

# Has effective medical therapy made the benefit of implantable cardioverter-defibrillators uncertain?

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Credit: University of Glasgow

Medication, including beta-blockers, may be so effective in reducing the risk of sudden death in heart failure that the overall benefit of implantable cardioverter-defibrillators (ICDs) may be uncertain

New research led by the University of Glasgow and published today in the *New England Journal of Medicine*, has analysed individual patient

data from clinical trials conducted between 1995 and 2014. The study concluded that the risk of sudden death has decreased so much, as a result of the cumulative use of a number of effective medications, that the net benefit of ICDs may no longer be clear cut in many [patients](#).

The paper reported an analysis of data on more than 40,000 patients who had heart failure and were enrolled in one of 12 [clinical trials](#) during the time-period of interest.

The study found that rates of sudden death had declined by 44% in the 19 years assessed, and that this decline paralleled the increased use of medications including beta-blockers, ACE inhibitors and mineralocorticoid receptor antagonists.

Professor John McMurray, Professor of Cardiology at the University of Glasgow and senior author of the study, said: "The low risk of sudden [death](#) in patients treated with a combination of effective medications reflects an extremely important improvement in outcomes for patients with heart failure. Indeed, when coupled with data from previous trials on the benefits and complications of ICDs, our findings question the need for and net benefit from an ICD in many patients treated with modern medical therapy."

ICDs, which are fitted in a minor operation, monitor the heart rhythm continuously. They deliver an electrical shock to restore the heart rhythm to normal should a rhythm disturbance which would cause cardiac arrest occur. ICDs are, however, expensive devices and have some complications including infection, malfunction and occasionally delivery of inappropriate shocks which lead, in some patients, to a diminished quality of life.

This paper looked at patients who had a particular type of heart failure: reduced [ejection fraction](#), where the left ventricle doesn't contract

effectively and, as a result, pumps less blood out of the heart on each beat. ICDs are indicated in patients with persistently poor heart function (low ejection fraction) despite appropriate use of effective medical treatments.

Current guidance suggests that [heart failure](#) patients should be given three months on [medication](#) before assessing whether it is necessary to fit an ICD, although some doctors do not wait this long. However, the results of this paper suggest that doctors might be able to wait longer, as improvements in [heart](#) function may still occur up to six and even 12 months after the start of medical treatment and the new data from this study show that the rate of [sudden death](#) remains low over this period.

However, the researchers add that while medication may be the right treatment on the whole, there will still be some high-risk patients for whom an ICD device would be the best option.

Professor McMurray said: "Our study suggests that new efforts are needed to better identify the high-risk subgroup of patients who would benefit most from ICD implantation."

The paper, 'Declining Risk of Sudden Death in Heart Failure' is published in the *New England Journal of Medicine (NEJM)*.

**More information:** Li Shen et al. Declining Risk of Sudden Death in Heart Failure, *New England Journal of Medicine* (2017). [DOI: 10.1056/NEJMoa1609758](https://doi.org/10.1056/NEJMoa1609758)

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