mcg/kg digitalizing dose (½ STAT; ¼ at 8hrs; ¼ at 16hrs)
Maintenance	4-5 mcg/kg/day q12hrs
Enalaprilat	5-10 mcg/kg dose q8 IV, Max 1.25mg;
	0.625-1.25 mg IV for Adolescents
Esmolol	100-500 mcg/kg over 1 minute, then 50-250 mcg/kg/min
Furosemide	0.5 – 2 mg/kg/dose IV/IM
Hydralazine	0.1 - 0.2 mg/kg/dose IV Max = 20 mg/dose
Labetolol	0.2 – 1 mg/kg/dose IV, Max = 40 mg/dose
Drip:	0.25 – 3 mg/kg/hr, Max = 3mg/kg/hr
Nicardipine	0.5 – 4 mcg/kg/min, Max = 4-5 mcg/kg/min
Nifedipine	0.25-0.5 mg/kg/dose PO/SL
Nitroprusside	0.3 - 4 mcg/kg/min (in D5W) Max = 8-10 mcg/kg/min
Nitroglycerin	0.5-10 mcg/kg/min
Phentolamine	0.05-0.1 mg/kg/dose (max: 5mg) [<i>alpha blocker</i>]
Propranolol	0.01-0.1 mg/kg IV, PO: 0.5-1 mg/kg/day div q6-12
	Max 1mg (infants), 3mg (children)

DIURETICS

Acetazolamide (Diamox)	20 mg/kg/day IV/PO div q12 (Adult 500mg q12)
Bumetanide (Bumex)	0.03-0.1 mg/kg/dose IV/PO ; Max 10mg/day
	(0.025 mg/kg=1mg/kg Lasix)
Chlorothiazide (Diuril)	20-30 mg/kg/day PO div q12h (Adult 500mg q12)
Etharynic acid (Edecrin)	1 mg/kg/dose IV
Furosemide (Lasix)	1 mg/kg/dose IV/IM/PO,
	0.05-0.3mg/kg/hr; Max 2-5mg/hr

Mannitol	0.5-1 gm/kg/dose IV
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TREATMENT OF HYPERKALEMIA

Get ECG! Eval for Peaked T's, QRS widening, PR or QT prolongation, ST↓ Interventions:	
Calcium	Ca ⁺ Gluconate-100 mg/kg IV
	Ca ⁺ Chloride – 20 mg/kg IV
Insulin / Glucose	0.1 U/kg IV / 2-4 ml/kg D25
Albuterol	<10kg → 1.25mg
	>10kg → 2.5mg
	>20kg → 5mg
Bicarb (HCO₃)	1 meq/kg IV
Kayexalate DIALYSIS!	1 gram/kg PO/PR (small children→ 1g/1mEq K+)

TREATMENT OF HYPOGLYCEMIA

Consider Oral / NG route when appropriate!

Premature neonate:	1-2 ml/kg of D10, followed by rate 4-6mg/kg/min
≤6months:	1-2 ml/kg of D25, Max = 25gm/dose
>6months – children:	2-4 ml/kg of D25, Max = 25gm/dose
Adolescents:	20-50 ml of D50
Glucagon	≤20kg → 0.5mg IV/IM
	>20kg → 1mg IV/IM
Octreotide	1-1.5mcg/kg/dose IV/SubQ, q12hrs (for sulfonylurea OD)
	2-10mcg/kg/day divided q6 (<i>hyperinsulinemic hypogly of newborn</i>)

ANAPHYLAXIS (“Epi! Early and Often”) q5-15min PRN

Epinephrine	0.01 mg/kg or 0.01 ml/kg of 1:1,000 IM , Max 0.5mg
EpiPen Jr =	0.15mg, use for <30kg
EpiPen =	0.3mg, use for >30kg
Dexamethasone	0.6 mg/kg PO/IV/IM, Max 10mg
Diphenhydramine	1-2 mg/kg IV/IM
Famotidine	0.5-1mg/kg PO/IV, Max 40mg/Day
Methylprednisolone	1-2mg/kg PO/IV/IM, then 2mg/kg/Day+ q6h
Ranitidine	1.5 mg/kg IV

ASTHMA/CROUP Rx & TX

Albuterol MDIs	4-8 puffs q 20minutes x 3 doses, then q 1-4 hrs
Albuterol Nebs	<10kg- 1.25mg; >10kg- 2.5mg; >20kg- 5mg
Continuous Nebs	0.5 mg/kg/hour (typically 10, 15 or 20 mg/hr)
Atrovent MDI	4-8 Puffs INH q 20 min x 3 doses, then q6 hours
Atrovent Nebs	250mg (<5yrs) or 500mcg (>5yrs)
	Nebs q20 mins x3 then q6 hours
Epinephrine	0.01 mg/kg 1:1,000 IM (Max 0.5mg) [q20 min]
Epi-Racemic (2.25%)	0.05 mL/kg INH, Max 0.5mL/dose
	diluted in 3 mL of NS. Repeat q 1-2 hrs
**Neb of Epi 1/1000	0.5 mL/kg (Max 5 mL) diluted in 3 mL of NS
Magnesium Sulfate	25-50mg/kg IV over 20 min x1, max 2grams
Terbutaline	5-10 mcg/kg/dose SC (Max = 0.4mg/dose)
	***10 mcg/kg slow IV bolus →then 0.2-0.4 mcg/kg/min may titrate by 0.1 mcg/kg/min to 2 mcg/kg/min
	<i>Monitor HR; do not increase drip if HR>200/min*</i>

Heliox

70-80% helium/20-30% O2

STEROIDS

Hydrocortisone stress:	50 mg/m ² /day IV div q8 <i>or</i>
	2.5 mg/kg/day div q8
	0.5-1 mg/kg/dose IV q6 (Adult 10mg q6)
Dexamethasone	0.6 mg/kg PO/IV/IM for croup.
	Max dose 10mg
Methylprednisolone	1-2 mg/kg PO/IV/IM, then 2 -4 mg/kg/Day
Prednisone	2 mg/kg/day PO, Max 60 mg/Day

SEIZURE MEDICATIONS

Diazepam	0.05-0.3 mg/kg IV or 0.5 mg/kg PR, Max 5 mg
Fosphenytoin	LOAD: 15-20 mg PE/kg IV/IM; Rate <3mg
Kepra	LOAD 10-20mg/kg IV/PO
	Maint 10-50mg/kg div q12H
Lorazepam	0.05-0.1 mg/kg IV, Max 4mg/dose, repeat x1
Midazolam	0.15mg/kg IV; 0.2mg/kg buccal/IN/IM
Drip:	0.02-1 mg/kg/hr
Phenobarbital	LOAD 20 mg/kg IV; Rate 1mg/kg/min,
	Max 30mg/min
	Maint: 5 mg/kg/day div q12
Phenytoin	LOAD: 15-20 mg/kg IV; Rate 0.5-1mg/kg/min
Propofol	2.5-3.5 mg/kg IV, repeat q2-4 min (only for ≥3yrs)
Drip:	0.1-0.3 mg/kg/min
Valproic Acid	LOAD: 20-40mg/kg IV; 40 mg/kg/day div q6

FLUIDS

Bolus	10-20 ml/kg 0.9% NaCl
Maintenance:	4-2-1 rule
	0-10 kg → 4 ml/kg/hr
	10-20 kg → 40 + 2ml/kg/hr (Total kg - 10)
	>20 kg → 60 + 1ml/kg/hr (Total kg - 20)
Blood products	
PRBCs	10-20 ml/kg – raises Hgb 1-2 points
FFP	10-20ml/kg
Platelets	0.1 units/kg – raises platelets 10K
Cryoprecipitate	0.1 units/kg

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GI/METABOLIC/NUTRITION

Famotidine	0.5mg/kg/dose Q12H/Q 24 neonate
Glucagon	0.025-0.1 mg/kg IV/IM/SQ (max 1mg); may repeat q20min
Magnesium	25-50 mg/kg IV
Metoclopramide	0.4-0.8 mg/kg PO QID (GERD dosing)
	0.1-0.2 mg/kg/dose PO QID (N&V dosing)
Octreotide	1-2 mcg/kg/hr infusion for GI bleed
	0.3-10 mcg/kg/dose for chylothorax
	1-2 mg/kg/day div q12, Max 20mg/day
	0.15 mg/kg/dose (max. 4 mg) q8 prn
	1 mg/kg/day div q24h
	0.3mmol/kg over 4 hours
	0.5-1.0 mEq/kg/dose IV, over 2-3 hrs
	(max rate 0.5 mEq/kg/hr)
Promethazine	0.25-1.0 mg/kg/dose IV/IM/PO q6; Max 25mg/dose
Ranitidine (Zantac)	4-10mg/kg/day IV div q8 (Adult 50mg q8);
	IV Drip: bolus 1mg/kg, infuse 0.08-0.16 mg/kg/hr
	2-10 mg/kg/day PO div BID (higher for GERD)
	2-4 mEq/kg/day PO BID
Sodium Chloride	40-80 mg/kg/day q6H
Sucralfate	20 mg/kg/day q12h
Ursodiol	

MISCELLANEOUS

Albumin 25%	4 ml/kg (1gm/kg) of 25%, with fluids
Alteplase (TPA)	0.5 mg/kg/hr x 6 hrs max <i>or</i>
	0.3mg/kg/hr x 3hrs
Aminocaproic acid	100mg/kg load then 30 mg/kg/hr
Dipyridamole	3-6 mg/kg/day divided TID
Glycopyrrolate (>6mo)	IV: 5-10 mcg/kg/dose given q6
	PO: 40-100 mcg/kg/dose PO q6-8
Lovenox	1mg/kg/dose q12h SC
Factor 7	100mcg/kg/dose IVx1
Haloperidol	5-10 mcg/kg/dose IV q6
Methylene Blue	1-2 mg/kg IV over 5 min
Narcan	<i>Opioid overdose</i>
	<5yo (<20kg) 0.1mg/kg IV q2-3min (IM/IO/SQ/ETT q3-8min)
	>5yo (>20kg) 2mg IV/IM q2-3min (IM/IO/SQ/ETT q3-8min)
	<i>Respiratory Depression w/ therapeutic dose (partial reversal)</i>
	<5yo (<20kg) 0.001-0.01 mg/kg IV q2-3min (IM/SQ q3-8min)
	>5yo (>20kg) 0.1-0.2mg IV q2-3min (IM/SQ q3-8min)
Potassium phosphate	0.3 mmol/kg once over 4 hours
Protamine	1 mg/kg

USEFUL FORMULAS

Equation	Formula
Sodium Deficit =	TBW x Normal Wt (kg) x (Pt's Na – Desired Na)
**Total Body Water =	0.6 if male and 0.5 if female
Bicarb Deficit =	0.4 * Wt in kg * (24 – Pt's bicarb level)
Endotracheal Tube Size =	(Age / 4) + 4 → uncuffed
Anion Gap =	Na – (Cl + HCO3-)
Serum Osmolality =	(2 * (Na + K)) + (BUN / 2.8) + (glucose / 18)
Parkland Formula =	4cc x Wt (kg) x % burned surface area
–	First half over initial 8 hours (from time of burn)
–	Second half over remaining 16 hours
IMPORTANT NOTE:	
	Calculate Parkland Formula from time of burn injury
	Deduct prehospital fluid from total volume
Transtracheal Jet Ventilation – goal pressure →	20-30psi (set before placement)
O2 admin:exhalation ratios →	Partial obstruction – 1sec:4sec
	Complete obstruction – 1sec:9sec

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