

Dobutamine

Sources:

- The two sources of dobutamine in Canada are Sandoz and Hospira:
 - Sandoz: 12.5mg/ml – on emergency allocation; expected resupply in Dec 2013
 - Hospira: 12.5mg/ml – indeterminate availability

Indications and clinical uses in Canada:

- Used as an inotropic agent to increase cardiac output.
 - Usual dosage is 2-20mcg/kg/min; infusion rate adjusted according to patient's response.

Treatment alternatives:

1) Dopamine Hydrochloride and 5% dextrose injection USP*

Dopamine can be used to increase cardiac output (like dobutamine), but also has vasopressor effects, which leads to a higher increase in blood pressure and intense vasoconstriction at comparable doses (3). Dopamine can also increase pulmonary artery occlusion pressure, which can worsen hypoxia in patients susceptible to pulmonary edema (4).

Both dopamine and dobutamine will have similar efficacy if administered properly, but dobutamine is typically better tolerated (5)

*Most preparations of dopamine are also shorted, but some are available through Baxter Canada (1-888-719-9955) during the shortage

2) Norepinephrine Bitartrate Injection USP

Norepinephrine is primarily used in cases of shock. It acts as a vasopressor agent to cause vasoconstriction and an increase in blood pressure. Cardiac output will also increase to a similar extent compared with dobutamine and dopamine (6)

Trial published in 2010 in the New England Journal of Medicine (SOAP II Trial) compared dopamine to norepinephrine for treating patients with shock found no difference in the rate of death between norepinephrine and dopamine; however, dopamine was associated with significantly more cardiac arrhythmia than norepinephrine, and therefore may be a more attractive first-line option, especially in patients with pre-existing cardiac conditions, despite both drugs being considered first-line therapies (7).

3) Milrinone for heart failure

Decompensated heart failure - In patients with low cardiac output, **milrinone** or **dobutamine** is indicated if the systolic blood pressure is >90 mm Hg (8)

Prepared by Terry Damm, BSP
Reviewed by Karen Jesen, BSP, MSc
November 26, 2013

References:

1. American Society of Health-System Pharmacists. Drug Shortages. Available at <http://www.ashp.org/DrugShortages/Current/Bulletin.aspx?id=929>. Accessed November 2013.
2. Lexi-comp [online]. Dobutamine monograph. Accessed November 26th, 2013.
3. Stoner JD III, Bolen JL, & Harrison DC: Comparison of dobutamine and dopamine in the treatment of severe heart failure. *Br Heart J* 1977; 39:536-539.
4. Worthley LIG, Tyler P, & Moran JL: A comparison of dopamine, dobutamine and isoproterenol in the treatment of shock. *Intensive Care Med* 1985; 11:13-19.
5. Benotti JR, McCue JE, & Alpert JS: Comparative vasoactive therapy for heart failure. *Am J Cardiol* 1985; 56:19B-24B.
6. Mueller H, Ayres SM, Giannelli S Jr, et al: Effect of isoproterenol, l-norepinephrine, and intraaortic counter pulsation on hemodynamics and myocardial metabolism in shock following acute myocardial infarction. *Circulation* 1972; 45:335-351
7. De Backer D, Biston P, Devriendt J, et al (SOAP II investigators). Comparison of dopamine and norepinephrine in the treatment of shock. *N Engl J Med*. 2010;362:779-89.
8. e-Therapeutics [online]. Heart Failure. Accessed December 2nd, 2013.