



Effective Health Care

Use of Natriuretic Peptide Measurement in the Management of Heart Failure Nomination Summary Document

Results of Topic Selection Process & Next Steps

- The use of natriuretic peptide measurement in the management of heart failure patients will go forward for refinement as an update to or expansion of an existing systematic review. The scope of this topic, including populations, interventions, comparators, and outcomes, will be further developed in the refinement phase.
- When key questions have been drafted, they will be posted on the AHRQ Web site and open for public comment. To sign up for notification when this and other Effective Health Care (EHC) Program topics are posted for public comment, please go to <http://effectivehealthcare.ahrq.gov/index.cfm/join-the-email-list/>.

Topic Description

Nominator: Health care professional association

Nomination Summary: The nominator presents a series of questions for a review on the effectiveness of natriuretic peptide measurement to guide the approach to the management of heart failure. The nominator states that “recently there have been a number of papers that have described the use of natriuretic peptide measurements to guide therapy, as well clinical decision making at the time of admission and discharge from hospital. Although the studies reported were conducted in different settings, and not all of the findings were fully concordant, there was clear evidence of a reduction in the number of cardiac events, and a reduction in the hospital admissions when patient’s therapy was guided by the natriuretic peptide measurement. The evidence on the health economics is less well documented but there is an indication that it would be cost effective to use the natriuretic peptide measurement to guide therapy.” Furthermore, the nominator asserts that a research review on the topic would be helpful in determining whether the use of natriuretic peptide measurement will help to improve the management of patients with heart failure by guiding the approach to management that may reduce urgent admissions and reliance on hospital-based care.

Population(s): Heart failure patients in either primary or secondary care settings (including patients admitted to a coronary care unit) and subgroups defined by disease stage.

Intervention(s): Natriuretic peptide measurement.

Comparator(s): Usual standard of care.

Outcome(s): Improved management and clinical outcomes such as reduction in cardiac events of patients with heart failure and improved economic outcomes including reduced hospital admissions, hospital stay, etc.

**Key Questions
from Nominator:**

1. What is the biological variation of the circulating natriuretic peptides, and does this variation have any impact on the use of their measurement in the selection and monitoring of treatment protocols?
2. What is the analytical performance required for the use of natriuretic peptide measurement in the selection and monitoring of treatment protocols?
3. In patients with heart failure, can the natriuretic peptide result be used to select the therapeutic strategy?
4. In patients with heart failure, can the natriuretic peptide result be used to guide the therapeutic decisions e.g., to increase or decrease the dosage of drug?
5. In patients with heart failure, can the natriuretic peptide result be used to guide the therapeutic decisions toward a target value of the natriuretic peptide?
6. In patients with heart failure, is there a desirable natriuretic peptide level that should be sought?
7. In patients with heart failure, will the use of a natriuretic peptide result to guide the therapeutic decisions lead to improved clinical outcomes (e.g., reduction in the number of cardiac events)?
8. In patients with heart failure, will the use of a natriuretic peptide result to guide the therapeutic decisions lead to improved economic outcomes (e.g., reduced emergency hospital admissions, reduced hospital stay etc)?
9. In patients with heart failure, can the natriuretic peptide result be used to guide clinical decision making at the time of discharge from hospital?

Considerations

- The topic meets all EHC Program selection criteria. (For more information, see [http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/.](http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/))
- Both B-type natriuretic peptides (BNP) and N-terminal pro-B-type natriuretic peptides (NT-proBNP) have been studied as markers for aiding in the diagnosis, management, and prognosis of acute heart failure syndrome.
- The McMaster Evidence-based Practice Center (EPC) published a report in 2006 (last search date February 2005) titled *Testing for BNP and NT-proBNP in the Diagnosis and Prognosis of Heart Failure*.
 - Balion C, Santaguida P, Hill S, Worster A, McQueen M, Oremus M, McKelvie R, Booker L, Fagbemi J, Reichert S, Raina P. Testing for BNP and NT-proBNP in the Diagnosis and Prognosis of Heart Failure. Evidence Report/Technology Assessment No. 142. (Prepared by the McMaster University Evidence-based Practice Center under Contract No. 290-02-0020). AHRQ Publication No. 06-E014. Rockville, MD: Agency for Healthcare Research and Quality.

September 2006. <http://www.ahrq.gov/downloads/pub/evidence/pdf/bnp/bnp.pdf>. The key questions from this review include:

1. What are the determinants of both BNP and NT-proBNP measurement?
 2. With respect to the diagnosis of heart failure (HF):
 - a. What are the clinical performance characteristics of both BNP and NT-proBNP measurement in patients with symptoms suggestive of heart failure (HF) or with known HF
 - i. presenting to the emergency department (ED)
 - ii. in a specialized clinic or outpatient setting
 - iii. presenting to a primary care setting
 - iv. presenting in long term care setting
 - v. all settings combined
 - b. Does measurement of BNP or NT-proBNP add independent diagnostic information to the traditional diagnostic measures of HF in patients with symptoms suggestive of HF?
 3. Do BNP or NT-proBNP levels predict cardiac events in populations:
 - a. Specific populations
 - i. at risk for coronary artery disease (CAD)
 - ii. with diagnosed CAD
 - iii. with diagnosed HF
 - b. What are the screening characteristics of BNP or NT-proBNP in general asymptomatic populations?
 4. Can BNP or NT-proBNP measurement be used to monitor response to therapy?
- A scan conducted for literature on the use of natriuretic peptide measurement for the management of heart failure patients published since the AHRQ EPC review listed above identified 5 RCTs that were not included in the 2006 AHRQ review and several ongoing studies that would be available to update the above review; therefore, this topic will move forward as an update to or expansion of the 2006 AHRQ systematic review.