Dobutamine: Drug information

Contributor Disclosures

For additional information see "Dobutamine: Patient drug information" and "Dobutamine: Pediatric drug information"

For abbreviations, symbols, and age group definitions show table

Pharmacologic Category

Adrenergic Agonist Agent; Inotrope

Dosing: Adult

Acute decompensated heart failure

Acute decompensated heart failure: Note: May consider for short-term use in patients with low cardiac index and hypotension or end-organ hypoperfusion (Ref).

Continuous infusion: IV: Initial: 2 to 5 mcg/kg/minute; titrate based on clinical end point (eg, systemic perfusion or end-organ perfusion); usual dosage range: 2 to 10 mcg/kg/minute; maximum dose: 20 mcg/kg/minute (Ref).

Inotropic support

Inotropic support (off-label use): Note: In patients with shock (eg, sepsis) who fail to meet hemodynamic goals with vasopressor therapy (eg, norepinephrine), dobutamine may be added to vasopressor therapy if there is continued hypoperfusion despite volume resuscitation (Ref).

Continuous infusion: IV: Initial: 2 to 5 mcg/kg/minute; titrate based on clinical end point (eg, BP, end-organ perfusion); usual dosage range: 2 to 10 mcg/kg/minute; however, doses as low as 0.5 mcg/kg/min have been used in less severe cardiac decompensation; maximum dose: 20 mcg/kg/minute (Ref).

Stress echocardiography, routine

Stress echocardiography, routine (diagnostic agent) (off-label use): Continuous infusion: IV: Initial: 5 mcg/kg/minute; increase at 3-minute intervals to 10 mcg/kg/minute, then 20 mcg/kg/minute, then 30 mcg/kg/minute, and then 40 mcg/kg/minute. May coadminister atropine in patients who do not achieve target heart rate (Ref).

Stress echocardiography, viability assessment

Stress echocardiography, viability assessment (diagnostic agent) (off-label use): Continuous infusion: IV: Initial: 2.5 mcg/kg/minute; increase at 5-minute intervals in 2.5 mcg/kg/minute increments until contractile response is noted, up to a maximum dose of 10 mcg/kg/minute (Ref).

Dosing: Kidney Impairment: Adult

The renal dosing recommendations are based upon the best available evidence and clinical expertise. Senior Editorial Team: Bruce Mueller, PharmD, FCCP, FASN, FNKF; Jason A. Roberts, PhD, BPharm (Hons), B App Sc, FSHP, FISAC; Michael Heung, MD, MS.

Note: In patients with CrCl <20 mL/minute receiving dobutamine continuous infusion for treatment of acute decompensated heart failure, dobutamine-induced myoclonus has been reported as a rare, but perhaps underrecognized, adverse effect (Ref).

Altered kidney function: No dosage adjustment necessary for any degree of kidney dysfunction (excreted in the urine as inactive metabolites) (Ref).

Hemodialysis, intermittent (thrice weekly): Dialysis removal unknown (some expected based on small volume of distribution); no supplemental dose or dosage adjustment necessary (Ref).

Peritoneal dialysis: Dialysis removal unknown (some expected based on small volume of distribution); no dosage adjustment necessary (Ref).

CRRT: No dosage adjustment likely to be necessary (Ref).

PIRRT (eg, sustained, low-efficiency diafiltration): No dosage adjustment likely to be necessary (Ref).

Dosing: Liver Impairment: Adult

There are no dosage adjustments provided in the manufacturer's labeling.

Dosing: Obesity: Adult

The recommendations for dosing in patients with obesity are based upon the best available evidence and clinical expertise. Senior Editorial Team: Jeffrey F. Barletta, PharmD, FCCM; Manjunath P. Pai, PharmD, FCP; Jason A. Roberts, PhD, BPharm (Hons), B App Sc, FSHP, FISAC.

Class 1, 2, and 3 obesity (BMI ≥30 kg/m^2):

Continuous infusion: IV: Use **ideal body weight** for initial weight-based dosing, then titrate to hemodynamic effect and clinical response (Ref). During therapy, clinicians should **not** change dosing weight from one weight metric to another (ie, actual body weight to/from ideal body weight) (Ref). Refer to "Dosing: Adult" for indication-specific doses.

Note: For dobutamine stress test dosing, use **actual body weight** for all BMI categories (Ref).

Rationale for recommendations:

There is a paucity of studies evaluating the influence of obesity on dobutamine dosing or pharmacokinetics. One observational study of patients undergoing dobutamine stress testing using a weight-based protocol (and use of atropine) supports the protocolized use of actual body weight for all classes of obesity in this setting; however, this may not be applicable to the general population

receiving dobutamine as a continuous infusion for inotropic support (Ref). Dobutamine has a small volume of distribution with a short half-life enabling rapid titration to the desired effect. Due to the short onset of action and small volume of distribution, rapid titration to clinical effect after initial dosing is possible (Ref).

Dosing: Older Adult

Refer to adult dosing.

Dosing: Pediatric

(For additional information see "Dobutamine: Pediatric drug information")

Hemodynamic support

Hemodynamic support: Infants, Children, and Adolescents: Continuous IV or intraosseous infusion: Initial: 0.5 to 1 mcg/kg/minute; titrate gradually every few minutes until desired response achieved; usual range: 2 to 20 mcg/kg/minute (Ref).

Dosing: Kidney Impairment: Pediatric

There are no dosage adjustments provided in the manufacturer's labeling.

Dosing: Liver Impairment: Pediatric

There are no dosage adjustments provided in the manufacturer's labeling.

Adverse Reactions

The following adverse drug reactions and incidences are derived from product labeling unless otherwise specified.

1% to 10%:

Cardiovascular: Angina pectoris (1% to 3%), chest pain (1% to 3%), increased heart rate (10%), increased systolic blood pressure (8%), palpitations (1% to 3%), premature ventricular contractions (5%)

Gastrointestinal: Nausea (1% to 3%)

Nervous system: Headache (1% to 3%)

Respiratory: Dyspnea (1% to 3%)

Frequency not defined:

Cardiovascular: Decreased blood pressure, ventricular tachycardia

Endocrine & metabolic: Decreased serum potassium

Local: Localized phlebitis

Postmarketing:

Cardiovascular: Atrial fibrillation (Wirtz 1995), bradycardia (Olszowska 2012), cardiomyopathy (Chandraprakasam 2015), coronary artery vasospasm (Yamagishi 1998), heart block (Vaidyanathan 2008), left ventricular dysfunction (takotsubo syndrome) (Mangolini 2020), torsade de pointes (Quan 2009)

Hematologic & oncologic: Eosinophilia (Maaliki 2021)

Hypersensitivity: Hypersensitivity reaction

Nervous system: Chills (Poldermans 1993), myoclonus (Noel 2022), shivering (Poldermans 1993)

Contraindications

Hypersensitivity to dobutamine or sulfites (some contain sodium metabisulfate), or any component of the formulation; hypertrophic cardiomyopathy with outflow tract obstruction (formerly known as idiopathic hypertrophic subaortic stenosis).

Canadian labeling: Additional contraindications (not in the US labeling): Pheochromocytoma.

Note: When utilized for stress testing, additional contraindications according to the American Society of Nuclear Cardiology include patients with recent (<2 to 4 days) myocardial infarction, unstable angina, severe aortic stenosis, atrial tachyarrhythmias with uncontrolled ventricular response, prior history of ventricular tachycardia, uncontrolled hypertension (>200/110 mm Hg), and aortic dissection or large aortic aneurysm (ASNC [Henzlova 2016]).

Warnings/Precautions

Concerns related to adverse effects:

• Arrhythmias: Ventricular arrhythmias, including nonsustained ventricular tachycardia and supraventricular arrhythmias, have been reported (Tisdale 1995). Observe closely for arrhythmias in patients with decompensated heart failure; sudden cardiac death has been observed (O'Connor 1999; Pickworth 1992; Young 2000). Ensure that ventricular rate is controlled in atrial fibrillation/flutter before initiating; may increase ventricular response rate.

• BP effects: An increase in BP is more common due to augmented cardiac output, but hypotension secondarily to vasodilation may occur at higher doses.

• Heart failure complications: An increased risk of hospitalization and death has been observed with prolonged use in New York Heart Association Class III/IV heart failure patients (O'Connor 1999).

• Tachycardia: May cause dose-related increases in heart rate.

• Ventricular ectopy: May exacerbate ventricular ectopy (dose related).

Disease-related concerns:

• Aortic stenosis: Ineffective therapeutically in the presence of mechanical obstruction such as severe aortic stenosis.

• Electrolyte imbalance: Correct electrolyte disturbances, especially hypokalemia or hypomagnesemia, prior to use and throughout therapy to minimize the risk of arrhythmias (ACC/AHA/ESC [Zipes 2006]; Tisdale 1995).

• Hypovolemia: If needed, correct hypovolemia first to optimize hemodynamics.

• Active myocardial ischemia/myocardial infarction (post): Use with caution in patients with active myocardial ischemia or recent myocardial infarction; can increase myocardial oxygen demand.

Concurrent drug therapy issues:

• Monoamine oxidase inhibitors: Use with extreme caution in patients taking monoamine oxidase inhibitors; prolong hypertension may result from concurrent use.

Dosage form specific issues:

• Sodium sulfite: Product may contain sodium sulfite.

Special populations:

• Older adults: Use with caution in older adults; start at lower end of the dosage range.

Dosage Forms: US

Excipient information presented when available (limited, particularly for generics); consult specific product labeling.

Solution, Intravenous, as hydrochloride:

Generic: 1 mg/mL (250 mL); 4 mg/mL (250 mL); 250 mg/20 mL (20 mL); 1 mg/mL (250 mL); 2 mg/mL (250 mL); 4 mg/mL (250 mL)

Solution, Intravenous, as hydrochloride [preservative free]:

Generic: 12.5 mg/mL (20 mL)

Generic Equivalent Available: US

Yes

Pricing: US

Solution (DOBUTamine HCl Intravenous)

12.5 mg/mL (per mL): $0.39 - $0.46

Solution (DOBUTamine-Dextrose Intravenous)

1 mg/mL 5% (per mL): $0.11

2 mg/mL 5% (per mL): $0.19

4 mg/mL 5% (per mL): $0.14

Disclaimer: A representative AWP (Average Wholesale Price) price or price range is provided as reference price only. A range is provided when more than one manufacturer's AWP price is available and uses the low and high price reported by the manufacturers to determine the range. The pricing data should be used for benchmarking purposes only, and as such should not be used alone to set or

adjudicate any prices for reimbursement or purchasing functions or considered to be an exact price for a single product and/or manufacturer. Medi-Span expressly disclaims all warranties of any kind or nature, whether express or implied, and assumes no liability with respect to accuracy of price or price range data published in its solutions. In no event shall Medi-Span be liable for special, indirect, incidental, or consequential damages arising from use of price or price range data. Pricing data is updated monthly.

Dosage Forms: Canada

Excipient information presented when available (limited, particularly for generics); consult specific product labeling.

Solution, Intravenous, as hydrochloride:

Generic: 12.5 mg/mL (20 mL)

Administration: Adult

IV: Always administer via infusion device; administer into large vein.

May be a vesicant; avoid extravasation.

Extravasation management: If extravasation occurs, stop infusion immediately; leave cannula/needle in place temporarily but do **NOT** flush the line; gently aspirate extravasated solution, then remove needle/cannula; elevate extremity; apply dry, warm compresses; initiate phentolamine antidote in severe cases (eg, when local tissue concentration is high) in addition to supportive management (Ref).

Phentolamine: **SUBQ:** Dilute 5 to 10 mg in 10 mL NS and administer into extravasation site as soon as possible after extravasation; if IV catheter remains in place, administer initial dose intravenously through the infiltrated catheter; may repeat in 60 minutes if patient remains symptomatic (Ref).

Alternatives to phentolamine:

Nitroglycerin topical 2% ointment: Apply a 1-inch strip to the site of ischemia to cover affected area; may repeat every 8 hours as necessary (Ref).

Terbutaline: **SUBQ:** Infiltrate extravasation area with terbutaline 1 mg using a solution of terbutaline 1 mg diluted in 10 mL NS. May repeat dose after 15 minutes (Ref).

Administration: Pediatric

Parenteral: Continuous IV infusion: Vials (concentrated solution) must be diluted prior to administration; premixed IV solutions (1,000 mcg/mL, 2,000 mcg/mL, 4,000 mcg/mL) are available. Administer as a continuous IV infusion via an infusion device. Central line administration is preferred; if central line not available, may administer for a short duration through a peripheral IV catheter placed in a large vein or via intraosseous access (Ref). Administration into an umbilical arterial catheter is **not** recommended (Ref). Frequent monitoring of the IV catheter site is recommended to rapidly identify extravasation (Ref). Refer to institutional policies and procedures; catheter placement/size and vasopressor concentration may vary depending on institution.

Rate of infusion (mL/hour) = dose (mcg/kg/minute) × weight (kg) × 60 minutes/hour divided by the concentration (mcg/mL)

May be a vesicant; avoid extravasation. If extravasation occurs, stop infusion immediately; leave cannula/needle in place temporarily but do **NOT** flush the line; gently aspirate extravasated solution, then remove needle/cannula; elevate extremity; apply dry, warm compresses. Initiate phentolamine (or alternative antidote) in severe cases (Ref).

Usual Infusion Concentrations: Adult

Note: Premixed solutions available.

IV infusion: 250 mg in 500 mL (concentration: 500 **mcg**/mL), 500 mg in 250 mL (concentration: 2,000 **mcg**/mL), **or** 1,000 mg in 250 mL (concentration: 4000 **mcg**/mL) of D5W or NS

Usual Infusion Concentrations: Pediatric

Note: Premixed solutions available.

IV infusion: 1,000 **mcg**/mL, 2,000 **mcg**/mL, **or** 4,000 **mcg**/mL

Use: Labeled Indications

Acute decompensated heart failure: Short-term management of patients with cardiac decompensation.

Use: Off-Label: Adult

Inotropic support; Stress echocardiography (diagnostic agent)

Medication Safety Issues

Sound-alike/look-alike issues:

DOBUTamine may be confused with DOPamine

High alert medication:

The Institute for Safe Medication Practices (ISMP) includes this medication among its list of drug classes (inotropic medications, IV) which have a heightened risk of causing significant patient harm when used in error (High-Alert Medications in Acute Care Settings).

Metabolism/Transport Effects

Substrate of COMT

Drug Interactions

(For additional information: Launch drug interactions program)

Note: Interacting drugs may **not be individually listed below** if they are part of a group interaction (eg, individual drugs within "CYP3A4 Inducers [Strong]" are NOT listed). For a complete list of drug interactions by individual drug name and detailed management recommendations, use the drug interactions program by clicking on the "Launch drug interactions program" link above.

Atomoxetine: May increase hypertensive effects of Sympathomimetics. Atomoxetine may increase tachycardic effects of Sympathomimetics. *Risk C: Monitor*

Beta-Blockers: May decrease therapeutic effects of DOBUTamine. *Risk C: Monitor*

Bornaprine: Sympathomimetics may increase anticholinergic effects of Bornaprine. *Risk C: Monitor*

Calcium Salts: May decrease therapeutic effects of DOBUTamine. *Risk C: Monitor*

Cannabinoid-Containing Products: May increase tachycardic effects of Sympathomimetics. *Risk C: Monitor*

Cocaine (Topical): May increase hypertensive effects of Sympathomimetics. Management: Consider alternatives to use of this combination when possible. Monitor closely for substantially increased blood pressure or heart rate and for any evidence of myocardial ischemia with concurrent use. *Risk D: Consider Therapy Modification*

COMT Inhibitors: May increase serum concentrations of COMT Substrates. *Risk C: Monitor*

Dihydralazine: Sympathomimetics may decrease therapeutic effects of Dihydralazine. *Risk C: Monitor*

Doxofylline: Sympathomimetics may increase adverse/toxic effects of Doxofylline. *Risk C: Monitor*

Esketamine (Injection): May increase adverse/toxic effects of Sympathomimetics. Specifically, the risk for elevated heart rate, hypertension, and arrhythmias may be increased. *Risk C: Monitor*

Guanethidine: May increase hypertensive effects of Sympathomimetics. Guanethidine may increase arrhythmogenic effects of Sympathomimetics. *Risk C: Monitor*

Kratom: May increase adverse/toxic effects of Sympathomimetics. *Risk X: Avoid*

Levothyroxine: May increase therapeutic effects of Sympathomimetics. Sympathomimetics may increase therapeutic effects of Levothyroxine. Levothyroxine may increase adverse/toxic effects of Sympathomimetics. Specifically, the risk of coronary insufficiency may be increased in patients with coronary artery disease. *Risk C: Monitor*

Linezolid: May increase hypertensive effects of Sympathomimetics. Management: Consider initial dose reductions of sympathomimetic agents, and closely monitor

for enhanced blood pressure elevations, in patients receiving linezolid. *Risk D: Consider Therapy Modification*

Solriamfetol: Sympathomimetics may increase hypertensive effects of Solriamfetol. Sympathomimetics may increase tachycardic effects of Solriamfetol. *Risk C: Monitor*

Sympathomimetics: May increase adverse/toxic effects of Sympathomimetics. *Risk C: Monitor*

Tedizolid: May increase adverse/toxic effects of Sympathomimetics. Specifically, the risk for increased blood pressure and heart rate may be increased. *Risk C: Monitor*

Pregnancy Considerations

Dobutamine should not be used as a diagnostic agent for stress testing during pregnancy; use should be avoided when other options are available (ESC [Regitz-Zagrosek 2018]). Medications used for the treatment of cardiac arrest in pregnancy are the same as in the non-pregnant female. Appropriate medications should not be withheld due to concerns of fetal teratogenicity. Dobutamine use during the post-resuscitation phase may be considered; however, the effects of inotropic support on the fetus should also be considered. Doses and indications should follow current Advanced Cardiovascular Life Support (ACLS) guidelines (AHA [Jeejeebhoy 2015]).

Breastfeeding Considerations

It is not known if dobutamine is present in breast milk.

Monitoring Parameters

BP, heart rate, ECG, hemodynamic parameters as appropriate (eg, CVP, RAP, MAP, CI, PCWP, SVR, $ScvO_2$ or SvO_2); intravascular volume status; kidney function; urine output.

Consult individual institutional policies and procedures.

Mechanism of Action

Dobutamine, a racemic mixture, stimulates myocardial $beta_1$-adrenergic receptors primarily by the (+) enantiomer and some $alpha_1$ receptor agonism by the (-)

enantiomer, resulting in increased contractility and heart rate, and stimulates both $beta_2$- and $alpha_1$-receptors in the vasculature. Although $beta_2$ and $alpha_1$ adrenergic receptors are also activated, the effects of $beta_2$ receptor activation may equally offset or be slightly greater than the effects of $alpha_1$ stimulation, resulting in some vasodilation in addition to the inotropic and chronotropic actions (Leier 1988; Majerus 1989; Ruffolo 1987). Lowers central venous pressure and wedge pressure, but has little effect on pulmonary vascular resistance (Leier 1977; Leier 1978).

Pharmacokinetics (Adult Data Unless Noted)

Onset of action: IV: 1 to 10 minutes

Peak effect: 10 to 20 minutes

Metabolism: In tissues and hepatically (via conjugation and methylation) to inactive metabolites.

Half-life elimination: 2 minutes

Excretion: Urine (as inactive metabolites).

Brand Names: International

Find brand name(s) by country (for United States and Canada see separate Brand Names sections)

Enter a Country or Country Code

International Brand Names by Country

For country code abbreviations (show table)

(AE) United Arab Emirates: Dobutamine hameln | Dobutrex; (AR) Argentina: Dobucard | Dobutamina | Dobutamina bioquim | Dobutamina drawer | Dobutamina fabra | Dobutamina gemepe | Dobutamina gray | Dobutamina Norgreen | Dobutamina richet | Dobutrex | Duvig | E.m.c. dobutamina; (AT) Austria: Dobutamin | Dobutamin hameln | Inotop; (AU) Australia: Dobutamine | Dobutamine bc | Dobutamine claris | Dobutamine hameln | Dobutamine HCL | Dobutrex; (BD) Bangladesh: Dobumin | Dobutamine abbott | Dobutin; (BE) Belgium: Dobutamine Baxter | Dobutamine eg |

Dobutamine mayne pharma (ben) | Dobutrex; (BG) Bulgaria: Dobutamin | Dobutamin hameln | Dobutrex; (BR) Brazil: Cloridrato de dobutamina | Dobtan | Dobu | Dobutal | Dobutamol | Dobutanil | Dobutariston | Dobutrex | Hibutan; (CH) Switzerland: Dobutamin | Dobutamin fresenius | Dobutrex; (CL) Chile: Dobutamina; (CN) China: Dobutamine | Dobutrex | Feng hai fen; (CO) Colombia: Autobod | Dobutamina | Dobutrex | Docarip | Dotropina | Duvig; (CR) Costa Rica: Corbusin | Dobutamina; (CZ) Czech Republic: Dobuject | Dobutamin | Dobutamin admeda | Dobutamin hameln; (DE) Germany: Dobutamin | Dobutamin carinopharm | Dobutamin hameln | Dobutamin hexal; (DO) Dominican Republic: Dobutrex | Dotropina | Inoject; (EC) Ecuador: Dobutam | Dobutamina | Dobutamina sanderson; (EE) Estonia: Dobcard | Dobuject | Dobutamine claris | Dobutamine hameln | Dobutamine HCL | Dobutamine merck | Dobutamine mylan | Dobuthaver | Dobutrex | Mekard; (EG) Egypt: Dobutamine | Dobutrex | Dubuject; (ES) Spain: Dobucor | Dobutamina abbott | Dobutamina inibsa | Dobutamina rovi | Dobutrex; (FI) Finland: Dobuject | Dobutamin abbott | Dobutrex; (FR) France: Dobutamine | Dobutamine Aguettant | Dobutamine Baxter | Dobutamine dakota | Dobutamine merck | Dobutamine Panpharma | Dobutamine Qualimed | Dobutamine winthrop | Dobutrex; (GB) United Kingdom: Dobutamine | Dobutrex | Posiject; (GR) Greece: Dobutamine HCL | Dobutan; (HK) Hong Kong: Dobutamine; (HU) Hungary: Dobuject | Dobutamin admeda | Dobutamin hameln | Dobutamina panpharma | Dobutrex; (ID) Indonesia: Cardiject | Dobuca | Dobuject | Doburan | Dobutamin | Dobutamine | Dobutel | Dobutrex | Domine | Dominic | Inodex | Inotrop; (IE) Ireland: Dobutamine | Posiject; (IN) India: Cardiforce | Dobicard | Dobier s | Dobunex pf | Dobusol | Dobustat | Inoject; (IT) Italy: Dobutamina abbott | Dobutamina bioindustria | Dobutamina Hikma | Dobutrex | Miozac; (JP) Japan: Bubucin | Doburack | Dobutamine | Dobutamine hydrochloride kkc | Dobutrex | Dobux | Dobux nichiiko | Dopmin | Doputamin | Doputamin Fuji | Doputamin h hexal | Hercarenone d | Retamex; (KR) Korea, Republic of: Aukomine | Dobamine | Dobuject | Doburan | Dobutamine | Dobutamine hcl and dextrose | Dobutamine hcl injection huons | Dobutrex | Myungmoon Dobutamine HCL | Toburex; (KW) Kuwait: Dobuject | Dobutrex; (LB) Lebanon: Dobutamin | Dobutrex; (LT) Lithuania: Dobuject | Dobutamin | Dobutamina panpharma | Dobutamine claris | Dobutamine hameln | Dobutrex; (LV) Latvia: Dobuject | Dobutamin | Dobutamine claris | Dobutamine mylan | Dobutrex; (MA) Morocco: Dobutrex; (MX) Mexico: Adregotec | Corbusin | Cryobutol | Dobuject | Dobutamina | Dobutamina gi tecn; (MY) Malaysia: Dobutamine | Mobitil; (NL) Netherlands: Dobutamine | Dobutamine CF | Dobutamine claris; (NO) Norway: Dobutamin | Dobutrex; (NZ) New Zealand: Dobutamine | Dobutamine claris | Dobutamine hameln; (PA) Panama: Dobutamina; (PE) Peru: Dobusol | Dobutamina | Dobutrex; (PH) Philippines: Abbott dobutamine hydrochloride | Cardease | Cardiotrex | Cardob | Dobine | Dobucard | Dobucore |

Dobuject | Dobulex | Dobumarc | Dobumean | Doburan | Dobusenz | Dobutamine | Dobutamine Baxter | Dobutrex | Dobutrim | Dobuzef | Inocard | Predobut | Pusogard; (PK) Pakistan: Dobamin | Dobutine | Dobutrex; (PL) Poland: Dobuject | Dobutamin hameln | Dobutrex; (PR) Puerto Rico: Dobutamine | Dobutamine HCL | Dobutrex; (PT) Portugal: Dasomin | Dobucor | Dobutamina | Dobutamina Aps | Dobutamina Claris | Dobutamina Generis | Dobutamina genthon | Dobutamina Hikma | Dobutina | Inotrex; (PY) Paraguay: Dobuject | Dobutamina sanderson | E.m.c.; (QA) Qatar: Dobcard | Dobuject | Dobutasel | Dobuthaver; (RO) Romania: Dobutamin admeda | Dobutamina | Dobutamina panpharma; (RU) Russian Federation: Dobutamin admeda | Dobutamine | Dobutel | Dobutrex; (SA) Saudi Arabia: Dobuject | Dobutamin | Dobutamine; (SE) Sweden: Dobutamin hameln | Dobutrex; (SG) Singapore: Dobutamine | Dobutrex; (SI) Slovenia: Dobutamin | Dobutamin hameln | Inotop; (SK) Slovakia: Dobutamin | Dobutrex; (SR) Suriname: Dobutamine CF | Dobutamine hameln; (TH) Thailand: Cardiject | Dobucin | Dobutamine | Dobutamine abbott | Dobutamine hcl DBL | Dobutel | Dobutrex; (TN) Tunisia: Dobutamine mylan | Dobutamine Panpharma; (TR) Turkey: Dobcard | Dobutamin | Dobutasel | Dobuthaver | Mekard; (TW) Taiwan: Butamine | Dobuha | Dobuject | Dobutamine | Dobutamine HCL | Dobutrex | Easydobu | Gendobu | Utamine; (UA) Ukraine: Cardiject | Clebutam | Dobutamin admeda | Dobutamin ebewe | Dobutel; (UY) Uruguay: Dobutam | Dobutamina | Dobutamina blaufarma | Dobutamina fu | Duvig; (VE) Venezuela, Bolivarian Republic of: Doburan | Dobutamina | Dobutrex | Dobuxin; (VN) Viet Nam: Butavell; (ZA) South Africa: Dobutamine

REFERENCES

1. American Society of Health-System Pharmacists (ASHP). Pediatric continuous infusion standards. https://www.ashp.org/-/media/assets/pharmacy-practice/s4s/docs/Pediatric-Infusion-Standards.ashx. Updated March 2024. Accessed March 22, 2024.
2. Annane D, Vignon P, Renault A, et al; CATS Study Group. Norepinephrine plus dobutamine versus epinephrine alone for management of septic shock: a randomised trial. *Lancet*. 2007;370(9588):676-684. doi:10.1016/S0140-6736(07)61344-0 [PubMed 17720019]
3. Bax JJ, Poldermans D, Elhendy A, et al. Improvement of Left Ventricular Ejection Fraction, Heart Failure Symptoms and Prognosis After Revascularization in Patients With Chronic Coronary Artery Disease and Viable Myocardium Detected

by Dobutamine Stress Echocardiography. *J Am Coll Cardiol*. 1999;34(1):163-169. [PubMed 10400006]

4. Beale RJ, Hollenberg SM, Vincent JL, Parrillo JE. Vasopressor and inotropic support in septic shock: an evidence-based review. *Crit Care Med*. 2004;32(11)(suppl):S455-S465. doi:10.1097/01.ccm.0000142909.86238.b1 [PubMed 15542956]
5. Boord A, Benson B. Myoclonus associated with continuous dobutamine infusion in a patient with end-stage renal disease. *Am J Health Syst Pharm*. 2007;64(21):2241-2243. doi:10.2146/ajhp060326 [PubMed 17959575]
6. Cavigelli-Brunner A, Hug MI, Dave H, et al. Prevention of low cardiac output syndrome after pediatric cardiac surgery: a double-blind randomized clinical pilot study comparing dobutamine and milrinone. *Pediatr Crit Care Med*. 2018;19(7):619-625. doi:10.1097/PCC.0000000000001533 [PubMed 29538053]
7. Chandraprakasam S, Kanuri S, Hunter C. Mid-ventricular variant of dobutamine-induced stress cardiomyopathy. *Res Cardiovasc Med*. 2015;4(2):e25223. doi:10.5812/cardiovascmed.4(2)2015.25223 [PubMed 26425489]
8. Dellinger RP, Levy MM, Rhodes A, et al. Surviving Sepsis Campaign: international guidelines for management of severe sepsis and septic shock: 2012. *Crit Care Med*. 2013;41(2):580-637. doi:10.1097/CCM.0b013e31827e83af [PubMed 23353941]
9. Dempsey E, Rabe H. The use of cardiotonic drugs in neonates. *Clin Perinatol*. 2019;46(2):273-290. doi:10.1016/j.clp.2019.02.010 [PubMed 31010560]
10. Dobutamine in 5% dextrose injection [prescribing information]. Deerfield, IL: Baxter Healthcare Corp; August 2023.
11. Dobutamine in 5% dextrose injection [prescribing information]. Lake Forest, IL: Hospira Inc; June 2024.
12. Dobutamine injection [prescribing information]. Lake Forest, IL: Hospira Inc; November 2020.
13. Dobutamine injection [product monograph]. Mississauga, Ontario, Canada: Hikma Canada Limited; June 2022.

14. Domonoske C. Appendix A: Common neonatal intensive care unit (NICU) medication guidelines. In: Eichenwald EC, Hansen AR, Martin CR, Stark AR. *Cloherty and Stark's Manual of Neonatal Care*. 8th ed. Lippincott Williams & Wilkins; 2017.
15. Dunlay SM, Colucci WS. Management of refractory heart failure with reduced ejection fraction. Post TW, ed. UpToDate. Waltham, MA: UpToDate Inc. http://www.uptodate.com. Accessed October 4, 2021.
16. Erstad BL, Barletta JF. Drug dosing in the critically ill obese patient: a focus on medications for hemodynamic support and prophylaxis. *Crit Care*. 2021;25(1):77. doi:10.1186/s13054-021-03495-8 [PubMed 33622380]
17. Evans L, Rhodes A, Alhazzani W, et al. Surviving Sepsis Campaign: international guidelines for management of sepsis and septic shock 2021. *Crit Care Med*. 2021;49(11):e1063-e1143. doi:10.1097/CCM.0000000000005337 [PubMed 34605781]
18. Expert opinion. Senior Obesity Editorial Team: Jeffrey F. Barletta, PharmD, FCCM; Manjunath P. Pai, PharmD, FCP; Jason A. Roberts, PhD, BPharm (Hons), B App Sc, FSHP, FISAC.
19. Expert opinion. Senior Renal Editorial Team: Bruce Mueller, PharmD, FCCP, FASN, FNKF; Jason A. Roberts, PhD, BPharm (Hons), B App Sc, FSHP, FISAC; Michael Heung, MD, MS.
20. Fragasso G, Lu C, Dabrowski P, Pagnotta P, Sheiban I, Chierchia SL. Comparison of stress/rest myocardial perfusion tomography, dipyridamole and dobutamine stress echocardiography for the detection of coronary disease in hypertensive patients with chest pain and positive exercise test. *J Am Coll Cardiol*. 1999;34(2):441-447. doi:10.1016/s0735-1097(99)00231-4 [PubMed 10440157]
21. Garcia MJ, Kwong RY, Scherrer-Crosbie M, et al; American Heart Association Council on Cardiovascular Radiology and Intervention and Council on Clinical Cardiology. State of the art: imaging for myocardial viability: a scientific statement from the American Heart Association. *Circ Cardiovasc Imaging*. 2020;13(7):e000053. doi:10.1161/HCI.0000000000000053 [PubMed 32833510]

22. Heidenreich PA, Bozkurt B, Aguilar D, et al. 2022 AHA/ACC/HFSA guideline for the management of heart failure: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2022;145(18):e895-e1032. doi:10.1161/CIR.0000000000001063 [PubMed 35363499]

23. Henzlova MJ, Cerqueira MD, Mahmarian JJ, Yao SS; Quality Assurance Committee of the American Society of Nuclear Cardiology. Stress protocols and tracers. *J Nucl Cardiol*. 2006;13(6):e80-e90. [PubMed 17174798]

24. Henzlova MJ, Duvall WL, Einstein AJ, Travin MI, Verberne HJ. Erratum to: ASNC imaging guidelines for SPECT nuclear cardiology procedures: stress, protocols, and tracers. *J Nucl Cardiol*. 2016;23(3):640-642. doi:10.1007/s12350-016-0463-x [PubMed 26961077]

25. Jeejeebhoy FM, Zelop CM, Lipman S, et al; American Heart Association Emergency Cardiovascular Care Committee, Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation, Council on Cardiovascular Diseases in the Young, and Council on Clinical Cardiology. Cardiac Arrest in Pregnancy: A Scientific Statement From the American Heart Association. *Circulation*. 2015;132(18):1747-1773. doi: 10.1161/CIR.0000000000000300. [PubMed 26443610]

26. Joynt C, Cheung PY. Treating hypotension in preterm neonates with vasoactive medications. *Front Pediatr*. 2018;6:86. doi:10.3389/fped.2018.00086 [PubMed 29707527]

27. Kittipovanonth M, Bernheim AM, Scott CG, Barnes ME, Shub C, Pellikka PA. Is the standard weight-based dosing of dobutamine for stress testing appropriate for patients of widely varying body mass index? *J Cardiovasc Pharmacol Ther*. 2011;16(2):173-177. doi:10.1177/1074248410384709 [PubMed 21183730]

28. Kleinman ME, Chameides L, Schexnayder SM, et al. Part 14: pediatric advanced life support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2010;122(18)(suppl 3):S876-908. [PubMed 20956230]

29. Lehtonen LA, Antila S, Pentikäinen PJ. Pharmacokinetics and pharmacodynamics of intravenous inotropic agents. *Clin Pharmacokinet*. 2004;43(3):187-203.

doi:10.2165/00003088-200443030-00003 [PubMed 14871156]

30. Leier CV. Regional blood flow responses to vasodilators and inotropes in congestive heart failure. *Am J Cardiol*. 1988;62(8):86E-93E. [PubMed 2901217]
31. Leier CV, Heban PT, Huss P, Bush CA, Lewis RP. Comparative systemic and regional hemodynamic effects of dopamine and dobutamine in patients with cardiomyopathic heart failure. *Circulation*. 1978;58(3 Pt 1):466-475. [PubMed 679437]
32. Leier CV, Webel J, Bush CA. The cardiovascular effects of the continuous infusion of dobutamine in patients with severe cardiac failure. *Circulation*. 1977;56(3):468-472. [PubMed 884803]
33. Lewis TC, Aberle C, Altshuler D, Piper GL, Papadopoulos J. Comparative effectiveness and safety between milrinone or dobutamine as initial inotrope therapy in cardiogenic shock. *J Cardiovasc Pharmacol Ther*. 2019;24(2):130-138. doi:10.1177/1074248418797357 [PubMed 30175599]
34. Ling LH, Christian TF, Mulvagh SL, et al. Determining myocardial viability in chronic ischemic left ventricular dysfunction: a prospective comparison of rest-redistribution thallium 201 single-photon emission computed tomography, nitroglycerin-dobutamine echocardiography, and intracoronary myocardial contrast echocardiography. *Am Heart J*. 2006;151(4):882-889. doi:10.1016/j.ahj.2005.06.023 [PubMed 16569554]
35. Maaliki N, Ali AA, Izzo C, Patel H, Antoine S. Alarming eosinophilia from dobutamine infusion. *Cureus*. 2021;13(1):e12530. doi:10.7759/cureus.12530 [PubMed 33564531]
36. Majerus TC, Dasta JF, Bauman JL, Danziger LH, Ruffolo RR Jr. Dobutamine: ten years later. *Pharmacotherapy*. 1989;9(4):245-59. [PubMed 2671957]
37. Manaker S, Teja B. Use of vasopressors and inotropes. Connor RF, ed. UpToDate. Waltham, MA: UpToDate Inc. http://www.uptodate.com. Accessed October 7, 2021.
38. Mangolini VI, Baron GB, Amaro G, et al. Dobutamine-induced Takotsubo syndrome during stress echocardiogram - an unusual but potentially severe association. *Rev*

Assoc Med Bras (1992). 2020;66(6):724-727. doi:10.1590/1806-9282.66.6.724 [PubMed 32696875]

39. Marcovitz PA, Armstrong WF. Accuracy of dobutamine stress echocardiography in detecting coronary artery disease. *Am J Cardiol*. 1992;69(16):1269-1273. doi:10.1016/0002-9149(92)91219-t [PubMed 1585858]
40. Mouncey PR, Osborn TM, Power GS, et al. Protocolised Management In Sepsis (ProMISe): a multicentre randomised controlled trial of the clinical effectiveness and cost-effectiveness of early, goal-directed, protocolised resuscitation for emerging septic shock. *Health Technol Assess*. 2015;19(97):i-xxv,1-150. doi:10.3310/hta19970 [PubMed 26597979]
41. Noel E, Fayoda B, Rabbani R, Benjamin YS, Lee J, Gillespie A. Dobutamine-induced myoclonus in a peritoneal dialysis patient: case report. *Kidney Med*. 2022;5(3):100591. doi:10.1016/j.xkme.2022.100591 [PubMed 36686274]
42. O'Connor CM, Gattis WA, Uretsky BF, et al. Continuous intravenous dobutamine is associated with an increased risk of death in patients with advanced heart failure: insights from the Flolan International Randomized Survival Trial (FIRST). *Am Heart J*. 1999;138(1, pt 1):78-86. [PubMed 10385768]
43. Olszowska M, Musiałek P, Drwiła R, Podolec P. Progressive bradycardia with increasing doses of dobutamine leading to stress echo interruption. *Cardiol J*. 2012;19(1):79-80. doi:10.5603/cj.2012.0012 [PubMed 22298172]
44. Patel MB, Kaplan IV, Patni RN, et al. Sustained Improvement in Flow-Mediated Vasodilation After Short-Term Administration of Dobutamine in Patients With Severe Congestive Heart Failure. *Circulation*. 1999;99(1):60-64. [PubMed 9884380]
45. Paulman PM, Cantral K, Meade JG, et al. Dobutamine Overdose. *JAMA*. 1990;264(18):2386-2387. [PubMed 2231992]
46. Peake SL, Delaney A, Bailey M, et al; ARISE Investigators; ANZICS Clinical Trials Group. Goal-directed resuscitation for patients with early septic shock. *N Engl J Med*. 2014;371(16):1496-1506. doi:10.1056/NEJMoa1404380 [PubMed 25272316]
47. Peberdy MA, Callaway CW, Neumar RW, et al; American Heart Association. Part 9: post-cardiac arrest care: 2010 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*.

2010;122(18)(suppl 3):S768-S786. doi:10.1161/CIRCULATIONAHA.110.971002 [PubMed 20956225]

48. Pellikka PA, Roger VL, Oh JK, Miller FA, Seward JB, Tajik AJ. Stress echocardiography. Part II. Dobutamine stress echocardiography: techniques, implementation, clinical applications, and correlations. *Mayo Clin Proc*. 1995;70(1):16-27. doi:10.1016/S0025-6196(11)64660-0 [PubMed 7808046]
49. Pellikka PA, Arruda-Olson A, Chaudhry FA, et al. Guidelines for performance, interpretation, and application of stress echocardiography in ischemic heart disease: from the American Society of Echocardiography. *J Am Soc Echocardiogr*. 2020;33(1):1-41.e8. doi:10.1016/j.echo.2019.07.001 [PubMed 31740370]
50. Phillips MS. Standardizing I.V. Infusion Concentrations: National Survey Results. *Am J Health Syst Pharm*. 2011;68(22):2176-2182. [PubMed 22058104]
51. Pickworth KK. Long-term dobutamine therapy for refractory congestive heart failure. *Clin Pharm*. 1992;11(7):618-624. [PubMed 1617912]
52. Poldermans D, Fioretti PM, Forster T, et al. Dobutamine stress echocardiography for assessment of perioperative cardiac risk in patients undergoing major vascular surgery. *Circulation*. 1993;87(5):1506-1512. doi:10.1161/01.cir.87.5.1506 [PubMed 8491005]
53. Previtali M, Lanzarini L, Ferrario M, Tortorici M, Mussini A, Montemartini C. Dobutamine versus dipyridamole echocardiography in coronary artery disease. *Circulation*. 1991;83(5)(suppl):III27-III31. [PubMed 2022044]
54. Quan F, Peng G, Kangan C, Dayi H, Cuilan L, Richard CC. Dobutamine infusion for unmasking long QT syndrome and torsades de pointes. *Clin Cardiol*. 2009;32(6):E79-E82. doi:10.1002/clc.20248 [PubMed 19353679]
55. Refer to manufacturer's labeling.
56. Regitz-Zagrosek V, Roos-Hesselink JW, Bauersachs J, et al; ESC Scientific Document Group. 2018 ESC Guidelines for the management of cardiovascular diseases during pregnancy. *Eur Heart J*. 2018;39(34):3165-3241. doi:10.1093/eurheartj/ehy340 [PubMed 30165544]

57. Reynolds PM, Maclaren R, Mueller SW, et al. Management of extravasation injuries: a focused evaluation of noncytotoxic medications. *Pharmacotherapy*. 2014;34(6):617-632. doi:10.1002/phar.1396 [PubMed 24420913]

58. Rich MN, Woods WL, Davila-Roman VG, et al. A Randomized Comparison of Intravenous Amrinone Versus Dobutamine in Older Patients With Decompensated Congestive Heart Failure. *J Am Geriatr Soc*. 1995;43(3):271-274. [PubMed 7884117]

59. Rivers E, Nguyen B, Havstad S, et al. Early Goal-Directed Therapy in the Treatment of Severe Sepsis and Septic Shock. *N Engl J Med*. 2001;345(19):1368-1377. [PubMed 11794169]

60. Ruffolo RR Jr. The pharmacology of dobutamine. *Am J Med Sci*.1987;294(4):244-248. [PubMed 3310640]

61. Shenoi RP, Timm N; Committee on Drugs; Committee on Pediatric Emergency Medicine. Drugs used to treat pediatric emergencies. *Pediatrics*. 2020;145(1):e20193450. [PubMed 31871244]

62. Smolders EJ, Benoist GE, Smit CCH, Ter Horst P. An update on extravasation: basic knowledge for clinical pharmacists. *Eur J Hosp Pharm*. 2020;28(3):165–167. doi:10.1136/ejhpharm-2019-002152 [PubMed 32341081]

63. Stefanos SS, Kiser TH, MacLaren R, Mueller SW, Reynolds PM. Management of noncytotoxic extravasation injuries: a focused update on medications, treatment strategies, and peripheral administration of vasopressors and hypertonic saline. *Pharmacotherapy.* 2023;43(4):321-337. doi:10.1002/phar.2794 [PubMed 36938775]

64. Tisdale JE, Patel R, Webb CR, Borzak S, Zarowitz BJ. Electrophysiologic and proarrhythmic effects of intravenous inotropic agents. *Prog Cardiovasc Dis*. 1995;38(2):167-180. [PubMed 7568905]

65. Vaidyanathan L, Anand N, Stead LG, Boie ET, Sztajnkrycer MD, Goyal DG. Dobutamine-induced complete heart block. *South Med J*. 2008;101(10):1038-1042. doi:10.1097/SMJ.0b013e31817e55d9 [PubMed 18791534]

66. van Diepen S, Katz JN, Albert NM, et al; American Heart Association Council on Clinical Cardiology; Council on Cardiovascular and Stroke Nursing; Council on Quality of Care and Outcomes Research; Mission: Lifeline. Contemporary

management of cardiogenic shock: a scientific statement from the American Heart Association. *Circulation*. 2017;136(16):e232-e268. doi:10.1161/CIR.0000000000000525 [PubMed 28923988]

67. Vermont Oxford Network (VON). Neonatal drug concentrations. Updated November 2022. Accessed March 22, 2024. https://public.vtoxford.org/wp-content/uploads/2022/11/Neonatal-Drug-Concentrations-Updated-November-2022.pdf
68. Wierre L, Decaudin B, Barsumau J, et al. Dobutamine-induced myoclonia in severe renal failure. *Nephrol Dial Transplant*. 2004;19(5):1336-1337. doi:10.1093/ndt/gfh132 [PubMed 15102987]
69. Wirtz CE. Sustained atrial fibrillation after dobutamine stress echocardiography in an older patient with left atrial enlargement. *West J Med*. 1995;162(3):268-269. [PubMed 7725721]
70. Yamagishi H, Watanabe H, Toda I, et al. A case of dobutamine-induced coronary arterial spasm with ST-segment elevation. *Jpn Circ J*. 1998;62(2):150-151. doi:10.1253/jcj.62.150 [PubMed 9559438]
71. Yealy DM, Kellum JA, Huang DT, et al; ProCESS Investigators. A randomized trial of protocol-based care for early septic shock. *N Engl J Med*. 2014;370(18):1683-1693. doi:10.1056/NEJMoa1401602 [PubMed 24635773]
72. Young JB, Moen EK. Outpatient parenteral inotropic therapy for advanced heart failure. *J Heart Lung Transplant*. 2000;19(8)(suppl):S49-S57. [PubMed 11016488]
73. Zipes DP, Camm AJ, Borggrefe M, et al; American College of Cardiology/American Heart Association Task Force; European Society of Cardiology Committee for Practice Guidelines; European Heart Rhythm Association; Heart Rhythm Society. ACC/AHA/ESC 2006 Guidelines for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death: a report of the American College of Cardiology/American Heart Association Task Force and the European Society of Cardiology Committee for Practice Guidelines (writing committee to develop Guidelines for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death): developed in

collaboration with the European Heart Rhythm Association and the Heart Rhythm Society. *Circulation*. 2006;114(10):e385-e484. [PubMed 16935995]

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