National Demand Optimisation Group Primary Care - Diagnostic Test Guidance Document	NT-proBNP/ BNP

Background

B-type natriuretic peptide (BNP) and N terminal-pro-B-type natriuretic peptide (NT-proBNP) are peptide hormones produced in the heart by breakdown of a precursor protein (pre-pro-BNP). BNP causes natriuresis, diuresis and vasodilation; NT-proBNP is inactive.

The use of BNP/NT-proBNP as the primary screening tool for diagnosis/exclusion of heart failure is recommended in all European and American cardiology guidelines and has also been prioritised in the Chronic Heart Failure guidelines: SIGN 147 (2016) and NICE 106 (2018).

Plasma BNP and NT-proBNP concentrations are raised in patients with both HF-REF and HF-PEF and the concentrations tend to rise with deteriorating NYHA class.

Pooled sensitivity for the diagnosis of HF using NT-proBNP testing was 0.91 (95% CI 0.88 to 0.93) and specificity was 0.76 (95% CI 0.75 to 0.77) (SIGN 147)

When to test

Refer to local guidelines for details on availability of testing and clinical cut off values.

Natriuretic peptide (BNP-type natriuretic peptide or NT-proBNP) levels should be measured in patients with suspected heart failure to decide if echocardiography is needed or not.

To help make this decision, the patient should undergo an ECG and measurement of BNP / NT pro-BNP levels (depending on local circumstances). If either test is abnormal, there is sufficient likelihood of HF to warrant echocardiography to confirm a diagnosis. If both tests are normal, HF is unlikely and alternative tests for the symptoms should be considered.

BNP levels can predict risk of hospitalisation and mortality, people presenting with signs and symptoms of HF in the community setting and who have very high natriuretic peptide levels should be treated more urgently than those with lower, but still abnormal, levels of natriuretic peptides.

NICE devised the following thresholds, based on the expert opinion of the group:

- BNP >400 pg/ml (ng/L) or NT-proBNP >2,000 pg/ml (ng/L) : echocardiogram and specialist clinical assessment no longer than two weeks from the time of presentation.
- BNP 100–400 pg/ml (ng/L) or NT-proBNP 400–2,000 pg/ml (ng/L): echocardiogram and specialised clinical assessment within six weeks from the time of presentation.
- BNP <100 pg/ml (ng/L) or NT-proBNP <400pg/ml (ng/L) in the absence of HF therapy: HF is an unlikely cause for the presentation.

When not to test

Naturetic peptides should not be used to screening the asymptomatic population.
Note: Naturetic peptides can be reduced if : BMI>35 ; patient is on medication for HF (eg diuretics, ACE inhibitors, AIIRAs, beta-blockers, aldosterone antagonists)

When to repeat a test

Naturetic peptides should not be repeated for the same symptoms unless in exceptional circumstances, e.g. intervening MI.

References and Further Reading

Management of chronic heart failure. SIGN 147; 2016
Chronic heart failure in adults: diagnosis and management. NICE [NG106]; 2018

Editorial Box

Author(s): *Jacqueline McGuire*
Version: *(final version should be V1.0)*
Current Review Date: *(from date of publishing on Right Decision app)*
Next Review Date: *(1 year after 'current review' date)*
Review Contact: nss.nationaldemand@nhs.scot
Approved By: National Demand Optimisation Group – Education Short Life Working Group, along with.... *(any other named groups/ experts)*