NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

Single Technology Appraisal

Ivabradine for the treatment of chronic heart failure

Final scope

Remit

To appraise the clinical and cost effectiveness of ivabradine within its licensed indication for the treatment of chronic heart failure.

Background

Heart failure is a complex clinical syndrome of signs and symptoms, generally defined as the inability of the heart to supply sufficient blood flow to meet the body's needs. It is caused by structural or functional abnormalities of the heart, commonly resulting from coronary artery disease. Heart failure may be associated with left ventricular systolic dysfunction (that is, reduced left ventricular ejection fraction, where the left pumping chamber's ability to pump is impaired) but may also be associated with preserved ejection fraction (minimum ejection fraction of 45%).

Signs and symptoms of heart failure can be due to pulmonary and systemic congestion, the structural abnormalities causing and resulting from heart failure, or from complications of therapy. Symptoms of heart failure are classified by the New York Heart Association (NYHA) system from Class I (no limitations) to Class IV (inability to carry out any physical activity without discomfort), and commonly include breathlessness, fatigue and ankle swelling. Quality of life is affected by the physical limitations imposed by the symptoms. Overall, the quality of life in people with heart failure declines as the severity of the disease increases.

Around 900,000 people in the UK have heart failure and approximately 63,000 people are diagnosed with heart failure each year. Both the prevalence and incidence of heart failure increase with age. About 3% of people aged 65 to 74 years have heart failure, this rate increases to about 7% of those aged 75-84 years and to over 14% of those aged 85 and above. The risk of heart failure is higher in men than in women in all age groups, but there are more women than men with heart failure due to population demographics. Thirty to forty percent of patients diagnosed with heart failure die within the first year. In the UK, heart failure accounts for approximately 2% of all NHS inpatient bed-days and 5% of all emergency medical admissions to the hospital.

In addition to improving the life expectancy and quality of life of patients, another primary goal of managing heart failure is to avoid hospitalisations. Current strategies include pharmacological management, implantation of devices, and surgical treatment, as well as management of any co-morbid conditions.

Current pharmacological treatment for chronic heart failure due to left ventricular systolic dysfunction includes a number of options. NICE clinical guideline 108 ('Chronic heart failure') recommends that that all patients be considered for first-line treatment with beta-blockers and an angiotensin-converting enzyme (ACE) inhibitor unless contraindicated or not tolerated. Aldosterone antagonists, angiotensin-II receptor antagonists, or hydrazaline in combination with nitrate are recommended as add-on treatments for second-line use in particular patient groups who remain symptomatic despite first-line treatment. Angiotensin-II receptor antagonists are alternatively recommended for first-line use for patients in whom ACE inhibitors are not tolerated. Coronary resynchronisation (NICE technology appraisal 120, 'Cardiac resynchronisation therapy for the treatment of heart failure' – currently being reviewed) and cardiac transplantation are options for severe symptoms unmanageable by pharmacological treatment.

The technology

Ivabradine (Procoralan, Servier Laboratories) is a sino-atrial modulator with bradycardiac activity. It selectively inhibits inward sodium and potassium ion cardiac current, slowing the onset of the next action potential and therefore the next heart beat. It is administered orally.

Ivabradine does not have a UK marketing authorisation for the treatment of chronic heart failure. It has been studied in a clinical trial, in comparison with placebo, in adults with symptomatic chronic heart failure (NYHA class II to IV), left ventricular systolic dysfunction, and who are in sinus rhythm. Ivabradine is intended as an adjunct to current therapies.

Intervention(s)	Ivabradine
Population(s)	Adults in sinus rhythm with symptomatic chronic heart failure (NYHA class II to IV) due to left ventricular systolic dysfunction who have been prescribed standard optimal heart failure therapy
Comparators	Standard treatment without ivabradine
Outcomes	The outcome measures to be considered include: • cardiovascular mortality • all-cause mortality • hospitalisation due to heart failure • all-cause hospitalisation • adverse effects of treatment • health-related quality of life

Economic analysis	The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year. The reference case stipulates that the time horizon for estimating clinical and cost effectiveness should be sufficiently long to reflect any differences in costs or outcomes between the technologies being compared. Costs will be considered from an NHS and Personal Social Services perspective.
Other considerations	Guidance will only be issued in accordance with the marketing authorisation.
Related NICE recommendations	Related Technology Appraisals: Technology Appraisal No. 120, May 2007, 'Cardiac resynchronisation therapy for the treatment of heart failure', Review Date Jul 2010. Related Guidelines: Clinical Guideline No. 108, Aug 2010, 'Chronic heart failure: management of chronic heart failure in adults in primary and secondary care'. Technology Appraisal in Preparation: Implantable cardioverter defibrillators for the treatment of arrhythmias and cardiac resynchronisation therapy for the treatment of heart failure (review of TA95 and TA120). Earliest anticipated date of publication TBC. Related Quality Standards: Chronic Heart Failure Quality Standard, June 2011 http://www.nice.org.uk/guidance/qualitystandards/chronicheartfailure/home.jsp