

STANDARDIZED PROCEDURE
CARDIAC STRESS TESTING-DOBUTAMINE INFUSION (Adult)

I. Definition:

This test is performed to evaluate for cardiac ischemia, arrhythmias, and/or response to exercise.

II. Background Information

A. Setting: The setting (inpatient vs outpatient) and population (adults vs pediatrics) for the Advanced Health Practitioner (AHP) is determined by the approval of the privileges requested on the AHP Privilege Request Form. This particular procedure is for adults only.

B. Supervision: The necessity of this protocol will be determined by the Advanced Health Practitioner in collaboration with the supervising physician or his/her designee. Designee is defined as another attending physician who works directly with the supervising physician and is authorized to supervise the Advanced Health Practitioner.

Direct supervision will not be necessary once competency is determined, as provided for in the protocol. The Advanced Health Practitioner will notify the physician immediately upon being involved in any emergency or resuscitative events or under the following circumstances:

1. Patient decompensation or intolerance to the procedure
2. Outcome of the procedure other than expected

C. Indications:

To rule-out cardiac ischemia

D. Precautions:

Although not common, serious adverse reactions that may occur during stress testing are sudden cardiac death, ischemia, life threatening arrhythmias, and bronchospasm.

III. Materials

Equipment and supplies are located in the department.

IV. Dobutamine Infusions

A. Pre-treatment evaluation

Obtain brief history. Check requisition as to appropriateness of ordered test. Read baseline ECG and note any baseline abnormalities and compare with previous ECG. Check resting nuclear images. Explain procedure and expected

symptoms to patient. Obtain informed consent from patient. Perform

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appropriate physical exam, assess vital signs and document. Consult with attending physician as needed.

B. Set up

1. Check intravenous line for patency and that the isotope is available.
2. Obtain Dobutamine infusion from pharmacy.

C. Patient Preparation

1. Do a time out with all appropriate checks prior to procedure.

D. Procedure

1. Inform nuclear medicine technician that the test is beginning.
2. Monitor and document the patient's vital signs, 12 lead ECG, and symptoms during the procedure. Give initial dose of 5 mcg/kg, and titrate according to protocol on the physician order sheet.
3. Have isotope injected or images obtained at peak Dobutamine effect.
4. If patient develops ST depression greater than 1 mm, or ST elevation, immediately turn off the Dobutamine and inject isotope or obtain ECHO images.
5. Continue to monitor the patient until the ECG and symptoms return to baseline.
6. In the event of adverse and/or continued symptoms (see Emergency Procedure below), the attending cardiologist is to be paged immediately.

E. Emergency Procedures

Though not common, serious adverse reactions that may occur during the stress testing procedure are:

1. Cardiopulmonary Arrest
2. Ischemia
3. Hypotension
4. Life Threatening Arrhythmias
5. Bronchospasm

1. Cardiopulmonary Arrest

Follow the "CODE BLUE" procedure in the nursing policy and procedure manual. Depending on the physical location of the stress lab, either overhead call a "Code Blue" or dial 911.

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2. Ischemia—ST Elevation or Significant ST Depression

During the test with or without chest pain.

- a. Stop the test. Inject isotope or obtain ECHO images as long as patient's vital signs are normal.
- b. Help the patient to the gurney.
- c. If ischemia and/or chest pain does not begin to resolve in 2-3 minutes, begin oxygen at 2-4 L/nasal prongs and start an IV of normal saline. If patient's blood pressure is greater than 110 systolic, give Nitroglycerine 0.4mg SL or 1-2 sprays and page the attending. May repeat nitroglycerine up to 3 times within ten minutes. If ST elevation occurs, then add 325 mg Aspirin p.o., if patient has not taken any that day. Continue to monitor patient until the Attending physician has arrived. Patient may require Morphine Sulfate, Metoprolol and/or admission to the Emergency Department to R/O MI per Attending.

During **Dobutamine** infusion with or without chest pain.

- a. Stop the infusion, if still infusing, and obtain ECHO images. Begin oxygen 2-4L/NP as indicated.
- b. If the ischemia persists and the blood pressure is greater than 110 systolic, give nitroglycerine 0.4mg SL or 1-2 sprays and page the Attending. Consider Morphine Sulfate and/or Metoprolol IV. Continue monitoring the patient. May require admission to the hospital.

3. Hypotension

- a. Place the patient flat on the gurney or in Trendelenberg and start IV line and give 250ml bolus of normal saline.
- b. Page the attending physician
- c. Treat tachyarrhythmia's or bradycardias per protocol below or per attending physician's recommendation.

4. Life Threatening Arrhythmias

- a. Ventricular Fibrillation: Follow "CODE BLUE" or "CODE WHITE" procedures in nursing manual.
- b. Sustained Ventricular Tachycardia
 1. Stop test and have patient cough until lying flat on gurney.
 2. Have technician page Attending physician STAT and bring "Crash Cart" into room.
 3. Obtain blood pressure and start an IV line and give 250ml bolus of normal saline.
 4. If still in VT, give 1-1.5mg/kg Lidocaine slowly IV push

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5. If patient is hypotensive, prepare for cardioversion.

- c. Supraventricular Tachycardia without Hypotension.
 1. Start IV line with normal saline and page the cardiologist.
 2. Prepare to give Adenosine 6mg rapid IVP, may repeat with 12mg rapid IVP. Metoprolol 1-5mg IV may also be given to slow the rate.

- d. Supraventricular Tachycardia with Hypotension.
 1. Start IV line and give 250ml bolus normal saline and page the Attending physician.
 2. Prepare for possible cardioversion.

- e. Bradycardia with Hypotension.
 1. Start IV line and give 250ml bolus normal saline and page the Attending physician.
 2. If symptomatic and hypotensive, give 0.5-1mg Atropine IV push. May repeat x1.
 3. Prepare external cutaneous pacemaker.

E. Post-procedure

1. At the end of the test, the IV is removed. All items contaminated by the isotope are placed in the appropriate container and are disposed of by the nuclear medicine staff.

2. The test is terminated after symptoms, ECG, and vital signs return to baseline.

V. Documentation

- A.** Documentation is in the electronic medical record.
 1. Documentation of the pretreatment evaluation

 2. Record the time out, procedure, the outcome, patient tolerance, medications given, and the plan in the note.

 3. Test is reviewed with the attending cardiologist at the end of the day.

- B.** All abnormal or unexpected findings are reviewed with the supervising physician.

VI. Competency Assessment

A. Initial Competence

1. The Advanced Health Practitioner will be instructed on the efficacy and the indications of this therapy and demonstrate understanding of such.

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2. The Advanced Health Practitioner will demonstrate knowledge of the following:
 - a. Medical indication and contraindications of Dobutamine infusion for cardiac stress testing.
 - b. Risks and benefits of the procedure
 - c. Related anatomy and physiology
 - d. Consent process (if applicable)
 - e. Steps in performing the procedure
 - f. Documentation of the procedure
 - g. Ability to interpret results and implications in management.
3. Advanced Health Practitioner will observe the supervising physician perform each procedure three times and perform the pharmacological stress test using Dobutamine **twenty-five** times under direct supervision.
4. Supervising physician will document Advanced Health Practitioner's competency prior to performing procedure without direct supervision.
5. The Advanced Health Practitioner will ensure the completion of competency sign off documents and provide a copy for filing in their personnel file and a copy to the medical staff office for their credentialing file.

B. Continued proficiency

1. The Advanced Health Practitioner will demonstrate competence by successful completion of the initial competency.
2. Each candidate will be initially proctored and signed off by an attending physician. Advanced Health Practitioner must perform Dobutamine pharmacological stress test **twenty-five** times per year. In cases where this minimum is not met, the attending must again sign off the procedure for the Advanced Health Practitioner. The Advanced Health Practitioner will be signed off after demonstrating 100% accuracy in completing the procedure.
3. Demonstration of continued proficiency shall be monitored through the annual evaluation.
4. A clinical practice outcomes log is to be submitted with each renewal of credentials. It will include the number of procedures performed per year and any adverse outcomes. If an adverse outcome occurred, a copy of the procedure note will be submitted.

VII. RESPONSIBILITY

Questions about this procedure should be directed to the Chief Nursing and Patient Care Services Officer at 353-4380.

VIII. HISTORY OF POLICY

Revised February 2012 by Subcommittee of the Committee for Interdisciplinary Practice

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Reviewed February 2012 by the Committee on Interdisciplinary Practice

Prior revisions May 2009

Approved February 2012 by the Executive Medical Board and the Governance Advisory Council

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