INTUBATION MANAGEMENT ALGORITHM

"LEMON" Airway Assessment:
Always ask: Is this a potentially difficult mask-ventilation and/or difficult intubation?
• **Look externally**: Midface/palatal/mandibular abnormalites (micrognathia, obesity, trauma, etc.)?
•**Evaluate** 3-3-2 Rule (using patient's fingerbreadth as "ruler"):
Mouth opening > 3 fingers, hyoid-chin > 3 fingers, and thyroid cartilage to floor of mouth > 2 fingers
•**Mallampati score**
•**Obstruction**: Evaluate for stridor, foreign bodies, and other evidence of obstruction
•**Neck mobility**: Should be able to extend at least 35 degrees

•**Assess last oral intake:** Clears > 2 hours, breast milk > 4 hours, solids > 6 hours
•**Position patient:** Align external auditory meatus with the clavicle (consider shoulder roll < 2 yo)
•**Assess vascular access**

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Needed Personnel:
Laryngoscopist, medications, cricoid pressure, recorder, respiratory therapist, and charge RN

Monitors
EKG leads hooked-up and working
SpO_2 probe placed and set to AUDIBLE tones
$EtCO_2$ monitor turned on and ready

Equipment: "SOAP"
Suction – Yankauer functional and on
Oxygen – Appropriate bag and mask
Airways – Laryngoscope, ETT tubes (1 size above and below), and oral/nasal airways (1 size above and below)
Pharmacology Considerations (next box)

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Medications (see RSI section above)
Premedications:

Atropine: All < 5 yo & if using ketamine or succinylcholine	Lidocaine: All patients with increased ICP or head injury

Sedatives/hypnotics:
Normotensive : Thiopental, midazolam, etomidate, or propofol
Status asthmaticus: Ketamine ± midazolam

Hypotension	Head injury
Mild: Etomidate, ketamine, or midazolam Severe: Etomidate, ketamine, or none	Normal BP: Thiopental, propofol, or etomidate Low BP: Etomidate or low-dose thiopental

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Management

Preoxygenate with 100% O_2
Premedicate (wait 3 min)
Sedate and hold cricoid pressure
Paralyze
Intubate trachea
Confirm placement: auscultate, $EtCO_2$, CXR
Determine maintenance sedation plan

PICU

Age (regardless of wt)	Laryngoscope	ETT Size = (Age/4) + 4
Term newborn	Miller 0-1	3.0 cuffed, 3.5 uncuffed
6 months – 1 year	Miller 1	3.5 cuffed, 4.0 uncuffed
1 – 2 years	Miller 1, Mac 1	4.0 cuffed, 4.5 uncuffed
2 – 4 years	Miller 2, Mac 2	4.0 cuffed, 4.5 uncuffed
4 – 6 years	Miller 2, Mac 2	4.5 cuffed, 5.0 uncuffed
6 – 8 years	Miller 2, Mac 2	5.0 cuffed, 5.5 uncuffed
8 – 12 years	Miller 2-3, Mac 2-3	6.0 cuffed, 7.0 uncuffed
12 years and up	Miller 3, Mac 3	7.0 cuffed, 8.0 uncuffed

RAPID SEQUENCE INTUBATION

ADJUNCTS	
Atropine	0.01 - 0.02 mg/kg/dose IV/IO for < 5 yo to blunt vagal reflex. -Min dose 0.1 mg, max dose child 0.5 mg, max dose adolescent 1 mg
Lidocaine	1 mg/kg/dose IV/IO for patients at risk for increased ICP.

INDUCTION	
Etomidate	0.3 mg/kg/dose IV/IO
Fentanyl	2 - 4 mcg/kg/dose IV/IO/IM
Ketamine	1 - 2 mg/kg/dose IV/IO; 2-4 mg/kg/dose IM.
Midazolam	0.1 - 0.3 mg/kg/dose IV/IO (max 4 mg)
Propofol	2 mg/kg/dose IV/IO
Thiopental	4 - 7 mg/kg/dose IV/IO if normotensive 2 - 4 mg/kg/dose IV/IO if hypotensive

PARALYTICS – Intubation	
Rocuronium	0.6 - 1.2 mg/kg/dose IV/IO
Succinylcholine	1 - 2 mg/kg/dose IV/IO; 2 - 4 mg/kg/dose IM. (Premedicate with atropine for < 5 yo)
Vecuronium	0.1-0.2 mg/kg/dose IV/IO

PARALYTICS – Maintenance	
Cisatracurium	0.1 - 0.2 mg/kg/hr IV/IO
Pancuronium	0.1 mg/kg/hr IV/IO
Vecuronium	0.1 mg/kg/hr IV/IO

STARTING POINTS FOR RESPIRATORY SUPPORT

Adjust settings based on clinical status & pre-existing cardiorespiratory disease

Pediatric—Initial Ventilator Settings

Mode: SIMV PC/PS

PEEP: 5 PS: 10 + 5 (i.e. 15) PIP: 20

FiO2: 100% —-> Wean to at least 40% as soon as possible

Goal Tidal Volumes 6-8 ml/kg.

End Tidal CO2: Goal depends on condition.

Normal Lungs Goal of 35-45

ALI/ARDS: Permissive Hypercapnea

Vent Parameter	Definition	Starting Setting
Tidal Volume (V_t)	Volume given with each mandatory breath	6-10ml/kg, if very stiff lungs (poor compliance) aim lower = 4-6ml/kg
Pressure control (PC)	Inspiratory pressure over PEEP, this is not PIP (PIP=PC+PEEP)	Usually around 14-20cmH_2O, look for good chest rise and V_t
Pressure support (PS)	Support given by the vent for each spontaneous breath	Usually 10cmH_2O for OETT, lower for tracheostomy
Positive end-expiratory pressure (PEEP)	Pressure left in the circuit at the end of each breath, used to maintain FRC	5cmH_2O for normal lungs, higher in atelectasis. If >10, paralysis is recommended to avoid a PTX.
Respiratory Rate	# of mandatory breaths/min	Age appropriate
Inspiratory time (I_t)	Amount of time over which the vent will deliver the set V_t or PC **Remember I_t determines E_t.	Newborn to 1yo: 0.50 – 0.70 s >1 yo: 0.60 – 1 second. **E_t= (60/RR) - I_t**
F_iO_2	Fraction of inspired air that is O_2	Titrate as soon as possible to <60%
Mean Airway Pressure	Not Set→measured by ventilator	Physiologic MAP 8-16cmH_2O
Peak inspiratory pressure (PIP)	PEEP + PC, not set-just observed	Goal < 30 cmH_2O to avoid barotrauma

Pediatric BiPAP:

Rate: Age appropriate

IPAP: 10 EPAP: 5 FiO2: 100% —> Wean to 40%

CPAP:

PEEP: Minimum of 5 FiO2: 100% —> Wean to 40%

HFNC:

Infant/Child Cartridge: Set Flow and FiO2. Max of 8 LPM

Adult Cartridge: Flow can exceed 8 LPM

PICU

Glasgow Coma Scale

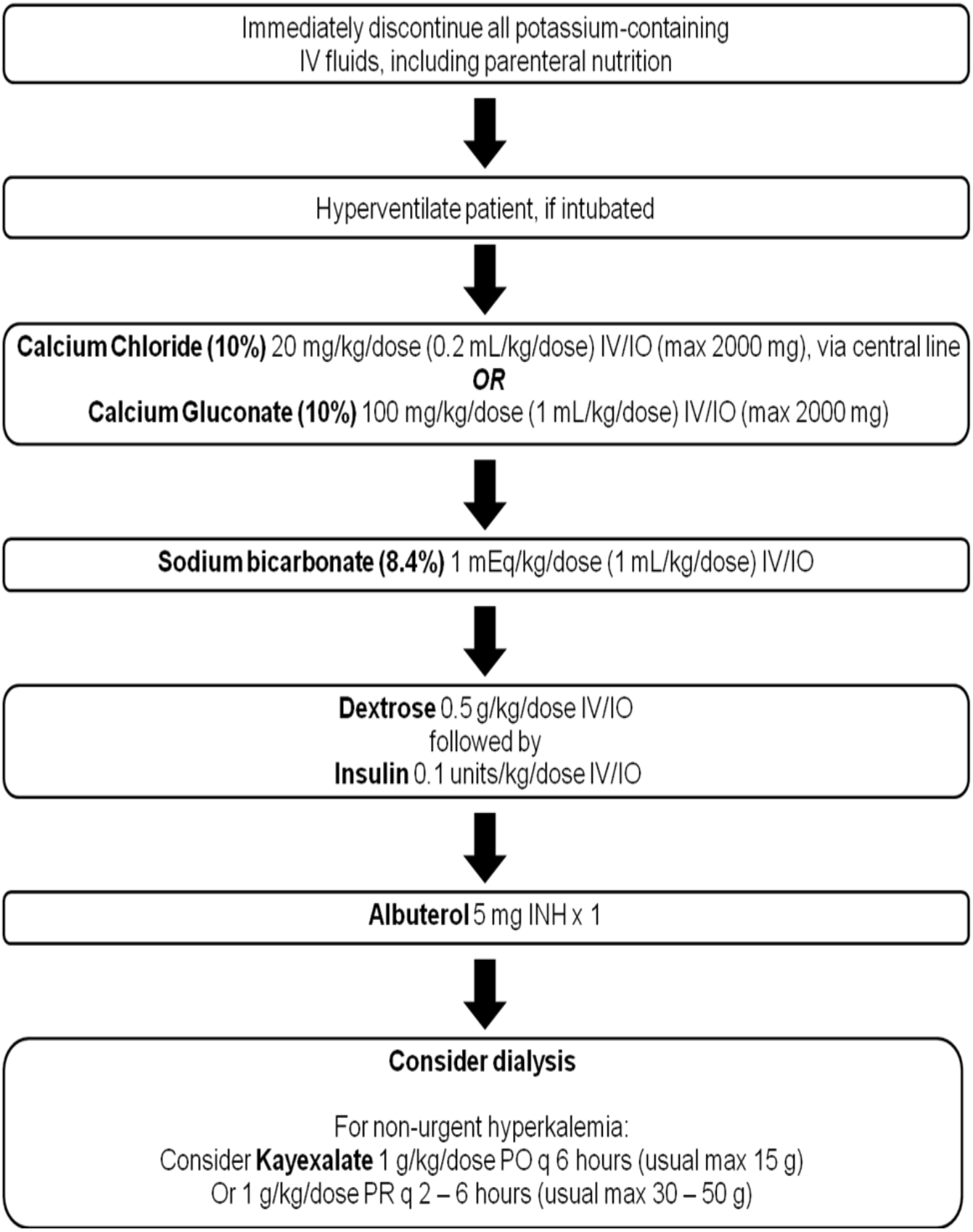
Activity	Infant	Child/Adult	Score
Eye Opening	Spontaneous	Spontaneous	4
	To speech	To speech	3
	To pain only	To pain only	2
	No response	No response	1
Best Verbal Response	Coos and babbles	Oriented, appropriate	5
	Irritable cries	Confused	4
	Cries to pain	Inappropriate words	3
	Moans to pain	Incomprehensible sounds	2
	No response	No response	1
Best Motor Response	Moves spontaneously & purposefully	Obeys commands	6
	Withdraws to touch	Localizes painful stimulus	5
	Withdraws to pain	Withdraws to pain	4
	Abnormal flexion posture to pain	Flexion response to pain	3
	Abnormal extension posture to pain	Extension response to pain	2
	No response	No response	1

ACUTE PAIN MANAGEMENT			
ANALGESICS			
Acetaminophen	10 – 15 mg/kg/dose (max 1000 mg) PO/PR q 4 – 6 hours PRN Max 90 mg/kg/day up to 4000 mg/day		
Ibuprofen	10 mg/kg/dose PO q 4 – 6 hours PRN (max dose 40 mg/kg/day)		
Ketorolac	0.5 mg/kg/dose IV/IM (max 30 mg) q 6 hours x 72 hours (do not exceed 5 days)		
Trisalicylate	7.5 – 15 mg/kg/dose (max 1.5 g) PO q 6 – 8 hours PRN		
NARCOTICS	Morphine 0.1 mg = Methadone 0.1 mg = Hydromorphone 0.02 mg = Fentanyl 0.001 mg		
Fentanyl	0.5 – 2 mcg/kg/dose IV/IO q 1 - 2 hours PRN		
Hydromorphone	0.015 mg/kg/dose IV/IO q 4 – 6 hours PRN		
Morphine	0.05 – 0.1 mg/kg/dose IV/IO q 2 hours PRN		
Oxycodone	0.05 – 0.15 mg/kg/dose (max 5 mg) PO q 4 – 6 hours PRN		
Patient-Controlled Analgesia (PCA)*	***Bolus***	***Basal***	***Max Dose*** (recommended: 0 – 5 doses / hour)
Fentanyl	0.25 – 1 mcg/kg/dose	0.25 – 1 mcg/kg/hour	3 doses / hour; lock out q 10 min
Hydromorphone	0.003 – 0.006 mg/kg/dose	0.003 – 0.006 mg/kg/hour	5 doses / hour; lock out q 7 – 15 min
Morphine	0.01 – 0.03 mg/kg/dose	0.01 – 0.03 mg/kg/hour	5 doses / hour; lock out q 7 – 15 min
*Child should be ≥ 5 yo and able to understand the PCA concept. Start low and titrate to effect. Use of basal may improve overall analgesia stead-state to include sleep pattern. Consider nalaxone infusion for side effect alleviation (below).			

SEDATIVES (MAINTENANCE)		
NARCOTICS	***Infusion (Titrate as necessary)***	
Fentanyl	1 – 6 mcg/kg/hour IV	
Hydromorphone	0.010 – 0.015 mg/kg/hour IV	
Morphine	0.06 – 0.2 mg/kg/hour IV	
Remifentanyl	Load: 0.5 – 1 mcg/kg/dose IV x 1; Infusion: 0.05 – 0.5 mcg/kg/min IV	
Naloxone	Anti-pruritic dosing: 0.25 – 1 mcg/kg/hour IV	
OTHER	***Load / PRN***	***Infusion (Titrate as necessary)***
Dexmedetomidine	Load: 0.5 mcg/kg/dose IV x 1	0.2 – 1 mcg/kg/hour IV
Ketamine	0.5 – 2 mg/kg/dose IV q 1 – 2 hours	0.5 – 2 mg/kg/hour IV
Midazolam	0.05 – 0.1 mg/kg/dose IV q 1 – 2 hours	0.05 – 0.1 mg/kg/hour IV
Pentobarbital	1 – 3 mg/kg/dose IV or 2 – 6 mg/kg/dose PO/PR/IM q 2 – 4 hours (max 150 mg)	1- 2 mg/kg/hour IV
ADJUNCTS		
Clonidine	5 mcg/kg/day topical patch (in 50 mcg intervals up to 300 mcg patch) Consider enteral load: 2.5 mcg/kg/dose PO q 12 hours x 4 doses	
Diphenhydramine	0.5 – 1 mg/kg/dose (max 50 mg) IV/PO q 6 hours	
Lorazepam	0.05 – 0.1 mg/kg/dose IV/PO q 4 – 8 hours PRN	
Methadone	0.1 mg/kg/dose IV/PO q 4 hours x 3 doses, then q 6 – 12 hours (max dose 10 mg)	

RENAL

ACUTE MANAGEMENT OF HYPERKALEMIA



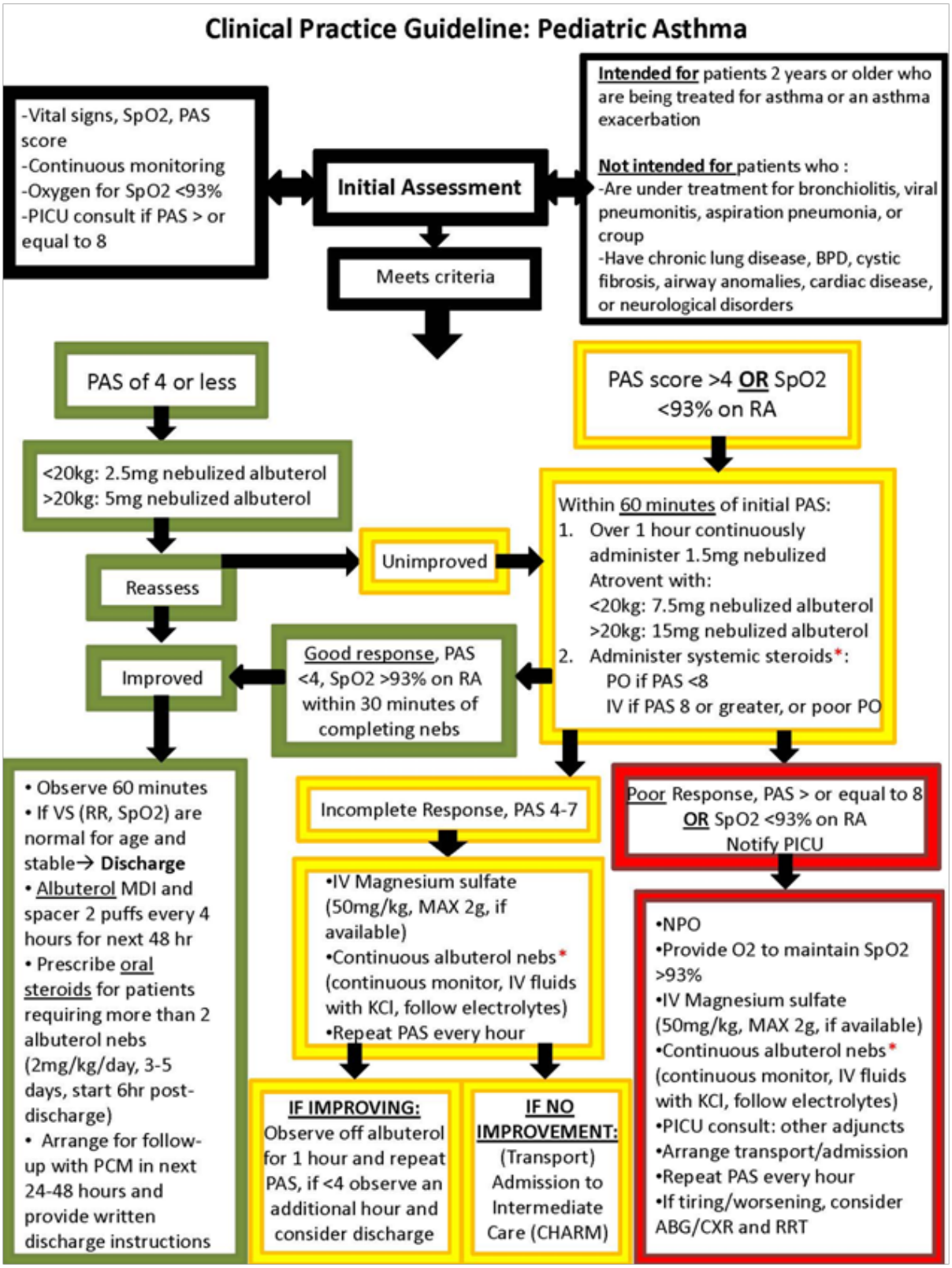
RENAL

Other Electrolyte Abnormalities

Abnormality	Differential Dx	Symptoms	Treatment
Hyponatremia (Na<130)	SIADH, CSW, Free water intox, iatrogenic, CAH, diuretics, hepatic or cardiac failure	Lethargy, seizures, coma from cerebral edema	3%NS in mL (if symptomatic) = 0.6*wt*($Na_{desired}$-Na_{actual})
Hypernatremia (Na>145)	DI, dehydration, iatrogenic, free water loss from skin, drugs	Seizures, renal failure, lethargy and coma	Free water deficit (mL)= [(Na_{actual}/$Na_{desired}$) - 1]*1000*0.6*wt
Hypocalcemia (Ca<4.5)	Hypoparathyroidism, multiple pRBC tx, diet, alkalosis, CRRT, lasix, malabsorption, hyperphosphatemia, hyperlipidemia	Paresthesias, bronchospasm, apnea, seizures, prolonged QT, Rickets, Chvostek sign (facial spasm), Trousseau sign (carpopedal spasm)	Calcium supplementation, need to replete magnesium as well
Hypercalcemia (Ca>10)	Iatrogenic, dietary intake, increased renal absorption or bone destruction, malignancy, Williams syndrome, salicylate ingestion, familial, acidosis	Poor feeding, emesis, FTT, confusion, psychosis, weakness, short QT, renal failure, Nephrogenic DI, Calcinosis	Hydration (IVF at 2-3xmaint), low dose loop diuretics; Calcitonin and bisphosphates if severe; CRRT
Hypokalemia (K<3)	Diet, medications, alkalosis, diarrhea, Adrenal-cortical excess, Bartter syndrome	Arrhythmias (PACs, PVCs), mild muscle weakness	KCl supplementation *KPhos is poor K supplier*
Hyperkalemia (K>6)	Renal failure, acute acidosis, tumor lysis, rhabdomyolysis, pRBCs tx, medications, adrenal insufficiency	Fatal arrhythmias, fatigue, mm weakness, disorientation, palpitations, paresthesias	CaCl, Bicarb ($NaHCO_3$), insulin/glucose, kayexalate (C BIG K pneumonic) also albuterol, Lasix, +/-CRRT
Hypomagnesemia (Mg<2)	Diarrhea, iatrogenic, diet, insulin for DKA, massive RBC tx, CPB, burns	Symptoms usu from resultant ↓Ca: mm weakness, tetany, seizures, hypokalemia	Magnesium supplemenation
Hypermagnesemia (Mg>4)	Diet, iatrogenic, massive cellular release	Mm weakness, resp depression, prolonged QT and PR	Hydration and loop diuretic if causing arrhythmias, CRRT if in renal failure
Hypophosphatemia (Phos<1.5)	↓intake or absorption, ↑bone formation, re-feeding syndrome	ATP depletion = hemolysis, WBC failure, plat dysfunction, mm atrophy and weakness, respiratory failure	Phosphate supplementation with KPhos or NaPhos
Hyperphosphatemia (Phos>9.5)	↑intake or ↓renal excretion	Refractory hypocalcemia	Hydration, stop Phos sources; Phosphate binders

PULMONOLOGY

WRNMMC Asthma Clinical Practice Guideline



*Prednisone: 2mg/kg po to MAX of 80mg
Methylprednisolone: 2mg/kg IV to MAX of 80mg
Dexamethasone: 6mg po for 7-10kg; 10mg po for 10-20kg; 16mg po for 20-30kg

*Continuous Albuterol: 5mg/hr for 5-10kg
10mg/hr for 10-20kg
15mg/hr for 20-30kg

PULMONOLOGY

WRNMMC Asthma Clinical Practice Guideline

Admit Criteria: Unable to wean Albuterol to every 4 hours or SpO2 less than 93% on room air

PICU	General Ward
-Requires terbutaline infusion -Requires continuous nebs -Consideration for Heliox -Change in mental status -Impending respiratory failure -Noninvasive ventilation required	- Albuterol no more than every 2 hours - Normal mental status

Pediatric Asthma Score

Characteristic	0	1	2
Respiratory Rate[1]			
1 -3 years	≤ 34	35 – 39	≥ 40
4 – 5 years	≤ 30	31 – 35	≥ 36
6 – 12 years	≤ 26	27 – 30	≥ 31
> 12 years	≤ 23	24 – 27	≥ 28
O_2 Saturation[2]	> 93% on RA	89 – 93% on RA	≤ 88% on RA
Auscultation	Normal BS	Expiratory Wheezes	Insp and Exp Wheezes to Diminished BS
Retractions[3]	≤ 1 accessory muscle	2 accessory muscles	≥ 3 accessory muscles
Dyspnea	Speaks full sentences, playful, and good oral intake	Speaks partial sentences, short cry, or poor oral intake	Speaks short phrases, grunting, or unable to PO

[1]Respiratory rate must be obtained over a 30-second time period and then multiplied by 2.

[2]O_2 requirement must be obtained after the patient has been on room air for 2 minutes.

[3]Accessory muscle use includes the following:
1) Nasal flaring
2) Supra-sternal muscle group use
3) Intra-costal muscle group use
4) Sub-sternal muscle group use

Weaning Guidelines:
Wean from cont. nebs → q2 if score ≤ 4
Wean from q2 → q4 if score ≤1
Discharge if score on q4 ≤ 1

If asthma score ≥5 and patient is on q2 nebs, increase to continuous nebs
If asthma score ≥2 and patient is on q4 nebs, increase to q2 nebs

EMERGENCY FORMULARY

RESUSCITATION

Adenosine	0.1 mg/kg/dose (max 6mg) rapid bolus IV/IO. If no effect, repeat 0.2 mg/kg/dose, (max 12mg rapid IV/IO.
Amiodarone	5 mg/kg/dose IV/IO bolus (max 300mg) if pulseless arrest. If pulse present, give over 20-60 minutes Repeat to daily max 5 mg/kg (or 2.2g).
Atropine	0.02 mg/kg/dose IV/IO or 0.04 - 0.06 mg/kg/dose ETT. Min dose 0.1 mg, max dose child= 0.5 mg, max dose adolescent 1 mg. Repeat q 5 min to max total dose= 1 mg child, 2 mg adolescent.
Calcium Chloride (10%)	20 mg/kg/dose (0.2 mL/kg/dose) IV/IO slow push during arrest (max 2000 mg)
Calcium Gluconate (10%)	100 mg/kg/dose (1 mL/kg/dose) IV/IO slow push during arrest (max 2000 mg)
Dextrose	0.5 to 1 g/kg/dose IV/IO - D10 5-10 mL/kg for < 2 mo - D25 2-4 mL/kg for 2 mo to 2 yrs - D50 1-2 mL/kg for > 2 yrs
Epinephrine	<u>Pulseless Arrest, Bradycardia (w/symptoms):</u> 0.01 mg/kg/dose (0.1 mL/kg/dose) 1:10,000 IV/IO q 3 to 5minutes (max 1 mg; 10 mL) 0.1 mg/kg/dose (0.1 mL/kg/dose) 1:1,000 ETT q 3 to 5 minutes. <u>Anaphylaxis:</u> 0.01 mg/kg/dose (0.01 mL/kg/dose) 1:1,000 IM (max 0.5 mg) Auto-injector 0.3 mg/dose (wt ≥ 30 kg) or Auto-Jr. 0.15 mg/dose (wt 10-30kg)

Insulin (HyperK+)	0.1 units/kg/dose IV/IO, following 0.5 g/kg/dose of dextrose
Magnesium sulfate	25 – 50 mg/kg/dose IV/IO bolus (pulseless VT) or over 10 to 20 minutes (VT with pulses)
Sodium bicarb 8.4%	1 mEq/kg/dose (1 mL/kg/dose) IV/IO; dilute 1:1 with sterile water for neonates.
Vasopressin	0.5 units/kg/dose (max 40 units) IV/IO. Push for pulseless arrest.

EMERGENCY FORMULARY

CARDIOVERSION / DEFIBRILLATION

SVT or VT w/ pulse	CARDIOVERT: 0.5 – 1 joules/kg synchronized x 1; if no response, 1-2 joules/kg synchronized.
VF or Pulseless VT	DEFIBRILLATE: 2 joules/kg x 1, 4 joules/kg x 2; adult: monophasic 360 joules, biphasic 200 joules.

REVERSAL

Naloxone	Respiratory depression 0.001 mg/kg/dose IV/IO/IM/SQ every 1-2 minutes until respirations adequate Respiratory arrest / full reversal 0.1 mg/kg/dose IV/IO/IM/SQ (max 2 mg/dose)
Flumazenil	0.01 mg/kg/dose (max dose 0.2mg) IV/IO Repeat q1 min to max total dose 0.05 mg/kg/dose or 1 mg as necessary.

POST-RESUSCITATION

DOBUTamine	2 – 20 mcg/kg/min IV/IO
DOPAmine	2 – 20 mcg/kg/min IV/IO
Epinephrine	0.03 – 1 mcg/kg/min IV/IO
Milrinone	Loading dose: 50 mcg/kg/dose IV/IO over 5 min Infusion: 0.25 –1 mcg/kg/min IV/IO
Norepinephrine	0.05 – 1 mcg/kg/min IV/IO
Phenylephrine	0.1 – 4 mcg/kg/min IV/IO
Vasopressin (Pressor)	0.3 – 2 milliunits/kg/MIN (18 – 120 milliunits/kg/HOUR) IV/IO

MISCELLANEOUS

Albumin	0.5 g/kg/dose (5%: 10 mL/kg; 25% : 2 mL/kg)

EMERGENCY FORMULARY

ANTI-HYPERTENSIVES

Esmolol	Load: 500 mcg/kg IV x 1 Infusion: 25 – 300 mcg/kg/min IV, repeat load PRN
Hydralazine	0.1 – 0.5 mg/kg/dose (max 20 mg) IV/IM q 4 – 6 hours PRN
Labetolol	0.25 – 1 mg/kg/dose (usual max 20 mg) IV q 10 min PRN Infusion: 0.25 – 1 mg/kg/hour IV
NICARdipine	0.5 – 5 mcg/kg/min IV
NitroPRUSSIDE	0.5 – 10 mcg/kg/min IV; monitor CN and thiocyante for > 4 mcg/kg/min.

Aim for a 10% drop in BP during a hypertensive crisis—no more than that!

DIURETICS

Bumetanide	≤ 6 mo: 0.01 – 0.05 mg/kg/dose (max 1 mg) IV/PO daily > 6 mo: 0.02 – 0.1 mg/kg/dose (max 10 mg) IV/PO daily Adult: 2 mg IV/PO daily - BID
Chlorothiazide	10 – 20 mg/kg/dose IV/PO q 12 hr (max IV 500 mg/dose; max PO 188 mg/dose for < 2 y; max PO 1000 mg/dose >2 y)
Furosemide	1 – 2 mg/kg/dose IV/PO q 6 – 24 hours (usual starting max 20 mg) Infusion: 0.05 – 0.3 mg/kg/hour
Spironolactone	1 mg/kg/dose (max 100 mg) PO q 12 hrs

EMERGENCY FORMULARY

ENDOCRINE

Vasopressin (DI)	0.5 – 3 milliunits/kg/HOUR; titrate to maintain UOP < 2 ml/kg/hour.
STEROIDS	Dexamethasone 1 mg = Methylprednisolone 5 mg = Hydrocortisone 20 mg
Dexamethasone	Airway edema: 0.1 – 0.6 mg/kg/dose (max 10 mg) IV q6h x 4 – 6 doses. Croup: 0.6 mg/kg IM/PO x 1
Methylpred-nisolone	Loading dose for asthma: 2 mg/kg/dose IV x 1 Maintenance: 0.5 – 1 mg/kg/dose (usual max 60 mg) IV q 6 – 12 hours
Hydrocortisone	Stress Dose: 50 mg/m2/dose (max 100 mg) IV x 1, then 25 mg/m^2/dose (usual max 75 mg) IV q 6 hours. Maintenance dose: 5 mg/m2/dose (usual max 10 mg) IV q 8 hours.

RESPIRATORY

Albuterol	2.5 mg/dose in 3 mL NS nebulized; may repeat q 20 minutes x 3 or . . . Continuous: 0.5 mg/kg/hr (max 20 mg/h) * < 7.5 kg: 2.5 mg/hour INH * 7.5 – 14.9 kg: 5 mg/hour INH * 15 – 29.9 kg: 10 mg/hour INH * > 30 kg: 20 mg/hour INH
Epinephrine	0.01 mg/kg (0.01 mL/kg) 1:1,000 SQ/IM (max 0.5 mg)
Ipratroprium	0.25 – 0.5 mg/dose INH q 4-6 hours
Magnesium sulfate	75 mg/kg/dose IV x 1 over 15 – 20 minutes (max 2000 mg); monitor for ¯BP
Terbutaline	Load: 10 mcg/kg/dose IV x1 over 30min Infusion: 0.4 – 6 mcg/kg/min IV.

EMERGENCY FORMULARY

SEIZURE

Diazepam	0.2 mg/kg/dose IV/IO q15 – 30 min PRN < 5 yo: 0.5 mg/kg/dose PR q2hr PRN 6 – 11 yo: 0.3 mg/kg/dose PR q2hr PRN ≥ 12 yo: 0.2 mg/kg/dose PR q2hr PRN
Fosphenytoin	Load: 20 mg PE/kg/dose IV x 1 Maintenance: 2 mg PE/kg/dose IV q8hrs
Lorazepam	0.05 – 0.1 mg/kg/dose (usual max 4 mg) q 15 min PRN.
Phenobarbital	Load: 20 mg/kg/dose IV x 1 Maintenance: 2.5 mg/kg/dose IV/PO q12h

CEREBRAL EDEMA

Hypertonic saline (2 or 3% NaCl)	3 mL/kg IV over 30 minutes Note: 1 mL/kg of 3% NaCl will increase serum sodium ~ 1 mEq/L
Mannitol	0.25 grams/kg/dose IV over 20 – 30 minutes PRN x 1

Pediatric Parameters & Equipment											
Age	**Birth**	**3mo**	**6mo**	**1 yr**	**2 yr**	**3 yr**	**4 yr**	**6 yr**	**8 yr**	**12 yr**	**14 yr**
Wt (kg)	3.5	6	8	10	12	14	16	20	25	40	50
~BSA (m^2)	0.24	0.34	0.42	0.49	0.56	0.62	0.68	0.79	0.92	1.3	1.5
HR	80-190	80-160	80-160	80-160	80-130	80-130	80-120	75-115	70-110	65-110	60-105
RR	30-50	24-38	24-38	22-30	22-30	22-30	20-24	20-24	18-24	16-22	14-20
SBP*	60-90	70-110	70-110	70-110	74-110	76-110	78-115	82-115	86-120	94-125	98-130
DBP	35-60	40-60	40-60	40-60	45-60	50-65	50-70	55-75	60-80	60-80	65-85
BP Cuff	Neo	Infant	Small Child	Small Child	Child	Child	Child	S. Adult	S. Adult	Adult	Adult
BVM	Infant	Infant	Child	Child	Child	Child	Child	Child	Child/ Adult	Adult	Adult
Oral Airway	Infant 50mm	Small 60mm	Small 60mm	Small 60mm	Child 70mm	Child 70mm	Med 80mm	Med 90mm	Med 90mm	Large 100mm	Large 100mm
ETT Blade	#0-1	#1	#1	#1	#2	#2	#2	#2	#2-3	#3	#3
ETT Size**	2.5-3.5	3.5-4.0	3.5-4.0	4.0-4.5	4.0-4.5	4.5-5.0	4.5-5.0	5.0-5.5	5.5-6.5	6.0-7.0	7.0-8.0
Suction Cath	6 Fr	8-10 Fr	8-10 Fr	8-10 Fr	10 Fr	10 Fr	10 Fr	10 Fr	10 Fr	12 Fr	14 Fr
NGT	5-8 Fr	5-8 Fr	8-10 Fr	8-10 Fr	10 Fr	10 Fr	10-12 Fr	12-14 Fr	14 Fr	14-18 Fr	14-18 Fr
Foley	6 Fr	8 Fr	8 Fr	8 Fr	8 Fr	8 Fr	8 Fr	10 Fr	12 Fr	14 Fr	14 Fr
IV Access	22-24g	22-24g	20-24g	20-24g	18-22g	18-22g	18-22g	18-20g	18-20g	16-20g	16-20g
Central Line	4 Fr 8cm	4 Fr 9cm	4 Fr 12cm	5 Fr 8cm	5 Fr 8cm	5 Fr 12cm	5 Fr 12cm	5 Fr 15cm	5 Fr 15cm	7 Fr 15cm	7 Fr 15cm

*Hypotension = Systolic BP ≤ 70 + (2 x age in years over 1 year); < 1 mo SBP ≤ 60; 1 mo – 1yr SBP ≤ 70
**ETT Size = [Age (years) + 16]/ 4; Use cuffed tube for ≥ 6.0; ETT Depth = 3 x ETT I.D. or (age in years/2) + 12

PEDIATRIC RAPID RESPONSE TEAM

WHEN to call the Rapid Response Team:

AGE	Abnormal Heart Rate (Beats/Minute)	Abnormal Resp Rate (Breaths/min)	Abnormal Systolic BP (mm Hg)
Neonate (<28d.o.)	<80 or >200	<20 or >70	<60
Infant (1mo-12mo)	<80 or >190	<20 or >65	<65
Toddler (1-2 yrs)	<65 or >180	<16 or >60	<70
Pre-school (2-6 yrs)	<60 or >170	<10 or >50	<75
School age (7-11 yrs)	<50 or >160	<10 or >40	<80
Adolescent (>12yrs)	<40 or >140	<10 or >35	<85

- O2 sat < 90 despite supplemental O2, (unless well documented baseline saturation i.e. cyanotic heart disease)
- **Worrisome changes** in heart rate, blood pressure, respiratory rate or work of breathing.
- **Worrisome change** in mental status (ex. Unexplained agitation or Depressed LOC)
- Staff member or patient's family concerned about patient's deteriorating status.
- Patient being considered for CHARm status independent of vital sign changes or the above criteria.

HOW to call the Rapid Response Team:

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