Medical Coverage Policy

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Plasma Brain Natriuretic Peptide in the Outpatient Setting

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Related Coverage Resources

Heart, Lung, and Heart-Lung Transplantation

INSTRUCTIONS FOR USE

The following Coverage Policy applies to health benefit plans administered by Cigna Companies. Certain Cigna Companies and/or lines of business only provide utilization review services to clients and do not make coverage determinations. References to standard benefit plan language and coverage determinations do not apply to those clients. Coverage Policies are intended to provide guidance in interpreting certain standard benefit plans administered by Cigna Companies. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement, Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer's benefit plan document always supersedes the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Each coverage request should be reviewed on its own merits. Medical directors are expected to exercise clinical judgment where appropriate and have discretion in making individual coverage determinations. Where coverage for care or services does not depend on specific circumstances, reimbursement will only be provided if a requested service(s) is submitted in accordance with the relevant criteria outlined in the applicable Coverage Policy, including covered diagnosis and/or procedure code(s). Reimbursement is not allowed for services when billed for conditions or diagnoses that are not covered under this Coverage Policy (see "Coding Information" below). When billing, providers

must use the most appropriate codes as of the effective date of the submission. Claims submitted for services that are not accompanied by covered code(s) under the applicable Coverage Policy will be denied as not covered. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations.

Overview

This Coverage Policy addresses measurement of plasma brain natriuretic peptide (BNP) or NT-proBNP in an outpatient setting.

Coverage Policy

Outpatient testing of plasma brain natriuretic peptide (BNP) or NT-proBNP is considered medically necessary for ANY of the following indications:

- to distinguish between heart failure (HF) and primary lung disease in a dyspneic individual
- asymptomatic individual with severe aortic stenosis to aid in timing of intervention
- for risk stratification in chronic HF
- in individuals with Stage A and Stage B* HF when ordered with cardiovascular team input as part of prevention and management of HF
- monitoring response to treatment for HF
- in children ages 14 and under at increased risk for endocardial biopsy who are status post heart transplant when ordered in combination with echocardiography or electrocardiogram
- individual on the waitlist for cardiac transplant
- suspected amyloidosis or for amyloidosis staging
- during diagnosis or work-up of multiple myeloma
- individual undergoing noncardiac surgery considered to be at an elevated risk of major adverse cardiovascular event (MACE) of ≥ 1% based on combined surgical and patient characteristics, and ONE of the following:
  - known cardiovascular disease (CVD)
  - age ≥ 65 years
  - age ≥ 45 years with symptoms suggestive of CVD
- following hospital discharge at office follow-up in Stage D or Medium/High-Risk Stage C myocarditis
- on immunotherapy and ANY of the following:
  - at baseline and serially during treatment to detect abnormal blood biomarkers that may precede symptomatic myocarditis induced by an Immune Checkpoint Inhibitor (ICI)
  - initial workup of cytokine release syndrome (CRS) related to the use of T-cell engaging bispecific agents
  - grade 2 CRS and persistent tachycardia
- for risk stratification or monitoring of pulmonary hypertension

Outpatient testing of plasma brain natriuretic peptide (BNP) or NT-proBNP testing for any other indication, including as part of a cardiovascular disease risk panel/profile, is considered not covered or reimbursable.

*Stage A: At risk for HF	At risk for HF but without symptoms, structural heart disease, or cardiac biomarkers of stretch or injury (e.g., patients with hypertension, atherosclerotic CVD, diabetes, metabolic syndrome and obesity, exposure to cardiotoxic agents, genetic variant for cardiomyopathy, or positive family history of cardiomyopathy).
Stage B: Pre-HF	Patients without current or previous symptoms/signs of HF but evidence of one of the following • Structural heart disease • Evidence of increased filling pressures • Risk factors and ➢ Increased natriuretic peptide levels or ➢ Persistently elevated cardiac troponin in the absence of competing diagnoses

Coding Information

Notes:

1. This list of codes may not be all-inclusive since the American Medical Association (AMA) and Centers for Medicare & Medicaid Services (CMS) code updates may occur more frequently than policy updates.
2. Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

Considered Medically Necessary when criteria in the applicable policy statements listed above are met:

CPT®* Codes	**Description**
83880	Natriuretic peptide

ICD-10-CM Diagnosis Codes	**Description**
C90.0-C90.02	Multiple myeloma
D89.832	Cytokine release syndrome, grade 2
E10.10-E10.A2	Type 1 diabetes mellitus
E11.00-E11.A	Type 2 diabetes mellitus
E13.00-E13.9	Other specified diabetes mellitus
E66.01-E66.9	Overweight and obesity
E85.0-E85.9	Amyloidosis
E88.810-E88.819	Metabolic syndrome and other insulin resistance
I05.0-I05.9	Rheumatic mitral valve diseases
I06.0-I06.9	Rheumatic aortic valve diseases
I07.0-I07.9	Rheumatic tricuspid valve diseases
I08.0-I08.9	Multiple valve diseases

ICD-10-CM Diagnosis Codes	Description
I09.0-I09.9	Other rheumatic heart diseases
I10	Essential (primary) hypertension
I11.0-I11.9	Hypertensive heart disease
I13.0-I13.2	Hypertensive heart and chronic kidney disease
I15.0-I15.9	Secondary hypertension
I16.0-I16.9	Hypertensive crisis
I1A.0	Resistant hypertension
I20.0-I20.9	Angina pectoris
I21.01-I21.B	Acute myocardial infarction
I22.0-I22.9	Subsequent ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction
I24.0	Acute coronary thrombosis not resulting in myocardial infarction
I24.81-I24.89	Other forms of acute ischemic heart disease
I24.9	Acute ischemic heart disease, unspecified
I25.10-I25.9	Chronic ischemic heart disease
I27.0-I27.9	Other pulmonary heart diseases
I28.0-I28.9	Other diseases of pulmonary vessels
I34.0-I34.9	Nonrheumatic mitral valve disorders
I35.0-I35.9	Nonrheumatic aortic valve disorders
I36.0-I36.9	Nonrheumatic tricuspid valve disorders
I37.0-I37.9	Nonrheumatic pulmonary valve disorders
I40.0-I40.9	Acute myocarditis
I41	Myocarditis in diseases classified elsewhere
I42.0-I42.9	Cardiomyopathy
I50.1-I50.9	Heart failure
I51.4	Myocarditis, unspecified
I51.7	Cardiomegaly
I5A	Non-ischemic myocardial injury (non-traumatic)
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation
J45.901	Unspecified asthma with (acute) exacerbation
J90	Pleural effusion, not elsewhere classified
J91.8	Pleural effusion in other conditions classified elsewhere
J94.8	Other specified pleural conditions
J94.9	Pleural condition, unspecified
J96.00-J96.02	Acute respiratory failure
J96.20-J96.22	Acute and chronic respiratory failure
J96.90-J96.92	Respiratory failure, unspecified
Q20.0-Q20.9	Congenital malformations of cardiac chambers and connections
Q21.0-Q21.9	Congenital malformations of cardiac septa
Q22.0-Q22.9	Congenital malformations of pulmonary and tricuspid valves

ICD-10-CM Diagnosis Codes	Description
Q23.0-Q23.9	Congenital malformations of aortic and mitral valves
Q24.0-Q24.9	Other congenital malformations of heart
Q25.0-Q25.9	Congenital malformations of great arteries
Q26.0-Q26.9	Congenital malformations of great veins
R06.00-R06.09	Dyspnea
R06.2	Wheezing
R06.3	Periodic breathing
R06.4	Hyperventilation
R06.81	Apnea, not elsewhere classified
R06.82	Tachypnea, not elsewhere classified
R06.89	Other abnormalities of breathing
R06.9	Unspecified abnormalities of breathing
R07.1-R07.9	Pain in chest
R16.0	Hepatomegaly
R18.8	Other ascites
R60.0-R60.9	Edema, not elsewhere classified
R73.03	Prediabetes
T45.AX5A-T45.AX5S	Adverse effect of immune checkpoint inhibitors and immunostimulant drugs
T80.82XA-T80.82XS	Complications of immune effector cellular therapy
T80.89XA-T80.89XS	Other complications following infusion, transfusion and therapeutic injection
T86.20-T86.298	Complications of heart transplant
Z48.21	Encounter for aftercare following heart transplant
Z48.280	Encounter for aftercare following heart-lung transplant
Z51.12	Encounter for antineoplastic immunotherapy
Z76.82	Awaiting organ transplant status
Z79.630-Z79.634	Long term (current) use of chemotherapeutic agent
Z82.49	Family history of ischemic heart disease and other diseases of the circulatory system
Z92.21	Personal history of antineoplastic chemotherapy
Z94.1	Heart transplant status
Z94.3	Heart and lung transplant status

Not Covered or Reimbursable:

ICD-10-CM Diagnosis Codes	Description
	All other codes

Not Covered or Reimbursable:

CPT®* Codes	Description
0309U	Cardiology (cardiovascular disease), analysis of 4 proteins (NT-proBNP, osteopontin, tissue inhibitor of metalloproteinase-1 [TIMP-1], and kidney injury molecule-1 [KIM-1]), plasma, algorithm reported as a risk score for major adverse cardiac event
0310U	Pediatrics (vasculitis, Kawasaki disease [KD]), analysis of 3 biomarkers (NT-proBNP, C-reactive protein, and T-uptake), plasma, algorithm reported as a risk score for KD

General Background

Brain-type natriuretic peptide (BNP) or N-terminal (NT) pro hormone BNP (NT-proBNP) testing has been proposed as an adjunct to other clinical testing in numerous clinical situations including, but not limited to, heart failure (HF). BNP/NT-proBNP is a hormone secreted primarily by the heart muscle. The heart releases more BNP and NT-proBNP when the heart is distended from working too hard, as in heart failure.

Plasma levels of BNP are less than 100pg/mL in most healthy individuals; reference ranges depend on age and gender. Assays for both BNP and NT-proBNP are available; a clear advantage of one biomarker over the other for any particular application has not been established. A major limitation of BNP is that a wide range of values is observed in individuals with and without HF, and all the determinants of the circulating BNP level have not yet been well established. In individuals without heart failure, higher levels are associated with female gender, advanced age, and lower body mass index.

U.S. Food and Drug Administration (FDA)
The laboratory testing of serum circulating BNP and NT-proBNP levels does not require FDA-approval. There are, however, a number of testing devices that have received FDA 510(k) approval. These devices can be found on the FDA Center for Devices and Radiological Health 510(k) database, product code NBC. An example of an FDA-approved BNP device is the Triage® B-Type Natriuretic Peptide (BNP) Test (Biosite, Inc., San Diego, CA). The test is intended to be used as an aid in the following (FDA, 2005):

- diagnosis of heart failure
- assessment of heart failure severity
- risk stratification of patients with acute coronary syndromes (ACS)
- risk stratification of patients with heart failure

An example of an NT-proBNP test system is the Elecsys® proBNP Immunoassay (Roche Diagnostics Corporation, Indianapolis, IN). The intended use is as an aid in the diagnosis of individuals suspected of having congestive heart failure (CHF). The test is further indicated for the risk stratification of individuals with ACS and CHF.

Although some of the components of Prevencio, Inc. panel tests are individually FDA-approved, at this time it does not appear that Prevencio's artificial-intelligence (AI)-driven algorithm panel tests are FDA-approved.

HEART FAILURE

Professional Societies/Organizations

American College of Cardiology (ACC): The 2023 ACC Expert Consensus Decision Pathway on Management of Heart Failure With Preserved Ejection Fraction (Kittleson, et al., 2023) noted that the Universal Definition of heart failure (HF) requires symptoms and/or signs of HF caused by structural/functional cardiac abnormalities and at least 1 of the following: 1) elevated natriuretic peptides; or 2) objective evidence of cardiogenic pulmonary or systemic congestion.

The American College of Cardiology (ACC) and the American Heart Association (AHA) Guideline for the Management of Heart Failure (Heidenreich, et al., 2022) listed the following recommendations:

2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure (Heidenreich, et al., 2022) 4.2. Use of Biomarkers for Prevention, Initial Diagnosis, and Risk Stratification Recommendations for Use of Biomarkers for Prevention, Initial Diagnosis, and Risk Stratification:	Class of Recommendation (COR) and Level of Evidence (LOE)*
*See Appendix for ACC/AHA Class of Recommendation and Level of Evidence definitions	
In patients presenting with dyspnea, measurement of B-type natriuretic peptide (BNP) or N-terminal prohormone of B-type natriuretic peptide (NT-proBNP) is useful to support a diagnosis or exclusion of HF	COR: 1; LOE: A
In patients with chronic HF, measurements of BNP or NT-proBNP levels are recommended for risk stratification	COR: 1; LOE: A
In patients hospitalized for HF, measurement of BNP or NT-proBNP levels at admission is recommended to establish prognosis	COR: 1; LOE: A
In patients at risk of developing HF, BNP or NT-proBNP–based screening followed by team-based care, including a cardiovascular specialist, can be useful to prevent the development of left ventricular (LV) dysfunction or new onset HF	COR: 2a; LOE: B-R
In patients hospitalized for HF, a predischarge BNP or NT-proBNP level can be useful to inform the trajectory of the patient and establish a post-discharge prognosis	COR: 2a; LOE: B-NR

2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure (Heidenreich, et al., 2022) ACC/AHA Stages of Heart Failure (HF)	
Stage	Definition
Stage A: At-risk for HF	At risk for HF but without symptoms, structural heart disease, or cardiac biomarkers of stretch or injury (e.g., patients with hypertension, atherosclerotic CVD, diabetes, metabolic syndrome and obesity, exposure to cardiotoxic agents, genetic variant for cardiomyopathy, or positive family history of cardiomyopathy).
Stage B: Pre-HF	Patients without current or previous symptoms/signs of HF but evidence of one of the following

2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure (Heidenreich, et al., 2022) ACC/AHA Stages of Heart Failure (HF)	
Stage	Definition
	• Structural heart disease ➢ reduced left or right ventricular systolic function ➢ reduced ejection fraction, reduced strain ➢ ventricular hypertrophy ➢ chamber enlargement ➢ wall motion abnormalities ➢ valvular heart disease • Evidence of increased filling pressures ➢ by invasive hemodynamic measurements ➢ by noninvasive imaging suggesting elevated filling pressures (e.g., Doppler echocardiography) • Risk factors and ➢ increased natriuretic peptide levels or persistently elevated cardiac troponin in the absence of competing diagnoses resulting in such biomarker elevations such as acute coronary syndrome, CKD, pulmonary embolus, or myopericarditis
Stage C: Symptomatic HF	Structural heart disease with current or previous symptoms of HF.
Stage D: Advanced HF	Marked HF symptoms that interfere with daily life and with recurrent hospitalizations despite attempts to optimize guideline-directed medical therapy (GDMT) (Heidenreich, et al., 2022)

The American College of Cardiology and American Heart Association Joint Committee on Clinical Practice Guidelines updated their clinical practice guidelines for the management of adults with congenital heart disease in 2025 with an updated classification system. The updated classification system added biomarkers, including NT-proBNP, to better identify individuals at risk for poorer prognosis. (Gurvitz, et al., 2025)

ACC: The 2024 ACC Expert Consensus Decision Pathway for Treatment of Heart Failure With Reduced Ejection Fraction (Maddox, et al., 2024) stated: In the setting of worsening symptoms, reassessment of BNP or NT-proBNP may be informative. Therefore, measurement of BNP or NT-proBNP is useful to monitor risk, assist in decision-making regarding the ordering of imaging studies to evaluate LV remodeling, and to provide helpful objective data regarding decision-making for referral to an advanced HF specialist.

American Diabetes Association (ADA): The ADA Consensus Report on Heart Failure stated that "Specific to individuals with diabetes, measurement of natriuretic peptides (B-type natriuretic peptide [BNP]; N-terminal pro-BNP [NT-proBNP]) or high-sensitivity cardiac troponin is particularly helpful to identify stage B HF and predict progression to symptoms or death from HF" (Pop-Busui, et al., 2022).

The ADA Standards of Care in Diabetes stated, "adults with diabetes are at increased risk for the development of asymptomatic cardiac structural or functional abnormalities (stage B heart failure) or symptomatic (stage C) heart failure. Consider screening adults with diabetes by measuring a natriuretic peptide (B-type natriuretic peptide [BNP] or N-terminal pro-BNP [NT-proBNP]) to facilitate prevention of stage C heart failure." The evidence for this recommendation was graded level B. (Bajaj, et al., 2026)

American Heart Association (AHA): The AHA 2017 Scientific Statement 'Role of Biomarkers for the Prevention, Assessment, and Management of Heart Failure' (Chow, et al., 2017) noted that monitoring natriuretic peptide concentrations in blood not only can provide the clinician information about the diagnosis and severity of HF but also can improve prognostication and treatment strategies.

MONITORING TREATMENT FOR HEART FAILURE
Professional Societies/Organizations
ACC: In the 2021 Update to the 2017 ACC Expert Consensus Decision Pathway for Optimization of Heart Failure Treatment (Maddox, et al., 2021), the ACC noted that biomarkers have been examined for their role as markers of clinical responsiveness to guideline directed medical therapy (GDMT). This is due, in part, to the fact that a wide range of GDMTs may reduce BNP and NT-proBNP concentrations in parallel with the benefits of these therapies. The ACC stated that in the GUIDE-IT (Guiding Evidence Based Therapy Using Biomarker Intensified Treatment in HF) trial, among individuals with HFrEF, lowering NT-proBNP to < 1,000 pg/mL was associated with significant reverse remodeling and improved outcomes (Daubert, et al., 2019). Similarly, in the PROVE-HF study, the speed and magnitude of NT-proBNP–lowering after ARNI initiation were associated with greater degrees of reverse cardiac remodeling and improved outcomes (Januzzi, et al., 2018; Januzzi, et al., 2020). Therefore, measurement of BNP or NT-proBNP is useful to monitor risk, assist in decision-making regarding the ordering of imaging studies to evaluate LV remodeling, and to provide helpful objective data regarding decision-making for referral to advanced HF therapies. Current evidence does not suggest targeting treatment to specific BNP or NT-proBNP levels (ACC/Maddox, et al., 2021).

AORTIC STENOSIS
Professional Societies/Organizations
ACC: The 2020 ACC/AHA Guideline for the Management of Patients With Valvular Heart Disease stated:

- In apparently asymptomatic patients with severe aortic stenosis (AS) (Stage C1) and low surgical risk, aortic valve replacement (AVR) is reasonable when the serum B-type natriuretic peptide (BNP) level is > 3 times normal (Class IIa, Level of Evidence B-NR) (ACC/Otto/2021)

The 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease addressed Biomarker Studies under the section of Evidence Gaps and Future Directions, noting that "Although interest in using circulating biomarkers for risk stratification of patients with aortopathy has increased, biomarker expression has not been clearly associated with relevant clinical aortic events". The guideline does not specifically address plasma brain natriuretic peptide (BNP) or NT-proBNP (Isselbacher, et al., 2022).

HEART TRANSPLANT
Professional Societies/Organizations
International Society for Heart and Lung Transplantation (ISHLT): The ISHLT Guidelines for the Evaluation and Care of Cardiac Transplant Candidates (Peled, et al., 2024) addressed serial evaluation (3.3.1. Guidelines for Repeat Testing on the Waitlist):

- 3.3.1.9. Role of Biomarkers / Recommendations for Repeat Testing on the Waitlist: Cardiac Biomarker Assessment:
  - Natriuretic peptides (NP) should be determined at the time of initial evaluation of a patient with advanced heart failure (Class 1, LOE: B-R*). Periodic assessment of NP in

a patient on the waitlist can be useful for early detection of clinical deterioration (Class 2a, LOE: B-R*).
- Progressive significant reduction of NP levels, accompanied by meaningful clinical improvement, and in the absence of other poor prognostic features, can help identify patients on the waitlist whose disease has improved on GDMT to the point where removal from the waitlist can be considered. (Class 2a, LOE: C-LD) (Peled, et al., 2024).

The ISHLT Guidelines for the Care of Heart Transplant Recipients (Velleca, et al., 2023) noted the following:

- Recommendations for Rejection Surveillance by Endomyocardial Biopsy in Heart Transplant Recipients:
  - The standard of care for adolescents should be similar to adults, including surveillance endomyocardial biopsy (EMB) for heart allograft rejection for 3 to 12 months after HT. In younger children, especially infants, the risks associated with EMB and required general anesthesia may outweigh the surveillance benefit for comparably rare acute rejection; therefore, it is reasonable to use a combination of non-invasive screening methods (echocardiography, ECG, biomarkers) instead (Class IIa, Level of Evidence: C*)
  - It is reasonable to integrate biomarkers such as BNP and high-sensitivity troponins into a rejection monitoring strategy to identify higher risk patients who may benefit from additional evaluation for acute cellular rejection (ACR), antibody-mediated rejection (AMR), or cardiac allograft vasculopathy (CAV) (Class IIb, Level of Evidence C).
  - In younger children, especially infants, the risks associated with EMB and required general anesthesia may outweigh the surveillance benefit for comparably rare acute rejection; therefore, it is reasonable to use a combination of non-invasive screening methods (echocardiography, ECG, biomarkers) instead (Class IIa, Level of Evidence: C)
- Frequency of Routine Tests and Clinic Visits in Heart Transplant Recipients
  - The purpose of the follow-up visits is to monitor for rejection and screen for adverse events and may include the following: Surveillance EMB, and noninvasive rejection monitoring [Gene Expression Profiling (Allomap), DSA, BNP and high sensitivity troponins, donor-derived cell-free DNA] (Class I, Level of Evidence B) (Velleca, et al., 2023).

*International Society for Heart and Lung Transplantation Standards and Guidelines Committee Grading Criteria

- Class I Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, and effective
- Class II Conflicting evidence and/or divergence of opinion about the usefulness/efficacy of the treatment or procedure
- Class IIa Weight of evidence/opinion is in favor of usefulness/efficacy
- Class IIb Usefulness/efficacy is less well established by evidence/opinion
- Class III Evidence or general agreement that the treatment or procedure is not useful or effective and in some cases may be harmful

- Level of evidence A: Data derived from multiple randomized clinical trials or meta-analyses
- Level of evidence B: Data derived from a single randomized clinical trial or large non-randomized studies
- Level of evidence C: Consensus of opinion of the experts and/or small studies, retrospective studies, registries

AMYLOIDOSIS
Professional Societies/Organizations
ACC: The 2023 ACC Expert Consensus Decision Pathway on Comprehensive Multidisciplinary Care for the Patient With Cardiac Amyloidosis, under section 7.6.1. Markers of Poor Prognosis in Cardiac Amyloidosis, stated, "For both amyloid monoclonal immunoglobulin light chain cardiomyopathy (AL-CM) and amyloid transthyretin cardiomyopathy (ATTR-CM), troponin and NTproBNP are powerful indicators of disease burden and prognosis. Multiple staging systems have been developed that rely predominantly on these biomarkers" (ACC, 2023).

National Comprehensive Cancer Network Guidelines™ (NCCN Guidelines™): The NCCN Guidelines for Systemic Light Chain Amyloidosis (Version 2.2026 — March 16, 2026) under Initial Diagnostic Workup (workup of patients with suspected amyloidosis), stated the following:
"Cardiac biomarkers in the serum provide a quantitative assessment of cardiac dysfunction (troponin I or T), and cardiac stress brain natriuretic peptide (BNP) or N-terminal prohormone of brain natriuretic peptide (NT-proBNP) are important predictors of outcome in amyloidosis as well as part of the cardiac response criteria". The NCCN panel recommends assessing BNP if NT-proBNP assessment is not available. With regard to staging, the NCCN noted that while multiple prognostic models have been proposed for individuals with amyloidosis, the NCCN panel recommended use of a staging system that incorporates NT-proBNP or BNP. (NCCN Guidelines for Systemic Light Chain Amyloidosis, 2026)

MULTIPLE MYELOMA
Professional Societies/Organizations
NCCN: The NCCN Guidelines for Multiple Myeloma (Version 5.2026 — January 9, 2026) addresses BNP and NT-proBNP. Under Diagnosis and Workup, the NCCN included NT-proBNP in their diagnostic work-up listing and noted that if NT-proBNP is not available, BNP can be performed (NCCN Guidelines for Multiple Myeloma, 2026).

NONCARDIAC SURGERY
Professional Societies/Organizations

2024 AHA/ACC/ACS/ASNC/HRS/ SCA/SCCT/SCMR/SVM Guideline for Perioperative Cardiovascular Management for Noncardiac Surgery (Thompson, et al., 2024) 3.4. Preoperative Biomarkers for Risk Stratification Recommendations for Preoperative Biomarkers for Risk Stratification	Class of Recommendation (COR) and Level of Evidence (LOE)*
*See Appendix for ACC/AHA Class of Recommendation and Level of Evidence definitions	
In patients with known CVD, or age ≥65 years, or age ≥45 years with symptoms suggestive of cardiovascular disease (CVD) undergoing elevated-risk noncardiac surgery (NCS), it is reasonable to measure B type natriuretic peptide (BNP) or N-terminal pro–B-type natriuretic peptide (NT-proBNP) before surgery to supplement evaluation of perioperative risk.	COR: 2a; LOE: B-NR

MYOCARDITIS
Professional Societies/Organizations
ACC: The 2024 ACC Expert Consensus Decision Pathway on Strategies and Criteria for the Diagnosis and Management of Myocarditis includes 4.7.1. Longitudinal Surveillance of Stage C and D Myocarditis (Table 3). It noted that post-discharge office follow-up in 2-4 weeks* should include the following for Stage D or Medium-/High-Risk Stage C: 1) Biomarkers include hs-troponin and natriuretic peptide level (if elevated at baseline or clinical deterioration) and CRP (if elevated at baseline, especially in context of connective tissue disease). Further biomarker testing can be based on the results at first follow-up. 2) ECG, and 3) Echocardiogram.

*Those with symptomatic HFrEF ideally should be seen within 1 week of hospital discharge.

IMMUNOTHERAPY-RELATED TOXICITIES
Professional Societies/Organizations
NCCN: The NCCN Guidelines for Management of Immune Checkpoint Inhibitor-Related Toxicities addressed BNP and NT-proBNP. Under Principles of Routine Monitoring for Immune Checkpoint Inhibitors, Pre-Therapy Assessment, Cardiovascular, the NCCN stated to "consider high-sensitivity troponin and N-terminal prohormone B-type natriuretic peptide (NT-proBNP)" (NCCN Guidelines for Management of Immune Checkpoint Inhibitor-Related Toxicities, 2025).

In the algorithm for suspected myocarditis, pericarditis, and large vessel vasculitis, NCCN recommended the following:

- Cardiac biomarkers (including but not limited to BNP, or NT-proBNP)
  Footnote: Consider high-sensitivity troponin and NT-proBNP at baseline (for identifying those at increased risk) and serially during treatment to detect abnormal blood biomarkers that may precede symptomatic myocarditis induced by immune checkpoint inhibitor (ICI). (NCCN Guidelines for Management of Immune Checkpoint Inhibitor-Related Toxicities, 2025).

The NCCN Guidelines for Management of CAR T-Cell and Lymphocyte Engager-Related Toxicities also addressed the use of BNP testing. For the management of individuals with grade 2 cytokine release syndrome (CRS) and persistent refractory hypotension, BNP testing was recommended in the presence of persistent tachycardia. In the initial workup/grading of CRS related to T-cell-engaging bispecific agents, BNP testing was recommended. NCCN Guidelines for Management of CAR T-Cell and Lymphocyte Engager-Related Toxicities, 2025).

PULMONARY HYPERTENSION
Literature Review
Frantz, et al., 2018 published a prospective observational study of 1,426 adult individuals with World Health Organization (WHO) group 1 pulmonary arterial hypertension from the Registry to Evaluate Early and Long-term Pulmonary Arterial Hypertension Disease Management (REVEAL) registry. BNP measurement was taken at enrollment. The median follow up time was 3 years. Overall survival was compared between individuals with low BNP (≥ 340 pg/mL) vs high (> 340 pg/mL) BNP. The authors noted that BNP of > 340 pg/mL was associated with a higher risk for mortality (hazard ratio 3.6; 95% CI, 3.0-4.2). They also noted that a reduced BNP was associated with improved survival. Previous evaluations of data at one-year post-enrollment revealed similar findings. In the one-year analysis, individuals with a plasma BNP level > 180 pg/mL had a significantly lower survival rate than those with a baseline plasma BNP ≤ 180 pg/mL (hazard ratio 3.2; 95% CI, 2.7-3.8; P < .001). The study was limited by lack of accounting for other parameters known to have an impact on BNP. The authors conclude, "plasma BNP provides a simple, noninvasive biomarker that can be monitored to help inform therapeutic decisions". (Frantz, et al., 2018)

Professional Societies/Organizations
The ACCF/AHA Expert Consensus Document on Pulmonary Hypertension provided the professional consensus on multiple aspects of diagnosis and management of pulmonary hypertension. According to the ACCF/AHA, elevated BNP is one predictor of poor prognosis. The consensus stated, "proBNP levels are increasingly being used and appear to correlate with RV enlargement and dysfunction". Elevated or increasing levels of BNP are correlated with an unstable clinical course. The greater the elevation, the higher the risk of poor prognosis. (McLaughlin, et al., 2009)

The American College of Cardiology and American Heart Association Joint Committee on Clinical Practice Guidelines updated their clinical practice guidelines for the managements of adults with

congenital heart disease in 2025. Within these guidelines, the recommended assessment for pulmonary arterial hypertension in adults with congenital heart disease includes BNP or NT-proBNP biomarkers. (Gurvitz, et al., 2025)

The American Thoracic Society (ATS) guideline on Diagnosis, Risk Stratification, and Management of Pulmonary Hypertension of Sickle Cell Disease concluded that NT-proBNP measure is reasonable for the purposes of risk stratification when Doppler echocardiography is not available or inadequate. (Klings, et al., 2014)

The AHA and ATS guidelines on pediatric pulmonary hypertension provided the following recommendations:

- BNP or NT-proBNP should be measured at diagnosis and during follow-up to supplement clinical decisions (Class I; Level of Evidence B [recommendation that the procedure or treatment is useful/effective]).
- BNP and NT-proBNP measurements can be useful in screening for pulmonary hypertension in patients with sickle cell disease (Class IIa; Level of Evidence C [recommendation in favor of treatment or procedure being useful/effective])

Specifically regarding sickle cell disease, the guideline stated, "serum NT-proBNP is reasonable for screening for pulmonary hypertension if Doppler echocardiography is not available or is unclear". (Abman, et al., 2015)

OTHER INDICATIONS

Any other indication for plasma brain natriuretic peptide (BNP) or NT-proBNP including, but not limited to, screening for various diagnoses, BNP as part of a panel/profile test, or targeting treatment to specific BNP or NT-proBNP levels, is considered experimental.

There is a lack of well-designed clinical trials in the peer-reviewed scientific literature addressing the impact to long-term health outcomes from using artificial intelligence (AI)-driven cardiac panel blood tests (Neumann, et al., 2020).

In the 2021 Update to the 2017 ACC Expert Consensus Decision Pathway for Optimization of Heart Failure Treatment (ACC/Maddox, et al., 2021), the ACC notes that current evidence does not suggest targeting treatment to specific BNP or NT-proBNP levels.

Further information on BNP or NT-proBNP-guided therapy includes the randomized Guiding Evidence-Based Therapy Using Biomarker-Intensified Treatment in HF (GUIDE-IT) trial which was conducted at 45 clinical sites in the United States and Canada to determine whether NT-proBNP-guided treatment strategy improves clinical outcomes compared to usual care in high-risk patients with HF and reduced ejection fraction (HFrEF). The trial was stopped for futility when 894 (median age, 63; 286 [32% women]) of the planned 1,100 patients had been enrolled and followed for a median of 15 months. Cardiovascular mortality was 12% in the biomarker guided group and 13% in the usual care group ($p = 0.75$). The authors concluded that in high-risk patients with HFrEF, a strategy of NT-proBNP-guided therapy was not more effective than a usual care strategy in improving outcomes (Felker, et al., 2017).

The ACC/AHA/HRS Syncope Guideline recommendations stated that the utility of BNP testing is "uncertain in patients for whom a cardiac cause of syncope is suspected". The guidelines noted that evidence is insufficient to determine whether these tests influence patient outcomes or clinical decision-making (Shen, et al., 2017).

Health Equity Considerations

Health equity is the highest level of health for all people; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which people are born, grow, live, work, and age.

Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include safe housing, transportation, and neighborhoods; racism, discrimination and violence; education, job opportunities and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

Disparities and Vulnerable Populations
The 2022 American College of Cardiology (ACC) and the American Heart Association Guideline for the Management of Heart Failure (Heidenreich, et al., 2022) addresses 'Risk of HF and Outcomes in Special Populations' (Table 27). Vulnerable Populations addressed include:

- Women
- Older adults (≥ 80y)
- Lower socioeconomic status populations (< $15,000/y)
- Black populations
- Hispanic populations
- Asian and Pacific Islander populations
- Native American and Alaskan Native populations

The ACC provides two Recommendations (both Class 1) for 'Disparities and Vulnerable Populations':

2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure (Heidenreich, et al., 2022) 11.1 Recommendations for Disparities and Vulnerable Populations	Class of Recommendation (COR) and Level of Evidence (LOE)*
In vulnerable patient populations at risk for health disparities, HF risk assessments and multidisciplinary management strategies should target both known risks for cardiovascular disease (CVD) and social determinants of health, as a means toward elimination of disparate HF outcomes	COR: 1; LOE: C-LD
Evidence of health disparities should be monitored and addressed at the clinical practice and the health care system levels	COR: 1; LOE: C-LD

The ACC notes:

- There are important differences in HF incidence, risk factors, clinical care needs, and outcomes between specific patient populations.
- The highest incident of HF is consistently observed in self-identified Black patients. HF hospitalization and mortality rates for Black patients are also higher than for White patients, with the gap increasing over time for young men. These differences are driven mostly by social circumstances; a biological premise or genetic explanation for disease or disease severity should not be inferred by race or ethnicity.
- Important strategies to remove biases within health care professionals and systems impacting minority and socioeconomically disadvantaged patient populations include implicit bias training, recruiting a diverse workforce, and promoting broad access to HF care.

In a research letter titled 'Racial Differences in Serial NT-proBNP Levels in Heart Failure Management Insights From the GUIDE-IT Trial', Parcha et al. (2020) noted Black patients with HF had ≈21% lower NT-proBNP levels as compared with white patients. Despite this, NT-proBNP concentrations of ≤ 1,000 pg/mL had prognostic significance in both Black patients and white patients. Black patients with HF had a higher risk for adverse cardiovascular outcomes compared with their white counterparts. Parcha et al., (2020) summarized achieving a target NT-proBNP level of ≤ 1000 pg/mL has favorable prognostic implications in both Black patients and white patients with HF, but the prognosis is worse for Black patients at either level of achieved NT-proBNP.

Appendix

Applying ACC/AHA Class of Recommendation and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care (Updated 2022)

The Class (Strength) of Recommendation (COR) indicates the strength of recommendation, encompassing the estimated magnitude and certainty of benefit in proportion to risk.

Class I – Strong (is recommended)
Class 2a – Moderate (is reasonable)
Class 2b – Weak (may/might be reasonable)
Class 3 – No benefit (Moderate) (is not recommended)
Class 3 – Harm (Strong) (potentially harmful)

The Level (Quality) of Evidence (LOE) rates the quality of scientific evidence supporting the intervention on the basis of the type, quantity, and consistency of data from clinical trials and other sources.

Level A – High quality evidence from more than one randomized clinical trial, Meta-analyses of high-quality randomized clinical trials, One or more randomized clinical trials corroborated by high-quality registry.
Level B-R – Randomized. Moderate quality evidence from one or more randomized clinical trials, Meta-analyses of moderate-quality randomized clinical trials.
Level B-NR – Non-randomized. Moderate quality evidence from one or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies, Meta-analyses of such studies.
Level C-LD – Limited data. Randomized or nonrandomized observational or registry studies with limitations of design or execution, Meta-analyses of such studies, Physiological or mechanistic studies of human subjects.
Level C-EO – Expert Opinion. Consensus expert opinion based on the clinical experience

References

1. Abman SH, Hansmann G, Archer SL, Ivy DD, Adatia I, et a. Pediatric Pulmonary Hypertension: Guidelines from the American Heart Association and American Thoracic Society. Circulation. 2015 Nov;132(21):2037-2099. doi:10.1016/CIR.000000000000329

2. Bajaj M, McCoy RG, Bellini NJ, Beverly EA, Early KB, et al. 10. Cardiovascular Disease and Risk Management: Standards of Care in Diabetes-2026. Diabetes Care. 2026 Jan;49(Supplement_1):S216-S245. doi:10.2337/dc26-S010

3. Chow SL, Maisel AS, Anand I, Bozkurt B, de Boer RA, American Heart Association Clinical Pharmacology Committee of the Council on Clinical Cardiology; Council on Basic Cardiovascular Sciences; Council on Cardiovascular Disease in the Young; Council on

Cardiovascular and Stroke Nursing; Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation; Council on Epidemiology and Prevention; Council on Functional Genomics and Translational Biology; and Council on Quality of Care and Outcomes Research, et al. Role of Biomarkers for the Prevention, Assessment, and Management of Heart Failure: A Scientific Statement From the American Heart Association. Circulation. 2017 May 30;135(22):e1054-e1091. doi:10.1161/CIR.0000000000000490 Erratum for: Circulation. 2017 May 30;135(22):e1054-e1091. doi:10.1161/CIR.0000000000000544

4. Daubert MA, Adams K, Yow E, Barnhart HX, Douglas PS, et al. NT-proBNP Goal Achievement Is Associated With Significant Reverse Remodeling and Improved Clinical Outcomes in HFrEF. JACC Heart Fail. 2019 Feb;7(2):158-168. doi:10.1016/j.jchf.2018.10.014

5. Drazner MH, Bozkurt B, Cooper LT, et al. 2024 ACC Expert Consensus Decision Pathway on Strategies and Criteria for the Diagnosis and Management of Myocarditis: A Report of the American College of Cardiology Solution Set Oversight Committee. J Am Coll Cardiol. 2025 Feb 4;85(4):391-431. doi:10.1016/j.jacc.2024.10.080

6. Dyer AK, Barnes AP, Fixler DE, Shah TK, Sutcliffe DL, Hashim I, Drazner MH, de Lemos JA. Use of a highly sensitive assay for cardiac troponin T and N-terminal pro-brain natriuretic peptide to diagnose acute rejection in pediatric cardiac transplant recipients. Am Heart J. 2012 Apr;163(4):595-600. doi:10.1016/j.ahj.2012.02.003

7. Felker GM, Anstrom KJ, Adams KF, Ezekowitz JA, Fiuzat M, et al. Effect of Natriuretic Peptide-Guided Therapy on Hospitalization or Cardiovascular Mortality in High-Risk Patients With Heart Failure and Reduced Ejection Fraction: A Randomized Clinical Trial. JAMA. 2017 Aug 22;318(8):713-720. doi:10.1001/jama.2017.10565

8. Frantz RP, Farber HW, Badesch DB, Elliott CG, Frost AE, et al. Baseline and Serial Brain Natriuretic Peptide Level Predicts 5-Year Overall Survival in Patients with Pulmonary Arterial Hypertension. Data from the REVEAL Registry. Chest. 2018 Jul;154(1):126-135. doi:10.1016/j.chest.2018.01.009

9. Galvani M, Ottani F, Oltrona L, Ardissino D, Gensini GF, Italian Working Group on Atherosclerosis, Thrombosis, and Vascular Biology and the Associazione Nazionale Medici Cardiologi Ospedalieri (ANMCO), et al. N-terminal pro-brain natriuretic peptide on admission has prognostic value across the whole spectrum of acute coronary syndromes. Circulation. 2004 Jul 13;110(2):128-34. doi:10.1161/01.CIR.0000134480.06723.D8

10. Geiger M, Harake D, Halnon N, Alejos JC, Levi DS. Screening for rejection in symptomatic pediatric heart transplant recipients: the sensitivity of BNP. Pediatr Transplant. 2008 Aug;12(5):563-9. doi:10.1111/j.1399-3046.2007.00860.x

11. Gurvitz M, Krieger EV, Fuller S, Davis LL, Kittleson MM, et al. 2025 ACC/AHA/HRS/ISACHD/SCAI Guideline for the Management of Adults With Congenital Heart Disease: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Circulation. 2025 Dec. doi:10.1161/CIR.0000000000001402

12. Heidenreich PA, Bozkurt B, Aguilar D, Allen LA, Byun JJ, et al. 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure: A Report of the American College of

Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. J Am Coll Cardiol. 2022 May 3;79(17):e263-e421. doi:10.1161/CIR.0000000000001063

13. Huelsmann M, Neuhold S, Resl M, Strunk G, Brath H, et al. PONTIAC (NT-proBNP selected prevention of cardiac events in a population of diabetic patients without a history of cardiac disease): a prospective randomized controlled trial. J Am Coll Cardiol. 2013 Oct 8;62(15):1365-72. doi:10.1016/j.jacc.2013.05.069

14. International Society for Heart and Lung Transplantation (ISHLT). Standards & Guidelines. Accessed March 2025. Available at URL address: https://www.ishlt.org/education-and-publications/standards-guidelines

15. Isselbacher EM, Preventza O, Hamilton Black J 3rd, Augoustides JG, Beck AW, et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines. Circulation. 2022 Dec 13;146(24):e334-e482. doi:10.1161/CIR.0000000000001106

16. James SK, Lindahl B, Siegbahn A, Stridsberg M, Venge P, et al. N-terminal pro-brain natriuretic peptide and other risk markers for the separate prediction of mortality and subsequent myocardial infarction in patients with unstable coronary artery disease: a Global Utilization of Strategies To Open occluded arteries (GUSTO)-IV substudy. Circulation. 2003 Jul 22;108(3):275-81. doi:10.1161/01.CIR.0000079170.10579.DC

17. Januzzi JL, Butler J, Fombu E, Maisel A, McCague K, Piña IL, Prescott MF, Riebman JB, Solomon S. Rationale and methods of the Prospective Study of Biomarkers, Symptom Improvement, and Ventricular Remodeling During Sacubitril/Valsartan Therapy for Heart Failure (PROVE-HF). Am Heart J. 2018 May;199:130-136. doi:10.1016/j.ahj.2017.12.021

18. Januzzi JL Jr, Camacho A, Piña IL, Rocha R, Felker GM, PROVE-HF Investigators, et al. Reverse Cardiac Remodeling and Outcome After Initiation of Sacubitril/Valsartan. Circ Heart Fail. 2020 Jun;13(6):e006946. doi:10.1161/CIRCHEARTFAILURE.119.006946

19. Kittleson MM, Panjrath GS, Amancherla K, Davis LL, Deswal A, Dixon DL, Januzzi JL Jr, Yancy CW. 2023 ACC Expert Consensus Decision Pathway on Management of Heart Failure With Preserved Ejection Fraction: A Report of the American College of Cardiology Solution Set Oversight Committee. J Am Coll Cardiol. 2023 May 9;81(18):1835-1878. doi:10.1016/j.jacc.2023.03.393

20. Kittleson MM, Ruberg FL, Ambardekar AV, Brannagan TH, et al. 2023 ACC Expert Consensus Decision Pathway on Comprehensive Multidisciplinary Care for the Patient With Cardiac Amyloidosis: A Report of the American College of Cardiology Solution Set Oversight Committee. J Am Coll Cardiol. 2023 Mar 21;81(11):1076-1126. doi:10.1016/j.jacc.2022.11.022. Epub 2023 Jan 23. Erratum in: J Am Coll Cardiol. 2023 Mar 21;81(11):1135.

21. Klings ES, Machado RF, Barst RJ, Morris CR, Mubarak KK, et al. An Official American Thoracic Society Clinical Practice Guideline: Diagnosis, Risk Stratification, and Management of Pulmonary Hypertension of Sickle Cell Disease. Am J Respir Crit Care Med. 2014 Mar;189(6):727–740. doi:10.1164/rccm.201401-0065ST

22. Knecht KR, Alexander ML, Swearingen CJ, Frazier EA. NTproBNP as a marker of rejection in pediatric heart transplant recipients. Pediatr Transplant. 2012 Jun;16(4):335-9. doi:10.1111/j.1399-3046.2012.01659.x

23. Kragelund C, Gronning B, Kober L, Hildebrandt P, Steffensen R. N-terminal pro-b-type natriuretic peptide and long-term mortality in stable coronary heart disease. N Engl J Med. 2005 Feb 17;352(7):666-75. doi:10.1056/NEJMoa042330

24. Ledwidge M, Gallagher J, Conlon C, Tallon E, O'Connell E,et al. Natriuretic peptide-based screening and collaborative care for heart failure: the STOP-HF randomized trial. JAMA. 2013 Jul 3;310(1):66-74. doi:10.1001/jama.2013.7588

25. Lindblade CL, Chun DS, Darragh RK, Caldwell RL, Murphy DJ, Schamberger MS. Value of plasma B-type natriuretic peptide as a marker for rejection in pediatric heart transplant recipients. Am J Cardiol. 2005 Apr 1;95(7):909-11. doi:10.1016/j.amjcard.2004.11.054

26. Maddox TM, Januzzi JL Jr, Allen LA, Breathett K, Brouse S, Butler J, Davis LL, Fonarow GC, Ibrahim NE, Lindenfeld J, Masoudi FA, Motiwala SR, Oliveros E, Walsh MN, Wasserman A, Yancy CW, Youmans QR. 2024 ACC Expert Consensus Decision Pathway for Treatment of Heart Failure With Reduced Ejection Fraction: A Report of the American College of Cardiology Solution Set Oversight Committee. J Am Coll Cardiol. 2024 Apr 16;83(15):1444-1488. doi:10.1016/j.jacc.2023.12.024

27. Maddox TM, Januzzi JL Jr, Allen LA, Breathett K, Butler J, et al. 2021 Update to the 2017 ACC Expert Consensus Decision Pathway for Optimization of Heart Failure Treatment: Answers to 10 Pivotal Issues About Heart Failure With Reduced Ejection Fraction: A Report of the American College of Cardiology Solution Set Oversight Committee. J Am Coll Cardiol. 2021 Feb 16;77(6):772-810. doi:10.1016/j.jacc.2020.11.022

28. McLaughlin VV, Archer SL, Badesch DB, Barst RJ, Farber HW, et al. ACCF/AHA 2009 Expert Consensus Document on Pulmonary Hypertension. Journal of the American College of Cardiology. 2009;53(17). doi:10.1016/j.jacc.2009.01.004

29. Morrow Da, de Lemos JA, Sabatine MS, Murphy SA, Demopoulos LA, DiBattiste PM, et al. Evaluation of B-type natriuretic peptide for risk assessment in unstable angina/non-ST-elevation myocardial infarction: B-type natriuretic peptide and prognosis in TACTICS-TIMI 18. J Am Coll Cardio. 2003;41(8):1264-72. doi:10.1016/s0735-1097(03)00168-2

30. Morrow DA, de Lemos JA, Blazing MA, Sabatine MS, Murphy SA, Jarolim P, et al.; A to Z Investigators. Prognostic value of serial B-type natriuretic peptide testing during follow-up of patients with unstable coronary artery disease. JAMA. 2005 Dec 14;294(22):2866-71. doi:10.1001/jama.294.22.2866

31. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). Multiple Myeloma. Version 5.2026. January 9, 2026. Accessed March 2026. Available at URL address: https://www.nccn.org/professionals/physician_gls/pdf/myeloma.pdf

32. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). Systemic Light Chain Amyloidosis. Version 2.2026. March 16, 2026. Accessed March 2026. Available at URL address: https://www.nccn.org/professionals/physician_gls/pdf/amyloidosis.pdf

33. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). Management of Immune Checkpoint Inhibitor-Related Toxicities. Version 1.2026. October 23, 2025.

Accessed March 2026. Available at URL address: https://www.nccn.org/professionals/physician_gls/pdf/ici_tox.pdf

34. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). Management of CAR T-Cell and Lymphocyte Engager-Related Toxicities. Version 2.2026. November 11, 2025. Accessed March 2026. Available at URL address: https://www.nccn.org/professionals/physician_gls/pdf/cellular_tox.pdf

35. Neumann JT, Sörensen NA, Zeller T, Magaret CA, Barnes G, Rhyne RF, et al. Application of a machine learning-driven, multibiomarker panel for prediction of incident cardiovascular events in patients with suspected myocardial infarction. Biomark Med. 2020 Jun;14(9):775-784. doi:10.2217/bmm-2019-0584

36. Omland T, Sabatine MS, Jablonski KA, Rice MM, Hsia J, Wergeland R, et al. PEACE Investigators. Prognostic value of B-Type natriuretic peptides in patients with stable coronary artery disease: the PEACE Trial. J Am Coll Cardiol. 2007 Jul 17;50(3):205-14. doi:10.1016/j.jacc.2007.03.038

37. Otto CM, Nishimura RA, Bonow RO, Carabello BA, et al. 2020 ACC/AHA Guideline for the Management of Patients With Valvular Heart Disease: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. J Am Coll Cardiol. 2021 Feb 2;77(4):e25-e197. doi:10.1161/CIR.0000000000000923 Erratum for: Circulation. 2021 Feb 2;143(5):e72-e227.

38. Parcha V, Patel N, Kalra R, Arora G, Januzzi JL Jr, Felker GM, et al. Racial Differences in Serial NT-proBNP Levels in Heart Failure Management: Insights From the GUIDE-IT Trial. Circulation. 2020 Sep 8;142(10):1018-1020. doi:10.1161/CIRCULATIONAHA.120.046374

39. Peled Y, Ducharme A, Kittleson M, Bansal N, et al. International Society for Heart and Lung Transplantation Guidelines for the Evaluation and Care of Cardiac Transplant Candidates-2024. J Heart Lung Transplant. 2024 Oct;43(10):1529-1628.e54. doi:10.1016/j.healun.2024.05.010

40. Pop-Busui R, Januzzi JL, Bruemmer D, Butalia S, Green JB, Horton WB, Knight C, Levi M, Rasouli N, Richardson CR. Heart Failure: An Underappreciated Complication of Diabetes. A Consensus Report of the American Diabetes Association. Diabetes Care. 2022 Jul 7;45(7):1670-1690. doi:10.2337/dci22-0014

41. Prevencio. Clinical evidence. Accessed March 2025. Available at URL address: https://prevenciomed.com/healthcare-professionals

42. Rossano JW, Denfield SW, Kim JJ, Price JF, Jefferies JL, Decker JA, Smith EO, Clunie SK, Towbin JA, Dreyer WJ. B-type natriuretic peptide is a sensitive screening test for acute rejection in pediatric heart transplant patients. J Heart Lung Transplant. 2008 Jun;27(6):649-54. doi:10.1016/j.healun.2008.03.008

43. Shen W-K, Sheldon RS, Benditt DG, Cohen MI, Forman, DE, et al. 2017 ACC/AHA/HRS Guideline for the Evaluation and Management of Patients With Syncope. A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. Circulation. 2017;136:e60-e122. doi:10.1131/CIR.0000000000000499

44. Thompson A, Fleischmann KE, Smilowitz NR, de Las Fuentes L, Mukherjee D, Peer Review Committee Members, et al. 2024 AHA/ACC/ACS/ASNC/HRS/SCA/SCCT/SCMR/SVM Guideline for Perioperative Cardiovascular Management for Noncardiac Surgery: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Circulation. 2024 Nov 5;150(19):e351-e442. doi: 10.1161/CIR.0000000000001285. Epub 2024 Sep 24. Erratum in: Circulation. 2024 Nov 19;150(21):e466.

45. U.S. Food and Drug Administration. Center for Devices and Radiological Health. Elecys® proBNP assay. 510(k) number K032646. Decision date November 12, 2003. Accessed March 2025. Available at URL address: https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm?ID=K032646 https://www.accessdata.fda.gov/cdrh_docs/reviews/K032646.pdf

46. U.S. Food and Drug Administration. Center for Devices and Radiological Health. Triage® BNP Test. 510(k) number K051787. Decision date September 22, 2005. Accessed March 2025. Available at URL address: https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm?ID=K051787 https://www.accessdata.fda.gov/cdrh_docs/reviews/K051787.pdf

47. Velleca A, Shullo MA, Dhital K, Azeka E, Colvin M, et al. The International Society for Heart and Lung Transplantation (ISHLT) guidelines for the care of heart transplant recipients. J Heart Lung Transplant. 2023 May;42(5):e1-e141. doi:10.1016/j.healun.2022.10.015

48. Wright SP, Doughty RN, Pearl A, Gamble GD, Whalley GA, Walsh HJ, et al. Plasma amino-terminal pro-brain natriuretic peptide and accuracy of heart-failure diagnosis in primary care: a randomized, controlled trial. J Am Coll Cardiol. 2003 Nov 19;42(10):1793-800. doi:10.1016/j.jacc.2003.05.011

Revision Details

Type of Revision	Summary of Changes	Date
Annual review	• Revised policy statement	5/15/2026
Focused Review	• No policy statement changes	10/15/2025
Annual review	• Revised policy statement	5/15/2025
Annual review	• Revised policy statement	5/15/2024