Cardio IQ® proBNP, N-terminal

Test Code: 91739

Specimen Requirements: 1 mL refrigerated serum (red-top [no gel] preferred); 0.3 mL minimum

CPT Code*: 83880

CLINICAL USE

- Determine risk of heart failure in patients with coronary heart disease

For other clinical uses (eg, distinguishing heart failure from other causes of dyspnea, establishing prognosis or disease severity, guiding heart failure therapy) use proBNP, N-terminal (test code 11188).

CLINICAL BACKGROUND

Patients with coronary heart disease are at risk of developing heart failure. Traditional risk factors, however, do not adequately predict which patients will progress to heart failure and consequently do not adequately inform decisions related to prevention and early diagnosis. Early diagnosis of heart failure is important to optimize therapy and improve the prognosis.[1]

A 12-month study of 1,049 stable coronary heart disease patients found that those who were admitted for heart failure had N-terminal proBNP (NT-proBNP) levels that were double those of patients who did not develop heart failure.[2] A subsequent study reported that patients with NT-proBNP levels in the upper quartile have an approximately 4-fold increased risk of heart failure as compared to those in the lowest quartile.[3]

Elevated NT-proBNP levels are also associated with increased risk of mortality, stroke, and cardiovascular events in patients with stable and unstable coronary heart disease.[4-7] NT-proBNP levels can also predict coronary heart disease in individuals with normal left ventricular function[8] and provide cardiovascular risk stratification in the general population.[9-10] The increased risk of death associated with elevated NT-proBNP levels is independent of conventional risk factors such as history of myocardial infarction, angina, hypertension, diabetes mellitus, and chronic heart failure.[11]

INDIVIDUALS SUITABLE FOR TESTING

- Individuals with coronary heart disease

METHOD

- Immuno(electro)chemiluminescence assay (ICMA) using 2 different monoclonal NT-proBNP antibodies
- Analytical sensitivity: 13 pg/mL
- Analytical specificity: no cross-reactivity with atrial natriuretic peptide (ANP), BNP, or C-type natriuretic peptide (CNP); no interference from hemoglobin (<1.0 g/dL), lipemia (intralipids <1500 mg/dL), bilirubin (<25 mg/dL), biotin (<30 ng/dL), or rheumatoid factors (<1500 IU/mL)
- Reportable range: 13-70,000 pg/mL

REFERENCE RANGE

See Table 1.

INTERPRETIVE INFORMATION

Omland et al have shown that patients with stable coronary heart disease with NT-proBNP levels in the upper quartile (≥253 pg/mL for men, ≥372 pg/mL for women) have an approximately 4-fold increased risk of heart failure, stroke, and cardiovascular mortality compared with those in the lowest quartile.[3]

NT-proBNP levels can be shifted upward by a number of other conditions including preexisting heart failure, acute lung injury, acute myocardial infarction, atrial fibrillation, cardiac amyloidosis, chronic obstructive pulmonary disease, chronic renal failure, cirrhosis, essential hypertension, hypervolemic states, left ventricular hypertrophy, pulmonary hypertension, pulmonary embolism with associated right ventricular dysfunction, and subarachnoid hemorrhage.[1,12] Thus, it is important to interpret elevated NT-proBNP levels in light of a patient's other clinical conditions.

Table 1. Heart Failure Risk Associated with NT-proBNP in Patients with Coronary Heart Disease[3]

Risk Category[a]	Men (pg/mL)	Women (pg/mL)
Optimal	<253	<372
High risk	≥253	≥372

[a] Risk of heart failure, stroke, and cardiovascular-associated mortality.

References

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