



Rx FOR SUCCESS

Echocardiogram

Echocardiogram reports are common in medical records of life insurance. They give information on the heart walls and valves as well as left ventricular function. Echocardiograms use ultrasound (sound waves). The technology is portable, non-invasive, and relatively inexpensive, making it a valuable testing methodology in heart disease.

There can be technical errors and interpretations are subjective. Interpretation of the test is complex and usually done by a cardiologist with specialty training.

Below is a list of the parts of the heart that are measured and some of the common causes for abnormalities. The underwriter is directed to their medical underwriting manuals for underwriting guidance of the abnormalities.

Left Atrial Enlargement (LAE) and Right Atrial Enlargement (RAE)

Enlarged atria present a risk for atrial fibrillation and stroke. The atria usually enlarge in response to some other condition. The left atrium most commonly enlarges due to ventricular dysfunction or mitral valve disease.

Left Ventricular Function

A healthy left ventricle requires normal functioning in both systole (during contraction) and diastole (during relaxation and filling) because its function is to pump blood to the entire body. Subtle symptoms of early dysfunction may include fatigue, shortness of breath, and decreased exercise tolerance.

▶ **Left Ventricular Diastolic (Dys) Function**

Diastolic dysfunction is common in conditions that cause stiff left ventricles such as aging, cardiomyopathy, hypertensive heart disease (LVH), and coronary artery disease (CAD). Diastolic function may improve with treatment of the underlying condition.

▶ **Left Ventricular Systolic (Dys) Function and Left Ventricular Size**

Systolic function is judged by % fractional shortening and by the % ejection fraction (LVEF). Normal LVEF is 55% or more. Impaired systolic function is most often due to some kind of cardiomyopathy such as ischemic cardiomyopathy due to coronary artery disease. An enlarging LV may be the first sign of a cardiomyopathy before LVEF falls.

Right Ventricular Hypertrophy (RVH), Dysfunction, or Dilation

The right ventricle (RV) and right atrium (RA) enlarge due to conditions such as cardiomyopathy, congenital heart disease, pulmonary and tricuspid valve diseases, or pulmonary disease. The right ventricle is a low pressure pump because it pumps blood a short distance to the lungs. If the right heart fails from lung disease, it is known as cor pulmonale.

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Pulmonary Artery Pressure (PAP), Right Ventricular Systolic Pressure (RVSP), Primary and Secondary Pulmonary Hypertension

Acute elevation in PAP and RVSP can be due to treatable conditions such as pulmonary embolism and heart failure. Other causes of elevated right-sided pressures are lung diseases (such as pulmonary fibrosis and COPD), sleep apnea, acquired valve disease, congenital heart disease, and myocardial infarction. These forms of secondary pulmonary hypertension may or may not resolve with treatment of the underlying condition. If they do not resolve, prognosis is poor for long term survival.

- ▶ **Primary Pulmonary Hypertension** is an uncommon disease of unknown cause, characterized by increased pulmonary artery pressure and pulmonary vascular resistance. It has a poor survival.
- ▶ **Normal PAP** (measured invasively by right heart catheterization) has a peak systolic value of 18 to 25 mmHg. Accurate quantitative measures of right heart pressures are difficult to obtain by non-invasive techniques. Echo measurements are estimations. Therefore, preference is given to invasive values, but they are rarely available.
- ▶ Widespread use of echocardiograms has led to the observation of mild elevations (40-50 mmHg range) in RVSP/PAP. The World Health Organization (WHO) recommends that, in asymptomatic individuals, the echocardiogram be repeated in six months. In symptomatic individuals, right heart catheterization is indicated to confirm the finding of elevated PAP.

Aortic Root

The aortic root is just above the three valve leaflets. The aortic root is more accurately measured via CT or MRI scanning than by echo.

Left Ventricular Hypertrophy (LVH)

LVH is excess heart muscle. On echo, the measure of LVH is left ventricular mass estimated by thickness of the posterior and septal walls. Common causes of LVH are hypertensive heart disease, hypertrophic cardiomyopathy (HCM), acquired valve disease, and congenital heart disease. LVH leads to diastolic dysfunction and LAE. Mortality risks of LVH include ventricular and atrial arrhythmias and progression to heart failure.