

Evidence Based Guideline

Apolipoprotein B in Cardiac Disease Risk Assessment

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Description of Procedure or Service

Low-density lipoproteins (LDL) have been identified as the major atherogenic lipoproteins and have long been identified by the National Cholesterol Education Project (NCEP) as the primary target of cholesterol-lowering therapy. LDL particles consist of a surface coat composed of phospholipids, free cholesterol, and apolipoproteins, surrounding an inner lipid core composed of cholesterol ester and triglycerides. LDL particles can vary both in size and in cholesterol content, and for a given level of LDL-C, there can be a wide variety of both size and numbers of LDL particles. Traditional lipid risk factors such as LDL-C, while predictive on a population basis, are weaker markers of risk on an individual basis. Only a minority of subjects with elevated LDL and cholesterol levels will develop clinical disease, and up to 50% of cases of coronary artery disease occur in subjects with 'normal' levels of total and LDL cholesterol. Thus there is considerable potential to improve the accuracy of current cardiovascular risk prediction models. Recently there has been interest in investigating the concentration of LDL particles and their size particles as an independent risk factor.

Two basic techniques are used for measuring LDL particle concentration, the surrogate measurement of apolipoprotein B (apo B) or direct measurement of the number of particles using nuclear magnetic spectroscopy. Apo B is the major protein moiety of all lipoproteins except for high-density lipoprotein (HDL). The most abundant form of apo B, large B or B-100, constitutes the apo B found in low-density lipoproteins (LDL) and very-low-density lipoproteins (VLDL). Since both LDL and VLDL each contain one molecule of apolipoprotein B, measurement of apo B reflects the total number of these atherogenic particles, 90% of which are LDL. Nuclear resonance spectroscopy (NMR) is based on the fact that lipoprotein subclasses of different size broadcast distinguishable NMR signals. Thus NMR can quantify the number of LDL particles of a specific size (i.e., small dense LDL) and can provide a measurement of the total number of particles.

*****Note: This guideline is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.**

Evidence Based Guideline for Apolipoprotein B in Cardiac Disease Risk Assessment

Measurement of apolipoprotein B may not be appropriate as an adjunct to LDL cholesterol in the risk assessment and management of cardiovascular disease.

Medical Evidence regarding Apolipoprotein B in Cardiac Disease Risk Assessment:

The evidence suggests that apo B provides independent information on risk assessment for cardiovascular disease and that apo B is superior to LDL-C in predicting cardiovascular risk. Numerous large prospective cohort studies and nested case-control studies have compared these measures and most have concluded that apo B is a better predictor of cardiac risk when compared to LDL-C. There is greater uncertainty around the degree of improvement in risk prediction and whether the magnitude of improvement is clinically significant. While there have been attempts to incorporate apo B into multivariate risk prediction models, at the present time apo B is not included in the models that are most commonly used in routine clinical care, such as the Framingham risk model and the PROCAM (Prospective Cardiovascular Munster Study) Score.

Currently, none of the major guidelines, such as NCEP ATP III, have yet to formally incorporate the measurement of apo B into their recommendations.

It is not yet possible to conclude that the use of apo B levels will improve outcomes when used in routine clinical care. Improved ability to predict risk and/or treatment response does not by itself result in better health outcomes. To improve outcomes, clinicians must have the tools to translate this information into clinical practice. No studies have demonstrated improved health outcomes by using apo B in place of LDL-C for either risk assessment and/or treatment response. The most widely used risk assessment models, such as the Framingham prediction model, and the most widely used treatment guidelines, the ATP III guidelines, do not provide the tools necessary for clinicians to incorporate apo B measurements into routine assessment and management of hyperlipidemic patients. This lack creates difficulties in interpreting and applying the results of apo B and/or apo B/apo A-I measurements to routine clinical care.

Benefits Application

Please refer to Certificate for availability of benefits. This policy relates only to the services or supplies described herein. Benefits may vary according to benefit design, therefore certificate language should be reviewed before applying the terms of the policy.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable codes: no specific code

There is no specific code for measurement of apolipoprotein B. CPT code 82172 (apolipoprotein, each) might be used.

Scientific Background and Reference Sources

BCBSA Medical Policy Reference Manual [Electronic Version]. 2.04.20, 5/14/09

Senior Medical Director review 9/2009

Policy: Apolipoprotein B in Cardiac Disease Risk Assessment

Policy Implementation/Update Information

10/26/09 New evidence based guideline issued. Measurement of apolipoprotein B may not be appropriate as an adjunct to LDL cholesterol in the risk assessment and management of cardiovascular disease.
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