NHS
Central Lancashire

Lancashire Teaching Hospitals NHS
NHS Foundation Trust

NT Pro B-Type Natriuretic Peptide (NTproBNP)

Natriuretic Peptides

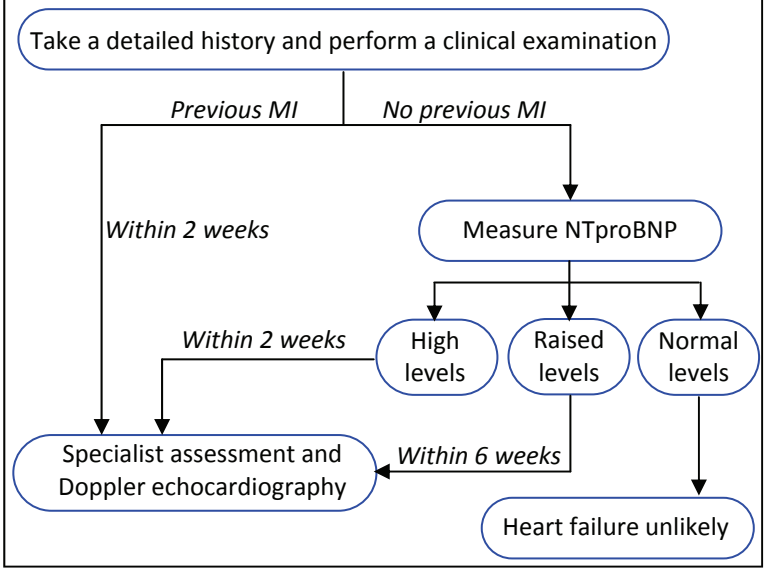
The use of natriuretic peptide measurements to act as an initial 'rule-out' test for chronic heart failure in primary care, prior to referral for echocardiography has been recommended by the European Society of Cardiology and NICE[1, 2]. B-type natriuretic peptide (BNP) and its inactive split product, the N-terminal portion of the pro-hormone (NTproBNP), have both been used for this purpose but the superior stability of NTproBNP makes this the peptide of choice.

NTproBNP will be the test provided for the investigation of heart failure

Guidelines

NICE has published an algorithm on the use of NTproBNP (Fig. 1) with suggested cut-offs for each category [2]. However, NICE cut-offs are higher than in other published articles[3]. Whilst this improves specificity, there is a loss of sensitivity which has raised concern that the NICE "normal" cut-off may miss up to 25% of patients with chronic heart failure[3]. It should be noted that NTproBNP can be elevated in conditions other than heart failure and that certain drugs can reduce levels[2]. Thus in the interpretation of NTproBNP NICE cut-off levels should be used initially, but drug therapy, age, other conditions and clinical suspicion should be taken into account.

Figure 1. NICE algorithm summarising recommendations for the diagnosis of heart failure[2]



Interpretation

A routine serum (clotted sample) is required for analysis. The following comments, based on NICE recommendations will be assigned to the results:

NTproBNP <400 ng/L (Normal levels):

- NTproBNP <400 ng/L in an untreated patient makes heart failure unlikely.
- Please note obesity, diuretics, ACE inhibitors, beta-blockers, ARBs and aldosterone antagonists can reduce levels.
- If clinical suspicion remains high consider further investigation. Please note that NTproBNP levels <50 ng/L (<50 years), <75 ng/L (50-75 years), and <250 ng/L (>75 years) make heart failure highly unlikely.

NTproBNP 400-2000 ng/L (Raised levels):

- Suggest specialist assessment and echo within 6 weeks. *(Please put NTproBNP result on referral form).*
- The level does not differentiate between heart failure due to left ventricular systolic dysfunction and heart failure with preserved ejection fraction.
- Please note that elevated levels can have causes other than heart failure (left ventricular hypertrophy, ischaemia, tachycardia, right ventricular overload, hypoxaemia [including pulmonary embolism], eGFR <60 mL/minute, sepsis, COPD, diabetes, age >70 and liver cirrhosis).

NTproBNP >2000 ng/L (High levels):

- Suggest specialist assessment and echo within 2 weeks. *(Please put NTproBNP result on referral form).*
- The level does not differentiate between heart failure due to left ventricular systolic dysfunction and heart failure with preserved ejection fraction.
- Please note that elevated levels can have causes other than heart failure (left ventricular hypertrophy, ischaemia, tachycardia, right ventricular overload, hypoxaemia [including pulmonary embolism], eGFR <60 mL/minute, sepsis, COPD, diabetes, age >70 and liver cirrhosis).

1. ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. Eur Heart J 2008;29:2388-2442.
2. NICE Clinical Guideline 108. Chronic heart failure: Management of chronic heart failure in adults in primary and secondary care. 2010.
3. Hildebrandt P, Collinson PO, Doughty RN, et al. Age-dependent values of N-terminal pro-B-type natriuretic peptide are superior to a single cut-point for ruling out suspected systolic dysfunction in primary care. European Heart Journal 2010:31;1881-1889.

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Working together, improving quality

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