Managing Residual Risk After Myocardial Infarction Among Individuals with Low Cholesterol Levels

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KEYWORDS

• Myocardial infarction • Disease management • Secondary prevention • Lipid-lowering medications • Statins • Ezetimibe

KEY POINTS

- About half of individuals with an acute myocardial infarction (MI) have a low-density lipoprotein cholesterol (LDL-C) level of less than 100 mg/dL.
- Management of individuals with MI and low LDL-C should include cardiac rehabilitation, lifestyle changes, evidence-based post-MI pharmacologic treatment, and adequate control of concomitant coronary risk factors.
- All individuals with a prior MI are recommended to take high-intensity statins (moderate intensity for those ≥75 years of age).
- Ezetimibe can be used as adjunctive lipid-lowering therapy among individuals with an MI and low LDL-C, particularly if they have inadequate response or intolerance to recommended intensity of statins.
- Little evidence exists to support the use of lipid-lowering medications other than ezetimibe in combination with statins among individuals with a prior MI.

INTRODUCTION

Despite substantial improvements in the last 50 years, coronary heart disease (CHD) remains an important cause of morbidity and mortality in the United States and globally.[1] Lipid-lowering medications, particularly statins, have been a core element of primary and secondary prevention of CHD over the past decades. In 2001, the Third Report of the National Cholesterol Education Program, Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (ATP-III) recommended a low-density lipoprotein cholesterol (LDL-C) of less than 100 mg/dL as a therapeutic target in high-risk individuals.[2] An optional therapeutic target of an LDL-C of less than 70 mg/dL was suggested later for very high-risk patients, including those with acute coronary syndrome (ACS) and an LDL-C of less than 100 mg/dL at the time of the event.[3] An increasing number of patients present with LDL-C levels below these targets, but remain at risk for a recurrent event. In this article,

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we review the current evidence and guidelines on the post-acute event management of individuals with myocardial infarction (MI) and LDL-C of less than 100 mg/dL.

EPIDEMIOLOGY AND SIGNIFICANCE

Cholesterol levels have declined in the United States as awareness of cholesterol as a CHD risk factor and use of statins have increased.[4] As a consequence, the population presenting with MI in the current era is enriched by individuals with low LDL-C. Using data from the Get With The Guidelines program, Sachdeva and colleagues[5] reported that about one-half of individuals hospitalized for MI in 2000 through 2006 had an LDL-C level of less than 100 mg/dL, and 17.6% had an LDL-C of less than 70 mg/dL.

Individuals with an acute MI have an increased risk for recurrent coronary events and death. About 11% of all men and 22% of all women 45 to 64 years of age with a first MI will have a recurrent event or fatal CHD within 5 years (**Fig. 1**).[1] Overall, 14.8% of individuals with a history of atherosclerotic disease will have an MI, stroke, revascularization, or cardiovascular death within 1 year.[6] These figures highlight the importance of considering residual risk among individuals with CHD, including those with low LDL-C levels.

Several factors are associated with risk for a recurrent MI or death in addition to blood cholesterol levels (**Box 1**). A formal appraisal of this residual risk could be performed using the Framingham risk prediction equations for subsequent coronary events, the CRUSADE long-term risk score, or the GRACE prediction tool.[7–9] However, these prediction models have not been incorporated into current guidelines and their applicability to individuals on "optimal medical therapy" is unclear.

Lifestyle changes and evidence-based pharmacologic therapy can effectively reduce risk among individuals with CHD. However, several investigators have shown that prescription of evidence-based post-MI pharmacologic therapy (both in hospital and at discharge) remains inadequate and that adherence to such therapy in the outpatient setting is suboptimal.[10,11] For example, only about 27% of Medicare beneficiaries fill a prescription for high-intensity statins after discharge for an MI.[12]

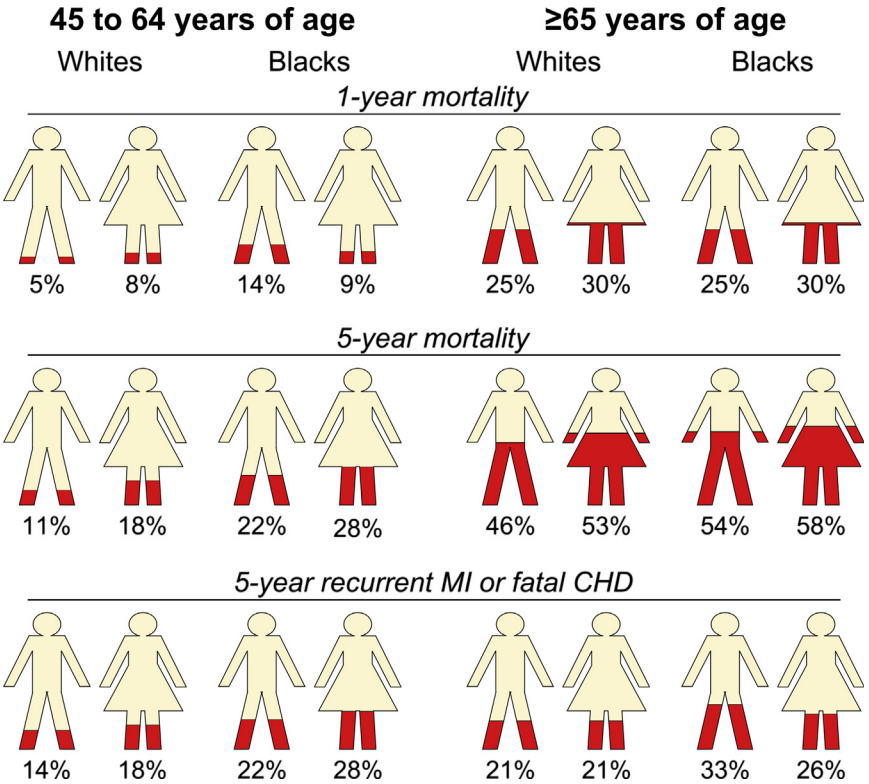

Fig. 1. Risk for all-cause mortality and recurrent myocardial infarction (MI) or coronary heart disease (CHD) death among individuals with a first MI. (*Data from* Go AS, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics 2014 update: a report from the American Heart Association. Circulation 2014;129:e231.)