Ward Resident Handbook
2E

Revised September 2010

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Contact Numbers

Hospitalists

- Dr. Andersen 619-218-5714
- Dr. Ruff 619-602-1483

Program Director

- CDR Johnson 619-602-9403

Chief Resident

- LT Dunlavy 619-602-6558

Nursing Dept. Head

- Deb Norton

Important Laboratory/Pharmacy/EEG Numbers:

Laboratory Division	**Phone number**	***Outside Lab Numbers***	***Phone number***
Main Lab	2-9200	*Newborn screens*	*866-463-6436*
Supervisor	2-8834	*HSV CSF PCR*	*858-966-5940*
Blood Bank	2-9356/9357	*HSV Serum PCR*	*800-522-2787*
Chemistry	2-7096	*UCSD Virology*	*619-543-5797*
Hematology	2-9283	*UCSD PCR*	*619-543-3798*
Microbiology	2-9234	*CA Encephalitis*	*510-307-8606*
Differential	2-9281	*CA Metabolic*	*858-576-2975*
Mail Out	2-9271	*NHCP Lab*	*760-725-1490*
		NHCP Micro	*760-725-2616*
Pharmacy Division	**Phone number**	*RCHSD Lab*	*858-966-5940*
Main Pharmacy	2-6825/8404/8417	*RCHSD Micro*	*858-966-7725*
Inpatient	2-8596	*Quest*	*619-686-3057*
ICU	2-5794/6310		
Compound	2-8406		
EEG	**Phone number**		
Office number	2-7278		
EEG Tech	877-713-5764		
Outpatient EEG	2-5620		

Pediatric Subspecialist – Attendings/Consultants

****If there are multiple providers, please check call schedules before paging the subspecialists. The ward clerk has this information.*

Specialty	Physician	Office number	Pager number
Adolescent Medicine	Duty Pager		619-804-4398
Anesthesia Floor Walker	Duty Pager		619-218-1692
Cardiology	CDR Maurer LCDR Powers		619-602-1244 619-602-6967
Dental	Duty Pager		619-453-6570
Dermatology	Dr. Gibbs		619-218-4488
Dietitian	Charis Ross	2-7540	619-379-6173
ENT	Duty Resident		619-453-6955
Endocrine	Duty Pager CDR Kunz CDR Yates	 2-6904 2-6920	619-804-4115 619-804-4670 619-804-4388
Gastroenterology	CDR Boamah	2-9720	619-602-9240
Hematology/Oncology	LCDR Bryan Dr. Pene	2-8332 2-8861	619-379-5625 619-804-4328
Infectious Disease	LCDR Arnold	2-7452 2-7475	619-804-4807
Lactation		2-5261	800-213-9729
Nephrology	CDR Ferrara	2-6923	800-524-2654
Neurology	Dr. Serena Dr. Zeldin	2-9575	619-602-1739 619-804-4507
Neurosurgery	Duty Pager Dr. Klugh		619-379-2604 619-665-3029
Ophthalmology	Duty Resident		619-453-6302
Orthopedic Surgery	Duty Resident		619-954-6797
Pain Service	Duty Pager		619-677-7415
Psychiatry	Duty Resident		800-471-9047
Pulmonary	CAPT Wojtczak	2-6883	800-697-5743
Asthma education	RN Burns	2-8819	
Surgery (Pediatric)	Daytime Night/Weekend Dr. Ignacio		Resident on Peds surg rotation 619-453-7102 619-453-6926
Social Workers	Heather Ducksworth Duty Pager	2-9329	619-804-4008 800-817-4994

Other Important Contact Numbers:

Hospital/Area	**Phone Number**	***Important Codes***	
2East	2-6250 Fax: 2-5237	***2East Door Code***	***2-1-5***
2East Backroom	2-6263/6463/7421	***Intern Call Room***	***(4,5)-(1,2)***
2North Clinic	2-5953	***PICU Call Room***	***1-3-5***
PICU	2-8153 Fax: 2-8668	***ER***	***8274****
PICU Call Room	2-8979	***Resident's Room***	***6-8-4-7***
NICU	2-8910		
NICU Backroom	2-8913		
ER	2-8274 (#1)		
Gen Peds appt line (staff)	2-5009		
Gen Peds appt line (parents)	2-8225		
Adolescent Clinic	2-6930		
Subspecialty Clinic (bldg 2)	2-6896 (parents) 2-5393 (staff)		
RCHSD Main number	858-576-1700		
RCHSD ER	858-966-8005		
NHCP Quarter Deck	760-725-1288		
NHCP ER	760-725-3258/1611		
NHCP Clinic	760-725-1578/1453		
NTC	619-524-4947		
TOC Clairemont	858-278-1180		
TOC Chula Vista	619-585-5521		
East County Clinic	619-645-0124		
Poison Control	800-411-8080		

Radiology

Radiology – Ordering studies

- Plain films (CXR, KUB, etc.) are the only radiological studies that **do not** require a CHCS order **nor** a call by the medical officer to the appropriate work station. A written order in the chart that includes reason for study i.e. r/o infiltrate, is sufficient. The clerk will fill out a chit and make the phone call to radiology.
- All other studies (MRI, CT, UGI, etc.) require a **STAT CHCS order, phone call by the medical officer / student to the appropriate radiology work station, and notifying the patient's nurse that the study has been ordered.** Most studies only require a phone call to the **tech** and not the radiologist. The radiology resident should be contacted if there is a question on what is the best study to order. The radiology resident should also be contacted for more complex/involved studies, i.e. a MRI that needs to be done in the middle of the night. (**Duty radiology resident – 800-570-0813**)

*****Sedated studies require coordination with the Anesthesia Floor Walker (800-408-3359)**
Order study and notify Radiology and the Anesthesia Floor Walker. Radiology and Anesthesia should then coordinate a time. **Do not forget to consider NPO status.**
Routine Peds Anesthesia day is Tuesday.

Radiology Phone Directory

Radiology Department	Phone Number
Front Desk	2-8666
Pediatric Reading Room	2-7382/6137
ER Reading Room	2-8684
Neurology Reading room	2-8744/7869
Fluoroscopy (UGI, VCUG, IVP, BE)/Nuc Med	2-8686/8786
CT Front Desk and Tech	2-8377 (Desk); 2-8731 (Tech)
CT Scanner 1 & 2/ ER CT	1: 2-8771 2: 2-8772 ER: 2-8245
MRI Front Desk	2-7865
MRI Techs	2-7867
MRI and CT Chest Reading Room	2-8678/8679
MRI and CT Abdomen Reading Room	2-5530/8676
US Desk/Techs/Duty Pager	2-8725 (Desk) 2-8746 (Techs) 800-448-5392
US Reading Room	2-5780/7820/5458
Interventional Radiology (IR)	2-8742

Reading Radiological Studies

- AGFA – located in the 2E and PICU work rooms; wet reads are sometimes placed in this system under text, full reports will eventually be in this system and CHCS I
- **Peds reading room (daytime) 2-7382/6137**; Avoid lunch time when residents are in conference
- Dictations Line - 2-7408 enter #12 or #11 1-play, 2-rewind, 3-pause, 4-end current report and hear next one

DAILY ROUTINE

- Arrival in accordance with Departmental 80/30 hour work plan.
- Discharge rounds with WAMO and off-going Resident (***busy months***)
- Pre-Rounding (Vitals/ Labs / X-rays / other studies)
- Overnight events etc –Talk with nursing staff/ Corps staff – invaluable resources
- Complete daily notes
- 7:40 –8:30 (M,W) 7:40-9:00 (Tues, Thurs, Fri) Morning Report & Lecture
  Monday – Grab Bag Case
  Tuesday – NICU Case
  Wednesday – Ward Case
  Thursday – Clinic Case
  Friday – PICU Case

Examining Patients

- Wash hands, clean stethoscope
- Be mindful of isolation precautions – if you don't know what they mean, **ASK!!**
- Consider performing exam in conjunction with nursing care (i.e. Block care)
- Tailor exam to specific need of that child – i.e. mucus membranes on neutropenic patient

Team Rounds

- Start soon after morning report
- Prioritize – discharges/new admits, post-call, pre-clinic, others – work with subspecialists
- Charge Nurse and Social work present as able
- If an issue arises before or during rounds – do not wait
- Presentations should be concise, complete and efficient
- *Presenting the Patient*
  - New Admits – CC/HPI/PMH (previous admissions) /PSH/Meds / Lines/Allergies/Immi/Fam hx/ Social Hx – other; Physical Exam with vital signs and growth parameters; labs and studies; assessment; plan/parents
  - Daily presentation – Hospital Day/Problem Summary/Med Day/ post-op day/ Meds and lines; last 24 hour summary; physical exam; labs/studies; A/P
  - New Attending – Brief but thorough summary – reason for admission, hospital course →daily presentation

Sign Out – Overnight coverage

- On call team should be ready for sign-out at 1630, but usually occurs at 1700 Monday – Friday (PICU to be signed out first routinely)
- Ideally <30 minutes process – "need-to-know" basis – handing off – not dumping
  - Clear sign out prepared on organized sign out sheets with all pertinent information for each patient

Writing Orders on 2 East

Orders for 2 East (placed in Essentris) must include the following

ADMISSION TO 2 EAST - Include name of attending, resident and intern

DIAGNOSIS/PLANNED SURGERY OR PROCEDURE

CONDITION (STABLE, GOOD)

VITAL SIGNS - Routine for this unit is every six hours (08-14-20-02) If vitals are needed more frequently, they should be written every three hours. Routine vital signs are Temp, Heart rate, Respiratory Rate and pain assessment. BP is done only at 0800 and oxygen sats are done only when ordered. Weights are done on all patients under one year and when ordered. Consider the need for a CRM (cardio-respiratory monitor)

ALLERGIES - medications, foods, latex etc.

NURSING – special orders, contact precautions, neutropenic precautions etc.

DIET - Age appropriate unless requiring specific restrictions: NPO, soft, clears, etc.
- Diabetic diets are written as "Regular diet for ___ (fill in age), no concentrated sweets"
- Don't forget food allergies/latex
- DO NOT ORDER "ADVANCE DIET AS TOLERATES" be specific – "if tolerates clears may advance to regular pediatric diet…"

IV FLUIDS – fluid type, concentration, added electrolytes, rate of infusion with calculated ml/hr.

MEDICATION - order as absolute **mg**
- **Comment section**: write **mg/kg/dose** or **mg/kg/day** with **current weight**
-"Do not use abbreviations" need to be followed

ACTIVITY - Age appropriate unless specific restrictions: bed rest, isolation, seizure precautions etc.

LAB TESTS

PARAMETERS TO NOTIFY MO - Be realistic and be ready to be notified

There are multiple order sets available in Essentris. Be sure to review all orders in the order set to ensure that they are complete and that they apply to your patients.

NPO Parameters

- Clears – 2 hours
- Breast Milk – 4 hours
- Cow's Milk – 6 hours
- Full Meal – 8 hours

HSV Work-Ups

- See Redbook for recommendations – Consider in ROS admits under 1 month with fever and irritability.
- Include "general viral cultures" of conjunctiva, nasopharynx, mouth, rectum, any lesions, urine, and CSF. Send PCR for blood and CSF. Consider LFTs. If this work-up takes place on a weekend, call the duty pathologist who will authorize a courier to take these cultures to UCSD to be plated. If you wait until Monday you will lose sensitivity and likely delay discharge.
- **Duty Pathologist: 800-746-1639**

Vital Sign Norms for Age

Age	Wt	HR	RR	SBP	DBP	ETT	Blade
Preterm	<2 kg	130-160	40-60	45-60	20-36	2.5	0
Term NB	2-4 kg	120-150	30-60	60-70	30-45	3	1
0 - 3 mo	3 - 7	120-140	30-55	60-100	30-62	3.5	1
3 - 6 mo	5 - 8	120-140	25-50	60-118	50-70	3.5	1
6 – 12 mo	6 - 10	120-140	20-35	66-126	41-91	4	1
1 – 2 yrs	10-12	110-135	20-30	70-125	40-90	4.5	1-2
2-3 yrs	12-14	100-130	20-28	74-124	39-89	4.5	2
4-5 yrs	16-18	90-115	20-25	79-119	45-85	5	2
6-8 yrs	20-26	80-110	20-25	80-124	45-85	5.5	2
8–10 yrs	24-32	75-95	16-24	90-125	50-85	6	2
10-12 yrs	30-42	70-90	16-24	85-135	55-88	6.5	3
>14	>45	60-90	15-20	90-140	60-90	7 – 7.5	3
Adult	70	60-90	15-20	90-140	60-90	7 – 7.5	3

CBC Norms By Age:

Age	Hb (g%) [a]	HCT (%) [a]	MCV (fL) [a]	MCHC (g/% RBC) [a]	Reticulocytes	WBCs (×10 3 /mm 3) [b]	Platelets (10 3 /mm 3) [b]
26–30 wk gestation [c]	13.4 (11)	41.5 (34.9)	118.2 (106.7)	37.9 (30.6)	—	4.4 (2.7)	254 (180–327)
28 wk	14.5	45	120	31.0	(5–10)	—	275
32 wk	15.0	47	118	32.0	(3–10)	—	290
Term [d] (cord)	16.5 (13.5)	51 (42)	108 (98)	33.0 (30.0)	(3–7)	18.1 (9–30) [e]	290
1–3 day	18.5 (14.5)	56 (45)	108 (95)	33.0 (29.0)	(1.8–4.6)	18.9 (9.4–34)	192
2 wk	16.6 (13.4)	53 (41)	105 (88)	31.4 (28.1)	—	11.4 (5–20)	252
1 mo	13.9 (10.7)	44 (33)	101 (91)	31.8 (28.1)	(0.1–1.7)	10.8 (4–19.5)	—
2 mo	11.2 (9.4)	35 (28)	95 (84)	31.8 (28.3)	—	—	—
6 mo	12.6 (11.1)	36 (31)	76 (68)	35.0 (32.7)	(0.7–2.3)	11.9 (6–17.5)	—
6 mo–2 yr	12.0 (10.5)	36 (33)	78 (70)	33.0 (30.0)	—	10.6 (6–17)	(150–350)
2–6 yr	12.5 (11.5)	37 (34)	81 (75)	34.0 (31.0)	(0.5–1.0)	8.5 (5–15.5)	(150–350)
6–12 yr	13.5 (11.5)	40 (35)	86 (77)	34.0 (31.0)	(0.5–1.0)	8.1 (4.5–13.5)	(150–350)
12–18 yr							
Male	14.5 (13)	43 (36)	88 (78)	34.0 (31.0)	(0.5–1.0)	7.8 (4.5–13.5)	(150–350)
Female	14.0 (12)	41 (37)	90 (78)	34.0 (31.0)	(0.5–1.0)	7.8 (4.5–13.5)	(150–350)
Adult							
Male	15.5 (13.5)	47 (41)	90 (80)	34.0 (31.0)	(0.8–2.5)	7.4 (4.5–11)	(150–350)
Female	14.0 (12)	41 (36)	90 (80)	34.0 (31.0)	(0.8–4.1)	7.4 (4.5–11)	(150–350)

Hb, hemoglobin.

CSF Norms:

EVALUATION OF CEREBROSPINAL FLUID

	WBC Count/µL	Mean % PMNs
Preterm	0–25	57%
Term (0–30 days)[11]	7.3 ± 13.9 (0–130)	61%–84%
Child	0–7	5%
GLUCOSE	**Conventional Units**	**SI Units**
Preterm	24–63 mg/dL	1.3–3.5 mmol/L
Term[11]	51.2 ± 12.9 mg/dL	
Child	40–80 mg/dL	2.2–4.4 mmol/L
CSF GLUCOSE/BLOOD GLUCOSE		
Preterm	55%–105%	
Term	44%–128%	
Child	50%	
PROTEIN		
Preterm	65–150 mg/dL	0.65–1.5 g/L
Term[11]	64.2 ± 24.2 mg/dL	
Child	5–40 mg/dL	0.05–0.40 g/L

Modified from Oski FA: Principles and Practice of Pediatrics, 3rd ed. Philadelphia, JB Lippincott, 1999.

CSF, cerebrospinal fluid; PMNs, polymorphonuclear lymphocytes; WBC, white blood cell.

FEN/GI PEARLS:

Holliday-Segar Method for Calculating IV Fluids

Body Weight	mL/kg/day		mL/kg/hr
First 10 kg	100	÷ 24 hr/day	= 4
Second 10 kg	50	÷ 24 hr/day	= 2
Each additional kg	25	÷ 24 hr/day	= 1

Bolus fluids should be NS at 10 or 20mL/kg.

Output

Urine output should be 1-2 cc/kg/hour

$$BSA\ (m^2) = \frac{wt(kg)\ x\ ht(cm)}{60}$$

Oral Rehydration Therapy

1 Liter Water + 8 tsp sugar + 1 tsp salt

* add ½ cup OJ or 1 mashed banana for added potassium

Hyperkalemia - Treatment

NaHCO3 1-2 meq/kg over 5-10 minutes

Dex 0.1unit/kg insulin + 0.5 gm/kg dextrose over 30 -60 minutes

Insulin gtt: insulin 0.1 units/kg/hr + D25W 1-2ml/kg/hr

CaGluc for EKG changes: 100mg/kg/dose over 3-5minutes

Corrected Calcium

Used to correct plasma total calcium measurements for effects of changes in albumin concentration. Corrected calcium can then be compared with usual reference intervals.

Calcium(corrected, mmol/L) = Calcium(measured, mmol/L) + {(40 - albumin (g/L)) x 0.02}

Weight Gain Expectations	
Small Preemie	15 gm/d
0-3 mo	15-30 gm/d
3-6 mo	15-20 gm/d
6-12 mo	5-8 gm/d
1-6 yr	5-8 gm/d
7-10 yr	5-11 gm/d

Mixing Infant Formulas		
20 cal/oz	1 scoop	2 oz
24 cal/oz	3 scoops	5 oz
26 cal/oz	2 scoops	3 oz
28 cal/oz	7 scoops	10 oz
30 cal/oz	3 scoops	4 oz

Caloric Requirements by Age		
Age	**Calories/Kg**	**Protein**
1 – 6 mo	108 kcal/kg/d	2.2 gm/kg/d
6 – 12 mo	98 kcal/kg/d	2 gm/kg/d
1 – 3 yrs	102 kcal/kg/d	1.2 gm/kg/d
4 – 6 yrs	90 kcal/kg/d d)	1.1 gm/kg/d
7 – 10 yrs	70 kcal/g/d	1 gm/kg/d

Infant and Pediatric Formulas and additives

Type of Product	Products	Substitution available at NCMSD	Who carries/how obtained
Infant-whole milk protein	Similac Advance Enfamil Lipil	Both available here	on the ward/central stores
Infant-soy protein	Similac Isomil Enfamil ProSobee	Both available here	on the ward/central stores
Tri-peptide milk based	Carnation Good Start	Available here-no other formula	on the ward/central stores
Tri-peptide soy based	Carnation Alsoy	Available here no other formula	on the ward/central stores
Infant semi-elemental, all LCT fat	Nutramigen	Available here, no other formula	on the ward/central stores, by special order
Infant semi-elemental, MCT oil containing	Pregestamil Alimentum	Both available here	on the ward/central stores, by special order
Infant elemental	Elecare Neocate	Elecare	Food operations dept, call diet office, 2-8523, after hrs on 1st floor pantry
Pediatric, whole milk protein	Pediasure, w/ and w/o fiber Pediasure enteral w/ and w/o fiber Nutren jr w/ and w/o fiber Resource Just for Kids w/ fiber Compleat Pediatric Kindercal	Nutren jr with fiber (until Nov 06) Pediasure Enteral with fiber (after Nov 06) Both can be consumed orally or through g-tube	Food operations dept, call diet office, 2-8523, after hrs on 1st floor pantry
Pediatric whole milk protein, 1.5kcal/ml	Resource Just for Kids 1.5kcal, w/ and w/o fiber	Resource Just for kids 1.5kcal, w/ fiber; for kids over 2 can use Ensure Plus w/o fiber, Resource can go in tube, ensure plus not	Food operations dept, call diet office, 2-8523, after hrs on 1st floor pantry
Semi-elemental	Peptinex DT Peptamen Jr. Vital Jr.		Not on formulary contact unit RD
Elemental	Elecare Neocate One Plus Vivonex Pediatric	Elecare	food operations dept, call diet office, 2-8523, after hrs on 1st floor pantry
Modulars			
Protein powder	beneprotein	beneprotein	Food operations dept, call 2-8523, after hrs on 1st floor pantry
glucose powder and liquid	polycose	Powder polycose	Food operations dept, 2-8523, after hrs on 1st floor pantry
MCT fat	MCT oil	MCT oil	Pharmacy
LCT fat	Microlipids	Microlipids	Food operations dept, 2-8523, after hrs on 1st floor pantry
fiber powder	Benefiber Metamucil	Benefiber	Food operations dept, 2-8523, after hrs on 1st floor pantry
Thickening agent	Thick It Resource ThickenUp Lyon's Ready care food thickener	Lyon's Ready Care food thickener	Food operations dept, call diet office, 2-8523, after hrs on 1st floor pantry

Condition Specific:			
Renal formula (pre-dialysis)	Infant-Similac 60/40 Over 1yo-Suplena Novasource renal Nutren Renal	Similac 60/40 Nutren Renal	Similac-on the ward or central stores Nutren Renal-Food operations, 2-8523, after hrs 1st floor pantry
Pulmonary formula	Over 1 yo: Nutren Pulmonary Pulmocare Novasource Pulmonary	Nutren Pulmonary	Food operations, 2-8523, after hrs 1st floor pantry
IBD	Modulen IBD	Modulen IBD	Food operations, 2-8523, after hrs, 1st floor pantry
Thickened juice and water	Resource thickened juice and water	Carry both, have both honey and nectar consistencies	Food operations, 2-8523, after hrs, 1st floor pantry
Adult Products			**Typically for kids over 10, but may be used over the age of 2**
Iso-osmolar, without fiber, milk protein based	Isocal Nutren 1.0 Osmolite	Osmolite	Food operations, 2-8523, after hrs 1st floor pantry
milk based with fiber	Nutren 1.0 w/ Fiber Nutren 1.5 w/ fiber Ultracal (1.06kcal/ml) Fibersource Standard (1.2kcal/ml) Jevity 1 Cal Jevity 1.2 Cal Jevity 1.5 Cal	Jevity 1.2kcal (NOTE: The osmalality of this product is 450, if lower is needed use osmolite and benefiber)	Food operations, 2-8523, after hrs 1st floor pantry
Semi-elemental	Peptinex Peptamen Peptamen 1.5 Reabilan Reabilan HN Vital	Peptamen 1.5 (NOTE: there are other semi-elemental but much higher protein)	Food operations, 2-8523, after hrs 1st floor pantry
Elemental	f.a.a vivonex Tolerex Vivonex TEN Vivonex Plus	None	Contact unit RD

Introduction to managing G-tubes

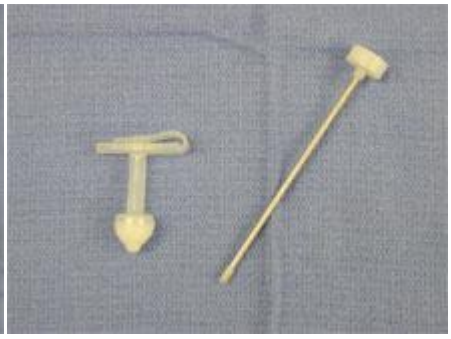
1) **Types of G-tubes**
    a. **Bard button**
    b. **MIC-G**
    c. **MIC-KEY button**
        i. **How to replace a MIC-KEY button** (instructions from Mickey guide book)
            1. Remove the new MIC-KEY feeding tube from the package. Fill the balloon with 5ml sterile/distilled/tap water.
            2. Remove the syringe and observe the balloon. It should be symmetrical. Check for leaks. Remove the water from the balloon.
            3. Attach the luer slip syringe to the balloon valve of the MIC-KEY feeding tube that is in your child's stomach. Pull back on the plunger until all the water is out of the balloon.
            4. Gently remove the MIC-KEY feeding tube from your child's stomach. It may help to use a little water soluble lubricant as you are removing it.
            5. Lubricate the tip of the replacement MIC-KEY feeding tube with a water soluble agent. DO NOT USE OIL OR PETROLEUM JELLY.
            6. Gently guide the new tube into the stoma. Insert the tube all the way until the MIC-KEY feeding tube is flat against the skin.

2) **Complications**
    a. **What do I do if the g-tube comes out before 4-6 weeks?**
        i. Attempt to place g-tube back in, and you will need to come to NMCSD 2E Pediatric floor that same day. A contrast study may be needed to evaluate g-tube.
    b. **What do I do if the g-tube comes out after 6 weeks?**
        i. Attempt to place g-tube back in, and then follow up with Pediatric Surgery clinic the next day or within the week.
    c. **Is leaking normal?**
        i. You will need to quantify how much leakage there is. Place 2x2 gauze around g-tube site. If the dressing only needs to be changed every 6-8 hours, this amount of leakage is normal.
        ii. If you need to replace the gauze every 2-3 hours, you will need to do the following:
            1. Check the balloon and ensure there is 5cc of water in balloon.
            2. You can also place 2 2x2 gauze at g-tube site to create a tighter seal.
    d. **Infection**
        i. Signs of infection are increased swelling, redness, pus, fevers
        ii. If you notice any signs of infection, contact pediatric surgery ASAP, or go to the emergency room.
        iii. To prevent infection from occurring, keep G-tube site dry.
    e. **Granulation tissue**
        i. Granulation tissue may form at the g-tube site. This is pink colored overgrowth of healthy tissue. May be a cause of increased leakage. If this occurs, inform Pediatric surgery. Silver nitrate will need to be applied to tissue to reduce tissue overgrowth.
    f. **Clogged feeding tubes**
        i. With a small syringe, flush tube with water. If this doesn't work, you can try sprite or coke to flush tube. Keep tube clamped for a few minutes. Then try to flush tube again with water.
        ii. To prevent tubes from clogging, flush tube after every feed.

3) **Home health agency**
        i. You will need to be set up with a home health agency as your supplier for g-tube replacements. A prescription can be written by us and faxed to your agency. You will always need to have a replacement with you at home.

MIC-Key		**Bard Button**	
Pros	Cons	Pros	Cons
Easy to change, little or no pain	Balloon breaks so needs more frequent change	Only needs to be changed once per year	Difficult to change, more painful
Can be changed at home by parent	Higher profile because valve is outside body	Low profile because valve inside stomach	Can only be changed in surgery office
Comes in wide variety of sizes	Stiffer silicone tube	Softer silicone tube	Limited size range
Has locking feeding adaptor			Feeding adaptors do not lock into place
			Needs different adaptor to vent

MIC-KEY



BARD

Central Lines:

I. Indications for central lines include the following:

A. Nutritional support when this cannot be achieved enterally for a significant period of time.
B. Chemotherapy for Hem/Onc patients
C. Chronic drug therapy of any kind exceeding 4 weeks
D. Administration of sclerotic drugs
E. Facilitation of home therapy
F. Elective venous access in patients with no peripheral veins
G. Hemodynamic monitoring

II. In contrast to adults most central lines in children require a general anesthetic. Subclavian puncture in an uncooperative patient carries an unacceptable risk.

III. The choices of tunneled vs. temporary and number of lumens should be discussed with the referring physician prior to the procedure. Recommendations should be based on the following:
   a. Access required for longer than 3-4 weeks requires placement of a tunneled catheter to reduce the risk of catheter sepsis.
   b. Positive blood cultures or clinical evidence of sepsis, within 7 days of line placement, are relative contraindications to placement of a tunneled catheter.
   c. The incidence of catheter sepsis is directly proportional to the number of central line lumens.
   d. Size and catheter considerations. For instance, available double lumen permanent catheters are too large for a child <10kg.

IV. A history of venous thrombosis, difficult previous insertions, previously infected lines, or coagulopathy, should be sought, brought to the attending's attention, and addressed prior to operation. This may require imaging of veins by ultrasound or MRI to confirm patency, correction of coagulopathy, or change in a planned site of placement.

V. Anatomic or mechanical constraints should be brought to the attending's attention prior to the procedure, i.e. severe contractures, halo traction vests, body casts, Stryker frames, etc.

Catheter Malfunction:

All catheter manipulations must be performed in accordance with NMCSD central line protocol. Ask the nursing staff.

I. *Leakage*- "It's leaking around the catheter." First determine the nature of the fluid, i.e. clear, intralipid, blood. Inspect the catheter for external kinks or cracks. If no obvious source is seen and the fluid is clear, determine glucose content by chemstrip. If the integrity of the line remains in doubt send the patient for a contrast injection to determine if extravasation occurs. If the integrity of the line is violated it must be removed or changed over a guidewire. Permanent lines with external cracks may be repaired.

II. *Obstruction*- Inspect catheter for kinks, visible thrombus. Be alert to other evidence of thrombosis, i.e. arm swelling, SVC syndrome, surface collateral formation. If venous thrombosis is suspected image the tip of the catheter prior to further manipulations. If no thrombus is suspected or seen, confirm obstruction by attempting to flush with a 1cc tuberculin syringe. If obstruction is confirmed, change temporary catheters over a guidewire. Permanent catheters may warrant a trial of urokinase injection prior to removal.

III. *Migration*- "It just fell out, we found it like this". If tip is still intravascular (blood return), change temporary lines over guidewire. Extrusion of the cuff on a tunneled line requires replacement of the line.

Catheter Sepsis:

I. Confirmation of catheter sepsis requires positive blood cultures and a corresponding positive culture of the catheter tip. Otherwise it is only presumed catheter sepsis.

II. If tunnel infection is present (i.e. erythema or cellulitis along the tunnel, expressible pus, tenderness or fluctuance on palpation) infection cannot be eradicated and the line must be removed as soon as cultures are obtained. In the absence of these findings, the following general guidelines apply.

III. The presence of a central catheter in a septic patient does not mandate central line removal. Cultures should be drawn and the patient treated through the line until cultures are complete.

IV. Temporary catheters may be changed over a guidewire and their tips cultured to confirm catheter sepsis. If the cultures are positive at 48 hrs, the catheter should be removed and antibiotics administered peripherally. Although the new line will be contaminated if the tract is infected, bacterial proliferation and shedding will not occur within 48 hours.

V. In the absence of tunnel infection or abscess, infection in permanent catheters can be eradicated in up to 70% of patients with antibiotic therapy through the line.

Catheter Removal

Be certain that catheters are no longer needed prior to removal. If there is any doubt (see catheter sepsis above), contact the attending.

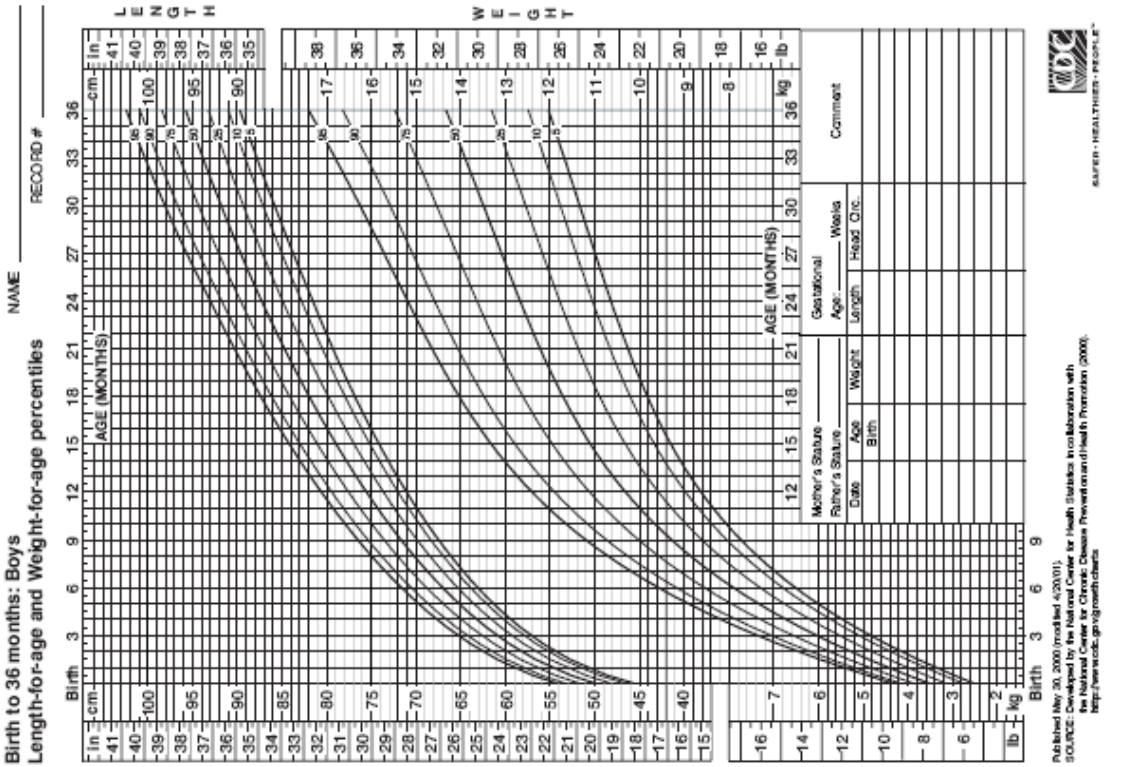
I. Removal of temporary catheters does not require a surgical consult

II. Removal of permanent catheters is a surgical procedure requiring local anesthesia and, in most cases, general anesthesia. Catheter removal of any tunneled line that has been in place longer than 2 weeks requires a trip to the OR. The only exception is for neonates in the NICU. The catheter cuff should be palpated prior to beginning the procedure. If it is within 2-3 cm of the catheter exit site, the catheter can be removed without a counterincision over the cuff. The procedure requires circumferential dissection of the cuff which is incorporated by fibrous tissue. If there is uncertainty about the position of the cuff, notify the attending prior to beginning the procedure.

III. Always be sure the entire cuff has been removed or an abscess may form. An occlusive dressing should remain in place for 48 hours.

IV. Do not pull lines without notifying the attending.

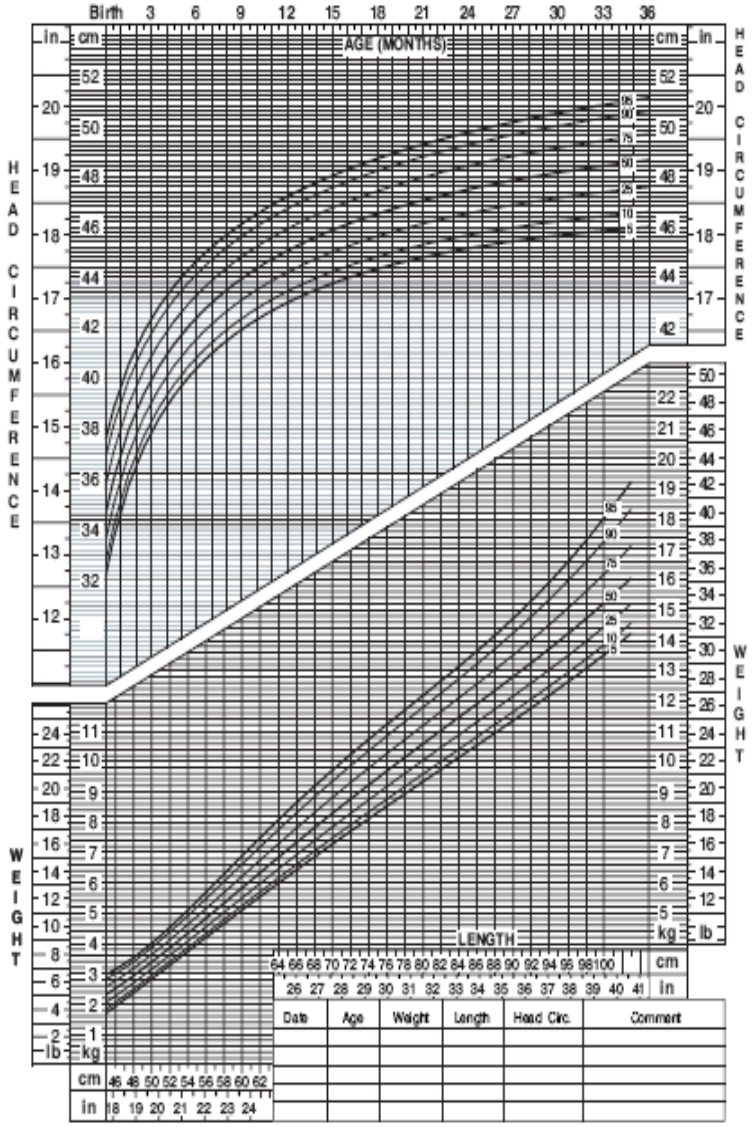
Growth Charts



Birth to 36 months: Girls
Head circumference-for-age and Weight-for-length percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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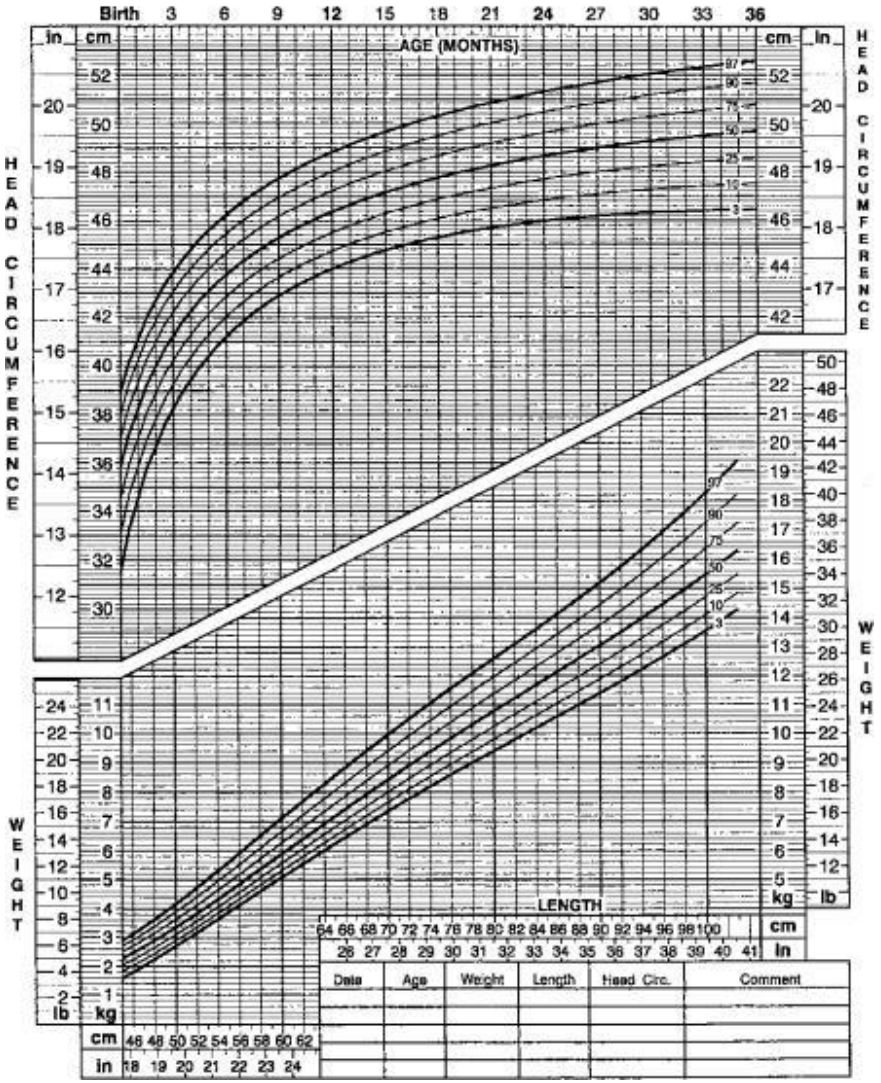
Birth to 36 months: Boys
Head circumference-for-age and Weight-for-length percentiles

NAME _____

RECORD # _____



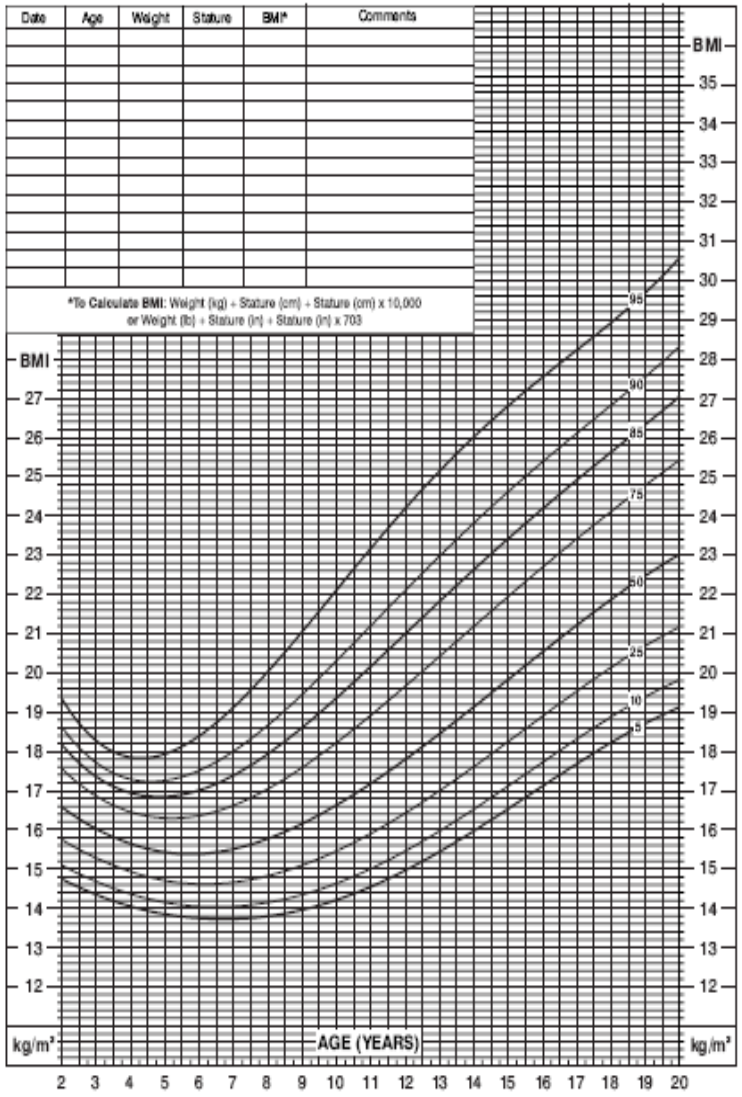
2 to 20 years: Boys
Body mass index-for-age percentiles

NAME _____

RECORD # _____

Date	Age	Weight	Stature	BMI*	Comments

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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2 to 20 years: Boys
Stature-for-age and Weight-for-age percentiles

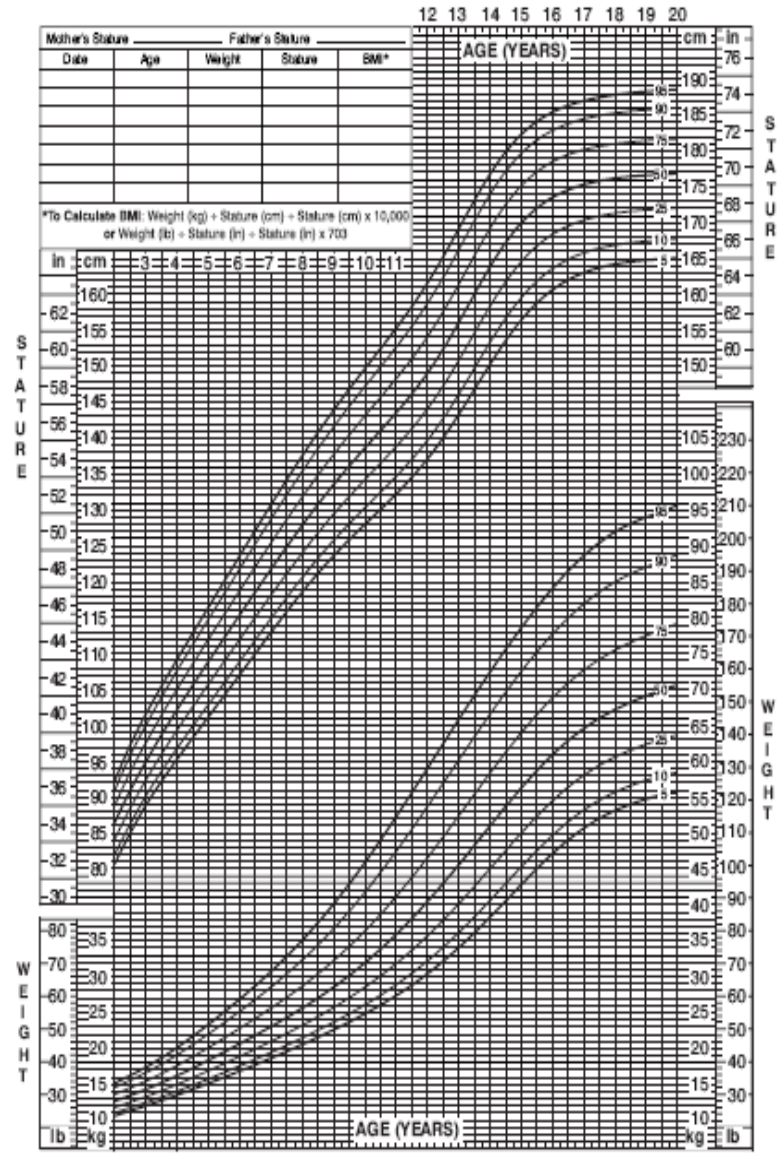
NAME _____

RECORD # _____

Mother's Stature _____ Father's Stature _____

Date	Age	Weight	Stature	BMI*

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 11/21/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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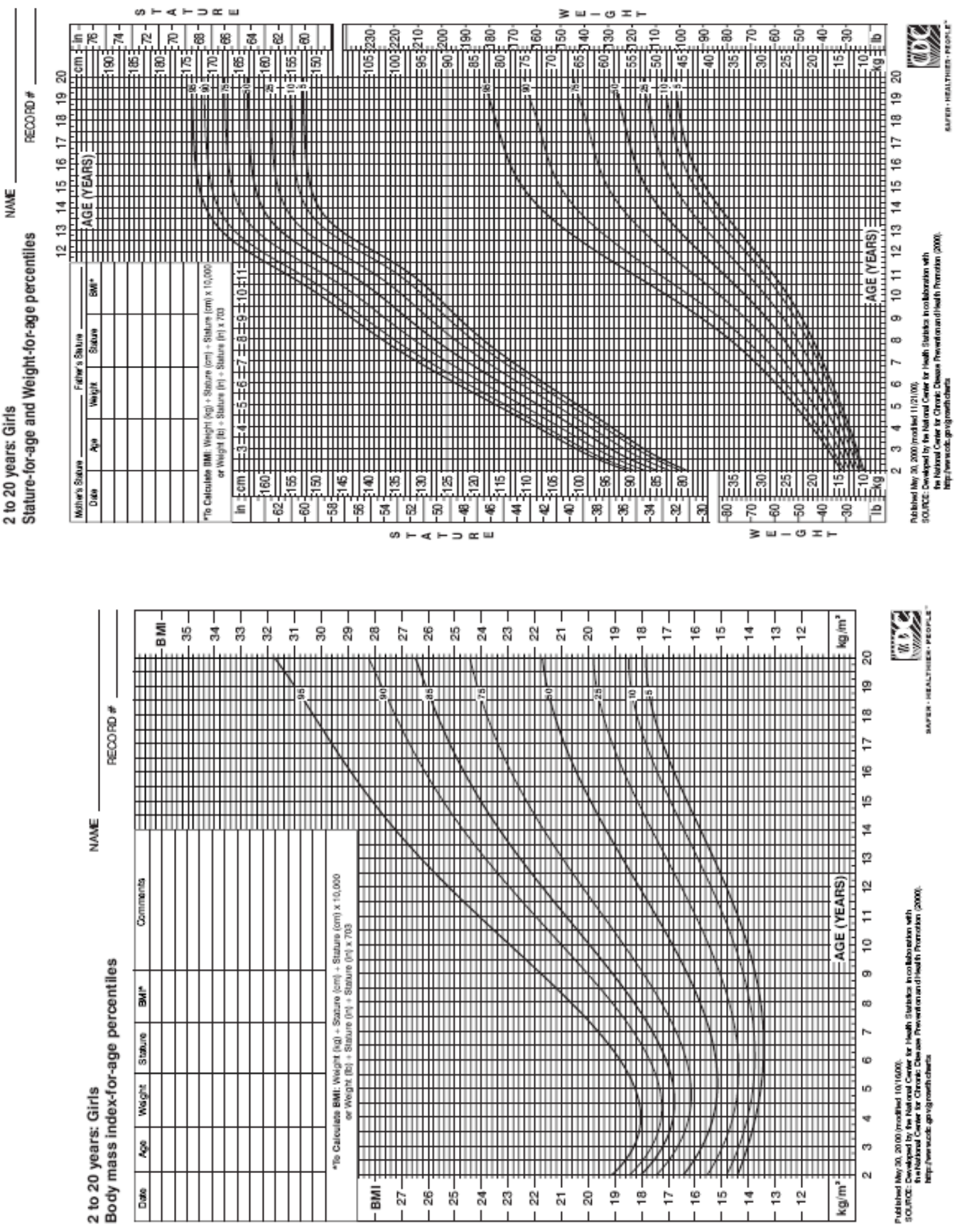


Down Syndrome growth charts: www.growthcharts.com

Commonly Used Medications

****** Medication doses should be looked up in The Harriet Lane Handbook or the Pediatric Dosing Handbook.***

Acetaminophen
Neonates: 10-15mg/kg/dose PO/PR Q6-8 hr.
Pediatric: 10-15mg/kg/dose PO/PR Q4-6 hr.
Adult: 325-650mg/dose
Max. dose: 4g/24 hr, 5 doses/24 hr

Ibuprofen
Child: 5-10 mg/kg/dose Q6-8 hr PO; max dose: 40mg/kg/24 hr PO
Adult: 400-800 mg/dose Q6-8 hr PO; max dose: 800mg/dose or 3200 mg/24 hr

Ampicillin
Neonate IM/IV:
- <7 days
  - <2 kg: 50-100 mg/kg/24 hr IM/IV ÷Q12 hr
  - ≥2 kg: 75-150 mg/kg/24 hr IM/IV ÷ Q8 hr
- ≥7 days:
  - <1.2 kg: 50-100 mg/kg/24 hr ÷Q12 hr IM/IV
  - 1.2-2 kg: 75-150 mg/kg/24 hr ÷Q8 hr IM/IV
  - >2 kg: 100-200 mg/kg/24 hr ÷ Q6 hr IM/IV

Infant/Child:
- Mild-moderate infections: 100-200 mg/kg/24 hr ÷Q6 hr IM/IV
- Severe infections: 200-400 mg/kg/24 hr ÷Q4-6 hr IM/IV

Gentamicin
Postconceptional Age ≥34 wks & Postnatal age 0-7 days: 4 mg/kg/dose IV/IM Q 24 hr
Postconceptional Age ≥ 34 wks & Postnatal age > 7 days: 4 mg/kg/dose IV/IM Q12-18 hr
Child: 7.5 mg/kg/24 hr ÷ Q 8 hr

Cefotaxime
Neonate: IV/IM:
- <7 days old and ≥2000 g: 100-150 mg/kg/24 hr ÷ Q8-12 hr
- >7 days old and ≥2000 g : 150-200 mg/kg/24 hr ÷ Q6-8 hr

Infant and child (1 mo-12 yr) (<50 kg): 100-200 mg/kg/24 hr ÷ Q6-8 hr IV/IM
- Meningitis: 200 mg/kg/24 hr ÷ Q6 hr IV/IM
- Max. dose: 12 g/24 hr

Ceftriaxone
Infant and child: 50-75 mg/kg/24 hr ÷ Q12-24 hr IM/IV; max. dose: 2 g/24 hr
- Meningitis: 100mg/kg/24 hr IM/IV ÷ Q12 hr; max dose: 4 g/24 h

Vancomycin

Neonate:

<7 days:

<1.2kg: 15mg/kg/dose Q24hr
1.2-2kg: 10-15mg/kg/dose Q12-18hr
>2kg: 10-15mg/kg/dose Q8-12hr

>7 days:

<1.2kg: 15mg/kg/dose Q24hr
1.2-2kg: 10-15mg/kg/dose Q8-12hr
>2kg: 10-14mg/kg/dose Q8hr

Infant and Child serious infection/meningitis: 60mg/kg/24hr ÷ Q6hr
Other infections: 40mg/kg/24hr ÷ Q6-8hr

Clindamycin

Neonate:

<7 days:

<2kg: 5mg/kg/dose Q12hr
>2kg: 5mg/kg/dose Q8hr

>7 days:

<1.2kg: 5mg/kg/dose Q12hr
1.2-2kg: 5mg/kg/dose Q8hr
>2kg: 5mg/kg/dose Q6hr

Child/Infant: PO: 10-30mg/kg/24hr ÷ Q6-8hr
IV: 25-40mg/kg/24hr ÷ Q6-8hr

Cefepime

Neonate:

<14 days: 60mg/kg/24hr ÷ Q12hr IV/IM
>14 days: 100mg/kg/24hr ÷ Q12hr IV/IM

Child > 2mo: 100mg/kg/24hr ÷ Q12hr IV/IM
Meningitis/Pseudomonas/Cystic Fibrosis: 150mg/kg/24hr ÷ Q8hr IV/IM

UNIT DESCRIPTION – 2 East

2 East is a 28 bed multidisciplinary medical and surgical Pediatric ward located on the 2nd floor of Building One, Naval Medical Center San Diego. Patient population ranges from neonates to 22 years of age depending on the diagnosis and medical and social history. The unit is comprised of one private room, two three-bed rooms, one four-bed room, one infant room with 6 cribs, three semi-private rooms and four isolation rooms. A family room and private conference room are available for counseling. A combination class/play room is available to meet continuing educational needs for preschool and school age patients. In addition there is a nutritional area, supply room, dirty utility room, medication room, two treatment rooms and a parent room.

Admission Criteria:

The ward is designed for a mixed population of chronic and acutely ill patients. Common candidates for admission include patients under the care of

- General and Specialty Pediatric Medicine
- Pediatric Surgery
- ENT
- Orthopedics
- Oral Maxillary Surgery
- Plastic Surgery
- Neurosurgery

All patients are admitted to the General Pediatrics Service except for the Pediatric Surgery. These admissions get Pediatric consults by the ward team within the first 24 hours of admission and will be followed daily if necessary.

A single team cares for patients admitted to the General Pediatric teaching service. The team consists of 2-3 senior residents who share the ward and admitting duties. These residents are from Navy (PL2 or 3) and UCSD (PL2). Other members of the team include 2-3 first year Pediatric (Navy PL-1) or Transitional (Scripps TY) interns. The team may also have fourth year medical students (MSIV) acting as subinterns and/or several third year medical students (MSIII) in clerkship training.

Attending Staff Physician responsibilities are shared and rotated on a weekly or biweekly basis. The bulk of this time falls to the three hospitalist pediatricians. The remainder is shared between the General and Subspecialty Pediatric Medicine Physician staff. Attending physicians provide overall supervision and oversight of patient care.

Intern Responsibilities

- To learn to function as a provider within a large, tertiary-care healthcare facility
- For now you're the ears, eyes, hands of the medical staff
- Primary physician for 5-8+ patients as assigned by the supervising resident
- Write an "Admission Note" for all patients admitted to the pediatric inpatient service, specifically noting presentation, differential diagnosis and plan of evaluation and management.
- Assist in pediatric consultation to the ED and other clinical pediatric services.
- Perform daily rounds and physical exams on all patients every day
- Present collected information in an organized, coherent form verbally on rounds, and in record either with daily notes.
- Communicate daily with the nursing staff and families regarding care of their patients, and inform the supervising resident of the status of all patients in a timely manner.
- **Maintain Discharge summaries**
- Begin mastering basic pediatric knowledge as outlined in the core curriculum.
- Display competency in basic procedures such as lumbar punctures, arterial blood gases, IV insertion, etc.
- Under the guidance of the pediatric staff attending and Ward Medical Officers, orient, supervise, instruct and evaluate all medical students rotating on the Pediatric service.
- Evaluate and co-sign all medical student admission and progress notes.
- Provide feedback and evaluation of medical students on a regular basis to include at a minimum; mid-term verbal feedback and formal written evaluation on completion of the rotation.
- Participate as a team leader in at least one mock code per month on 2 East.
- Update the sign out sheet.
- Prepare case presentations for morning report with assistance from the resident.
- Be prepared to assist with teaching lectures as time permits.

Call Responsibilities

- Call responsibilities will average every fourth night while on the Ward service with cross coverage while on other services. All interns will remain in compliance with the 80 / 30 hour RRC policies.
- Assume responsibility for every patient on Pediatric medicine service.
- Document any assessment, procedure, or intervention you perform.
- Watch notes for any significant change in patient status are required summarizing the patient's course throughout the day, evening and overnight and expected plan.
- Relay all pertinent information to the resident regarding changes in patient status.
- Serve as first responder for all calls from nursing staff.
- Assist the resident in the PICU when appropriate.

Resident Responsibilities

- Direct responsibility for all medical care provided to all patients admitted to the Pediatric Medical Service under the supervision of the Pediatric Ward attending
- Navy and UCSD residents co-manage and supervise patient care provided by junior house officers and medical students
- Under the guidance of the pediatric staff attending, orient, supervise, instruct and evaluate all interns and medical students rotating on the Pediatric Service
- Outline specific responsibilities and expectations for all junior members of the medical team (interns and medical students) as they relate to patient management and teaching including rounds, pre-rounds, notes, call schedule, patient assignments, weekend/holiday schedules, 80/30 compliance, presentations and all other clinical and education duties
- Assign patients to junior house staff appropriate for workload and to maximize learning experiences
- Provide feedback and evaluation of junior team members on regular basis to include at a minimum; mid-term verbal feedback and formal written evaluation on completion of rotation.
- Acts as primary consultant to the ER and other clinical pediatric services; provide emergency care to any patient as needed on the ward; notify the respective attending immediately
- Completion of ER consult Essentris notes and provide them to Ward Attending. All ER consults must be discussed with the ward attending prior to discharging home.
- Write a “Resident Admitting Note” (RAN) for all patients admitted to the pediatric inpatient service, specifically noting presentation, differential diagnosis and plan of evaluation and management.
- Consult on all surgical patients
- Coordinate all transfers involving the pediatric inpatient service
- Organize and direct morning work rounds and afternoon check-out rounds.
- Participate in planning for weekly morning report
- In conjunction with the division officer and the charge nurse, organize and perform at least one mock code per month
- Teach and evaluate competency in basic procedures such as lumbar punctures, arterial blood gas punctures, IV insertion, etc
- Document all invasive procedures in the procedure log
- Document all nosocomial infections on 2 East
- Update the admission log on the computer
- Review all discharge summaries completed by the interns and sign them prior to having them scanned

Scrub Policy

- Scrubs should be worn only when you are on call starting at 1700 and post-call.
- Scrub bottoms AND tops must be worn. Tee shirts and long sleeve shirts can be worn UNDER the scrub top.
- Those in the military must have their hair in compliance with uniform standards
- A white coat must be worn over scrubs when seeing patients and in the hallways and courtyard
- Scrubs cannot be worn when going to and from your car

Responsibility to the Family

- At the time of admission, clearly inform parents of why their child is being admitted to the ward.
- Keep parents updated regularly on patient's condition, changes, procedures performed and results and plans- TALK TO PARENTS DAILY!!!!!
- All procedure must be clearly explained to parents and consents obtained.
- Convey all information in a timely and sensitive manner.
- Do not leave parental contact to the On-Call team.
- Contact parents ASAP with any sudden deterioration in patient condition.

New Patient Paperwork

- H&P – Essentris format
- Admission Orders / Clinical Pathways - Essentris
- Growth Chart
- Consent packet completed as clinically indicated
- **Essentris Discharge Summary Initiated**

Assessment and Plan

By problem list / problem-based assessment for routine admissions

OR

In CHINNAS format for critical patients and multiple problems

- Cardiopulmonary
- Heme/Bili
- Infectious Disease
- Nutrition / Fluids and Electrolytes
- Neurologic
- All other issues
- Social / Discharge planning

Ordering Additional Studies

- ECHOs – coordinated directly with the Pediatric Cardiologist
- Sleep Studies – coordinated with respiratory therapy in conjunction with Pediatric Pulmonology – Paper consult form needs to be filled out.
- EEG – coordinated with EEG techs in conjunction with Pediatric Neurology
- Modified barium swallow studies – coordinate with June Carter, Speech Pathologist 2-5874

Consultants

- Consult early in the day if possible
- Contact directly by phone or pager – Staff or appropriate resident
- Complete, concise history of patient, indication for consultation and any special requests
- Be available when consultant is on the ward – provide supplemental information, etc.
- Relay recommendations from consultant to WAMO and Pediatric Attending
- Follow-up on any studies, relay any change in patient status to all involved

Consent

- Consent of the parents or guardian must be obtained in all cases prior to treatment of minor dependents – oral, written or telephone.
- Consent may be obtained from authorized minors in compliance with California state law (married, active duty, emancipated, legally self-sufficient). Guidance is available through the California Healthcare Association www.calhealth.org or 916-443-7401

Procedures

- LPs, IVs, Caths etc. – be assertive – get your practice in now and document.
- Keep personal procedure logs up-to-date.
- Record all procedures performed in procedure log in back room. The WAMO is responsible to keep this updated.
- Parents should be made aware of all procedures prior to initiation even if consent has already been obtained – including LPs, transfusions, etc.

Discharging Patients

- **Pre-plan all discharges particularly during busy months.**
- Interns should keep all discharge summaries up to date. This is especially important for days when you are post-call, days off, or leaving the service.
- Follow up appointments can be made by the clerks or you can call directly to the clinic
- Weekend discharges should be prepared for during the previous week.
- **Discharge medications need to be entered into CHCS and in the discharge summary.**
- Outpatient consults need to be entered in CHCS.
- Radiology studies ordered for outpatient time-frame need to be entered in CHCS and parents should be given phone numbers and told to call to schedule studies.
- All durable medical equipment, IV antibiotics, and special formulas need to be arranged 1-2 days prior to discharge to allow for preparation and teaching. The social worker will help you arrange this.
- All discharge orders should be described in detail in the discharge summary and the orders written in the chart. **Go over the instructions with the parents.**
- Discharge summaries will be scanned. Refer to the WAMO for instruction.

Admission Management

TriWest is the health insurance for the military personnel on the west coast. When the admitting resident is contacted regarding a possible transfer from an outside ER, it is important to ask if the patient is "prime." Prime patients should be admitted to NMCSD. If a family does not want to be admitted to NMCSD the response should be "We have a bed." You do not have the authority to disengage a patient. ONLY TRIWEST can authorize admission to another facility. Contact the attending physician if you have any questions.

Sources and Types of Admissions

- Acute patients from a NMCSD clinic, TriWest Outpatient Clinic (TOC), or transfer from another facility will be admitted directly to the ward.
- ER patients will be evaluated by the Ward team in the ER and then admitted.
- Scheduled and non-emergency patients will be admitted via the admission department prior to arrival on the ward.
- Patients with planned elective surgery/procedures should be admitted through same day surgery within the guidelines established. These patients then arrive on the ward post procedure with completed paperwork and post-procedure orders.
- In house transfers to the ward can come from the PICU, NICU or another ward. The patient should arrive with transfer orders and a summary of the hospital course to date.

Bed Management

The capacity for the Pediatric ward is 28 beds. When the census is maximized, the attending medical team will be notified. Admission requests will be reviewed on a case by case basis and a collaborative decision will be made between the staff attending, resident and shift charge nurse.

Priorities for admission:

- In-house transfers from PICU when the PICU needs bed for admission
- Hematology/Oncology patients
- Same Day Surgery Admissions
- Emergency/urgent admits from clinics
- Emergency Room Patients
- All other pre-admits
- Routine PICU transfer
- Transfer from other facilities

Patients who require more than ward care (PICU admission, etc.) include:

- Patients who require intubation for ventilation
- Patients who require IV pressors
- Patients who require invasive hemodynamic physiologic monitoring
- Patients requiring continuous insulin infusion
- Patients with suicidal ideation
- Patients requiring aerosolized treatment greater than every hour for three hours or successive back to back treatments within a two hour period
- Patients who require IV sedation

Physician's Responsibility on Admission

- Patients on 2 East will be seen within thirty minutes upon arrival to the floor by the responsible intern/resident. The responsible staff physician will see the patient within 24 hours or prior to discharge if less than 24 hours.
- Ensure that the Authority for Admission NMCSD Form 6300/5 is completed and submitted.
- Orders for the patients care will be available within 1 hour of arrival to the floor.
- The plan of care will be discussed with patient/parents after completion of the initial exam
- The physician will also notify the charge nurse/team leader of the plan of care.

Interdepartmental transfers

- Non-emergent patients transferred to the PICU services from the newborn, pediatric, or surgical services must have documented direct staff to staff communication. Newly admitted patients transferred prior to initial evaluation will be exempt. Emergent and non-emergent patients will require transfer orders and a transfer summary note to document change in patient status and pertinent background information for the accepting team. The accepting physician's awareness and patient's / family acceptance will be documented in this note.
- All patients transferred from the PICU/NICU to the newborn or pediatric service must have direct staff to staff communication and patient acceptance documented. All patients will have transfer orders and a transfer summary note reflecting pertinent information for the transfer. The accepting physician's awareness will be documented in this note.
- Patients who no longer require NICU in-patient services but will be followed by the NICU service do not require an accepting physician but will require transfer orders and a brief transfer summary including documentation of patient status reflecting appropriateness of transfer.
- Surgical patients who no longer require the PICU but will be followed by the same surgical service do not require an accepting physician but will require transfer orders and a brief summary including documentation of patient status reflecting appropriateness of the transfer.

Transfer of Patient to Another Facility

Physician's responsibility

- Securing required approval and accepting physician
- Notifying the LCSW to assist in arranging transportation, insurance authorization and psychosocial aspects of the transfer
- Notifying responsible family member
- Provide full documentation of patient's hospital course and treatment history with complete discharge summary.
- Provider to provider report given reviewing patient's history and current treatment plan.

Nursing/clerk responsibilities

- Provide copies of transfer orders, history and physical, progress notes, lab/x-ray reports and medication record.
- Provide medication needed in route is available.
- Phone report to RN at receiving facility

Patient Isolation

Isolation techniques are employed to interrupt four modes of transmission of infections and communicable diseases: (1) direct contact, (2) indirect contact, (3) droplet contact and (4) airborne spread. This is done to prevent transmission of infectious agents among patients, personnel and visitors. The intelligent use of isolation procedures requires knowledge of the contagiousness of the disease in question and its usual mode of transmission.

Isolation procedure on 2 East shall be in accordance with NAVMEDCEN SDIEGO INSTRUCTION 6220.1C, Isolation Policies for Patients with Communicable Diseases

CPS Holds

Once instituted by Child Protective Services, the medical officer or LCSW initiates CPS hold by recording date, time and CPS worker in the in-patient medical record in the patient order area and as a clinical note. The typical CPS hold is 48 working hours (does not include weekends or holidays). Therefore, a hold instituted on Friday at 0900 is complete at 0900 on the following Tuesday. Instructions and contact forms are located in the doctor's office and on the command's Home Page. The pediatric social worker will be notified during usual working hours or after hours as needed. If the CPS Hold is placed on the weekend, after hours, or holiday, the social worker will be notified on the next regular work day.

AMA

AMA instructions are in accordance with NAVMEDCEN SDIEGO INSTRUCTION 6320.1D, Leaving and/or Refusing Treatment Against Medical Advice or Leaving Without Proper Medical Authority. Notify the attending if this situation occurs. In general, minors cannot leave AMA.

80 Hour Work Week/30 hour limit

- Self reporting in continuity clinic.
- End of rotation totals
- No more than 30 consecutive hours in the hospital, no new admissions after 24 hours
- Notify resident/staff if totals over 80 hours/week

Post-call: give appropriate sign-out with senior resident and covering intern

Pediatric Codes on 2E

- All codes shall be conducted in accordance with Naval Medical Center San Diego Instruction 6320.91C.
- The phone number for a code is **#4444**
- You should state "PEDIATRIC CODE 2 EAST"
- Do not give out the patient's room number
- You will receive more responders than you will need. The charge nurse and or nursing supervisor should send away those you do not need.
- Those who should respond are pharmacy, respiratory therapy, and anesthesia.
- Ensure the charge nurse notifies the attending physician.
- **TAKE CHARGE!! DIRECT - DO NOT DO!!!**
- Appoint those around you to do the work. Select someone to maintain airway, someone to start IV, someone to do medications, someone to calculate drug dosages…
- Make sure a recorder is writing down vital information and keeping time for you.
- Remember: ABCs, IV, O2, Monitors and Reassess!!!
- Help will come. Stay Calm!!!

Mock Codes

- 2E is required to have one daytime mock code, and one nighttime mock code per month.
- In accordance with NAVMEDCEN SDIEGO INSTRUCTION 6320.91C – Command Cardiopulmonary Resuscitation (CPR) Plan, mock codes will be conducted regularly on 2 East. It is the command requirement that two be completed every quarter; one on days 0700-1900 and one on nights 1900-0700.
- CPR dummies are available. Scenarios are available in the PALS Manual. The code cart is to be opened and hands on experience obtained.
- A Mock Code Critique (from NMCSD Instruction 6320.91C) must be completed and turned in to the division officer.
- Recommendations:
    - use an empty room
    - use a scenario appropriate to 2 East
    - Allow the intern to run the code
- **TEACH**

Licensed Clinical Social Worker

The hospitalization of a child is an emotionally difficult time. There are many feelings as sadness, guilt, and anger that a patient and/or parent might be feeling. These are all normal feelings and reactions. Due to the emotional impact of the hospitalization a Licensed Clinical Social Worker (LCSW) is available for support. The following are some of the many areas with which the LCSW might be able to assist the patients and their families: orientation to the NMCSD and 2 East, transportation, food, lodging, Fisher House referrals, childcare, individual and marriage counseling, parenting classes, assisting in emergency leave, contacting the American Red Cross, insurance problems, ordering home medical supplies, developmental resources, ensuring the understanding of the patient's medical problems, and assisting in the coordination between patients, families and the medical and nursing staff.

PICU Pearls

PICU Sign-out

- Sign-out takes place at 16:30 in the PICU.
- Be sure to obtain a detailed sign-out. Don't be afraid to ask questions.
- Know which attending is on-call and obtain the contact numbers.
- When you are on-call Friday and Saturday nights, ask if you will need to round in the PICU in the morning.
- Give your pager # to the PICU clerk.

PICU Admissions

- Must be approved by the attending before accepting the admission.
- Always check with the Charge Nurse for nursing coverage.
- H&P should be documented in Essentris.
- Involve your intern in the admission if time/2E patient census permits.
- Discuss the plan with PICU attending.
- Discuss the plan with the patient's nurse and the family.

PICU MD Orders

- Orders are handwritten in the charts.
- Charts with orders should be flagged utilizing the "MD Order Wheel" located on the chart binder. Turn the wheel to "Red" for STAT and "Green" for routine. Fold over the order sheet and give the chart to the nurse or ward clerk for transcription.
- Communicate all orders to the nurse assigned to the patient.
- Use "Standard Drip Orders" for continuous infusions.
- See Standard Order Sets (Essentris) for DKA and Status Asthmaticus.

Patient Care

- Notify the attending when significant changes in patient status occur.
- Don't be afraid to call the attending with questions. However, it is best to try to formulate a plan before calling.
- While the PICU team is the primary team, the appropriate subspecialty team i.e. peds surgery, neurosurgery etc. should be consulted/updated when appropriate. These services often want to be directly involved in the decision-making.
- A handwritten or Essentris "resident watch note" should be done when significant events occur or change in patient status.

Emergency Conditions:

- Code Blue - #4444: You will be running the code, but significant help will arrive.
- Notify the PICU attending.
- Anesthesiology will arrive when you call a code. You may also contact them by calling the "anesthesia floor walker" for non-emergent situations.
- When a pediatric code is called in the ER or outside the pediatric wards, you should immediately go the specified area. Identify yourself as a pediatric resident and ask what assistance they would like.
- Remember, there is always a Neonatolgist in-house who may be able to assist.

Croup pathway

Inclusion criteria

- Age 3 months to 6 years old

  - Croup occurs most commonly in children 6 months to 3 years of age but may occur in children as young as 3 months and as old as 12 to 15 years of age.
  - Croup usually occurs seasonally in the late autumn but can occur any time, including summer

- Able to control secretions
- Moderate stridor with mild to moderate respiratory symptoms and upper respiratory symptoms compatible with croup

Croup Symptoms

- Barky cough
- Inspiratory stridor
- Hoarseness
- No to moderately high fever
- Symptoms usually improve during the day, exacerbate at night
- Majority of children resolve croup symptoms within 48 hours
- May or may not have antecedent cough, rhinorrhea or fever

Exclusion criteria

- Age under 3 months
- Severe respiratory distress or impending respiratory failure

Impending respiratory failure suggested by

- Changes in mental status such as lethargy, fatigue or listlessness
- Pallor
- Dusky appearance or cyanosis
- Decreasing retractions or decreasing breath sounds with decreased stridor

- Lethargy or altered mental status
- Inability to control secretions
- Suspected foreign body aspiration
- History of airway anatomic abnormality (laryngomalacia, subglottic stensois, vocal cord paresis, tracheomalacia, bronchomalacia) or congenital lung disease
- History of prior intubation
- Toxic appearance
- Immunodeficiency

Alternative Diagnoses Suggested by Findings

- High fever, toxic appearance and poor response to epinephrine suggests
  - **Bacterial tracheitis**

- Sudden onset of symptoms with high fever, no barky cough, drooling and dysphagia, anxious or apprehensive appearance and forward sitting in a "sniffing position" suggests
  - **Epiglottitis**
- Other potential causes include
  - Foreign body
  - Retropharyngeal abscess (before 3 to 4 years old) or peritonsillar abscess
  - Hereditary angioedema
  - Subglottic stenosis
  - Infectious mononucleosis
  - Diphtheria
  - Other causes of extrinisic (e.g. hematoma) or intrinsic (e.g. tumor or cyst) of airway
  - Trauma

Assessment

- Review differential to exclude other causes of stridor
- Laboratory and radiological investigations are not necessary to make a diagnosis of croup
- Imaging studies occasionally may be helpful in clarifying the diagnosis when unclear
- Pulse oximetry should be checked in moderate to severe cases
- Viral cultures and rapid antigen tests do not aid in routine management of patients and should not be performed without clear indication

Radiologic Pearls

- **Croup** - "steepling" of the subglottic area instead of normal square shoulder appearance on AP neck radiograph
- **Bacterial tracheitis** – ragged edge or membrane spanning the trachea
- **Epiglottitis** - thickening of epiglottis and aryepiglottic folds "thumblike" appearance
- **Retropharyngeal abscess** – bulging of the posterior pharynx soft tissues

Treatment

Make the child comfortable

- Avoid agitating child with unnecessary procedures (e.g. oral dexamethasone vs intramuscularly)
- Provide blow-by oxygen to children in respiratory distress
  - *There is no proven efficacy to mist therapy*

Medications effective for croup

Dexamethasone

- Indicated in all children with croup who present for medical care
- Clear benefit even with mild symptoms
- Improvement within 2 to 3 hours with effects persisting for 24 to 48 hours after single dose
- Potential exceptions include immunodeficiency and recent varicella exposure
- Oral administration is equivalent to intramuscular administration
- Oral dexamethasone may be administered using parenteral solution mixed with flavored syrup and is rapidly absorbed with less than 5% of children vomiting the drug

Epinephrine

- Indicated in patients with stridor at rest and more severe respiratory distress caused by croup
- Improvement begins within minutes and lasts for about one hour
- Treatment does not alter disease progress after 2 hours
- L-epinephrine 1:1000 is as effective as racemic epinephrine
- Nebulized epinephrine does not mandate admission to the hospital
- An observation period of four hours after administration is no longer required but observation for 2 hours or as indicated is recommended

Budesonide

- Not routines indicated for treatment of croup but is effective and may be used in special situations
    - Child with persistent vomiting
    - Child with severe respiratory distress
- May be mixed with epinephrine for administration via nebulizer

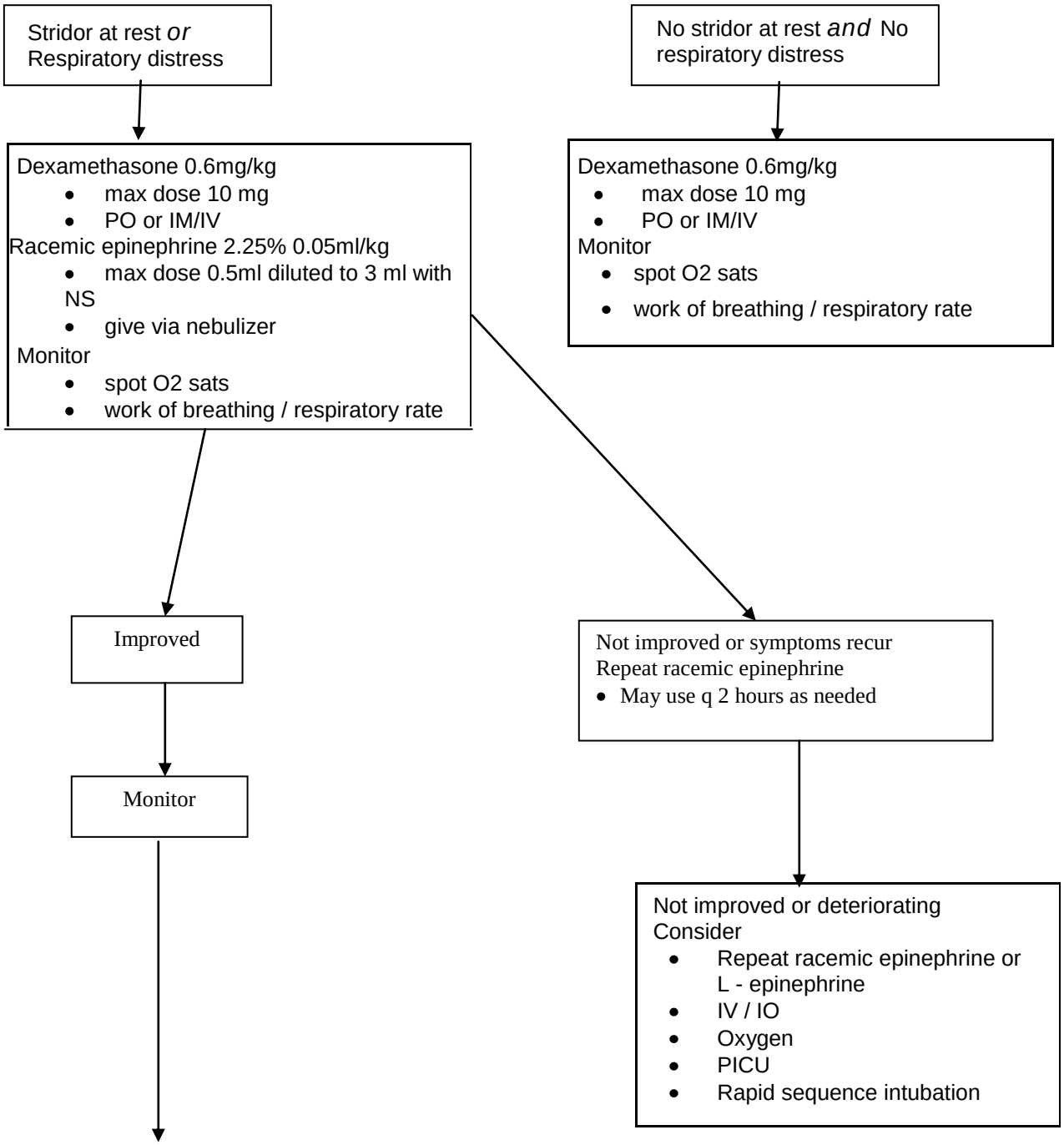
Not effective

- Antibiotics
- Oral decongestants
- Antihistamines

Contraindicated

- Sedation

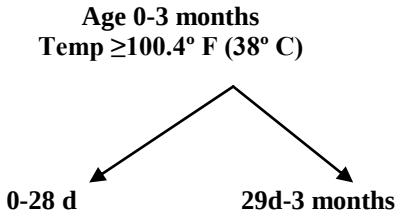
Admitted for croup

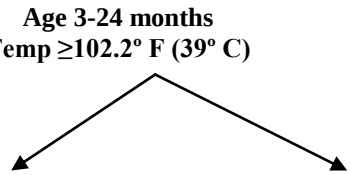


Discharge Criteria:

- Minimal or no stridor at rest
- Stridor while crying is not a reason for continued hospitalization
- No respiratory distress
- SaO_2>92%
- No racemic epinephrine 6 hours prior to discharge

Evaluation of Well Appearing Febrile Infants Without a Source





0-28 d	29d-3 months	3-5 months or >5 months with <2 PCV7/Hib	>5 months & ≥ 2 PCV7/Hib
UA & UCx	UA & UCx	UA & UCx same as →	UA & UCx
CBC w/diff & BCx CSF studies & Cx Consider CXR Consider stool, viral studies	CBC w/diff & BCx Consider CSF studies & Cx	BCx Consider CBC w/diff	- all females - circ males <6 mo. - uncirc males<1 yr.
Ampicillin 50 mg/kg Cefotaxime 50 mg/kg	If negative w/u Consider Ceftriaxone (Only if LP done)	If negative w/u	If negative w/u
Admit	D/C with 24 hr. F/U (consider admission)	D/C with 24 hr. F/U	D/C with 24 hr. F/U

- Consider admission for 28-90 d with unreliable follow-up/social situation or not completely well appearing.
-Febrile neonates with URI/respiratory symptoms should still have full w/u and admission.
-Treat UTI with antibiotics (e.g., IM ceftriaxone or PO Cefixime, etc.) and arrange for follow-up for further work-up per UTI pathway.
- Consider CXR in patients with respiratory symptoms (e.g., hypoxia, tachypnea, cough).
- For children who have not received at least 2 PCV7/Hib, before giving Ceftriaxone, STRONGLY CONSIDER first doing an LP. For example, a 4 month old – STRONGLY CONSIDER doing an LP.

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COMMUNITY ACQUIRED PNEUMONIA PATHWAY (Oct 2005)

Focus Population: Children 3 months to 21 years of age with suspected pneumonia acquired in the community.

Inclusions (Patients must have **all** of these):

- Suspected uncomplicated bacterial pneumonia in an otherwise normal host
- Patients who are stable on room air, nasal canula or simple mask oxygen

Exclusions (Patients with **any** of these):

- Patients < 1 month or > 21 years old
- Immunocompromised patients
- Patients requiring intensive care
- Patients with prior history of a significant respiratory condition including severe asthma requiring PICU admission or intubation
- Bronchopulmonary dysplasia
- Hospital acquired pneumonia (recent hospitalization)
- Aspiration pneumonia
- Airway foreign body
- Cystic fibrosis
- Sickle cell anemia and similar hemoglobinopathies
- Patients with significant co-morbid condition including congenital heart disease or significant neurologic impairment
- Patients requiring non-rebreather mask to maintain O_2 saturations ≧92%
- Empyema or pneumatoceles
- Pneumothorax
- Suspected TB

General Background Information:

- Overall, viruses cause the majority of pediatric pneumonia
- Age is the best indicator of the microbial etiology of pneumonia
- The choice of antibiotics is based on the age of the patient, clinical presentation and the local resistance patterns
- In the neonatal period Group B strep, E. coli and Listeria monocytogenes are the most common pathogens
- Chlamydia trachomatis pneumonitis must be considered in infants 1 to 3 months of age
- Between 3 months and 2 years, the most common pathogens are viral
- Between 2 months and 5 years, the most likely identified bacterial organism is S. pneumoniae
- In school-aged children (≥5 years), Streptococcus pneumoniae and Mycoplasma pneumoniae are the most common pathogens and empiric therapy must cover both
- Agitation may an indication of hypoxia
- In 40-60% of cases, the pathogen cannot be identified
- Half of patients with bacterial pneumonia will present with lobar or segmental consolidation
- M. pneumoniae infection may be clinically and radiologically indistinguishable from Chlamydial pneumoniae infection
- The incidence of bacterial co-infection with RSV pneumonia is low, so when the RSV test is positive, generally antibiotics are not indicated
- Less than 10% of asthma patients exacerbations are due to bacterial LRTI
- Chest physiotherapy is not beneficial

Diagnostic Studies:

- Order studies only as anticipated to contribute to therapeutic decisions
- Chest radiographs, in this setting, are indicated when clinical findings are ambiguous, a complication such as a pleural effusion is suspected, or when pneumonia is prolonged or unresponsive
- Although an interstitial pattern is characteristic of viral infection and lobar consolidation is the hallmark of bacterial disease, there are many exceptions, thus, chest radiograph interpretation cannot be relied upon to distinguish between viral and bacterial etiologies in most settings
- CBC with differential should be considered when such information is judged necessary to help decide whether to use antibiotics
- Blood cultures should be obtained on all inpatients and should be considered for outpatients
- In selected older children, sputum Gram stain and culture might be helpful
- Nasopharyngeal bacterial cultures are not usually helpful
- If you are considering pertussis, obtain a nasopharyngeal swab or aspirate of the posterior nasopharynx
- Laboratory confirmation of a viral etiology (e.g., RSV) can occasionally be helpful
- The incidence of bacterial co-infection with RSV pneumonia is low, so when the RSV test is positive, generally antibiotics are not indicated
- Remember to consider TB and the intradermal TB skin test
- PCR, serologies and acute phase reactant studies are not usually helpful

Admission Factors:

- SpO_2 <92%
- Age < 6 months
- Toxic appearance
- Marked respiratory distress
- Dehydration with inability to take PO fluids/antibiotics
- Failed oral antibiotics
- Immunocompromised
- Unstable social situation; non-adherence

Removal from the pathway should be considered if any of the following apply:

- No improvement in clinical condition within 72 hours
- Significant deterioration, especially persistently increasing oxygen requirement
- Primary diagnosis seems questionable

Criteria for Discharge:

- SpO_2 ≧92%
- No respiratory distress
- Able to take PO medications and fluids

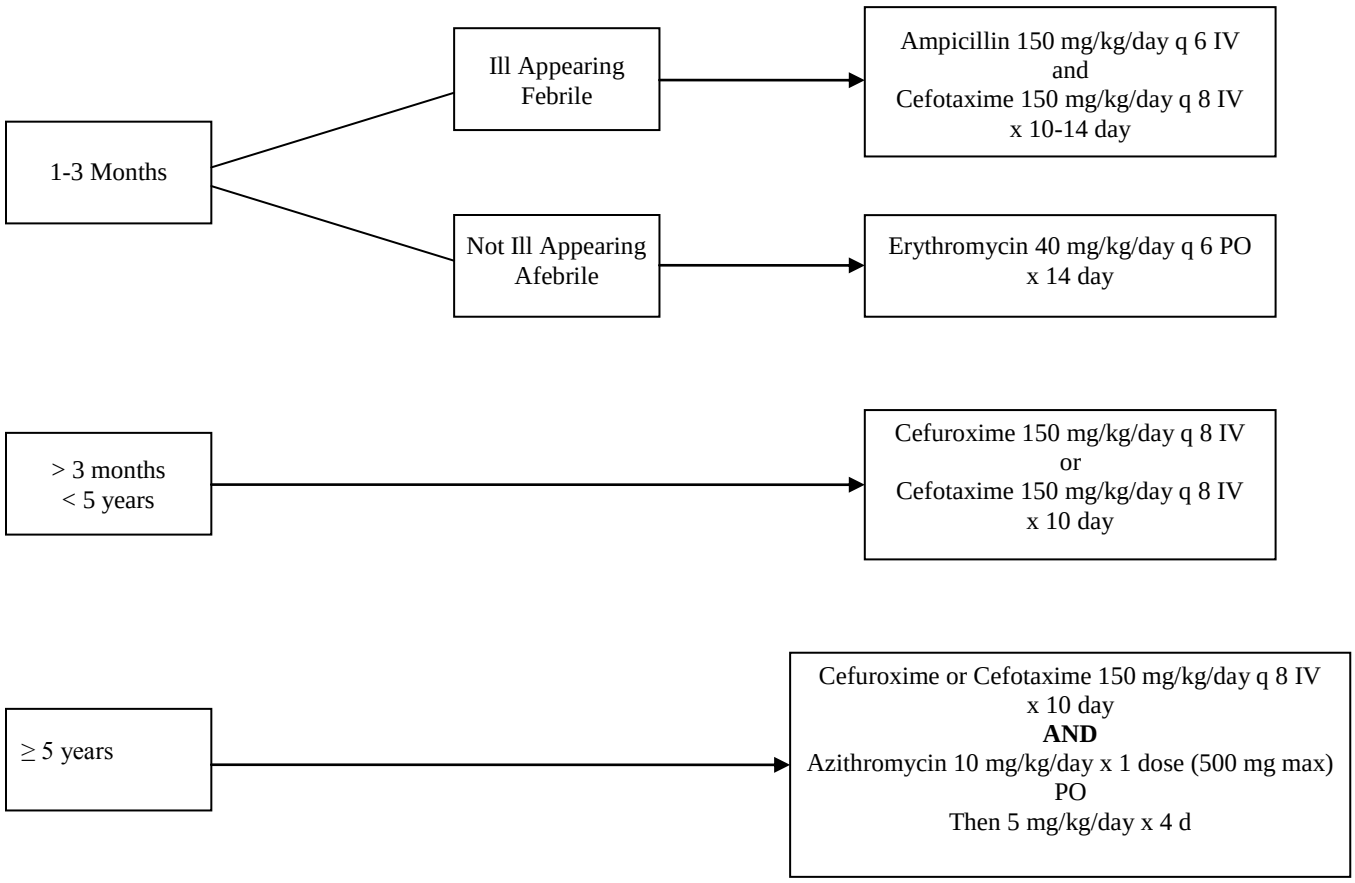
Outpatient Antibiotic Therapy for suspected Bacterial PNA (Community Acquired)

Age 3 months - ≤ 5 years: Amoxicillin 90mg/kg/day TID x 7-10 days

Age ≥ 5 years: Azithromycin 10mg/kg/day for the first day (max 500mg)
Then 5mg/kg/day x 4 days

Inpatient Antibiotic Therapy for suspect Bacterial PNA (Community Acquired)

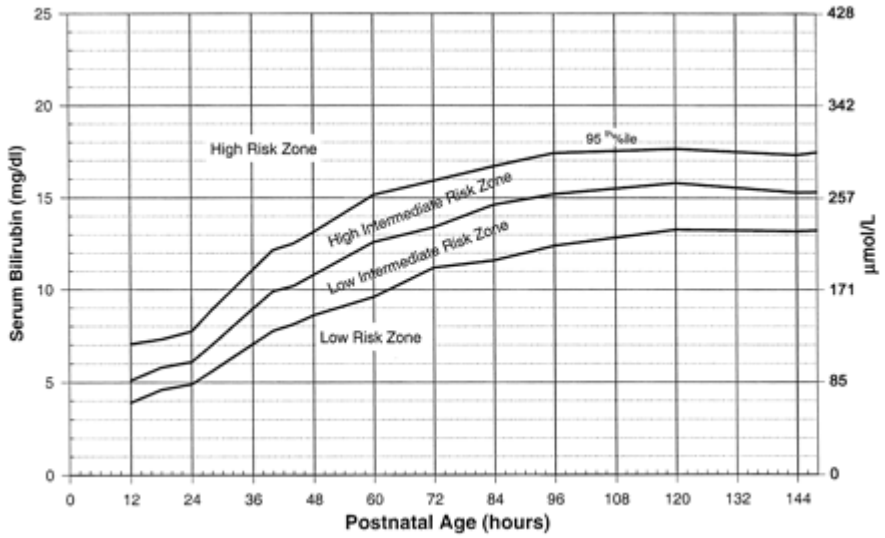
Note: If staphylococcal infection is suspected, vancomycin is indicated.



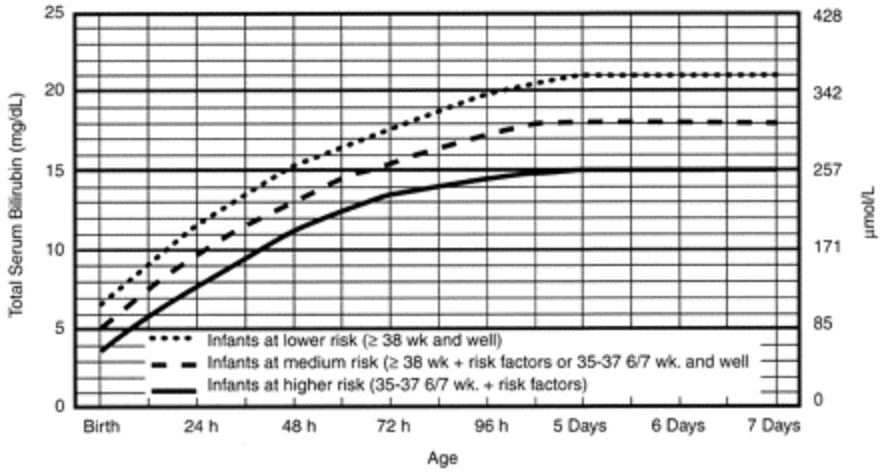
Laboratory Evaluation of the Jaundiced Infant of 35 or More Weeks' Gestation

Indications	Assessments
Jaundice in first 24 h	Measure TcB and/or TSB
Jaundice appears excessive for infant's age	Measure TcB and/or TSB
Infant receiving phototherapy or TSB rising rapidly (i.e., crossing percentiles [Fig. 2]) and unexplained by history and physical examination.	Blood type and Coombs' test, if not obtained with cord blood
	Complete blood count and smear
	Measure direct or conjugated bilirubin
	It is an option to perform reticulocyte count, G6PD, and $ETCO_c$, if available
	Repeat TSB in 4-24 h depending on infant's age and TSB level
TSB concentration approaching exchange levels or not responding to phototherapy	Perform reticulocyte count, G6PD, albumin, $ETCO_c$, if available
Elevated direct (or conjugated) bilirubin level	Do urinalysis and urine culture. Evaluate for sepsis if indicated by history and physical examination
Jaundice present at or beyond age 3 wk, or sick infant	Total and direct (or conjugated) bilirubin level
	If direct bilirubin elevated, evaluate for causes of cholestasis
	Check results of newborn thyroid and galactosemia screen, and evaluate infant for signs or symptoms of hypothyroidism

Hour specific Bhutani Bilirubin Nomogram

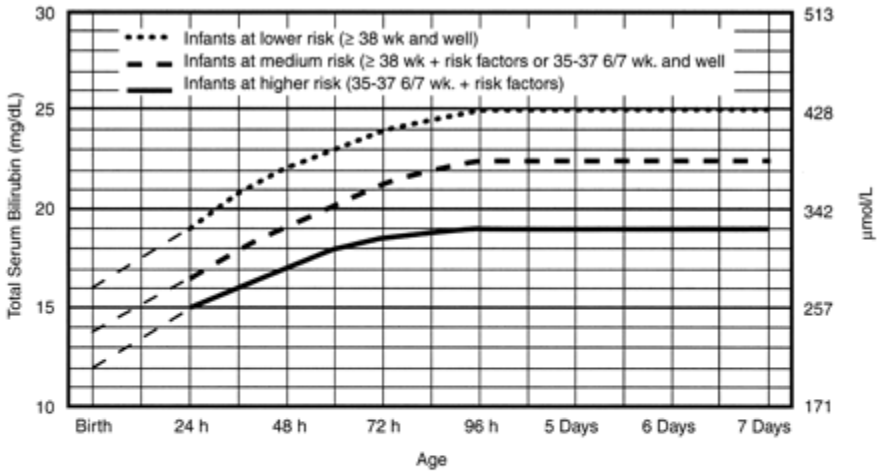


Guidelines for phototherapy in hospitalized infants of 35 or more weeks gestation.



- Use total bilirubin. Do not subtract direct reacting or conjugated bilirubin.
- Risk factors = isoimmune hemolytic disease, G6PD deficiency, asphyxia, significant lethargy, temperature instability, sepsis, acidosis, or albumin < 3.0g/dL (if measured)
- For well infants 35-37 6/7 wk can adjust TSB levels for intervention around the medium risk line. It is an option to intervene at lower TSB levels for infants closer to 35 wks and at higher TSB levels for those closer to 37 6/7 wk.
- It is an option to provide conventional phototherapy in hospital or at home at TSB levels 2-3 mg/dL (35-50mmol/L) below those shown but home phototherapy should not be used in any infant with risk factors.

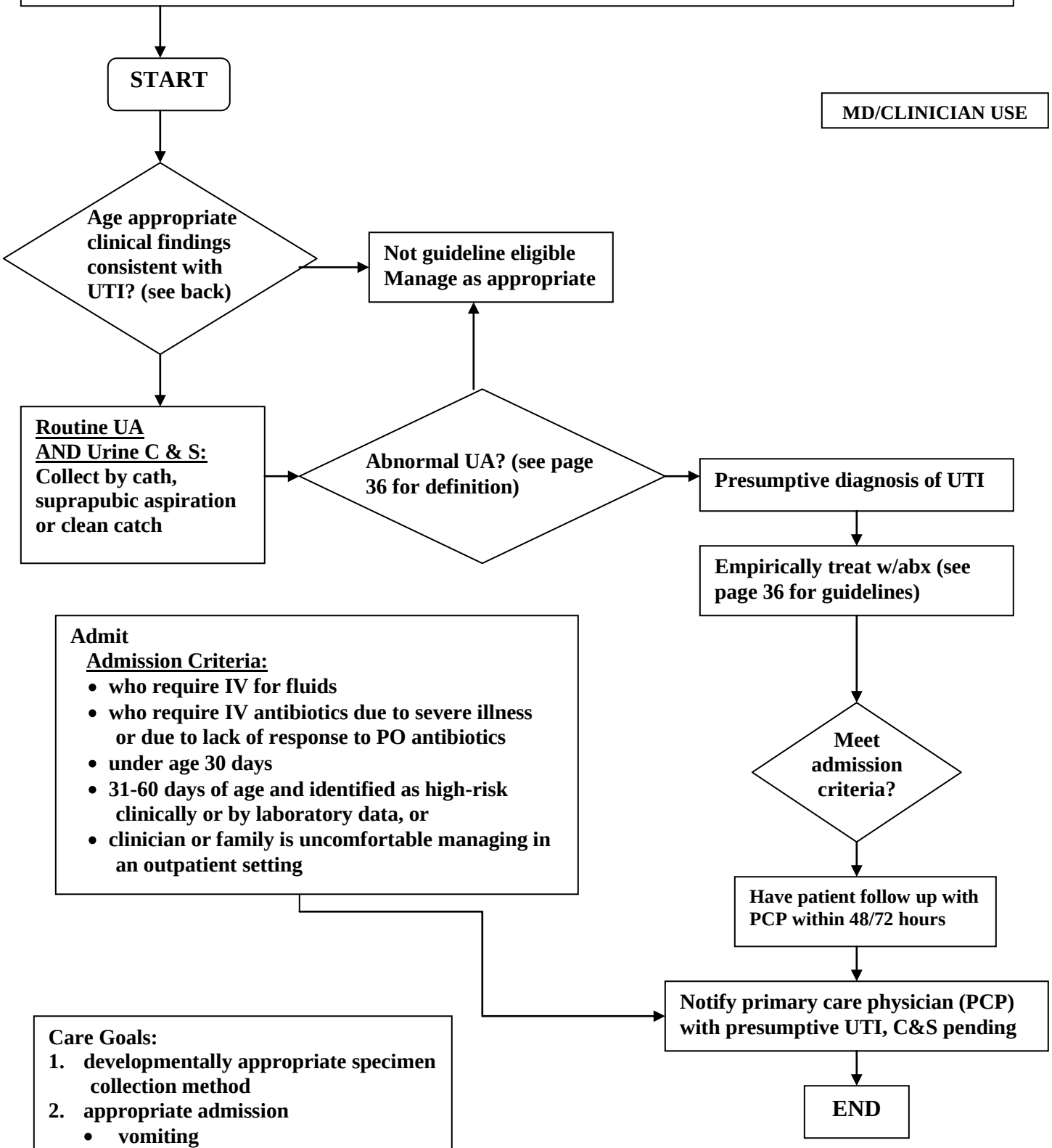
Guidelines for exchange transfusion in hospitalized infants of 35 or more weeks gestation.



- The dashed lines for the first 24 hours indicate uncertainty due to a wide range of clinical circumstances and a range of responses to phototherapy.
- Immediate exchange transfusion is recommended if infant shows signs of acute bilirubin encephalopathy (hypertonia, arching, retrocollis, opisthotonos, fever, high pitched cry) or if TSB is ≥5 mg/dL (85 µmol/L) above these lines.
- Risk factors - isoimmune hemolytic disease, G6PD deficiency, asphyxia, significant lethargy, temperature instability, sepsis, acidosis.
- Measure serum albumin and calculate B/A ratio (See legend)
- Use total bilirubin. Do not subtract direct reacting or conjugated bilirubin
- If infant is well and 35-37 6/7 wk (median risk) can individualize TSB levels for exchange based on actual gestational age.

Reference: American Academy of Pediatrics, Clinical Practice Guidelines: Subcommittee on Hyperbilirubinemia: Management of hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. Pediatrics. 2004; 114:297-31.

ED Algorithm for medical management of Uncomplicated Urinary Tract Infection in children age 12 or less



Clinical Signs and Symptoms of UTI

Newborn	Infants and Preschoolers	School Age Children
Jaundice	Diarrhea	Vomiting
Sepsis	Failure to Thrive	Fever
Failure to Thrive	Vomiting	Strong-smelling urine
Vomiting	Fever	Abdominal or flank pain
Fever	Strong-smelling urine	New onset Urinary Incontinence
	Abdominal or flank pain	Dysuria
	New onset urinary incontinence	Urgency
	Dysuria (preschoolers)	Frequency
	Urgency (preschoolers)	

Abnormal Urinalysis (UA)

Any one of the following study results defines a positive UA

- **positive nitrite screen**
- **positive microscopic exam: the definition of abnormal microscopic exam is dependent on patient or provider-specific determinants:**

WBC/hpf (spun)	Likelihood Ratio (LR)
≥5	3.7 – 13.5
≥10	6.2 – 32.0

*** Consider positive leukocyte esterase as Abnormal when pretest probability is high**

Parenteral Antibiotics for UTI

Antibiotic	Dose, Frequency & Max Daily Dose
Cefotaxine (Claforan®)	150 mg / kg / day Max daily dose: 12 gm given as 50 mg/kg every 12 hours If age < 7 days, given as: 50 mg / kg every 12 hours
Ampicillin	100 mg / kg / day Max daily dose: 12 gm given as 25 mg / kg every 6 hours If age < 7 days, given as: 50 mg / kg every 12 hours
Gentamicin	Determine dosing based on age, gestational age, and individual renal function if age < 1 month, given as: 3 mg / kg every 24 hours if age 1 – 2 months, given as: 2.5 mg / kg every 12 hours if age ≥ 3 months, given as 1/5 – 2.5 mg / kg every 8 hours
Ceftriasone (Rocephin®)	50 – 100 mg / kg / day Max daily dose: 1 gm, but may be as high as 2 – 4 gm for adult weight older child with severe disease, given: 25 – 50 mg / kg every 12 hours or 50 – 100 mg / kg every 24 hours

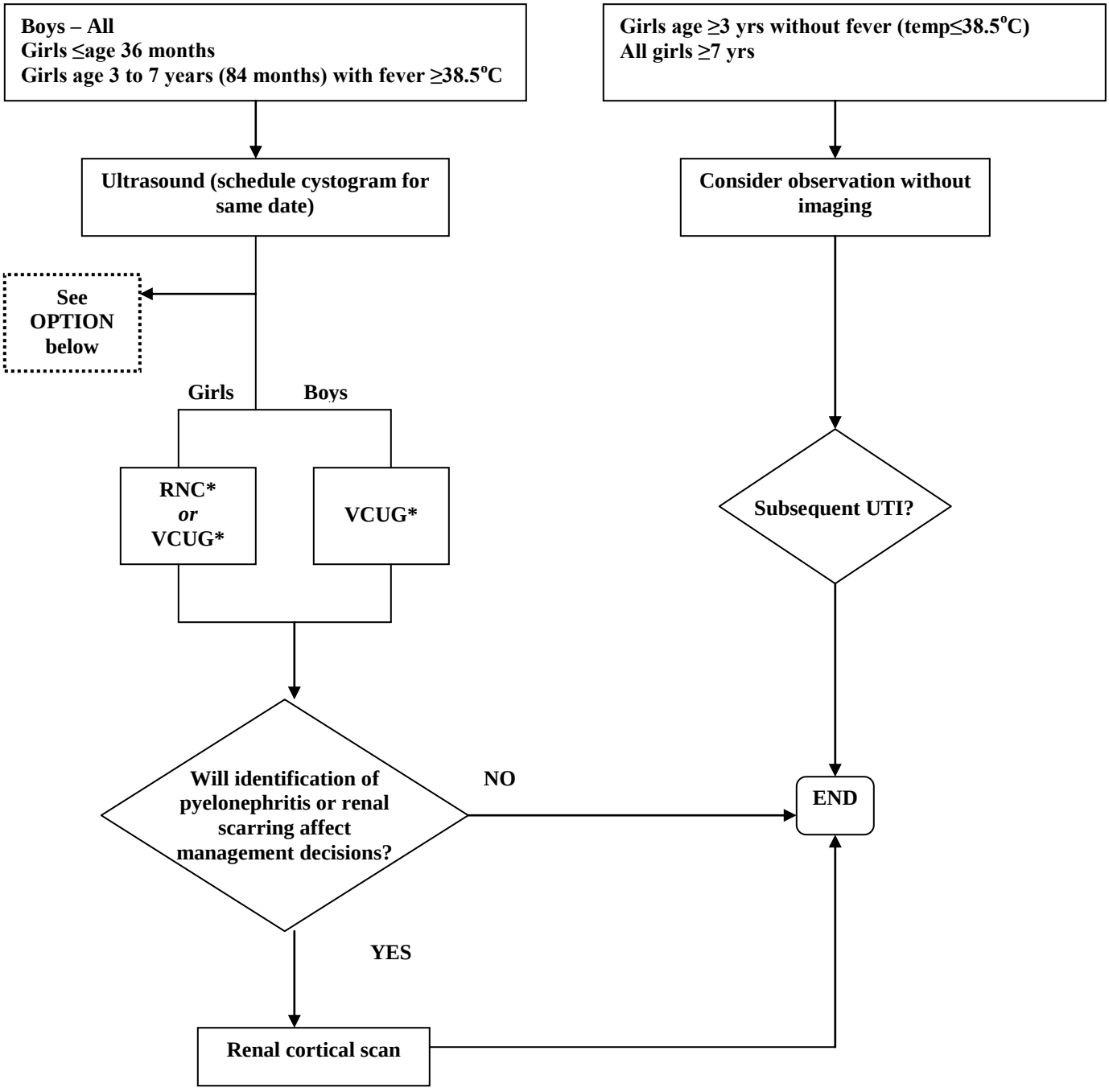
Antibiotic & Dose Form	Dose, Frequency & Max Daily Dose (oral unless otherwise specified)
First Line Antibiotics	
Cefixime (Suprax®) 100 mg / 5 mL suspension or 400 mg tablet	Day 1: 16 mg / kg /day taken as: 8 mg / kg BID Day 2-14: 8 mg / kg/ day taken once daily Max daily dose: 400 mg.
Cephalexin (Biocef®, Keflex®) 125 or 250 mg / 5mL suspension or 250 or 500 mg capsule	25 – 100 mg / kg / day Max daily dose: 4 gm taken in 4 divided doses
Sulfamethoxazole / Trimethoprim (Bactrim®, Septra®, Generic) 200/40 mg S/T per 5mL suspension or 400/80 or 800/160 mg S/T tablet	Dosing based on trimethoprim 6 – 10 mg / kg /day Max daily dose: 320 trimethoprim; 1600 mg sulfamethoxazole taken as: 3 – 5 mg / kg / dose twice daily
Alternative Antibiotics for Patients with Special Circumstances	
Nitrofurantoin (Macrodantin®, Furadantin®) 25 mg / 5mL suspension or 25, 50 or 100 mg capsule	5 – 7 mg / kg / day Max daily dose: 400 mg taken in 4 divided doses
Ciprofloxacin (Cipro®) 250 or 500 mg / 5mL suspension or 100, 250, 500 or 700 mg. tablet	
Ceftriaxone (Rocephin®)	50-100 mg / kg / day Max daily dose: 1 gm by may be as high as 2 – 4 gm for adult weight older child with severe disease given: 25 – 50 mg / kg every 12 hrs or 50 – 100 mg every 24 hrs
Note: Amoxicillin is not listed in this table due to the increasing incidence of resistance to *E. Coli*	

CCHMC Formulary

Emergency Department Algorithm Uncomplicated Urinary Tract Infection.

Adapted from: Todd, J.K.; Management of urinary tract infections: Children are different. *Pediatr.Rev.* 16(5): 190-6. 1995.

Recommended Imaging Algorithm for First Time Acute Urinary Tract Infection



***If an RNC (Nuclear Cystogram) has been ordered, and if there are significant Ultrasound abnormalities, the Radiology staff physician will ask to substitute a VCUG (Voiding Cystourethrogram) for the RNC at that appointment.**

OPTION: An optional imaging evaluation for children with febrile UTI, especially those over age 3 years is to first Perform Ultrasound and renal cortical scan. This avoids bladder catheterization (part of the cystogram procedure) if the results of the scan are normal. However, if pyelonephritis or cortical scarring is found on the renal cortical scan, a cystogram is indicated.

Apparent Life-Threatening Event (ALTE)
Clinical Pathway

Relationship to gastroesophageal reflux

- Gastroesophageal reflux (GER) is a normal event in infants and adults. The relationship to ALTE may be more tenuous than previously thought
    - Some studies show no relationship to GER or apnea that precedes the episode of reflux
- It is possible to have evidence of GER and another, co-extent disorder
- Mechanism of reflux induced apnea may be central or related to laryngospasm from local acid effect
- If suspected to be temporarily related to ALTE, pH probe is the gold standard

Relationship to SIDS

- ALTE may be a risk factor for SIDS according to some studies
- An ALTE requiring resuscitation may be a more severe risk factor for SIDS
- ALTE peak 1 to 3 months of age
- SIDS peak 3 to 5 months of age
- Apnea of prematurity does not appear to be a risk factor for SIDS
- Back-to-sleep campaign decreased SIDS rate 30-50% but did not change ALTE admission rate

Recommended Tests

Complete history and physical is the ***most*** important evaluation. Use your history and physical to tailor testing:

- **Complete blood count** (screening for infection, anemia)
- **Chemistry with liver panel** (screening for electrolyte abnormalities such as hypo- or hypernatremia, hypercalcemia, hypoglycemia, acidosis, liver panel may be helpful for intrabdominal trauma [NAT] or other metabolic problems)
- **Serum Lactic Acid (**hypoxia, toxins, enzyme defects such as GSD 1, fatty acid oxidation defect, multiple cabroxylase deficiency, methylmalonic aciduria)
- **Serum Ammonia** (screening for MCADD, other urea cycle defects)
- **Oxygen saturation on room air** (screen for hypoxemia which could be related to occult cardiovascular or pulmonary disease)
- **Urinalysis and urine culture (via catheter)** (screen for reducing substances and infection)
- **Multichannel pneumocardiogram** (most helpful bedside test for determining central vice obstructive or mixed apnea)
- **Electrocardiogram** (screening for WPW, prolonged QT)
- **Urine toxicology screen** (opiates in breast milk reported as cause of ALTE)
- **Other tests as indicated by history** may include:
    - **Chest x-ray** if any respiratory symptoms
    - **Pertussis** if exposure or any respiratory symptoms
    - **RSV** if any respiratory symptoms
    - **Video surveillance** if Munchausen by proxy considered

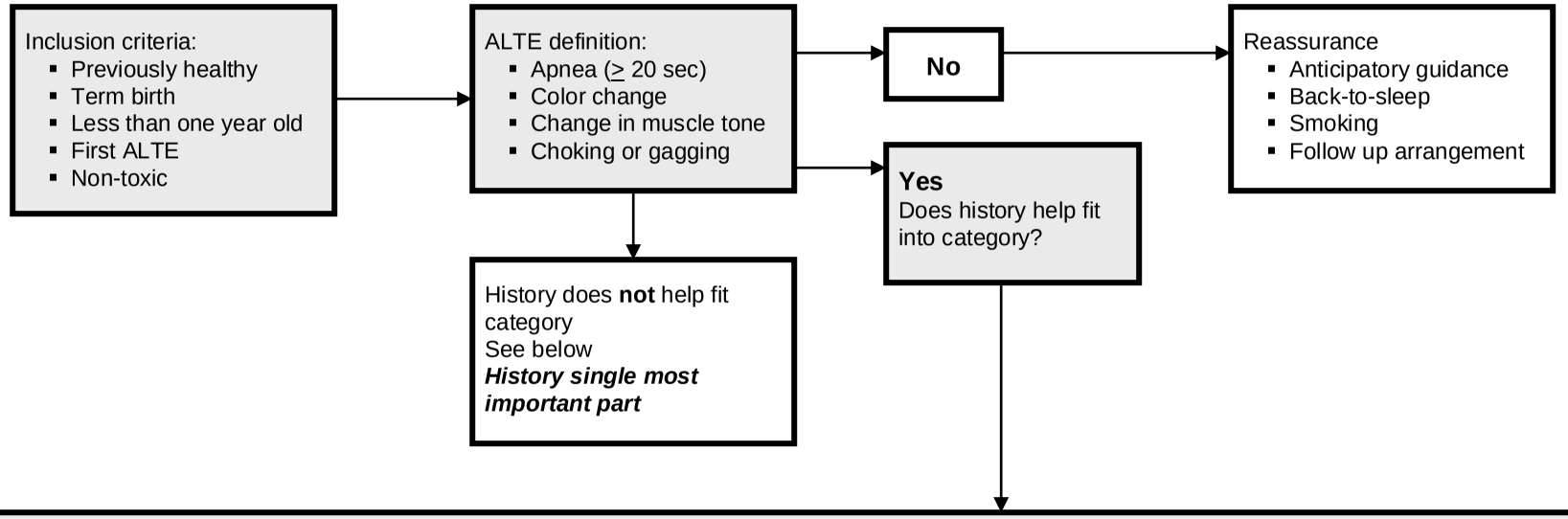
Conditions not requiring ALTE workup

- Normal child (overreaction to normal phenomenon such as simple choking, gagging, vomiting episode – eyes open and "bulging", increased tone) – **if not sure, consider admission and workup**
- Cyanotic breath-holding spell
  - Rare before 6 months of age, peak is 2 years of age
  - Brief, shrill cry followed by expiration and apnea
  - Cyanosis and loss of consciousness, sometimes clonic jerks
- Pallid breath-holding spell
  - More rare than cyanotic breath-holding spell
  - Initiated by painful experience such as fall or severe startle
  - Child stops breathing, rapidly loses consciousness, becomes pale and hypotonic
  - Probably **needs workup**, but not on ALTE pathway
- Period breathing
  - Defined as three or more respiratory pauses of greater than 3 second duration with less than 20 seconds of respiration between pauses
  - Normal in preterm infants and may persist beyond term in otherwise normal infants
  - Pathologic if associated with cardiorespiratory instability

Clues to diagnosis

- Nasal congestion/cough – consider **RSV**
- Stridor/hoarseness – consider **airway evaluation**
- Recurrent ALTE – consider **NAT**
- History involving foreign body – consider **foreign body evaluation**, lateral decubitus
- Stridor or snoring – consider **obstructive sleep apnea / airway** evaluation
- Pallor – consider **anemia / intracranial hemorrhage**
- Blood in infant's mouth or nose – consider **NAT**
- Visible hemangioma, especially in beard distribution – consider **airway evaluation**
- History of altered consciousness at any time during event – consider **seizure**
- Low tone, constipation, endemic area (California) – consider **infant botulism**

NMCSD ALTE Pathway



Infectious	Neurologic	Gastrointestinal	Cardiovascular	Trauma	Respiratory/ENT	Metabolic
Meningitis	Seizure	GERD	CHD	NAT pathway	Vascular ring	Inborn error
Sepsis	Encephalopathy	Dysphagia	Arrhythmia		Vascular sling	Hypocalcemia
Pertussis	Intracranial HTN	Volvulus	Anemia		Bronchomalacia	Hypoglycemia
RSV	Other structural	Intussusception	Myocarditis		Foreign body	Hyper/hyponatremia
Botulism	Central apnea	Severe AGE	Cardiomyopathy		Subglottal or laryngeal stenosis	Poisoning
Pneumonia	Vasovagal		Long QT		Vocal cord abnormality	Hypomagnesemia
UTI	Shaken baby		WPW		Laryngotracheomalacia	Anemia
Mycoplasma	Breath holding					Hypothermia
Infant botulism						
Consider	**Consider**	**Consider**	**Consider**	**Consider**	**Consider**	**Consider**
CBC/diff	P2	UGI	EKG	Social Work	CXR	Urine organic acids
UA/UCx	Glucose	Reflux teaching	CXR	CPS	Pneumocardiogram	Serum amino acids
Pertussis Cx	CNS imaging	Acid-blocking meds	Upper/lower BP	CT head	Swallow study	P2
RSV	EEG	Thickened feeds	Cardiology consult	Skeletal survey	Pulmonary consult	Ammonia
Blood Cx	Neurology consult	Gastroenterology consult		Ophthalmology consult		Lactate
CSF studies				Forensics consult		Pyruvate
CXR						Drug screen ID consult
						Genetics consult

No category or unclear

All decisions should be on a case-by-case basis
All parents should have CPR training, if possible, during the admission
All parents should receive SIDS prevention instruction during their hospital stay
(back-to-sleep, anticipatory guidance, smoking cessation)
Consider formal pulmonary evaluation in patients who continue to have events during their hospital stay

Consider in all patients
Admission to hospital for monitoring and workup
Careful history, physical including neurologic exam
Chemistry (Na, K, Cl, HCO_3, BUN, Cr, Mg, Ca, NH_3, lactate, liver panel)
Complete blood count
Urinalysis and urine culture
Chest x-ray
Electrocardiogram
Multi-channel pneumocardiogram
Urine toxicology
Remember GE reflux may coexist with other entities

Consider NAT in all patients
Some experts recommend screening head CT

Consider in young infant < 3 mo or ill infant
Sepsis workup (including LP studies)
RSV
Pertussis culture / DFA
Empiric antibiotics +/- acyclovir

Blood Gas Interpretation

Interpretation of Arterial Blood Gas				
	Ph	$P_aO_{2\ (mmhg)}$	$P_aCO_{2\ (mmhg)}$	HCO_3 (meq/L)
Newborn (birth)	7.26 – 7.29	60	55	19
Newborn (>24 hr)	7.37	70	33	20
Infant (1–24 mo)	7.4	90	34	20
Child	7.39	96	37	22
NOTE: VBG can be used to assess acid-base status, not oxygenation. Ph is slightly lower and PCO_2 averages 6-8 mmHg higher. Capillary gases correlate best with arterial pH and moderately well with P_aCO_2.				

CO_2 on a VBG is 6-8 mm Hg higher than on the ABG

Starting Ventilator Settings		
	Infant	Child
Rate	25 - 35	15 - 25
Tidal Vol	4-8 ml/kg	6-10ml/kg
PIP	16-18	20
PEEP	4-5	3-5
I time	0.4-0.6 sec	0.8-1 sec

Basic Vent Changes				
Variable	Rate	PIP	PEEP	FiO_2
To ↑CO_2	↓	↓		
To ↓ CO_2	↑	↑		
To ↑ O_2		↑	↑	↑
To ↓ O_2		↓	↓	↓

ETT Size = Age/4 + 4
< 1 kg: 2.5
1-2 kg: 3.0
2-3 kg: 3.5
> 3kg: 4.0

ETT depth = 3 x ETT size
OR
Age + 10

(adults: M 23cm; F 20cm)

Predicted Peak Flow Measurements					
Height	PEFR (L/min)	Height	PEFR (L/min)	Height	PEFR (L/min)
43	147	51	254	59	360
44	160	52	267	60	373
45	173	53	280	61	387
46	187	54	293	62	400
47	200	55	307	63	413
48	214	56	320	64	427
49	227	57	334	65	440
50	240	58	347	66	454
Ref: Voter, KZ. Pediatr Rev 1996; 17 (2): 53-63.					

ACID-BASE CALCULATIONS

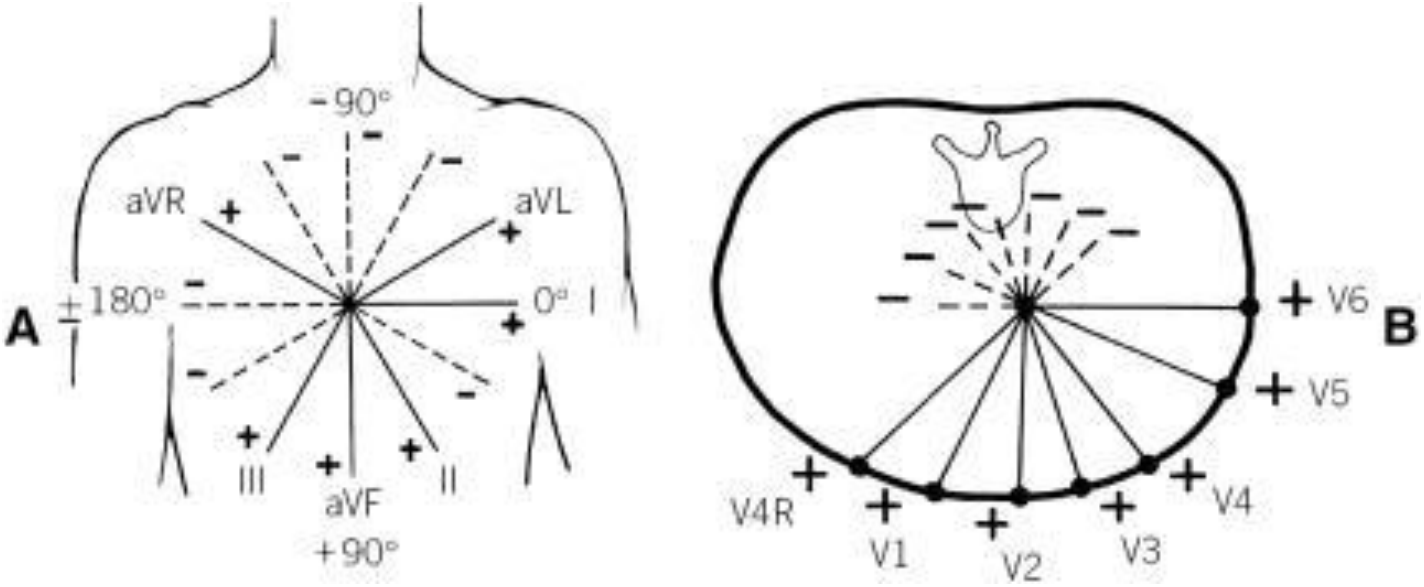
1. **Look at the pH.** Whichever side of 7.40 the pH is, that is the cause of the primary abnormality as the body doesn't perfectly compensate in a primary disorder.
2. **Calculate the Anion Gap.** A gap acidosis results from additional anions (acids) that are not measured.
   If the anion gap is >20mmol/L, there is a primary metabolic acidosis as the body does not generate a large gap for compensation.
3. **Calculate the Excess Anion Gap.** For each mmol increase in acids, one mmol of bicarb is converted to CO2 and H20 as a buffer-- so adding the excess gap to the value of serum bicarb should give you a normal bicarb value.

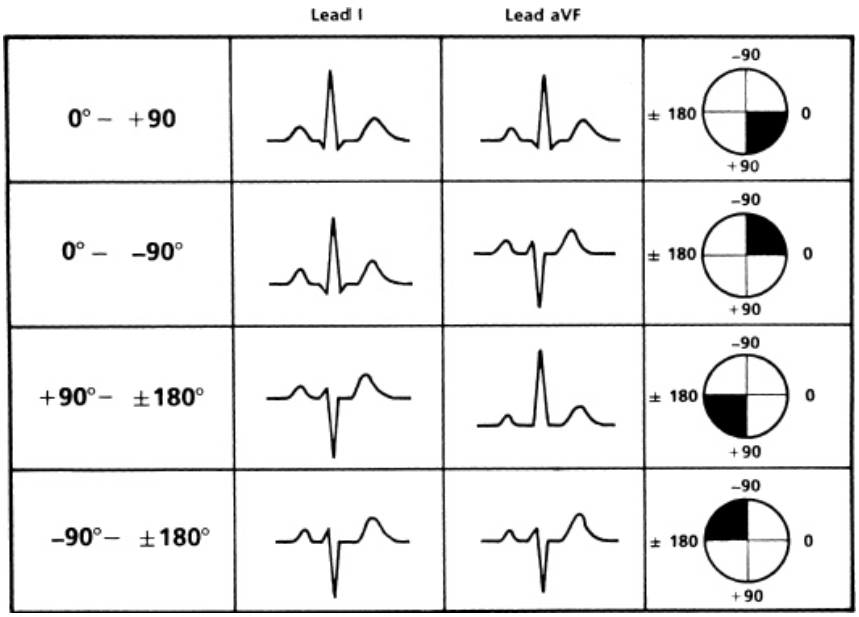
If the sum is greater than normal **(> 30)** then there is an **underlying metabolic alkalosis**. (ie extra bicarb)
If it is less than normal **(< 23)** there is an **underlying nongap metabolic acidosis**. (ie loss of bicarb)

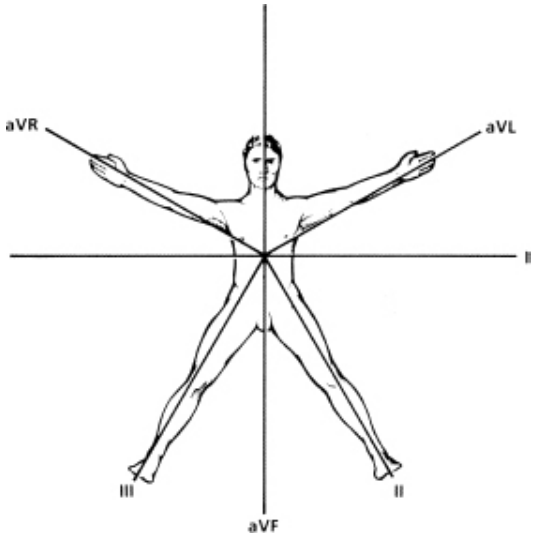
EKG Interpretation

EKG Norms								
Age	**HR (b/m)***	**QRS axis**	**PR interval**	**QRS duration**	**RV_1 (mm)**	**SV_1 (mm)**	**RV_6 (mm)**	**SV_6 (mm)**
< 1day	95-154 (123)	+59 to -163 (137)	0.08-0.16 (0.11)	0.03-0.07 (0.05)	5-26 (14)	0-23 (8)	0-11 (4)	0-9.5 (3)
1-2 days	91-159 (123)	+64 to -161 (134)	0.08-0.14 (0.11)	0.03-0.07 (0.05)	5-27 (14)	0-21 (9)	0-12 (4.5)	0-9.5 (3)
3-6 days	91-166 (129)	+77 to -163 (132)	0.07-0.14 (0.10)	0.03-0.07 (0.05)	3-24 (13)	0-17 (7)	0.5-12 (5)	0-10 (3.5)
1-3wks	107-182 (148)	+65 to +161 (110)	0.07-0.14 (0.10)	0.03-0.08 (0.05)	3-21 (11)	0-11 (4)	2.5-16.5 (7.5)	0-10 (3.5)
1-2mos	121-179 (149)	+31 to +113 (74)	0.07-0.13 (0.10)	0.03-0.08 (0.05)	3-18 (10)	0-12 (5)	5-21.5 (11.5)	0-6.5 (3)
3-5mos	106-186 (141)	+7 to +104 (60)	0.07-0.15 (0.11)	0.03-0.08 (0.05)	3-20 (10)	0-17 (6)	6.5-22.5 (13)	0-10 (3)
6-11mos	109-169 (134)	+6 to +99 (56)	0.07-0.16 (0.11)	0.03-0.08 (0.05)	1.5-20 (9.5)	0.5-18 (4)	6-22.5 (12.5)	0-7 (2)
1-2yrs	89-151 (119)	+7 to +101 (55)	0.08-0.15 (0.11)	0.04-0.08 (0.06)	2.5-17 (9)	0.5-21 (8)	6-22.5 (13)	0-6.5 (2)
3-4yrs	73-137 (108)	+6 to +104 (55)	0.09-0.16 (0.12)	0.04-0.08 (0.06)	1-18 (8)	0.2-21 (10)	8-24.5 (15)	0-5 (1.5)
5-7yrs	65-133 (100)	+11 to +143 (65)	0.09-0.16 (0.12)	0.04-0.08 (0.06)	0.5-14 (7)	0.3-24 (12)	8.5-26.5 (16)	0-4 (1)
8-11yrs	62-130 (91)	+9 to +114 (61)	0.09-0.17 (0.13)	0.04-0.09 (0.06)	0-12 (5.5)	0.3-25 (12)	9-25.5 (16)	0-4 (1)
12-15yrs	60-119 (85)	+11 to +130 (59)	0.09-0.18 (0.14)	0.04-0.09 (0.07)	0-10 (4)	0.3-21 (11)	6.5-23 (14)	0-4 (1)

*2-98% (mean)







T Wave Axis			
Age	**V1, V2**	**AVF**	**I, V5, V6**
Birth–1 day	±	+	±
1–4 days	±	+	+
4 days to adolescent	-	+	+
Adolescent to adult	+	+	+
+, T wave positive; -, T wave negative; ±, T wave normally either positive or negative.			

Common Seizure Medications

Drug	Trade	Target Dose (mg/kg/d)	Common Effective Dose (mg/dL)	Loadable[#]	Efficacy*
Carbamazepine	Tegretol	10-20	8-12		P
Clonazepam	Klonopin	0.05-0.2	N/A		G/P
Ethosuximide	Zarontin	10-20	40-100		G
Felbamate	Felbatol	15-45	40-100		G/P
Fosphenytoin	Cerebyx	4-6 PE^	100-200	20 mg/kg IV	
Gabapentin	Neurontin	20-40	n/a		P
Lamotrigine	Lamictal	5-15	3-18		G/P
Levetiracetam	Keppra	10-40	30-60	20-30 mg/kg IV	G/P
Oxcarbazepine	Trileptal	10-30	MHD lv 5-40		P
Phenobarbital	Luminal	5-10	15-40	5-10 mg/kg IV	P
Phenytoin	Dilantin	5-10	10-20		P
Tiagabine	Gabitril	1-2	N/A		P
Topiramate	Topomax	1-9	2-20		G/P
Valproic acid	Depakote Depakene Depakon	10-40	50-150	20 mg/kg IV	G/P
Zonisamide	Zonegran	5-13	20-40		G/P

^ PE=Phenytoin equivalents *[#] For PO Rx, give 1/2 daily dose and resume schedule* *G=general, P=partial*

Status Epilepticus

Status Epilepticus: tx if sz >5 min

↓

ABCs / Vital signs
Jaw thrust, O2, suction
Check glucose
IV access

↓

Lorazepam 0.1mg/kg IV
or
Diazepam 0.5mg/kg PR or

↓

Map repeat lorazepam q2-5min x3
or Diazepam after 10 min
Need CR and pulse ox monitors

↓

Fosphenytoin 20 mg PE/kg IV/IO
at 3mg PE/kg/min
Consider neuro or ICU consult

↓

Fosphenytoin 5mg/kg IV/IO at 3mg PE/kg/min

↓

Phenobarbitol 20 mg/kg IV slow push
Be prepared to intubate

Etiology of Seizures:

- Known epilepsy
- Febrile
- Acute infection
- Metabolic encephalopathy / hypoglycemia
- Trauma
- Intoxication
- Anticonvulsant withdrawal
- Tumor/syndromes
- Stroke
- Idiopathic

Labs to consider:

- Glucose
- Lytes, BUN, Cr, Ca/Mg/Phos
- Antiepileptic drug levels
- CBC/D, blood cultures
- ABG
- Tox screen
- LFTs
- Head CT
- LP

- Rectal valium comes as 2.5, 5, 10, 15, and 20mg prepackaged doses
- Undiluted 5mg/ml parenteral diazepam can be used PR

Migraine Management

PEG-3350 with electrolytes (Golytely) cleanout guideline

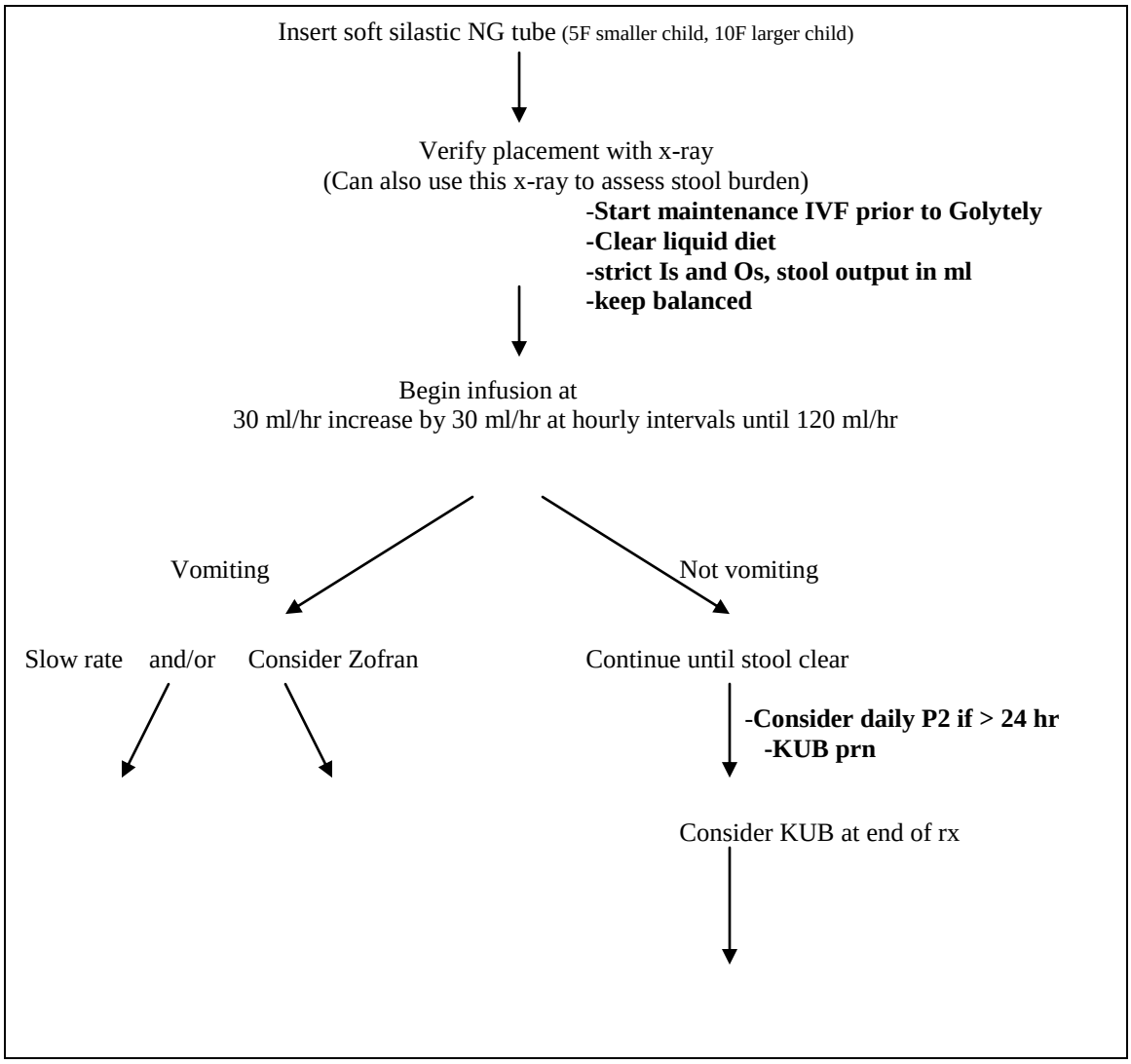
1. Patient selection
    a. Failed outpatient treatment with appropriate laxative regimen

Contraindications

1. Hypersensitivity to polyethelyene glycol or any component
2. GI obstruction
3. Ileus
4. Gastic retention
5. Bowel perforation
6. Toxic colitis
7. Megacolon

    a. Allergic reaction – rarely reported
    b. Vomiting / abdominal distension / nausea
    c. Aspiration
        i. Reported with continuous infusions after vomiting
    d. Electrolyte imbalance due to “stooling out” *

3. Safety
    a. PEG-3350 with electrolytes offers a significant improvement on safety of previously used regimens such as saline irrigation and is significantly more effective than other regimens
    b. Because it is difficult to drink the amount required , a NG tube is recommended for continuous infusion
    c. Rare cases of aspiration secondary to vomiting have occurred in animal studies and in some adult reports
    d. Studies, in general, have not shown significant changes in electrolytes or serum osmolality



References:

1. Adamiak T, et al. One-day bowel preparation with polyethylene glycol 3350: as effective regimen for colonoscopy in children. Gastrointest endosc 2010; 71: 573-577.
2. Dahshan A, et al. A randomized, prospective study to evaluate the efficacy and acceptance of three bowel preparations for colonoscopy in children. Am J of Gastroenterology 1999; 94: 3497-3501.
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6. Marschall HU. Life-threatening complications of nasogastric administration of polyethylene glycol-electrolyte solutions (Golytely) for bowel clensing. Gastro endoscop 1998; 47: 408-410.
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DKA Protocol

DKA: Hyperglycemia, presence of ketones (serum or urine), acidosis pH < 7.3 or HCO3 < 15 mM

1. **Initial laboratory studies:** Panel 2, EG7, Urinalysis
   Anti-insulin antibody, Anti-GAD antibody, Islet cell 512 antibody
   Serum insulin and C-peptide, Anti-tissue transglutaminase (tTG), total IgA
2. **Initial fluid: 0.9% normal saline 10-20 cc/kg over 1 hour**
3. **Insulin drip:** Do not give a bolus
   Begin with a continuous insulin infusion of 0.1 unit/kilogram/hour (if blood glucose is > 600 mg/dL consider holding insulin until glucose has decreased to < 600 mg/dL with fluid therapy)
4. **Fluid therapy:** 0.45 % normal saline with potassium (see potassium guideline)
   Rate: ml/hour = $\frac{(3{,}500 \text{ ml/m2 x BSA m2} - \text{volume of initial fluid})}{24 \text{ hours}}$

   BSA m2 = square root of: $\frac{\text{height(cm) x weight (kg)}}{3600}$

   Add dextrose when blood glucose is < 300mg/dL.

   Potassium supplement guideline
   (based on initial K)
   K < 5.0 40meq/L (25meq KCl & 15meq KPhos)
   K 5.0 - 5.5 20meq KCl/L
   (if urinating and already received insulin)
   K > 5.5 no K
5. **Laboratory studies:**
   a. glucose every hour
   b. Panel 2 q 2 hrs for first 6 hours. If stable after 6 hours then q4 hours.
   c. EG7 with lytes until HCO3 > 10mM
   d. calculate effective osmolality
   osmeff = 2(sodium + potassium) + glucose/18 (normal range = 280-295 mosm)
   e. phosphate and ionized calcium at 6 and 12 hour lab draw.
6. **Switch to subcutaneous insulin when pH> 7.3 or HCO3 > 15 and patient is able to tolerate PO.** Immediately after giving the first subcutaneous insulin injection, discontinue IV fluids and continuous insulin infusion and allow the patient to eat their meal.

****CALL ENDOCRINE WHEN READY TO SWITCH OVER TO SQ INSULIN****

KAWASAKI DISEASE

DIAGNOSTIC CRITERIA:

- Fever of at least 5 days duration
- PLUS, at least 4 additional principal features
  - Changes in extremities
    - Acute: erythema of palms, soles, edema of hands, feet
    - Subacute: periungual peeling of fingers, toes in weeks 2-3
  - Polymorphous exanthema
  - Bilateral conjunctival injection
  - Changes in the lips and oral cavity
  - Cervical lymphadenopathy - > 1.5 cm diameter, usually unilateral
- Absence of any other known disease process that can explain the clinical findings

Consider the following labs:

-CBC w/diff (leukocytosis, neutrophilia)
-CRP, ESR (elevated)
- AST/ALT, GGT (elevated), albumin (low)
- UA (bag or clean catch – sterile pyuria); Urine CX if UA has WBC or pt < 6 months
- Blood CX & LP if pt is < 6 months or presentation suggests meningitis
-Rhinoprobe or general viral culture swab for Adenovirus
-Rapid strept/throat CX if child > 3 y/o (Consider ASO/Streptozyme)
-EBV serology (if HSM and /or generalized lymphadenopathy present)

If Dx unsure, consider:

- Ophthalmology consult: slit lamp exam to look for anterior uveitis
- ID consult to consider other DX
- Rheumatology consult if arthritis a major component
- Consider Echo

TREATMENT PLAN:

1. IVIG : 2 grams/kg IV over 10-12 hours-**treatment within 10 days of onset of fever substantially reduces progression to coronary artery dilation**
   a. Hypotension during infusion:
      - stop the infusion
      - give diphenhydramine in addition to the maintenance IV fluids
      - attempt to restart the IVIG at ½ rate for 1 hr then increase
      - if hypotension recurs, stop. Consider alternative treatments.
2. Aspirin: 80-100 mg/kg/day every 6 hours until afebrile at least 48 hours (and CRP near normal, if measured) then reduce to 3-5 mg/kg/day (usually 1 baby aspirin) until repeat echo at 4-6 weeks is normal.
3. IV fluids
4. AVOID ibuprofen or acetaminophen to control fever (usually no help, pt receiving aspirin)
5. If pt is still febrile 36 hours after IVIG infusion, redraw CBC w/diff, CRP, liver panel and if no contraindication, repeat IVIG same dose.
6. Echocardiogram - if <3yo consider need for sedation/NPO status
7. D/C pt if afebrile 24 hours after completion of IVIG and D/C criteria met

DISCHARGE CRITERIA:

1. Able to take PO fluids and medications
2. Afebrile 24 hours after last treatment
3. Parent or care provider is able to manage patient at home
4. Discharge Medications:
   -Review symptoms of aspirin toxicity (gastric bleeding, coffee ground emesis, melena)
   -Review aspirin dosing (higher dose for 2 days after the fever subsides, then reduced)
5. Schedule outpt ID and Cardiology follow-up as indicated – IVIG interferes with MMR/varicella
6. Flu shot given, if available.

Diagnosis, Treatment and Long Term Management of Kawasaki Disease. Newburger et al.Circulation 2004;110:2747-2771

Table 1. Laboratory criteria supporting a diagnosis of KD

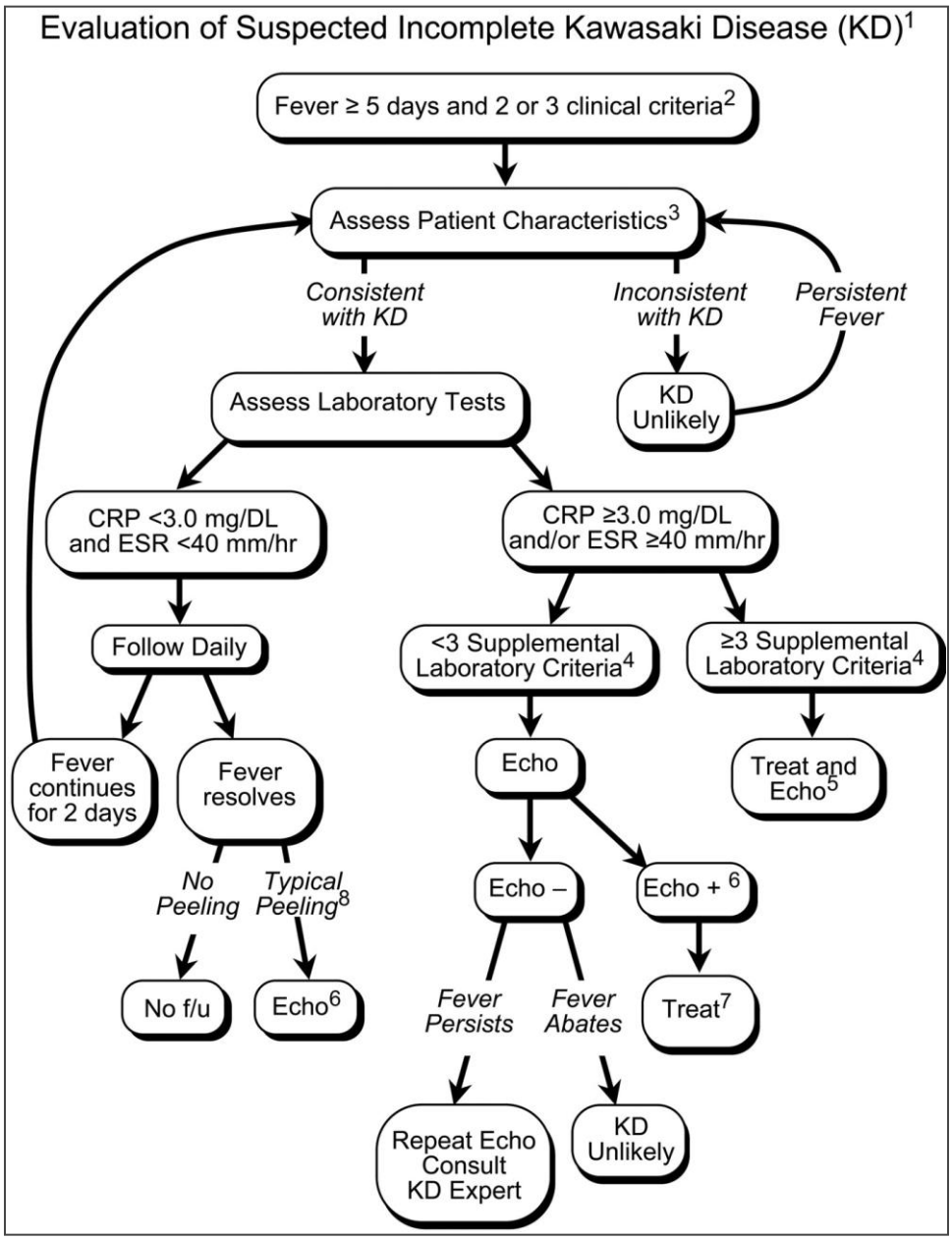
Major findings:
CRP ≥ 3.0 mg/DL
ESR ≥ 40 mm/hr
Minor findings:
Albumin ≤ 3.0 g/dl
Anemia for age
Elevation of alanine aminotransferase
Platelets after seven days ≥ 450,000/mm^3
White blood count ≥ 15,000/mm^3
Urine ≥ 10 white blood cells/high-power field

Typical lab features

- *Marked ↑ ESR, CRP
  - Almost universal
  - IVIG may cause ↑ ESR
- *Marked thrombocytosis
  - After 7 days > 500 K
  - 700 K is mean plt count
- Increased WBC
  - 50% have > 15 K
- Mild anemia
- Hyponatremia
- Abnormal lipids
- Hypoalbuminemia
  - ≤ 3.0 gm/dl
- ↑ Transaminases
- ↑ GGT
- Sterile pyuria
  - Proteinuria
  - > 10 WBC/hpf
- Aseptic meningitis

Increased risk for aneurysm

- Male
- < 1 year old
- Prolonged fever > 16 days and/or recurrent fever
- Thrombocytopenia on presentation
- Hypoalbuminemia
- No or delayed treatment with IVIG
- WBC > 30,000
- ESR > 100
- Elevated ESR or CRP > 30 days or reappearance of elevated ESR or CRP
- Abnormal Q wave in leads II, III, aVF
- Other features of cardiac involvement (myocarditis, pericardial effusion, arrhythmias)


Evaluation of Suspected Incomplete Kawasaki Disease (KD)[1]
Fever ≥ 5 days and 2 or 3 clinical criteria[2]
Assess Patient Characteristics[3]
Consistent with KD
Inconsistent with KD
Persistent Fever
Assess Laboratory Tests
KD Unlikely
CRP <3.0 mg/DL and ESR <40 mm/hr
CRP ≥3.0 mg/DL and/or ESR ≥40 mm/hr
Follow Daily
<3 Supplemental Laboratory Criteria[4]
≥3 Supplemental Laboratory Criteria[4]
Fever continues for 2 days
Fever resolves
Echo
Treat and Echo[5]
No Peeling
Typical Peeling[8]
Echo –
Echo + [6]
No f/u
Echo[6]
Fever Persists
Fever Abates
Treat[7]
Repeat Echo Consult KD Expert
KD Unlikely

PROCEDURE	CPT CODE	PROCEDURE	CPT CODE
Adm inhal meds	94640	Bone mar asp	38220
Arterial puncture	36600	Bone marrow bx	38221
Bladder cath	51045	Cast, gauntlet	29085
Chest tube	32002	Cast, short arm	29075
Conscious sed.	99141	Circ – GOMCO	54160
Devel. Screen	96110	Circ – Pastibell	54150
ET tube	31500	ECG interpret	93010
FB removal ear	69200	Eye irrigation	68810
GYN/PAP smear	V72.3	FB, eye	65205
Hearing screen	92553	FB, nose	30300
I & D of abscess	10060	Finger splint	29130
IM injections	90782	I & D hemorrhoid	10060
Intradermal inj.	90788	Inhalation meds	94664
Life Support	99450	IV infusion	36400
LP	62270	Long arm splint	29105
Pelvic exam	57410	Long leg splint	29505
Placement of intraosseous lines	36680	Newborn resuscitation	99440
Subcut injections	90782	Pain management	90780
Suture of lacer.	12001	Short arm splint	29125
Thoracentesis	32000	Short leg splint	29515
Tympanometry & interpretation	92567	Suprapubic tap	51000
UAC	36660	Transvaginal ultrasound	76830
UVC	36510	Tube thoracotomy	32020
Venipuncture	36415	Vision screen	99173
Vision screen	99173	Wound care	12001