

# Cardiac resynchronization improves survival in heart failure patients

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Patients in mild heart failure who receive a specialized pacemaker known as cardiac resynchronization therapy with a defibrillator (CRT-D) may live longer than those implanted with a traditional implantable cardioverter defibrillator (ICD), according to research presented at the American College of Cardiology's 63rd Annual Scientific Session.

In the first study to look at CRT-D in mildly symptomatic [patients](#), researchers found that patients with left bundle branch block implanted with a CRT-D had a 41 percent reduced risk of death compared to patients who had a conventional ICD. The probability of all-cause mortality at seven years was 18 percent among the CRT-D patients, compared to 29 percent in the ICD group in this subset of patients. The five-year survival rate for patients with CRT-D was close to 90 percent.

"Based on our findings, we now have an intervention that can potentially change the outcomes for certain heart failure patients," said Ilan Goldenberg, M.D., director of the department of cardiology, Israel's Leviev Heart Center, and one of the lead investigators of the study. "We can intervene early in the course of the disease to reduce the risk of long-term mortality in these patients."

The Multicenter Automatic Defibrillator Implantation with Cardiac Resynchronization Therapy trial enrolled 1,820 patients with mild or no heart failure symptoms – including 1,281 with left bundle branch block in this analysis – and randomized them to receive CRT-D therapy or ICD. ICDs are implanted in the right ventricle of patients at high risk of

[sudden cardiac death](#) due to heart arrhythmias. When patients have a life-threatening arrhythmia, the ICD delivers an electrical shock to help restore a regular heartbeat. A CRT-D differs from an ICD in that it has a second electrode over the left ventricle of the heart to help synchronize a patient's heartbeat and improve cardiac function.

Patients enrolled in the study were diagnosed with New York Heart Association Class 1 or 2 (mild) heart failure, left ventricular dysfunction and an ejection fraction of 30 percent or lower. The original trial followed patients for an average of 2.4 years, and the current study extended this follow-up for up to seven years from enrollment.

According to Goldenberg, previous studies have shown survival benefits from CRT-D in patients with moderate-to-severe symptoms, where intervention took place relatively late in the course of the disease when mortality rates are high. This study is the first to show the significant survival benefit when CRT-D is used with mildly symptomatic patients or asymptomatic patients with cardiac dysfunction.

Heart failure is a condition in which the heart is unable to pump or fill with enough blood and must work harder to supply enough blood for the body's needs. The condition ranges from mild to severe and can progress over time. Approximately half of patients who develop moderate or severe heart failure die within five years of diagnosis, making it important to intervene early in the clinical course of the disease.

The significant long-term survival benefit of CRT-D in the trial was observed only among patients with a specific ECG pattern, left bundle branch block, Goldenberg said. The study does not support early intervention with CRT-D in patients without left bundle branch block.

While researchers expected to find mortality reduction in patients with left bundle branch block during long-term follow-up, Goldenberg said,

"we were surprised by the consistency of results in each subgroup of these patients, regardless of age, gender or the cause or duration of heart failure."

Goldenberg recommends additional research to see if similar benefits are found in patients with higher ejection fractions and among those without any symptoms of [heart failure](#). The study was supported by an unrestricted grant from Boston Scientific, St. Paul, Minn.

Provided by American College of Cardiology

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