

SECTION: PM-5

PROTOCOL TITLE: PEDIATRIC HYPOTENSION AND SHOCK

REVISED: January 28, 2010

GENERAL COMMENTS: Use of good clinical judgment is essential. This protocol includes shock and hypotension from a myriad of causes. When another protocol is more appropriate (i.e. Allergic Reaction) it should be followed instead. Fluid administration use should be used with caution in pediatric patients with severe congenital heart defects.

BLS SPECIFIC CARE: See General Pediatric Care Protocol PM-1

- Determine patient's color category on length based resuscitation tape (Broselow Tape)

ILS SPECIFIC CARE: See General Pediatric Care Protocol PM-1

- IV access (to a max of three attempts) only if needed due to severity of underlying injury or illness, or marked dehydration. Otherwise defer until arrival of ALS providers
 - IV: Crystalloid solution at a TKO rate
 - 10-20 cc/kg, Repeat as needed for hypotension
- IO access: as needed for markedly critical patients after unsuccessful vascular access. Follow fluid administration guidelines as above

ALS SPECIFIC CARE: See General Pediatric Care Protocol PM-1

- Positive pressure ventilations if pulmonary edema present
 - **IV/IO fluid therapy**
 - 20 ml/kg fluid boluses over 10 minutes
 - If no signs of pulmonary edema
 - Repeat up to three times as needed to a maximum of 60 ml/kg

Pharmacologic therapy:

If patient unresponsive to fluid therapy or if fluids are not indicated

Vasopressors:

- Epinephrine infusion:
 - First line agent for treatment of shock not responsive to fluids in the pediatric patient
 - 0.1-1 mcg/kg/min.
 - See, "Pediatric Epinephrine Infusion: Preparation and Administration," chart (PC-4)
 - Titrate to adequate blood pressure response
- Dopamine infusion:
 - 2-20 mcg/kg/min.
 - See, "Pediatric Dopamine Infusion: Preparation and Administration," chart (PC-4)
 - Titrate to adequate blood pressure response

Protocol PM-5

PED HYPOTENSION AND SHOCK

PHYSICIAN PEARLS:

DOPAMINE DRIP: Because of its rapid elimination, dopamine can only be administered as a continuous infusion. To calculate a dopamine infusion, multiply the child's weight in kg by 6. This amount of dopamine (in mg) is then added to enough IV solution to equal a total of 100 ml. **When the resulting solution is infused at a rate of 1 ml/hr, it will deliver a dosage of 1 mcg/kg/min.**

EPI DRIP: In pediatric patients with continued hypotension, epinephrine may be given as a continuous infusion (drip). The recommended starting dose is 2 mcg/kg/min. The infusion rate is reduced to maintain the desired response; usually to 0.1 to 1 mcg/kg/min. Infusion of doses greater than 5 mcg/kg/min may produce profound vasoconstriction at the site of administration.

To calculate an epinephrine drip, a simple formula for children uses **0.6** multiplied by the child's weight in kg. This amount (in mg) is then added to enough IV solution to equal a total of 100 ml. **When the resulting solution is infused at a rate of 1ml/hr, it will deliver a dosage of 0.1 mcg/kg/min. 2mcg/kg/hr is 2 ml/hr.**

Protocol PM-5

Rule of 6 quick reference

KG	1	2	4	6	8	10	12	14	16	18	20
Pounds	2.2	4.4	6.6	8.8	17.6	22	26.4	30.8	35.2	39.6	44
Dopamine added to Buretrol	6	12	18	24	48	60	72	82	96	108	120
Epinephrine added to Buretrol	0.6	1.2	1.8	2.4	4.8	6.0	7.2	8.2	9.6	10.8	12.0

KG	22	24	26	28	30	32	34	36	38	40
Pounds	48.4	52.8	57.2	61.6	66	70.4	74.8	79.2	83.6	88
Dopamine added to Buretrol	132	144	156	168	180	192	204	216	228	240
Epinephrine added to Buretrol	13.2	14.4	15.6	16.8	18.0	19.2	20.4	21.6	22.8	24.0

KG	42	44	46	48	50	52	54	56	58	60
Pounds	92.4	96.8	101.2	105.6	110	114.4	118.8	123.2	127.6	132
Dopamine added to Buretrol	252	264	276	288	300	312	324	336	348	360
Epinephrine added to Buretrol	25.2	26.4	27.6	28.8	30.0	31.2	32.4	33.6	34.8	36.0

PED HYPOTENSION AND SHOCK

Protocol
PM-5

PED HYPOTENSION AND SHOCK