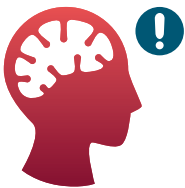
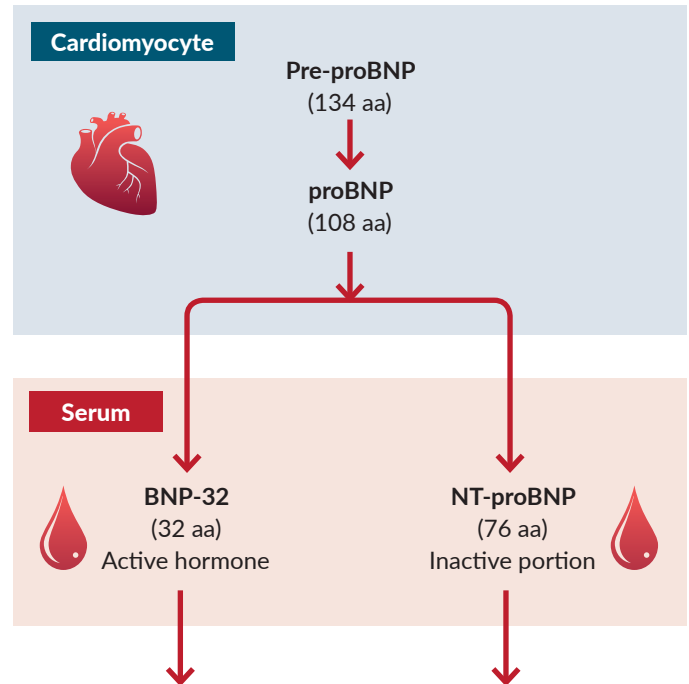


PRACTICE TOOL

Using brain natriuretic peptide (BNP) to support a diagnosis of heart failure

BNP is a hormone released from cardiomyocytes in the heart ventricles. It has multiple physiological effects, including vasodilation, natriuresis and diuresis.

- **Relevance:** BNP levels increase when the heart is under stress/overloaded
- **Measuring BNP:**
 1. Can support a diagnosis when HF is suspected
 2. Provides prognostic information
 3. Can be used to monitor and guide long-term treatment in difficult cases



BNP testing does not replace the need for echocardiography in patients with confirmed heart failure if this is available.

	BNP-32	NT-proBNP
HF unlikely (Rule-out test)	<30 pmol/L (100 pg/mL)	<35 pmol/L (300 pg/mL)
HF uncertain	Patients with measurements that fall within this intermediate area who also present with symptoms and/or signs with a good specificity for HF, e.g. paroxysmal nocturnal dyspnoea and/or elevated venous jugular pressure, are likely to have HF	
HF likely (Rule-in test)	>145 pmol/L (500 pg/mL)	Age dependent: <50 years: >50 pmol/L (450 pg/mL) 50–70 years: >100 pmol/L (900 pg/mL) >75 years: >210 pmol/L (1800 pg/mL)

Either type of BNP test can be used to support a clinical diagnosis

- The type of test available and the reference range for BNP may differ between laboratories/regions (although normal ranges are generally provided alongside blood results)*
- Diagnostic cut-offs shown here are based on National Heart Foundation NZ and NHFA/CSANZ guidelines

* If the BNP reference range is not provided by your local laboratory alongside blood results, then consider discussing the findings with a clinical biochemist.

aa, amino acid; BNP, brain natriuretic peptide; CSANZ, Cardiac Society of Australia and New Zealand; HF, heart failure; NT-proBNP, N-terminal pro-BNP; NZFA, National Heart Foundation of Australia.

References:

1. NHFA CSANZ Heart Failure Guidelines Working Group. Heart Lung Circ. 2018;27:1123–208;
2. Management of chronic heart failure NZ guideline. Heart foundation. Available at: www.heartfoundation.org.nz/resources/management-of-chronic-heart-failure-nz-guideline (Accessed Sep, 2019).

PRACTICE TOOL

BNP testing can be requested alongside other routine blood tests



- Laboratories generally offer only one type, i.e. either BNP-32 or NT-proBNP (both of which may be called “BNP”)



BNP testing is not “heart failure-specific”

- BNP levels may be **increased** due to atrial fibrillation, COPD, left ventricular hypertrophy, pulmonary thromboembolism, hypertension, acute coronary syndrome, renal insufficiency



- BNP levels may be **decreased** due to hypothyroidism, treatment with diuretics, vasodilators and ACE inhibitors

Consider co-morbidities when interpreting BNP results



Serial BNP measurements may be helpful (but should not be done routinely)

- This can help inform decisions to adjust treatment for difficult cases of heart failure
- Significant decreases in BNP levels following treatment modifications is an encouraging sign
- Ensure there is at least two weeks between repeat tests; no more than four tests per year

NYHA functional class assessment

Useful to support treatment decisions once a diagnosis of HF has been established

- Patients can move between classes, and therefore this assessment can help identify treatment responses
- Special Authority approval for Entresto subsidy requires that the patient is in NYHA class II–IV (see full presentation for more information)

Class I	Asymptomatic – no limitation of physical activity The patient does not develop undue dyspnoea, fatigue or palpitations with ordinary physical activity
Class II	Mild symptoms – slight limitation of physical activity The patient is comfortable at rest, but develops dyspnoea, fatigue or palpitations with ordinary physical activity
Class III	Moderate symptoms – marked limitation of physical activity The patient is comfortable at rest, but develops dyspnoea, fatigue or palpitations with less than ordinary physical activity
Class IV	Severe symptoms – unable to do any physical activity without discomfort. The patient may have symptoms at rest and if any physical activity is undertaken, the level of discomfort is increased

ACE, angiotensin converting enzyme; BNP, brain natriuretic peptide; COPD, chronic obstructive pulmonary disease; NT-proBNP, N-terminal pro-BNP; NYHA, New York Heart Association.

References:

- NHFA CSANZ Heart Failure Guidelines Working Group. Heart Lung Circ. 2018;27:1123–208;
- Management of chronic heart failure NZ guideline. Heart foundation. Available at: <https://www.heartfoundation.org.nz/resources/management-of-chronic-heart-failure-nz-guideline> (Accessed Sep, 2019).