Critical Review Form

Clinical Practice Guidelines

Clinical Policy: Critical Issues in the Evaluation and Management of Adult Patients Presenting to the Emergency Department with Acute Heart Failure Syndromes, *Ann Emerg Med* 2007: 49: 627-669

Objective: **"To help improve the evaluation and management of heart failure patients presenting to an ED by answering four critical questions that represent current interest or controversy." (p. 628)**

Methods: **An unknown number of authors conducted a MEDLINE search of English language research published between January 1995 and December 2005 using combinations of key words including "heart failure," "natriuretic peptide," "vasodilator," "nitroglycerin," "nesiritide," "diuretic," "furosemide," "noninvasive ventilation," "continuous positive airway pressure (CPAP)," and "bi-level positive airway pressure (BiPAP)" . Selected article bibliographies were also reviewed and investigators supplied research articles from their personal files.**

All articles were graded by at least two ACEP Clinical Policy Committee members with three grade levels: Class I (highest caliber evidence), Class II, or Class III (weakest evidence). An Evidentiary table is included in the manuscript for each of the four questions answered.

Next, the Policy Committee assigned three levels of evidence:

Level A: **Generally accepted principles for patient management that reflect a high degree of clinical certainty (Class I or Class II evidence).**

Level B: **a particular strategy or range of management strategies that reflect moderate clinical certainty (Class II evidence or decision analysis that directly address the issue or strong consensus based upon Class III studies).**

Level C: **Other strategies for patient management based on preliminary, inconclusive, or conflicting evidence, or in the absence of any published evidence based upon panel consensus.**

I.	Are the Recommendations Valid?	Answer questions IA-D below
A.	**Did the recommendations consider all relevant patient groups, management options, and possible outcomes?**	No. "This policy is not intended to be a complete manual on the evaluation and management of adult patients with acute heart failure but rather a focused examination of critical issues that have particular relevance to the current practice of emergency medicine". (p. 629)
B.	**If necessary, was an explicit, systematic, and reliable process used to tap expert opinion?** *You should look for a clear description of how the panel was assembled along with the members' specialties and any organizations they are representing.*	There is no description offered for ACEP Clinical Policies Committee selection, how review authors were selected, or specific manuscript author selections. Additionally, there is no explanation of author expertise. On the ninth page of the 42-page manuscript are two paragraphs detailing potential conflicts of interest: *"Relevant industry relationships are those relationships with companies associated with products that significantly impact the specific aspect of disease addressed in the critical question.* *Relevant industry relationships for the following Acute Heart Failure Syndromes Subcommittee members are as follows: Dr. Kosowsky received a research grant from Biosite, Inc."* (p. 636)
C.	**Is there an explicit, systematic specification of values or preferences?** *Panelists' ratings presumably reflect the risk-benefit trade-offs of specific interventions, but whether other physicians or patients themselves would make the same decisions remains uncertain. Whether given options are value or preference related should be clearly stated in the guideline.*	No. For the BNP question there was no assessment of risk/benefit, costs, patient preferences, or quality of life by which to judge BNP test ordering intrinsic and extrinsic value.

D.	**If the quality of the evidence used in originally framing the criteria was weak, have the criteria themselves been correlated with patient outcomes?** *When the studies utilized to produce guidelines are less than randomized-controlled trials, conclusions can be strengthened by noting how outcomes can be correlated with adherence to the guidelines.*	There are **no Level A recommendations** for BNP or NT-proBNP. The only recommendation was a Level B: "The addition of a single BNP or NT-proBNP measurement can improve the diagnostic accuracy compared to standard clinical judgment alone in the diagnosis of acute heart failure syndrome among patients presenting to the ED with acute dyspnea. Use the following guidelines: ● BNP <100 pg/dL or NT-proBNP <300 pg/dL acute heart failure syndrome unlikely (LR- = 0.01) ● BNP >500 pg/dL or NT-proBNP >1,000 pg/dL acute heart failure syndrome likely (LR+=6)". (p. 630) Although the ACEP guideline criteria have not themselves been tested, "BNP is one of the few diagnostics available in the ED setting that has been subjected to outcomes testing". (p. 630) • Mueller's (2004 industry sponsored) RCT demonstrated shorter hospitalization (8-days vs. 11 days) and lower total treatment costs ($5410 vs. $7264).
II.	**Were the Criteria Applied Appropriately?**	
A.	**Was the process of applying the criteria reliable, unbiased, and likely to yield robust conclusions?**	No. The recommended criteria have not been tested nor routinely applied.
B.	**What is the impact of uncertainty associated with evidence and values on the criteria based ratings of process of care?**	Unknown since little tested or hypothesized patient outcomes were reported and guidelines are simply a static statement (not a tested intervention).
III.	**How Can I Apply the Criteria to Patient Care?**	

A.	**Are the criteria relevant to your practice setting?** *Medical practice is shaped by an amalgam of evidence, values, and circumstances; clinicians should consider their local medical culture and practice circumstances before importing a particular set of audit criteria.*	Yes, although guideline does not help clarify how BNP testing will improve ED dyspnea patient outcomes.
B.	**Have the criteria been field-tested for feasibility of use in diverse settings, include settings similar to yours?**	No – most guidelines never are.

Limitations

1) **No description of guideline author expertise or selection process.**

2) **No assessment of BNP costs or cost-effectiveness or other diagnostic tool quality measures recommended by the GRADE criteria to fully assess the risk-to-benefit ratio for a new diagnostic test.**

3) **Evidence grading does not incorporate STARD criteria for diagnostic evidence.**

4) **No discussion of using BNP as a continuous variable (interval LR's) or pre-test probability assessment prior to BNP ordering.**

Bottom Line

Very low (BNP <100 pg/dL, NT-proBNP <300 pg/dL) or very high (BNP >500 pg/dL, NT-proBNP >1,000 pg/dL) levels may be more useful than unaided clinical gestalt to rule out or rule in an acute CHF presentation in ED patients. More research is needed to ascertain the external validity of these recommendations to assess the ability and utility of probability based BNP-testing to augment patient-important outcomes above current standard of care.