

LMBP™

**Call for Unpublished Quality Improvement Project Data Submissions
Biomarkers and Risk of Cardiovascular Disease**

Currently we are accepting data on the use of biomarkers to improve the accuracy of risk stratification, specifically for coronary heart disease (CHD) (myocardial infarction and CHD death). The Framingham Risk Score (FRS) will serve as the framework for stratification and observing improvements.

Do you have any data from projects that demonstrate improvement in the accurate classification of at-risk individuals across predicted Framingham Risk Score (FRS) 10-year risk categories? Is the data specifically for CHD events, upon inclusion of additional specific biomarkers to the FRS? If yes, this is an opportunity to share your data.

More information on the practices and outcomes of interest for this systematic review is provided below. Please contact Stephanie Buehler (LMBPinfo@cdc.gov) with questions or for additional information.

We are looking for evidence comparing the effectiveness of any of the below practices with an earlier or alternative practice (pretest-posttest evidence in the same setting, case-control, randomized designs, etc.). If you have data or have done a quality improvement study and have effectiveness evidence (positive, negative, or no change) we are interested in your results.

Practices of interest are the addition of the following biomarkers to the FRS:

- apolipoprotein B
- apolipoprotein A-I
- apolipoprotein B/ apolipoprotein A-I ratio
- high sensitivity-C reactive protein (hs-CRP)
- non-high density lipoprotein (HDL) cholesterol

MBP™ Quality Issue/Gap
<p style="text-align: center;">Effectiveness of risk stratification</p> <p>There is controversy about the effectiveness of current risk stratification scoring systems that are based on traditional risk factors including standard lipid tests (total cholesterol and high-density lipoprotein (HDL) cholesterol) to accurately predict risk of cardiovascular events. Misclassification may cause missed opportunities for prevention, overaggressive treatment, and may lead to sub-optimal clinical management. There is considerable interest in using biomarkers to improve the performance of risk stratification scoring systems, particularly for at-risk populations with no previously diagnosed CHD or diabetes (men > 35 years, women > 45 years, younger adults ≥20 years old with multiple risk factors for CHD, in ambulatory and inpatient settings). The value of information added by a biomarker can be measured by how much it will modify (reclassify) an individual’s predicted risk. Given that the reported proportion of patients incorrectly stratified varies widely from 1% to 50%, there is a need to improve the</p>

effectiveness of their risk stratification for cardiovascular events. This may be achieved by adding biomarkers that can improve the post-analytical phase utility of laboratory tests, including standard lipid tests, to provide better information for prevention and management.	
Review Question	
What practices (use of biomarkers) are effective at improving the accuracy of risk stratification using the Framingham Risk Score for populations at risk for cardiovascular events (i.e. myocardial infarction and death)?	
Practices	Descriptions
Framingham Risk Score (FRS) (comparison)	A risk prediction scoring system adopted by the third report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults-Adult Treatment Panel III (ATP III) for quantitative risk assessment to assist in matching intensity of therapy using low-density lipoprotein (LDL) cholesterol as the primary target with absolute risk.
FRS augmented with apolipoprotein B	The added measurement of apolipoprotein B to the FRS. Apolipoprotein B reflects the total number of atherogenic particles, 90% of which are low density lipoprotein (LDL).
FRS augmented with apolipoprotein A-I	The added measurement of apolipoprotein A-I to the FRS. Apolipoprotein A-I is the major apolipoprotein of HDL.
FRS augmented with apolipoprotein B / apolipoprotein A-I ratio	The added measurement of apolipoprotein B / apolipoprotein A-I ratio to the FRS. Apolipoprotein B / apolipoprotein A-I ratio is used as a surrogate for total cholesterol/HDL cholesterol ratio.
FRS augmented with high sensitivity-C reactive protein (hs-CRP)	The added measurement of hs-CRP to the FRS. Hs-CRP is an inflammatory marker.
FRS augmented with non-HDL cholesterol	The added measurement of non-HDL cholesterol to the FRS. Non-HDL cholesterol is the difference between the total cholesterol concentration and the HDL cholesterol concentration.
Associated Outcome Measures	Outcome Definitions
Accuracy of stratification	Improvement in the accuracy of stratification across predicted FRS 10-year levels of low (<10%), intermediate (10-20%), and high (>20%) risk categories for CHD events (i.e., myocardial infarction and CHD death) upon adding the biomarker.

If you have questions about data submissions or problems during data submission, please contact us at 404-460-1446 or at lbmpinfo@cdc.gov.