Dopamine is an endogenous neurotransmitter and a chemical precursor of epinephrine. It has dopaminergic, alpha, and beta receptor stimulating actions. Its actions differ with the dosage given:

1. 2-5 mcg/kg/min – dopaminergic effects on renal arteries and mesenteric blood vessels causing vasodilation (no effect on heart rate or blood pressure). This drip is no longer used to treat oliguria.
2. 5-10 mcg/kg/min - beta effects on heart that usually increase cardiac output and blood pressure. This dosage has less effect on heart rate.
3. 10-20 mcg/kg/min - alpha peripheral effects cause peripheral vasoconstriction, increased blood pressure, and increase heart rate.

Indications and Administration

1. Shock not responsive to IV fluid resuscitation or where IV fluid is contraindicated.
   a. **Adult -** Start infusion at 5 mcg/kg/min. Gradually increase to obtain desired effect. Use IV pump if possible. Do not exceed 20 mcg/kg/min.
   b. **Pediatric -** Start infusion at 5 mcg/kg/min. Gradually increase to obtain desired effect. IV pump is mandatory.
2. Symptomatic bradycardia not improved by atropine.
   a. **Adult** – 2-10 mcg/kg/min. Titrate to patient response.

Notes

1. Try IV fluids before administration of dopamine. Dopamine is not indicated if shock is reversed with fluids. However, if fluids are contraindicated, as in pulmonary edema, then begin dopamine infusion.
2. The most common side effects include ectopic beats, nausea and vomiting. Angina has been reported following treatment. Tachycardia and dysrhythmias are less likely than with other catecholamines.
3. Do not mix in same line as with sodium bicarbonate.
4. Certain antidepressants (monoamine oxidase inhibitors) potentiate the effects of this drug. Check for psychiatric medications and get advice from medical control.

Dopamine Drip Rate Chart: Premix = 400 mg in 250 ml for a concentration of 1600 mcg/cc and run at (ml/hr):

mcg/kg/min	***20 kg***	***30 kg***	***40 kg***	***50 kg***	***60 kg***	***70 kg***	***80 kg***	***90 kg***	***100 kg***
2 mcg	1.5	2	3	4	5	5	6	7	8
5 mcg	4	6	8	9	11	13	15	17	19
10 mcg	8	11	15	19	23	26	30	34	38
15 mcg	11	17	23	28	34	39	45	51	56
20 mcg	15	23	30	38	45	53	60	68	75