



Title **The Use of B-type Natriuretic Peptides (BNP and NT-proBNP) in the Investigation of Patients with Heart Failure**

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Reference **Craig et al. 2005. Health Technology Assessment Report 6.**
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Aim

- To determine the role of B-type natriuretic peptides (BNP) in diagnosing heart failure.

More specifically, whether or not a normal BNP or NT-proBNP result can reliably 'rule out' heart failure:

- in the primary care setting to inform the decision to refer a patient to a specialist or for echocardiography
- in the admissions setting to inform decisions around treatment and placement of patients.

Conclusions and results

Testing of BNP has similar sensitivity, but greater specificity than electrocardiograms (ECGs) read by cardiologists in selecting patients for referral to echocardiography. The accuracy of BNP testing is greatest in patients with more severe disease and poorest in patients receiving therapy for heart failure.

Modeling results suggested that BNP tests could be cost saving if the specificity of diagnostic tests currently used to inform whether or not to refer patients for echocardiography is less than 50%. The cost-effective use of BNP testing may reduce the number of patients referred inappropriately for further cardiac assessment from general practice, and decrease the length of stay and total treatment costs in the acute setting.

Patients would value avoiding unnecessary anxiety waiting for a diagnosis of heart failure if a more sensitive and relatively noninvasive test can 'rule out' heart failure.

Recommendations

- In the primary care setting, GPs, who do not record ECGs in their own practice or who are not confident in confirming an automated ECG report, should adopt BNP tests.
- In the acute setting, physicians should use BNP tests, in conjunction with other clinical information, for patients in whom there is genuine diagnostic uncertainty after standard evaluation, and no timely access to echocardiography.

- BNP tests should not replace echocardiography for the diagnosis of heart failure.
- Healthcare professionals should explain to patients and carers, in a clear and timely manner, what the diagnosis is and how it was made, and ensure that this is supported by written information.

Methods

Scientific literature was systematically searched to identify evidence. Experts, patient interest groups, and manufacturers were invited to submit evidence. All evidence was critically appraised, and clinical data were pooled to evaluate the accuracy of diagnostic tests in heart failure and left ventricular systolic dysfunction. An economic model was constructed to compare the number and cost of correct test results for heart failure in alternative diagnostic pathways. Patients' needs and preferences and organizational issues were considered.

Further research/reviews required

Research is needed to identify relevant cutoffs for different settings and different patient subgroups, particularly the elderly.