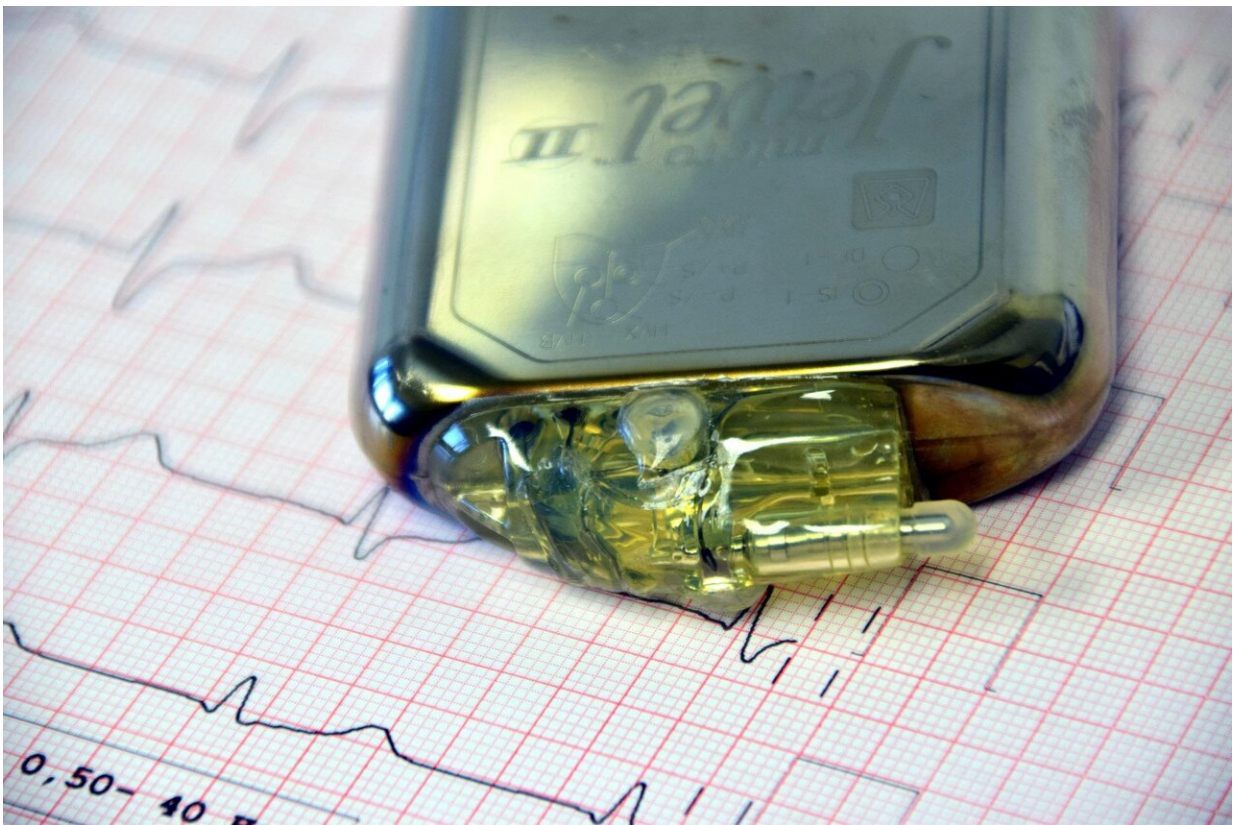


Upgrade to cardiac resynchronization therapy benefits heart failure patients with pacing

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Upgrade to cardiac resynchronization therapy with a defibrillator (CRT-D) reduces morbidity and mortality and improves left ventricular (LV)

reverse remodeling compared to an implantable cardioverter-defibrillator (ICD) in select patients with heart failure and reduced ejection fraction (HFrEF) and intermittent or permanent right ventricular (RV) pacing, according to late breaking research presented in a Hot Line session August 26 at [ESC Congress 2023](#).

Approximately one million conventional pacemakers or ICDs are implanted each year worldwide. Nearly 30% of these patients experience LV systolic dysfunction due to intraventricular dyssynchrony induced by RV pacing, leading to a relatively high incidence of [heart failure](#) hospitalization and associated adverse clinical outcomes.

In HFrEF patients with a pacemaker or ICD, the potential benefits of an upgrade to CRT, where an extra LV lead is implanted to the coronary sinus side branch, have not been established. Due to the lack of high-quality data from large randomized controlled trials, the class/level of recommendation for CRT upgrade have been modified several times over the past decade in ESC and US guidelines, showing an unmet need for more robust evidence.

BUDAPEST CRT Upgrade was the first trial to compare the efficacy and safety of a CRT upgrade, compared to ICD alone, in HFrEF patients with a pacemaker or ICD and intermittent or permanent RV pacing. The trial enrolled [heart failure patients](#) with reduced ejection fraction ($\leq 35\%$) who had received a pacemaker or ICD at least six months previously, had heart failure symptoms (New York Heart Association class II–IVa), a wide paced QRS complex (≥ 150 ms), a high burden of RV pacing ($\geq 20\%$), and were treated with guideline-directed medical therapy.

Patients were excluded if they were eligible for CRT according to current guidelines, had severe RV dilation, had severe valvular heart disease, had severe renal impairment or had survived an [acute](#)

[myocardial infarction](#) or coronary revascularization in the previous three months.

Participants were randomly assigned to receive a CRT-D upgrade or ICD in a 3:2 ratio. For patients with an ICD at baseline who were assigned to the ICD arm, there were two options at the physician's discretion: 1) no procedure; or 2) CRT-D upgrade with the CRT function turned off. The primary outcome was the composite of heart failure hospitalization, all-cause mortality, or

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