DOBUTamine (doe-byoo-ta-meen)

**Classification**
Therapeutic: inotropics
Pharmacologic: adrenergics

**Pregnancy Category B**

**Indications**
Short-term (≤ 48 hr) management of heart failure caused by depressed contractility from organic heart disease or surgical procedures.

**Action**
Stimulates beta1(myocardial)-adrenergic receptors with relatively minor effect on heart rate or peripheral blood vessels. Therapeutic Effects: Increased cardiac output without significantly increased heart rate.

**Pharmacokinetics**
Absorption: Administered by IV infusion only, resulting in complete bioavailability.
Distribution: Unknown.
Metabolism and Excretion: Metabolized by the liver and other tissues.
Half-life: 2 min.

**TIME/ACTION PROFILE (inotropic effects)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>1–2 min</td>
<td>10 min</td>
<td>brief (min)</td>
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</tbody>
</table>

**Contraindications/Precautions**
Contraindicated in: Hypersensitivity to dobutamine or bisulfites; Idiopathic hypertrophic subaortic stenosis.
Use Cautiously in: History of hypertension (increased risk of exaggerated pressor response); MI; Atrial fibrillation (pretreatment with digitalis glycosides recommended); History of ventricular arrhythmias (may be exaggerated); Hypovolemia (correct before administration); Pregnancy or lactation (safety not established).

**Adverse Reactions/Side Effects**
CNS: headache.
Resp: shortness of breath.
CV: hypertension, increased heart rate, premature ventricular contractions, angina pectoris, ECG changes.
GI: nausea, vomiting.
Local: phlebitis.
Misc: hypersensitivity reactions including skin rash, fever, bronchospasm or eosinophilia, nonanginal chest pain.

**Interactions**
Drug-Drug: Use with nitroprusside may have a synergistic effect on cardiac output. Beta blockers may negate the effect of dobutamine. Risk of arrhythmias or hypertension with some anesthetics (cyclopropane, halothane). MAO inhibitors, amphetamines, or tri cyclic antidepressants.

**Route/Dosage**

<table>
<thead>
<tr>
<th>Route</th>
<th>Adults and Children:</th>
<th>Neonates:</th>
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</thead>
<tbody>
<tr>
<td>IV</td>
<td>2.5–15 mcg/kg/min titrate to response (up to 40 mcg/kg/min)</td>
<td>2–15 mcg/kg/min</td>
</tr>
</tbody>
</table>

**NURSING IMPLICATIONS**

**Assessment**
- Monitor BP, heart rate, ECG, pulmonary capillary wedge pressure (PCWP), cardiac output, CVP, and central venous pressure continuously during the administration. Report significant changes in vital signs or arrhythmias. Consult physician for parameters for pulse, BP, or ECG changes for adjusting dose or discontinuing medication.

**NURSING IMPLICATIONS**
- Palpate peripheral pulses and assess appearance of extremities routinely throughout dobutamine administration. Note phlebitis if the quality of pulse deteriorates or if extremities become cold or mottled.

**Lab Test Considerations**
- Monitor potassium concentrations during therapy; may cause hypokalemia.
- Monitor electrolytes, BUN, creatinine, and prothrombin time weekly during prolonged therapy.

**Potential Nursing Diagnoses**
- Decreased cardiac output (Indications)
- Ineffective tissue perfusion (Indications)

**Patient Education**
- Explain purpose of therapy and need for routine laboratory tests.
- Instruct patient to report dizziness, palpitations, or nonanginal chest pain.

**Discontinue**
- Discontinued.
2 Implementation

- **High Alert:** IV vasoactive medications are potentially dangerous. Have second practitioner independently check original order, dosage calculations, and infusion pump settings. Do not confuse dobutamine with dopamine. If available as floor stock, store in separate areas.
- Correct hypovolemia with volume expanders before initiating dobutamine therapy.
- Administer into a large vein and assess administration site frequently. Extravasation may cause pain and inflammation.

**IV Administration**

- **pH:** 2.5–5.5.
- **Continuous Infusion:** Dilution: Vials must be diluted before use. Dilute 250–1000 mg in 250–500 mL of D5W, 0.9% NaCl, 0.45% NaCl, DS-0.45% NaCl, DS 0.9% NaCl, or LR. Administer infusions slowly for 4–6 hr at room temperature and 7 days refrigerated. Premixed infusions are already diluted and ready to use.
- **Concentration:** 0.25–5 mg/mL.
- **Rate:** Based on patient’s weight (see Route/Dosage section). Administer via infusion pump in same precise amount delivered. Monitor patient’s response (heart rate, presence of ectopic activity, BP) every 60 min. Do not exceed by 10% of baseline.

- **Y-Site Compatibility:** amifostine, amikacin, amiodarone, anidulafungin, argatroban, atracurium, atropine, aztreonam, bivalirudin, bumetanide, calcium chloride, calcium gluconate, caspofungin, cimetidine, ciprofloxacin, cisatracurium, cyclosporine, cladribine, dexmedetomidine, dexamethasone, digoxin, diltiazem, doxorubicin liposome, doxycycline, enalaprilat, epsilon amino-beta-cyclodextrin, erythromycin, esmolol, etoposide phosphate, famotidine, fentanyl, fluconazole, gemcitabine, gentamicin, griseofulvin, haloperidol, hydromorphone, insulin, isoproterenol, labetalol, levodopa, lincomycin, lorazepam, magnesium sulfate, meperidine, methylprednisolone sodium succinate, metoclopramide, metoprolol, mitomycin, morphine, nafcillin, nicardipine, nitroglycerin, norepinephrine, ondansetron, oxaliplatin, palonosetron, pancuronium, penicillin G potassium, phenytoin, phytonadione, piperacillin/tazobactam, potassium chloride, promethazine, propofol, propranolol, promethazine, ranitidine, remifentanil, theophylline, ticarcillin, ticar-

- **Y-Site Incompatibility:** acyclovir, allopurinol, amphotericin B cholesteryl sulfate, ampicillin, ampicillin/sulbactam, amphotericin B, colistin, colistin sulfate, cromolyn, cyclosporine, diclofenac, diltiazem hydrochloride, dobutamine hydrochloride, dopamine, doxorubicin liposome, doxycycline, enalaprilat, epsilon amino-beta-cyclodextrin, erythromycin, esmolol, etoposide phosphate, famotidine, fentanyl, fluconazole, gemcitabine, gentamicin, griseofulvin, haloperidol, hydromorphone, insulin, isoproterenol, labetalol, levodopa, lincomycin, lorazepam, magnesium sulfate, meperidine, methylprednisolone sodium succinate, metoclopramide, metoprolol, mitomycin, morphine, nafcillin, nicardipine, nitroglycerin, norepinephrine, ondansetron, oxaliplatin, palonosetron, pancuronium, penicillin G potassium, phenytoin, phytonadione, piperacillin/tazobactam, potassium chloride, promethazine, propofol, propranolol, promethazine, ranitidine, remifentanil, theophylline, ticarcillin, ticar-

**Patient/Family Teaching**

- Explain to patient the rationale for instituting this medication and the need for frequent monitoring.
- Advise patient to inform nurse immediately if chest pain, dyspnea, or numbness, tingling, or burning of extremities occurs.
- Instruct patient to notify nurse immediately if pain or discomfort at the site of administration.

**Home Care Issues:** Instruct caregiver to properly care for IV equipment.

**Evaluation/Desired Outcomes**

- Increase in cardiac output.
- Improved hemodynamic parameters.
- Increased urine output.

**Why was this drug prescribed for your patient?**