American Heart Association | American Stroke Association

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Top Ten Things to Know
Role of Biomarkers for the Prevention, Assessment, and Management of Heart Failure

1. Current data show that an estimated 6.5 million Americans over the age of 20 years have heart failure and projections show that the prevalence of HF will increase 46% by 2030. There are 960,000 new HF cases yearly.[i]
2. Several biomarkers are associated with HF that are well recognized; measuring concentrations can provide information about severity of disease and help in detection, diagnosis, prognosis and management of HF. Those discussed in this paper include: natriuretic peptides, soluble (s)ST2, highly sensitive troponin (hs-troponin), galectin-3 (gal-3), midregional-proadrenomedullin (MR-proADM), cystatin-C, IL-6, procalcitonin, and others.
3. This purpose scientific statement summarizes the existing literature and provides guidance for the utility of currently available biomarkers. It makes suggestions/considerations for clinical practice but does not supersede guideline recommendations.
4. The pathophysiological role of biomarkers in HF is discussed, including the role of neurohormones, markers of extra-cellular matrix remodeling, inflammatory mediators/markers of oxidative stress, myocyte injury/myocyte stress, and other biomarkers.
5. Assessment for risk of incident HF is discussed, including predicting incident HF risk in the community, natriuretic peptides, troponins, markers of renal dysfunction, and emerging markers of inflammation (galectin-3, sSt2 and GDF-15).
6. Biomarkers for the diagnosis of HF is reviewed with attention to the role of natriuretic peptides in the diagnosis of acute decompensated HF, biomarkers for the potential diagnosis of HF with preserved ejection fraction (HFpEF), natriuretic peptides, markers of diastolic dysfunction, collagen homeostasis/matrix markers, micro RNAs, multi-biomarker panels, and novel biomarker candidates in HF with preserved EF.
7. Biomarkers and prognosis in both acute and chronic HF (example: natriuretic and cardiac troponins, and more), are discussed.
8. Outpatient management of HF, is discussed through the lens of the use of biomarkers for diagnostic and prognostic purposes, but is still under investigation.
9. The potential application of biomarkers in clinical trials and quality assurance is included.
10. This scientific statement provides a detailed perspective on the use of biomarkers in HF. There are several biomarkers available for diagnosis and prognosis that could be used in HF. This statement provides suggestions on how several biomarkers could be used for the diagnosis and prognosis of HF.

Chow SL, Maisel AS, Anand I, Bozkurt B, de Boer RA, Felker et al; on behalf of the 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. Role of biomarkers for the prevention, assessment, and management of heart failure: a scientific statement from the American Heart Association [published online ahead of print April 26, 2017]. *Circulation*. doi: 10.1161/CIR.0000000000000490.

[i] Benjamin EJ, Blaha MJ, Chiuve SE, Cushman M, Das SR, Deo R, de Ferranti SD, Floyd J, Fornage M, Gillespie C, Isasi CR, Jimenez MC, Chaffin Jordan L, Judd SE, Lackland D, Lichtman JH, Lisabeth L, Liu S, Longenecker CT, Mackey RH, Matsushita K, Mozaffarian D, Mussolino ME, Nasir K, Neumar RW, Palaniappan L, Pandey DK, Thiagarajan RR, Reeves MJ, Ritchey M, Rodriguez CJ, Roth GA, Rosamond WD, Sasson C, Towfighi A, Tsao CW, Turner MB, Virani SS, Voeks JH, Willey JZ, Wilkins JT, Wu JH, Alger HM, Wong SS, Munter P: on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2017 update: a report from the American Heart Association. Circulation. 2017;135:e146—e603. DOI: 10.1161/CIR.0000000000000485.