

FIVE THINGS TO KNOW ABOUT ...

## Chronic heart failure with reduced ejection fraction

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See also page 510 and [www.cmaj.ca/lookup/doi/10.1503/cmaj.131742](http://www.cmaj.ca/lookup/doi/10.1503/cmaj.131742)

### How is heart failure with reduced ejection fraction diagnosed?

Heart failure with reduced ejection fraction is a clinical syndrome of dyspnea, exercise intolerance and/or edema resulting from an impairment of ejection of blood, usually documented by a left ventricular ejection fraction of 40% or less on echocardiography.<sup>1,2</sup> Coronary artery disease is a major cause; therefore, stress testing or, in the presence of angina, coronary angiography should be performed.<sup>1,2</sup> Recommended testing includes electrocardiography, complete blood count, urinalysis, and measurement of electrolytes, creatinine, thyroid-stimulating hormone, glucose and brain natriuretic peptide.<sup>2</sup> Other investigations should be individually tailored, with a focus on potentially reversible causes.

### What medications should be avoided in these patients?

Medications to avoid in patients with heart failure with reduced ejection fraction include the following:<sup>1,2</sup>

- all nonsteroidal anti-inflammatory agents (including cyclooxygenase-2 inhibitors), except for low-dose acetylsalicylic acid in select patients
- nonvasoselective calcium channel blockers (e.g., verapamil and diltiazem)
- antiarrhythmics (except amiodarone and dofetilide)
- thiazolidinediones (e.g., rosiglitazone, pioglitazone)

### What medications improve outcomes in patients with this condition?

Several medications have been shown by well-designed studies to reduce morbidity and mortality. After use of a loop diuretic, low-dose angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARBs) should be started.<sup>1,2</sup> When combined with an ACE inhibitor or ARB, specific  $\beta$ -blockers also reduce mortality (number needed to treat [NNT] = 9).<sup>1,2</sup> There is no difference in outcomes in patients started on an ACE inhibitor or  $\beta$ -blocker first.<sup>3</sup> In patients intolerant of ACE inhibitors or ARBs, a hydralazine–nitrate combination has been shown to improve mortality, hospital admission and symptoms, particularly in African-American patients.<sup>1,2</sup> In patients with persistent symptoms, spironolactone or eplerenone reduce mortality (NNT = 6).<sup>1,2</sup> These medications should be started at low doses and titrated every two to four weeks, with close monitoring.<sup>1,2</sup> A recent large trial showed that LCZ696, a drug that combines an ARB and with a neprilysin inhibitor, provided a mortality benefit as compared with ACE inhibitors.<sup>4</sup> These data have not yet been integrated into guidelines.

### What instructions should be given to a patient with heart failure with reduced ejection fraction to prevent exacerbation of heart failure?

Patients should be counselled on the importance of adherence to medical advice and timely follow-up. Guidelines recommend sodium restriction, although the supporting evidence is modest. Patients should be encouraged to avoid prepared or processed food, and fluctuations in salt consumption.<sup>1,2,5</sup> Patients should weigh themselves daily and have a target weight. Clinicians should discuss an individualized “first response plan” for increasing the diuretic dose in the event of weight gain. Regular exercise and cardiac rehabilitation can reduce hospital admissions and improve survival.<sup>1,2,6</sup>

For references, [www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.140430/-/DC1](http://www.cmaj.ca/lookup/suppl/doi/10.1503/cmaj.140430/-/DC1)

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### When should a patient with this condition be referred for device therapy or transplant?

Patients with an ejection fraction of 35% or less who are receiving optimal medical therapy should be referred to an electrophysiologist for consideration of electrical device therapy.<sup>1,2</sup> A subset of patients who are receiving optimal therapy may have persistent symptoms, recurrent admissions, progressive renal dysfunction and/or recurrent ventricular arrhythmias.<sup>1</sup> These patients should be referred for consideration of mechanical circulatory support or cardiac transplantation.

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