GP Access to Diagnostics

NT-proBNP

Frequently Asked Questions

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Background

GPs are being provided with direct access to NT-proBNP blood testing via public hospitals for the full adult population, regardless of their GMS status. Direct GP access to this blood test will enhance the diagnosis and management of individuals with **heart failure, atrial fibrillation, type 2 diabetes, and ischemic heart disease** in primary care. Direct GP access to echocardiogram and spirometry have also been funded and are available in many areas already, with further development work ongoing in some regions to operationalise these services.

Through the Enhanced Community Care Programme (ECC), additional resources have been provided to the public laboratories for the provision of a ring-fenced direct NT-proBNP service to GPs. This additional diagnostic capacity supports GPs to diagnose chronic disease early in their at-risk patients, to intervene early and to work with their patients to optimise their chronic conditions. This will support hospital avoidance and improved patient outcomes.

The NT-proBNP test is an expensive laboratory test and is only to be ordered in a specific set of circumstances. Please be cognisant of the national referral criteria which are described below for the GP direct access NT-proBNP service and only refer tests from individuals who fulfil one or more of the criteria below to the laboratory, to ensure that the capacity of the laboratories to deliver this service is not exceeded. The aim of this document is to address the common questions that GPs may have as to how to appropriately access the NT-proBNP service for their patients.

1.0 Background FAQs

1.1 What is NT-proBNP?

N-terminal b-type natriuretic peptide (NT-proBNP) is a breakdown product of B-type NP which is made in the heart. It is biologically inert but a stable marker of BNP metabolism. It is elevated in situations where BNP activity is increased such as pressure and volume overload. High levels of BNP or NT-proBNP in the blood indicate that the walls of the heart are stretched and that the heart is struggling to meet the body's demands.

While both BNP and NT-proBNP can be measured as part of the investigation of heart failure, NT-proBNP is significantly more stable and can be stored at room temperature for longer than BNP and hence, it is a more suitable investigation to be undertaken in General Practice. Therefore, GPs are now being offered direct access to NT-proBNP testing for their patients.

1.2 Are BNP and NT-proBNP results comparable?

BNP and NT-proBNP test results are not interchangeable and they cannot be directly compared. They have different half-lives, different modes of degradation and critically, different decision cut-off values.

1.3 What are the clinical indications for undertaking an NT-proBNP test?

There are three clinical indications for undertaking an NT-proBNP test in general practice:

Clinical indication 1: As part of the investigative work up of a patient who presents with symptoms suggestive of new onset heart failure.

An NT-proBNP test is used for the work-up of possible heart failure. When there is clinical suspicion of a new diagnosis of heart failure (HF) NT-proBNP should be performed as an initial test to help triage the need for echocardiography. If the NT-proBNP value is normal then it is almost certain that the patient does not have HF and no further testing for that diagnosis, including echocardiography is required (see Figure 1). If the NT-proBNP level is elevated then follow-on echocardiography is required to confirm or rule-out HF. An elevated NT-proBNP level in the absence of an abnormal echocardiogram does not confirm HF.

Clinical indication 2: As part of the investigative work up of a patient with suspected deterioration of existing heart failure with a co-morbidity (e.g. COPD) where symptoms of deterioration are similar (e.g. dyspnoea) (See Table 1 for interpretation guide).

In an established case of HF where there is emerging deterioration possibly related to HF the NT-proBNP level is helpful to define the cause of the deterioration.

Clinical indication 3: One NT-proBNP test will be facilitated per GP Structured Chronic Disease Management registration visit for type 2 diabetes, ischemic heart disease or atrial fibrillation to aid in risk stratification (See Table 1 for interpretation guide).

In asymptomatic patients at risk for HF (established coronary artery disease, atrial fibrillation, diabetes mellitus) NT-proBNP can be helpful as a risk stratification tool for the development of HF or related cardiovascular problems. In this setting it is being used as a determinant of risk and if elevated, underlines the need for strict risk factor control for the patient.

GPs must state on the referral form the indication for the NT-proBNP test. If no information is provided to the laboratory, the NT-proBNP test will not be done.

Please ensure that you do not send samples which do not meet one or more of the above criteria, unless discussed and agreed with the laboratory. There is a limited capacity to provide this test, which needs to be used to support chronic disease management as intended. Please avoid repeat testing outside of the above parameters. If you are concerned about a patient, please contact your local cardiology service for further advice.

NT-proBNP is one of the more expensive tests and significantly impacts on laboratory budgets. Unnecessary testing is contrary to the goal of a sustainable healthcare service.

1.4 Who should not have an NT-proBNP test done?

NT-proBNP testing is not recommended in the following patient cohorts:

1. **Patients with classic signs of acute decompensated heart failure (i.e. prior episodes of acute decompensated heart failure, volume overload) or those with shortness of breath consistent with other aetiologies (i.e. asthma, COPD)**. In these instances, NT-proBNP is not likely to assist in the diagnostic workup. If you are concerned that a patient has acute decompensated heart failure, please use available referral channels to obtain specialist input, as required.
2. **Screening for asymptomatic ventricular dysfunction in a low risk population**. In a low risk population, lower pre-test probability renders NT-proBNP sub-optimal for screening purposes.
3. Repeat testing is not required at annual or interim CDM review visits for Heart failure.
4. Repeat testing is not required to assess response to treatment changes in heart failure in the community

1.5 When can I start ordering NT-proBNP tests for patients?

Additional resources for the public hospital laboratories have been secured for the provision of a ring-fenced direct NT-proBNP service for GPs. Please contact your local laboratory to discuss referral requirements for NT-proBNP testing in General Practice.

1.6 Where does clinical governance lie when a patient has been referred for an NT-proBNP test?

Similar to other blood tests, the GP retains responsibility for the follow up of the test result and for the management of the patient.

1.7 What sample tube is required for an NT-proBNP sample?

A venous blood sample is required for testing. Laboratory requirements may vary depending on location. You should contact your local laboratory for specific requirements for undertaking the NT-proBNP test.

Table 1 National clinical indications for ordering an NT-proBNP test for a patient in General Practice

	Clinical indication	Description
1	Suspected new onset heart failure	• **NT-proBNP<400 ng/L:** HF unlikely. Consider other causes for symptoms. • **NT-proBNP>400 ng/L:** Refer for echocardiogram. • **NT-proBNP>2000 ng/L:** Refer for urgent echocardiogram and specialist review.

2	Existing HF with suspected deterioration	Not for regular use with every deterioration of HF. Useful in existing HF with multi-morbidity (e.g. COPD) where symptoms of deterioration are similar (dyspnoea). A stable NT-proBNP suggests HF is not the cause of the deterioration. A rise of 30-50% suggests that HF is the cause of deterioration.
3	First registration visit related to the Chronic Disease Management programme	Raised NT-proBNP should firstly prompt a check for symptoms and signs of HF and appropriate management if present. In the absence of clinical features of HF, an elevated NT-proBNP should highlight patients at higher cardiovascular risk and prompt us to achieve tighter control of risk factors and to "look under the bonnet" to see if there are any previously undiagnosed issues at play (ECG to look for AF, ABPM to assess BP control).

2.0 Referral FAQ

2.1 Are there clinical guidelines to support my decision-making when considering whether to undertake an NT-proBNP test for a patient?

The GP Structured Chronic Disease Management software will prompt you where an NT-proBNP test may be indicated. Please refer to the National Model of Care for Heart Failure, the GP Quick Reference Summary for Heart Failure Diagnosis and Management, the CDM Matrix of Investigations, the NICE guideline Chronic heart failure in adults: diagnosis and management and the Laboratory Testing for Natriuretic Peptides (NP)-BNP / NT- proBNP to guide your decision making in relation to the NT-proBNP test.

Please see attached in Appendix 1 a list of the recommended investigations to be done as part of the HSE's GP Structured Chronic Disease Management Programme.

In addition, please consider whether the patient meets the referral criteria as stated above in question 1.3.

2.3 How do I undertake an NT-proBNP blood test?

The patient must fulfil the referral requirements as outlined in question 1.3.

The blood samples for NT-proBNP should be transferred to the same public hospital laboratory as your general patient bloods. Specific laboratory requirements for NT-proBNP may vary depending

on location and you should contact your local laboratory for specific requirements in order to process your NT-proBNP test requests e.g. type of sample tube, days of the week the samples can be submitted for processing etc. The GP must state the indication for the NT-proBNP request, as it relates to the above referral criteria, on the laboratory request form.

2.4 Is there a limit to the number of NT-proBNP requests that I can order in a week/ month?

The NT-proBNP test should only be used in limited clinical scenarios. There are clear referral criteria that must be fulfilled for each test request the GP makes. The GP must state the indication for the test as it relates to the referral criteria set out in section 1.3 above, on the laboratory referral form. If no information is given on the test request form, the NT-proBNP test will not be done. Repeat NT-proBNP tests are not recommended outside of the above referral criteria. If you are concerned about a patient, please contact your local cardiology service for further advice.

3.0 Results FAQs

3.1 What is the turnaround time for the NT-proBNP test?

The turnaround time will vary depending on your geographical location as some NT-proBNP tests will be transported onwards from your local laboratory to a different laboratory for testing. The average turnaround time for an NT-proBNP test will be three days approximately but delays may occur where demand exceeds the capacity of your local laboratory. You will receive the result for this blood test via Healthlink, similar to how you receive your other routine blood results.

3.2 What is an abnormal NT-proBNP result?

Please see table 1 above for further information. NT-proBNP should always be interpreted within the clinical context and should consider factors which either increase (age, gender [F>M] and other co-morbidities [e.g. renal dysfunction, AF]) or decrease levels (obesity, drug therapy [diuretics, beta-blockers, ACEi, ARNI etc]).

3.3 The NT-proBNP result has come back as abnormal. What should I do next?

See Table 1 and Figure 1. NT-proBNP helps rule out heart failure. If the level is normal it is unlikely the person has heart failure. If the level is elevated the patient may have heart failure but there are many causes of raised NT-proBNP. To confirm the diagnosis you need an echocardiogram.
The GP caring for the patient is responsible for arranging any follow up that a patient requires. For suspected non-acute onset of heart failure in primary care, please see algorithm below (Figure 1) for further information. Please refer to the GP Quick Reference Summary for Heart Failure Diagnosis and Management and the National Model of Care for Heart Failure for more detailed information.

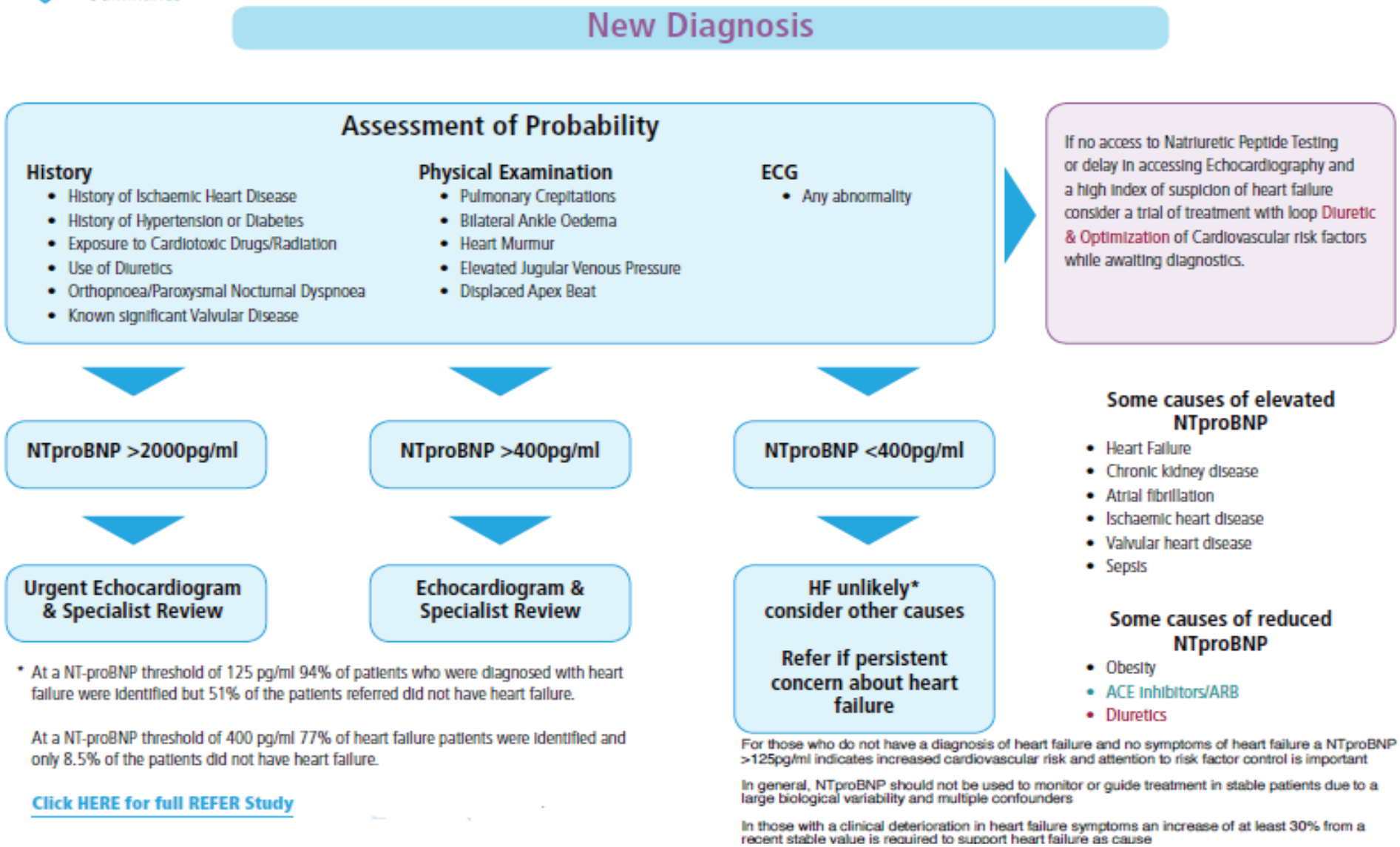

Figure 1 Clinical care pathway for suspected non-acute heart failure

Appendix 1

RECOMMENDED INVESTIGATIONS FOR THE HSE CHRONIC DISEASE TREATMENT AND PREVENTION PROGRAMMES

TREATMENT PROGRAMME - ANNUAL REVIEW

CONDITION	FBC	Creati-nine	Lipid	HbA1c	ACR	NTpro BNP	Fasting Glucose (FPG)	eGFR	Tyroid Function Test	Liver Function Test
Type 2 Diabetes	✔	✔	✔	✔	✔			✔		
Asthma										
COPD			✔	✔						
Heart Failure	✔	✔	✔	✔				✔		
Atrial Fibrillation	✔	✔	✔	✔				✔		
Ischaemic heart disease		✔	✔	✔				✔		
Stroke/TIA		✔	✔	✔				✔		

TREATMENT PROGRAMME - INTERIM REVIEW

CONDITION	FBC	Creati-nine	Lipid	HbA1c	ACR	NTpro BNP	Fasting Glucose (FPG)	eGFR	Tyroid Function Test	Liver Function Test
Type 2 Diabetes	✔	✔	✔	✔				✔		
Asthma										
COPD										
Heart Failure										
Atrial Fibrillation		✔						✔		
Ischaemic heart disease										
Stroke/TIA										

TREATMENT PROGRAMME - REGISTRATION VISIT - FIRST VISIT ONLY

CONDITION	FBC	Creati-nine	Lipid	HbA1c	ACR	NTpro BNP	Fasting Glucose (FPG)	eGFR	Tyroid Function Test*	Liver Function Test*
Type 2 Diabetes	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Asthma	✔									
COPD	✔	✔	✔	✔				✔	✔	✔
Heart Failure	✔	✔	✔	✔		✔		✔	✔	✔
Atrial Fibrillation	✔	✔	✔	✔		✔		✔	✔	✔
Ischaemic heart disease	✔	✔	✔	✔		✔		✔		
Stroke/TIA	✔	✔	✔	✔				✔		

PREVENTION PROGRAMME

	FBC**	Creati-nine	Lipid	HbA1c	ACR	NTpro BNP	Fasting Glucose (FPG)	eGFR	Tyroid Function Test*	Liver Function Test*
Registration - First Visit Only	✔	✔	✔	✔	✔		✔	✔	✔	✔
Annual Review	✔	✔	✔	✔	✔		✔	✔		

OPPORTUNISTIC CASE FINDING (OCF)

	FBC	Creati-nine	Lipid	HbA1c	ACR	NTpro BNP	Fasting Glucose (FPG)	eGFR	Tyroid Function Test	Liver Function Test
OCF Visit	✔	✔	✔	✔	✔			✔		

✔ *if clinically indicated* | **If ever tested does not need repeating*

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