# Stress Echo and Contrast Echo

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Resting echocardiography is a convenient tool to evaluate cardiac function and provides the mechanism for patients' symptom and sign. However, cardiovascular symptom could be induced by increasing workload or stress because increase in oxygen demand cannot be adequately met by the underlying disease. Therefore, echocardiography performed with stress is able to disclose additional abnormality which might not be seen at rest.

Stress echocardiography is usually performed with exercise, the administration of a pharmacologic agent or atrial pacing. The most common indication of stress echocardiography is evaluation of coronary artery disease. However, stress echocardiography is also helpful in evaluation of hemodynamic status, such as in valvular heart disease, pulmonary hypertension, exertional dyspnea and left ventricular filling pressure. In addition, stress echo has advantage of assessment of myocardial viability and prognosis as well.

With the use of the regional wall motion abnormality criteria, the sensitivity and specificity of stress echocardiography are comparable to stress thallium. However, the diagnostic accuracy depends on the patient population, the expertise of the interpreter, and the quality of the imagines.

We will primarily discuss the use of stress echocardiography using 2D, 3D and strain echocardiography in daily practice.

Contrast echocardiography is now used to identify intracardiac and intrapulmonary shunts, to augment Doppler velocity signals, to enhance the endocardial border, and to assess myocardial perfusion.

The most frequent shunt lesion evaluated in an echocardiography lab is an atrial shunt through a patent foramen ovale. Bubbles created by agitated saline do not appear in the left side of the heart unless there is a communication between the right and left chambers. Bubbles created by

agitated saline strengthen Doppler velocity signals from the right heart chambers.