SHORT COMMUNICATION

Latest Indian Guidelines for Dyslipidemia Management: A Biochemist's Perspective

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Abstract

The recent lipid management guidelines emphasize using low density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (non-HDL-C), and apo B levels as treatment targets. Out of these, LDL-C is the primary target of lipid management, non-HDL-C is the co-primary and ApoB is the secondary target. One-time estimation of lipoprotein(a) is sufficient presently to assess risk in view of the lack of specific drugs targeting it. Triglyceride levels ≥150 mg/dL in fasting and ≥175 mg/dL in non-fasting samples are considered risk modifiers for atherosclerotic cardiovascular disease. Lipid profile estimation in a non-fasting sample is considered good enough to manage a dyslipidemia patient. The inclusion of risk group-specific target range of lipid profile in biochemistry report format shall be more informative and helpful in ensuring better patient compliance.

Keywords: Apolipoprotein B, Dyslipidemia, Low density lipoprotein cholesterol, Non-high-density lipoprotein cholesterol.

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In recent years, two major medical bodies dealing with atherosclerotic cardiovascular diseases; the Cardiological Society of India (CSI) and Lipid Association of India (LAI) have come out with their clinical practice guidelines and consensus statements for dyslipidemia management.[1,2]

It is important to discuss the relevant points from the perspective of a biochemist since dyslipidemia management begins with diagnosis by accurate estimation of lipid profile in a Biochemistry laboratory.

- Both CSI and LAI are in consensus in their guidelines to designate low density lipoprotein cholesterol (LDL-C) as the principal treatment target for risk management of cardiovascular disease. The levels of high-density lipoprotein cholesterol (non-HDL-C) are designated as the co-primary target while reduction in the levels of apolipoprotein B is the secondary aim of the treatment therapy.

  The levels of low-density lipoprotein cholesterol are the specific measure of the total cholesterol content present in the LDL particles. On the other hand, the calculation of non-HDL-C provides a mechanism to estimate the cholesterol content of all the atherogenic lipoproteins present in the serum. The proatherogenic lipoproteins, for example, chylomicron remnants, very low-density lipoprotein, intermediate-density lipoprotein, and low-density lipoprotein each contain Apo B as the associated apolipoprotein, making it the ideal analyte for cardiovascular disease risk assessment. However, since concordant results for its estimation may be obtained for LDL-C and non-HDL-C cholesterol; Apo B is considered a secondary treatment target.[2]
- High-density lipoprotein cholesterol levels are no longer a risk modifier for atherosclerotic cardiovascular disease.
- Cardiological Society of India recommends measurement of non-fasting levels of triglycerides, total cholesterol, HDL-C, LDL-C alongside calculation of non-HDL-C for the estimation of cardiovascular risk and deciding management protocol for various risk groups.[1] The desirable levels of these analytes for various categories of patients according to the risk of cardiovascular disease have been tabulated in Table 1.
- The LAI though mentions that the levels of non-HDL-C can be estimated from a non-fasting sample; it does not recommend the estimation of lipid profile in a non-fasting sample discreetly. The association designates the plasma triglycerides levels ≥150 mg/dL in fasting and ≥175 mg/dL in the non-fasting sample as risk modifiers for cardiovascular disease.

  The principal aim of treatment protocol to manage atherosclerotic cardiovascular disease remains focused on reducing the levels of LDL-C, non-HDL-C, and apo B in that sequence with LDL-C as the most important parameter to control the risk. The LAI recommendations of target levels for various risk categories are summarized in Table 2.

  The association recommends lipid profile sampling including apo B and Lipoprotein (a) for stratification and defining LDL-C targets accordingly. One of the key features of their risk assessment strategy remains the coronary artery calcium score.[2]
- Since lipoprotein(a) targeting drugs are not available presently, its one-time measurement is currently recommended. Value <20 mg/dL is an indicator of low risk.

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Table 1: Standard lipid testing panels and targets for various risk groups according to CSI[1]

	Desirable levels (mg/dL)				
Lipid parameter	*Low risk*	*Moderate risk*	*High risk*	*Very high risk*	*Extremely high risk*
LDL-cholesterol	<100	<100	<70	<55	<40
Non-HDL cholesterol	<130	<130	<100	<85	<70
HDL cholesterol	>40 M >50 F	>40 M >50 F	>40 M >50 F	>40 M >50 F	>40 M >50 F
Triglycerides	<150	<150	<150	<150	<150

Low risk – No known risk factor of cardiovascular disease. Moderate risk – Any one risk factor, for example, smoking/hypertension/diabetes mellitus etc. High risk – Two or more risk factors without any disease manifestation, chronic kidney disease, long-standing diabetes mellitus existing for more than 10 years, history of heterozygous familial hypercholesterolemia. Very high risk – clinical evidence of coronary artery disease, long-standing diabetes mellitus existing for more than 20 years, etc. Extremely high risk – recurrent vascular events

Table 2: Treatment targets for lipid-lowering therapy for various atherosclerotic cardiovascular risk groups according to LAI[2]

	Desirable levels (mg/dL)				
Lipid parameter	*Low risk*	*Moderate risk*	*High risk*	*Very high risk*	*Extremely high-risk groups*
LDL-cholesterol	<100	<100 (optional <70)	<70	<50	≤30 to 10–15
Non-HDL cholesterol	<130	<130 (optional <100)	<100	<80	≤60 to 40–45
Apo B	<90	<90	<80	<65	<65 to <50

Extreme high-risk categories have been further divided in to 3 categories (A, B, C)

The main takeaways for a biochemist from these guidelines apart from emphasis on the treatment goals are the following from the author's viewpoint:

- A generalized reference range for lipid profile parameters can be misleading for the patient since an LDL-C level of 95 mg/dL can be good for a moderate-risk patient but still high for a high-risk patient. So the lipid profile reporting should preferably mention the reference range according to various risk categories.
- High-density lipoprotein cholesterol must be included as a calculated parameter in lipid profile reporting.
- Collection of non-fasting samples for lipid profile estimation should be encouraged since the major determinants of cardiovascular disease risk, for example, LDL-C and non-HDL-C are not affected by the non-fasting state. This can be helpful in the early identification of lipid abnormality and reduce the inconvenience of repeat lab visits for a fasting sample analysis.

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