Dopamine Intravenous Guide

Note to MD: write Dopamine prescription in the usual medication section of chart: "Dopamine as per IV guide; titrate to Mean Arterial Pressure (MAP) or BP of _____"

Indications:

- hemodynamic compromise secondary to sepsis, cardiogenic shock, trauma
- *NB Dopamine was associated with a greater number of adverse events (arrythmias) in comparison with Norepinephrine IV*

Mechanism of Action:

- 5-10 mcg/kg/min = alpha and beta-1 stimulation, but beta effect dominates, causing increased cardiac output and vasoconstriction
- > 10 mcg/kg/min = stimulates alpha receptors causing intense vasoconstriction

Adverse Effects:

- cardiovascular: arrhythmia, hypotension (low dose), hypertension (high dose)
- GI: nausea, vomiting
- neuro: headache
- renal: acute renal failure
- skin: extravasation can cause tissue necrosis **(infusion through central venous catheter is strongly recommended**)

Contraindications:

- hypersensitivity to sulfites
- ventricular fibrillation (NB there is an increase in rate of arrythmias in comparison to Norepinephrine
- pheochromocytoma

Prior to Infusion:

- obtain patient's weight
- cardiac monitor, O2 sat monitor
- adequate fluid administration
- **central venous catheter strongly recommended**
- foley

Infusion (adults) > 50kg:

- **400mg (400,000mcg) dopamine in 250cc D5W (1600mcg/cc)**
- start infusion at 5mcg/kg/min (see chart for pump speed)
- increase dose by 2.5mcg/kg/min every 5 minutes until desired response is reached
- monitor and record vitals q 5 minutes

- goal = sBP 100-120 or MAP > 65 (MAP = 2/3 dBP + 1/3 sBP)
- max recommended dose = 30mcg/kg/min, if BP still not at target consider using norepinephrine or phenylephrine
- monitor IV site frequently for extravasation, if occurs: mix 5mg phentolamine + 10cc NS in syringe and inject with hypodermic needle directly into site

Infusion (children) < 50kg:

- **400mg (400,000mcg) dopamine in 250cc D5W (1600mcg/cc)**
- start infusion at 5mcg/kg/min (see chart for pump speed)
- increase dose by 2.5mcg/kg/min every 5 minutes until desired response is reached
- monitor and record vitals q 5 minutes
- goal = sBP of 70 + (2 x age) to 90 + (2 x age)
- max recommended dose = 30mcg/kg/min, if BP still not at target consider using norepinephrine or phenylephrine
- monitor IV site frequently for extravasation, if occurs: mix 5mg phentolamine + 10cc NS in syringe and inject with hypodermic needle directly into site

References

1. *Ottawa General Hospital. Intravenous Drug Therapy Manual. 2008: Dopamine*
2. *Guide d'administration intraveineuse des drogues critiques. Institut universitaire de cardiologie et de pneumologie de Quebec. 6e edition. 2012: Dopamine*
3. *Comparison of Dopamine and Norepinephrine in the Treatment of Shock Daniel De Backer, M.D., Ph.D., Patrick Biston, M.D., Jacques Devriendt, M.D., Christian Madl, M.D., Didier Chochrad, M.D., Cesar Aldecoa, M.D., Alexandre Brasseur, M.D., Pierre Defrance, M.D., Philippe Gottignies, M.D., and Jean-Louis Vincent, M.D., Ph.D. for the SOAP II Investigators. N Engl J Med 2010; 362:779-789March 4, 2010DOI: 10.1056/NEJMoa0907118*
4. *Uptodate: Use of vasopressors and inotropes. Accessed June 18 2012*

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Cree Board of Health and Social Services of James Bay

Dopamine Infusion Rate (Adult) > 50kg

400mg (400,000mcg) dopamine in 250cc D5W (1600mcg/cc)

						Weight (Kg)						
		50	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**	**100**
	5	9.4	10.3	11.3	12.2	13.1	14.1	15.0	15.9	16.9	17.8	18.8
	6	11.3	12.4	13.5	14.6	15.8	16.9	18.0	19.1	20.3	21.4	22.5
	7	13.1	14.4	15.8	17.1	18.4	19.7	21.0	22.3	23.6	24.9	26.3
	8	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	30.0
	9	16.9	18.6	20.3	21.9	23.6	25.3	27.0	28.7	30.4	32.1	33.8
	10	18.8	20.6	22.5	24.4	26.3	28.1	30.0	31.9	33.8	35.6	37.5
	11	20.6	22.7	24.8	26.8	28.9	30.9	33.0	35.1	37.1	39.2	41.3
	12	22.5	24.8	27.0	29.3	31.5	33.8	36.0	38.3	40.5	42.8	45.0
	13	24.4	26.8	29.3	31.7	34.1	36.6	39.0	41.4	43.9	46.3	48.8
	14	26.3	28.9	31.5	34.1	36.8	39.4	42.0	44.6	47.3	49.9	52.5
	15	28.1	30.9	33.8	36.6	39.4	42.2	45.0	47.8	50.6	53.4	56.3
mcg/kg/min	**16**	30.0	33.0	36.0	39.0	42.0	45.0	48.0	51.0	54.0	57.0	60.0
	17	31.9	35.1	38.3	41.4	44.6	47.8	51.0	54.2	57.4	60.6	63.8
	18	33.8	37.1	40.5	43.9	47.3	50.6	54.0	57.4	60.8	64.1	67.5
	19	35.6	39.2	42.8	46.3	49.9	53.4	57.0	60.6	64.1	67.7	71.3
	20	37.5	41.3	45.0	48.8	52.5	56.3	60.0	63.8	67.5	71.3	75.0
	21	39.4	43.3	47.3	51.2	55.1	59.1	63.0	66.9	70.9	74.8	78.8
	22	41.3	45.4	49.5	53.6	57.8	61.9	66.0	70.1	74.3	78.4	82.5
	23	43.1	47.4	51.8	56.1	60.4	64.7	69.0	73.3	77.6	81.9	86.3
	24	45.0	49.5	54.0	58.5	63.0	67.5	72.0	76.5	81.0	85.5	90.0
	25	46.9	51.6	56.3	60.9	65.6	70.3	75.0	79.7	84.4	89.1	93.8
	26	48.8	53.6	58.5	63.4	68.3	73.1	78.0	82.9	87.8	92.6	97.5
	27	50.6	55.7	60.8	65.8	70.9	75.9	81.0	86.1	91.1	96.2	101.3
	28	52.5	57.8	63.0	68.3	73.5	78.8	84.0	89.3	94.5	99.8	105.0
	29	54.4	59.8	65.3	70.7	76.1	81.6	87.0	92.4	97.9	103.3	108.8
	30	56.3	61.9	67.5	73.1	78.8	84.4	90.0	95.6	101.3	106.9	112.5

Infusion rate (cc/hr) = (weight (kg) x dose (mcg/kg/min) x 60 (min/hr)) / concentration (1600mcg/cc)

Dopamine Infusion Rate (Children) < 50kg

400mg (400,000mcg) dopamine in 250cc D5W (1600mcg/cc)

						Weight (Kg)				
		5	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**
	5	0.9	1.9	2.8	3.8	4.7	5.6	6.6	7.5	8.4
	6	1.1	2.3	3.4	4.5	5.6	6.8	7.9	9.0	10.1
	7	1.3	2.6	3.9	5.3	6.6	7.9	9.2	10.5	11.8
	8	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5
	9	1.7	3.4	5.1	6.8	8.4	10.1	11.8	13.5	15.2
	10	1.9	3.8	5.6	7.5	9.4	11.3	13.1	15.0	16.9
	11	2.1	4.1	6.2	8.3	10.3	12.4	14.4	16.5	18.6
	12	2.3	4.5	6.8	9.0	11.3	13.5	15.8	18.0	20.3
	13	2.4	4.9	7.3	9.8	12.2	14.6	17.1	19.5	21.9
	14	2.6	5.3	7.9	10.5	13.1	15.8	18.4	21.0	23.6
	15	2.8	5.6	8.4	11.3	14.1	16.9	19.7	22.5	25.3
mcg/kg/min	**16**	3.0	6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0
	17	3.2	6.4	9.6	12.8	15.9	19.1	22.3	25.5	28.7
	18	3.4	6.8	10.1	13.5	16.9	20.3	23.6	27.0	30.4
	19	3.6	7.1	10.7	14.3	17.8	21.4	24.9	28.5	32.1
	20	3.8	7.5	11.3	15.0	18.8	22.5	26.3	30.0	33.8
	21	3.9	7.9	11.8	15.8	19.7	23.6	27.6	31.5	35.4
	22	4.1	8.3	12.4	16.5	20.6	24.8	28.9	33.0	37.1
	23	4.3	8.6	12.9	17.3	21.6	25.9	30.2	34.5	38.8
	24	4.5	9.0	13.5	18.0	22.5	27.0	31.5	36.0	40.5
	25	4.7	9.4	14.1	18.8	23.4	28.1	32.8	37.5	42.2
	26	4.9	9.8	14.6	19.5	24.4	29.3	34.1	39.0	43.9
	27	5.1	10.1	15.2	20.3	25.3	30.4	35.4	40.5	45.6
	28	5.3	10.5	15.8	21.0	26.3	31.5	36.8	42.0	47.3
	29	5.4	10.9	16.3	21.8	27.2	32.6	38.1	43.5	48.9
	30	5.6	11.3	16.9	22.5	28.1	33.8	39.4	45.0	50.6

Infusion rate (cc/hr) = (weight (kg) x dose (mcg/kg/min) x 60 (min/hr)) / concentration (1600mcg/cc)