Subject: Dobutamine Stress Echo

Purpose: To administer medication to evaluate the status of myocardial perfusion.

Policy: The RN, under physician supervision, will assess, administer medication, and monitor the patient undergoing cardiac testing.

Additional Information:
1. There are many patients with known or suspected coronary artery disease who cannot exercise on a treadmill and require pharmacologic induced stress testing.
2. Dobutamine drip graph and THR percentage chart accompany this procedure to assist staff with calculations.
3. Dobutamine infusion should be stopped for the following reasons:
   a. severe or progressive angina
   b. significant arrhythmias
   c. severe hypertension SBP >220 DBP >120
   d. hypotension B/P decreases 30 mm Hg
   e. clinically significant ECG changes
   f. Attainment of THR - 85%
   g. Maximum Dobutamine dose - 40 mcg/kg/min
4. Monitor patient for the following adverse reactions:
   a. feeling of anxiety, shakiness, dizziness
   b. palpitations
   c. angina
   d. arrhythmias
   e. headache, nausea, vomiting
   f. hypertension
   g. hypotension

Equipment List:
- IV infusion pump
- IV Supplies
- Emergency drug
- CPR cart
- Oxygen
- Suction
- BP cuff & stethoscope
- EKG machine operated by nuclear medicine technologist
- Dobutamine from pharmacy
- Wall clock
- Dobutamine drip graph
- IHC chart
- Dobutamine Stress Test worksheet
- Dobutamine Protocol for use of Esmolol, Atropine, and Lidocaine
Content:

RN is responsible

**Procedure Steps**

1. Patient will be weighed by the nurse or patient gives stated weight if current.
2. The target heart rate will be calculated after patient's age has been confirmed.
3. Procedure discussed with patient/family by nurse and written consent obtained.
4. All patients are to have an IV started(preferably in the R/arm) with 250 D5W.
5. Obtain pulse rate and blood pressure for baseline assessment. Obtain pertinent patient hx., medications and cardiac risk factors.
6. Obtain baseline EKG prior to the administration of Dobutamine and every two minutes during the infusion and at 1, 3, and 5 minutes after Dobutamine is discontinued.
7. A baseline Echocardiogram must be done prior to the administration of Dobutamine.
8. Have Esmolol, Atropine, and Lidocaine dosages calculated and ready for use.
9. Dobutamine will be administered as outlined on the Physician's order sheet.
10. Pulse rate, blood pressure, echocardiogram will be obtained and documented at the end of each two minute stage and when the THR achieved.
11. See Dobutamine protocol for usage of Atropine and Esmolol.
12. Record pulse rate, and blood pressure at 1, 3, 5 minute intervals after the Dobutamine is discontinued and images completed or until patient vital signs return to baseline.
13. The IV fluids will be discontinued and patient discharged when vital signs return to baseline.

**Key Points**

1. The pharmacy will mix the Dobutamine - 50 mg Dobutamine in 50 D5W or 1 mg/ml Dosage.
2. The THR is 85% of max. per IHC chart. The formula used to figure percentages:

   \[
   \frac{220 - \text{age}}{200} \times \text{%} \div 100 = \text{%}
   \]

3. #22 Jelco is adequate in most cases.
4. Baseline assessment can be used for future reference.
5. Nuclear medicine technologist will do EKG's. He/She will have the EKG checked before IV start. The baseline EKG must be read by the physician before starting the Dobutamine.
6. If the patient weigh 200 lbs or more, please delay the starting of the IV until a cardiac window can be seen.
7. Refer to the Dobutamine protocol for usage guidelines.
8. The nurse will calculate the amount of Dobutamine (mg/kg/min) according to the patient's weight using the Dobutamine drip graph. The Dobutamine drip will be piggybacked to the main line IV. An infusion pump must be used in the administration of the Dobutamine.
Documentation:

Patient assessment is documented on the Dobutamine Stress Test Worksheet. EKG's are recorded by the Nuclear Medicine Technologist. EKG tracings will be kept on file in the Cardiac Services; images and associated paperwork archived in PACS. Charges will be made by Diagnostic Imaging.

Reference: Iowa Heart Center Protocol, Iowa Heart Center, Des Moines IA
PDR
MMSC Pharmacy
MGMS Stress Testing Protocol, MCMS, Ames IA
DOBUTAMINE PROTOCOL

Emergency Medications

1. WHEN DO YOU GIVE ATROPINE?
   A. Beginning 30mcg/kg/min level with no noticeable increase in heart rate
   B. Heart rate is gradually decreased instead of increased
   C. Atropine 0.2mg-0.5mg IVP - observe monitor closely. May repeat dose to maximum dose of 2.0 mg.

2. USES OF ESMOLOL:
   A. Give Esmolol 20 mg. after last echo is completed if ordered by physician. May give 10 mg. then wait a couple minutes to give another 10 mg. if H.R. not coming down significantly.
   B. Images have been obtained and patient is very uncomfortable with high heart rate.
   C. Patient begins having chest pain at higher doses with EKG changes.
   D. Esmolol 20 mg (2 cc or 0.125 mg - 0.25 mg/kg) - may repeat dose X 1 five to ten minutes later, if patient has persistent symptoms or heart rate remains elevated

3. USES FOR LIDOCAINE
   PVC's are common with many of our patients. Treatment of their arrhythmias is usually unnecessary. Many times the arrhythmias are fleeting. Treatment with Lidocaine may be necessary if the patient is symptomatic with the arrhythmias. Treatment may also be beneficial for the PEAK images.

   Because of the computer triggering from the EKG's QRS complex, many PVC's will interfere.

   Lidocaine 50mg may be used to suppress the PVC's.

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