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Title **Cardiac Resynchronisation Therapy. A Health Technology Assessment**

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Aim

To answer the following questions: 1) Is cardiac resynchronization therapy (CRT) safe and clinically effective? What is the comparative effectiveness of CRT-P versus CRT-D?; 2) Is CRT cost effective and consequently, should this mode of therapy be reimbursed in eligible patients?; and 3) Should the implantation of CRT devices be restricted to specialized centers?

Conclusions and results

1) In patients with NYHA class III (and IV): Randomized trials have shown that CRT-P and CRT-D prolong life when added to optimal medical therapy in subsets of patients with NYHA class III/IV heart failure (HF). This has been best documented in drug-refractory patients with symptomatic chronic HF who were in sinus rhythm, who had a severely depressed systolic heart function and severe intraventricular conduction delays. Our modeling with the data from the largest of these trials in combination with Belgian demographic data revealed that in NYHA class III/IV patients, CRT-P increases longevity on average 1.31 years compared to optimal treatment. Likewise, addition of a defibrillator function to CRT-P (i.e. CRT-D) in those patients would prolong life on average 0.80 years. In this study, the survival benefit for CRT-P was not significant, but in meta-analyses the gain became a significant 1.83 years. (See full report for further details.)

2) In patients with NYHA class II (and I): No trials have been performed to compare CRT-P and/or CRT-D with optimal medical therapy in patients with only mild symptoms of HF. Three large trials comparing CRT-D with ICD have been published, mostly including NYHA class II patients. In two of them, no mortality benefit could be documented. (See full report for further details.)

Recommendations

1) Reimbursement for CRT-P appears to be justified. Scientific studies reveal a nonsignificant trend suggesting that CRT-D could prolong survival in these patients compared with CRT-P, but the additional cost is excessive.

2) Based on the specific technical requirements and skills required for CRT implant surgery, we recommend a minimum threshold of 20 CRT implants a year per center.

3) Implant doctors should be encouraged to discuss the advantages and drawbacks of CRT with their patients. CRT can only partially remedy the problems of HF and often has complications.

Methods

1) Clinical effectiveness. The review of the clinical effectiveness is based mainly on the evidence identified in the guideline from the European Society of Cardiology, since the updated (August 2010) guideline was considered sufficiently comprehensive and up-to-date.

2) Economic evaluation. This economic review is a rapid health technology assessment (HTA). Due to time constraints, a limited search was performed. The initial search of the HTA database of the Centre for Reviews and Dissemination (CRD) of the UK's National Health Service (NHS) yielded the 2007 HTA by Fox et al. as the most recent health-economic evaluation. This report featured a well-documented, systematic search performed in January 2006.

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