

Global Summit on

Heart Diseases and Therapeutics

October 20-21, 2016 Chicago, USA

Use of particle number versus cholesterol, measures to optimize management of LDL-related ASCVD risk

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Managing low-density lipoprotein (LDL) is an integral part of clinical practice. Recent guidelines have shifted from attaining discrete LDL goals (based on an individual's cardiovascular disease risk), to use of specific therapies shown to reduce atherosclerotic cardiovascular disease (ASCVD) events in randomized controlled trials. Following institution of outcome proven therapy, on-treatment LDL levels are advocated to judge adherence, individual response, and aid consideration of adjustments of therapy. What remains controversial is whether LDL-guided adjustments in treatment can lead to further reduction in ASCVD events. Historically, the cholesterol content of LDL particles (LDL-C) has been used to express LDL quantity. However, due to variability in the cholesterol carried in LDL particles, frequent disagreement (discordance) occurs between LDL-C and particle number measures of LDL quantity, including apolipoprotein B-100 (apo B) or nuclear magnetic resonance (NMR) LDL particle number (LDL-P). Epidemiologic and clinical intervention trials consistently demonstrate that ASCVD risk tracks with LDL particle number (apo B or NMR LDL-P), rather than LDL-C, when these measures are discordant. Furthermore, managed care claims data demonstrate significant additional reduction of ASCVD events is noted among high-risk patients attaining low NMR LDL-P (mean 860 nmol/L) versus statin treated subjects with low LDL-C (mean 79 mg/dL). Accordingly, many expert society recommendations and guidelines now advocate the use of LDL particle number (NMR LDL-P or apo B) to adjudicate individual response and aid adjustment in therapy to optimize individual therapy.

Biography

William Cromwell has received his MD degree from Louisiana State University School of Medicine in New Orleans, LA and completed his Post-graduation in Lipid Disorders from the Washington University School of Medicine Lipid Research Center in St. Louis, MO. He is Chief of the Lipoprotein and Metabolic Disorders Institute, Discipline Director for Cardiovascular Disease at Laboratory Corporation of America (LabCorp), and Adjunct Associate Professor at Wake Forest University School of Medicine, USA. He has published over 25 book chapters and papers in journals including *Lancet*, *Journal of the American College of Cardiology*, *American Journal of Cardiology*, and *Journal of Clinical Lipidology*.

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