

# Implanted heart device linked to increased survival

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Implantable cardioverter defibrillators (ICDs) are associated with improved survival among heart failure patients whose left ventricles only pump 30 to 35 percent of blood out of the heart with each contraction, according to a study from the Duke Clinical Research Institute.

The findings, published in the June 4 issue of the *Journal of the American Medical Association*, support existing recommendations to implant ICDs in [patients](#) with a left ventricular ejection fraction (LVEF) – a measurement of how much blood is squeezed out of the heart – of 35 percent or lower.

"Our findings fill an important gap in knowledge, as most randomized clinical trials of ICDs include [heart failure patients](#) with a median LVEF of well below 30 percent," said Sana Al-Khatib, M.D., MHS, the study's lead investigator and associate professor of medicine at Duke.

"Given that a large number ICDs are implanted in patients with a LVEF between 30 to 35 percent, understanding outcomes in such patients is important."

ICDs are small devices implanted in the chest to monitor the heart's rhythm and deliver small electrical pulses or shocks to help treat life-threatening [heart rhythm disorders](#). Previous [clinical trials](#) have shown that ICDs are the best therapy currently available to prevent sudden cardiac death in patients with heart failure.

The researchers found that survival of heart failure patients with a LVEF of 30 to 35 percent was significantly improved in those with ICDs versus those without ICDs. Three-year mortality rates dropped from 55 percent to 51.4 percent when an ICD was implanted.

Similarly, ICDs were associated with increased survival among heart failure patients with a LVEF of less than 30 percent, with three-year mortality rates dropping from 57.6 percent to 45 percent with ICD use.

Joint guidelines from the American College of Cardiology Foundation and the American Heart Association recommend using ICDs to prevent sudden [cardiac death](#) in select patients with a LVEF of 35 percent or less. The American College of Cardiology defines a normal heart's LVEF as 50 to 70 percent, while a measurement below 50 percent may be a sign of dysfunction or heart failure.

To better understand outcomes among heart failure patients with a LVEF of 30 to 35 percent, the researchers studied the National Cardiovascular Data Registry, intended to track primary prevention ICDs implanted in Medicare beneficiaries, making it the largest repository of ICD implants in the United States. They compared individuals in the registry with [heart failure](#) patients in the Get With the Guidelines-Heart Failure database who also had a LVEF of 30 to 35 percent but did not have ICDs.

The researchers compared all-cause mortality among those with and without ICDs, looking at a total of 3,120 patients with a LVEF of 30 to 35 percent. The analysis was repeated in 4,578 patients with a LVEF of less than 30 percent.

"Until now, the association between the ICD and improved outcomes in patients with a LVEF of 30 to 35 percent was largely implied," Al-Khatib said. "Our results support current guidelines to implant

prophylactic ICDs in patients with a LVEF of 35 percent or lower."

**More information:** Paper doi:10.1001/jama.2014.5310

Provided by Duke University Medical Center

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