

## Heart failure

When designing heart failure services, consider the following interventions as ways to achieve specific productivity improvements whilst maintaining the quality and safety of clinical care. This approach is being trialled as a beta product alongside the Map of Medicine Heart failure pathway, which covers all areas of a patient's care.

### Pharmacological treatment

#### Angiotensin converting enzyme inhibitors and beta blockers

Offer both angiotensin converting enzyme (ACE) inhibitors and beta-blockers licensed for heart failure to all patients with heart failure due to left ventricular systolic dysfunction as first line treatment.<sup>1</sup>

National Institute for Health and Clinical Excellence (NICE) guidance on heart failure, published in 2010, recommends ACE inhibitors and beta-blockers (those licensed for use in heart failure) as first line treatment, using clinical judgement to decide which drug to start first.<sup>1</sup>

Health economic evaluations have shown both drug classes to be consistently clinically and cost effective in reducing all-cause mortality and hospitalisation in all groups of patients with heart failure.<sup>1,2</sup>

#### Initiate ACE inhibitor therapy with the lowest-cost generic version.<sup>3</sup>

There are generic versions available for some of the ACE inhibitors that are less costly than branded ACE inhibitors, but equally as effective. The volume of prescribing of ACE inhibitors is increasing significantly. Expenditure in primary care in England on medications affecting the renin-angiotensin system currently stands at over £400 million per year. Prescribing generic rather than branded ACE inhibitors can be very cost-effective.<sup>3</sup>

### Cardiac resynchronisation therapy (CRT)

#### Cardiac resynchronisation therapy with a pacing device (CRT-P)

Eligible patients with severe chronic heart failure caused by left ventricular systolic dysfunction should be considered for cardiac resynchronisation therapy with a pacing device under specialist supervision.<sup>4</sup>

NICE guidance on CRT, published in 2007, recommends the implantation of a CRT pacing device in eligible patients as it may lead to significant improvements in all-cause mortality, hospitalisation for heart failure, and quality of life, compared with optimal pharmacological therapy alone.<sup>4</sup>

The CRT pacing device is considered a cost effective intervention for eligible patients at an incremental cost-effectiveness ratio (ICER) of £17,000 per quality-adjusted life year (QALY) when compared with the threshold set by NICE.<sup>4</sup>

#### Cardiac resynchronisation therapy with a defibrillator device (CRT-D)

Eligible patients with severe chronic heart failure who are at risk of sudden cardiac death should be considered for cardiac resynchronisation therapy with a defibrillating device, under specialist supervision.<sup>4</sup>

Compared with optimal pharmacological therapy alone, cardiac resynchronisation therapy with a defibrillator significantly reduces the incidence of sudden cardiac death and all-cause mortality.<sup>4</sup>

Over a lifetime horizon, CRT-D is associated with a 0.99 QALY gain which is equivalent to 361 days of full health for a patient at risk of sudden death, at an incremental cost of £23,320. This is considered to be 30% likely to be cost effective at a willingness to pay of £20,000 per QALY when compared with optimal pharmacological therapy alone.<sup>4</sup>

However, the cost effectiveness of CRT-D over a lifetime would be considerably improved in patients with heart failure who have additional risk factors for sudden cardiac death.<sup>4</sup> The decision to offer this intervention in this cohort of patients should be made on a case-by-case basis.<sup>4</sup>

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## Cardiac Rehabilitation

### Exercise-based cardiac rehabilitation

Offer a supervised group exercise program designed for heart failure patients as part of a cardiac rehabilitation program.<sup>5</sup>

Exercise-based cardiac rehabilitation programs for heart failure patients have a positive effect on clinical and quality of life outcomes such as hospitalisation, exercise tolerance, symptom severity, Quality of Life (QoL) scores, and all cause mortality for up to 5 years.<sup>5</sup>

Health economic analyses have also shown that exercise-based rehabilitation programmes in heart failure patients are cost effective as the ICER is £258 per life year gained.<sup>5,6</sup>

#### Key dates

The Map of Medicine systematically monitors the medical literature for the latest productivity interventions and will update this document as new evidence emerges.

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#### Methodology

The productivity considerations presented in this document are relevant to the UK. They were identified by systematically searching for and appraising productivity evidence from multiple sources, including NICE guidance, health economic databases and Zynx Health (a sister company of Map of Medicine).

A productivity message explicitly states interventions that can reduce the cost of care, whilst maintaining or improving patient outcomes. Actions that are believed to lead to improved productivity, but lack unequivocal clinical or economic evidence, are not included.

Some productivity considerations are informed by more recent evidence than that included in relevant national guidelines.

The document has been peer reviewed by an independent group of experts.

#### Feedback

This approach to productivity guidance is being trialled as a beta product alongside the Map of Medicine Heart failure. We welcome your feedback. If you know of additional resources that describe cost-effective interventions, please forward the reference information to us at [productivity@mapofmedicine.com](mailto:productivity@mapofmedicine.com).

#### Other topics of interest

Productivity considerations for service design – [Acute coronary syndrome](#)

Productivity considerations for service design – [Stable coronary artery disease](#)

#### References

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2. Yao G, Freemantle N, Flather M et al. [Long-term cost-effectiveness analysis of nebivolol compared with standard care in elderly patients with heart failure: an individual patient-based simulation model](#). *Pharmacoeconomics*. 2008; 26: 879- 89.
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4. National Institute for Health and Clinical Excellence (NICE). [Cardiac resynchronisation therapy for the treatment of heart failure](#). Technology Appraisal Guidance 120 London: NICE; 2007.
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6. Hagberg L, Lindholm L. [Cost-effectiveness of healthcare-based interventions aimed at improving physical activity](#). *Scand J Public Health*. 2006; 34: 641-53.

#### Disclaimer

This document is not to be substituted for a healthcare professional's diagnosis or clinical decisions.