

CADTH Reference List

# Point-of-Care B-Type Natriuretic Peptide Testing for Congestive Heart Failure

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## Key Messages

- We did not find any studies about the diagnostic test accuracy of point-of-care B-natriuretic peptide testing for patients suspected of having congestive heart failure that met our criteria for this review.
- We did not find any studies about the clinical utility of point-of-care B-natriuretic peptide testing for patients suspected of having congestive heart failure that met our criteria for this review.
- We did not find any evidence-based guidelines about the use of point-of-care B-natriuretic peptide testing for patients suspected of having congestive heart failure that met our criteria for this review.
- We identified other references on this topic that may be of interest, which are listed in the report.

## Research Questions

1. What is the diagnostic test accuracy of point-of-care B-natriuretic peptide testing for patients suspected of having congestive heart failure?
2. What is the clinical utility of point-of-care B-natriuretic peptide testing for patients suspected of having congestive heart failure?
3. What are the evidence-based guidelines regarding the use of point-of-care B-natriuretic peptide testing for patients suspected of having congestive heart failure?

## Methods

### Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Database of Systematic Reviews, the International HTA Database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were BNP and point of care testing. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was completed on September 22, 2022 and limited to English-language documents published since January 1, 2017. Internet links were provided, where available.

### Selection Criteria and Summary Methods

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study publications were not reviewed. The Overall Summary of Findings was based on information available in the abstracts of selected publications. Open access full-text versions of

evidence-based guidelines were reviewed when available, and relevant recommendations were summarized.

**Table 1: Selection Criteria**

| Criteria             | Description  |
|----------------------|--|
| <b>Population</b>    | Patients suspected of having congestive heart failure (e.g., presenting with shortness of breath and/or chest pain)  |
| <b>Intervention</b>  | Point-of-care B-type natriuretic peptide testing   |
| <b>Comparator</b>    | Q1 and Q2: Standard lab testing (i.e., lab-based, chemical analysis)<br>Q3: Not applicable   |
| <b>Outcomes</b>      | Q1: Diagnostic test accuracy (i.e., sensitivity and specificity)<br>Q2: Clinical utility (e.g., effects on time to diagnosis, hospital admission and/or length of stay; need for medivac; mortality)<br>Q3: Recommendations regarding best practices |
| <b>Study designs</b> | Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, evidence-based guidelines   |

## Results

No relevant health technology assessments, systematic reviews, randomized controlled trials, or non-randomized studies were identified regarding the diagnostic test accuracy or clinical utility of point-of-care B-natriuretic peptide (BNP) testing for patients suspected of having congestive heart failure. No relevant evidence-based guidelines were identified about the use of point-of-care BNP testing for patients suspected of having heart failure.

References of potential interest that did not meet the inclusion criteria are provided in [Appendix 1](#).

## Overall Summary of Findings

No relevant literature was found about the diagnostic test accuracy or clinical utility of point-of-care BNP testing for patients suspected of having congestive heart failure. Additionally, no evidence-based guidelines were found about the use of point-of-care BNP testing for patients suspected of having heart failure; therefore, no summary can be provided.

## References

### Health Technology Assessments

No literature identified.

### Systematic Reviews

No literature identified.

### Randomized Controlled Trials

No literature identified.

### Non-Randomized Studies

No literature identified.

### Guidelines and Recommendations

No literature identified.

## Appendix 1: References of Potential Interest

### Health Technology Assessments

#### *Alternative Comparator*

Ontario Health (Quality). Use of B-Type Natriuretic Peptide (BNP) and N-Terminal proBNP (NT-proBNP) as Diagnostic Tests in Adults With Suspected Heart Failure: A Health Technology Assessment. *Ont Health Technol Assess Ser.* 2021 May 6;21(2):1-125.; PMID: PMC8129637. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8129637/>. Accessed 2022 September 29. [PubMed](#)  
See Table 2, Page 23; Outcomes: Diagnostic Accuracy of BNP- Page 21

Perera R, Stevens R, Aronson JK, et al. Long-term monitoring in primary care for chronic kidney disease and chronic heart failure: a multi-method research programme. *NIHR Journals Library.* Aug 2021. [PubMed](#)

#### *Unclear Comparator*

Natriuretic peptides to rule-in and rule-out a diagnosis of acute heart failure in adults in the emergency department setting. Cardiff (UK): Health Technology Wales. 2021. <https://healthtechnology.wales/reports-guidance/natriuretic-peptides-to-rule-in-and-rule-out-a-diagnosis-of-acute-heart-failure/>. Accessed 2022 Sep 29.  
See Evidence Appraisal Report, section 5.1.2- BNP

### Systematic Reviews

#### *Unclear Comparator*

Schols AMR, Stakenborg JPG, Dinant GJ, Willemsen RTA, Cals JWL. Point-of-care testing in primary care patients with acute cardiopulmonary symptoms: a systematic review. *Fam Pract.* 2018; 35(1): 4-12. [PubMed](#)

#### *Alternative Comparator- Echocardiography and/or Clinical Examination*

Taylor KS, Verbakel JY, Feakins BG, et al. Diagnostic accuracy of point-of-care natriuretic peptide testing for chronic heart failure in ambulatory care: systematic review and meta-analysis. *BMJ.* 2018; 361: k1450. [PubMed](#)

#### *Population Not Specified*

Pecoraro V, Banfi G, Germagnoli L, Trenti T. A systematic evaluation of immunoassay point-of-care testing to define impact on patients' outcomes. *Ann Clin Biochem.* 2017; 54(4): 420-431. [PubMed](#)

### Non-Randomized Studies

#### *Point-of-Care Testing for N-Terminal Prohormone B-Natriuretic Peptide*

Chami J, Fleming S, Taylor CJ, et al. Point-of-care NT-proBNP monitoring for heart failure: observational feasibility study in primary care. *BJGP Open.* 2022; 6(3): BJGPO.2022.0005. [PubMed](#)

#### *Unclear Population - Patients in the Department of Cardiology*

Schreinlechner M, Mrakovic A, Laschober G, et al. Clinical evaluation of capillary B-type natriuretic peptide testing. *Clin Chem Lab Med.* 2020; 58(4): 618-624. [PubMed](#)

### Review Articles

Alawieh H, Chemaly TE, Alam S, Khraiche M. Towards Point-of-Care Heart Failure Diagnostic Platforms: BNP and NT-proBNP Biosensors. *Sensors (Basel).* 2019; 19(22): 5003. [PubMed](#)