

# Lipid Measurements in the Management of Cardiovascular Diseases:

## PRACTICAL RECOMMENDATIONS



Lipoprotein measurements are pivotal in the management of patients at risk for atherosclerotic coronary heart disease (CHD) with myocardial infarction and coronary death as the main outcomes, and for atherosclerotic cardiovascular disease (ASCVD), which includes CHD, and stroke. Recent developments and changes in guidelines affect optimization of using lipid measures as cardiovascular biomarkers.

### LABORATORY PRE-ANALYTIC VARIATIONS RESULT FROM:

- **Lifestyle**
- **Altered lipid metabolism due to disease**  
*Ideally, a patient sample should only be collected when the patient is in a stable metabolic state and does not have a concurrent illness.*
- **Source of the specimen**
- **Conditions of sample collection**  
*Obtaining more than one specimen on different days should be considered to gain greater certainty about baseline values before initiating lipid lowering drug interventions.*

### RECOMMENDATIONS: FASTING

- Fasting lipid specimens are recommended for routine screening.
- Non-fasting lipid specimens are reasonable alternatives to fasting specimens for routine screening.
- It is reasonable to follow up abnormal non-fasting lipid measurements, especially TG levels > 175 mg/dL, with fasting lipid measurements.



### HIGHLIGHTS

- It is acceptable to screen with nonfasting lipids.
- Non-High-Density Lipoprotein HDL-Cholesterol (non-HDL-C) is measured reliably in either the fasting or the nonfasting state and can effectively guide ASCVD prevention.
- Low Density Lipoprotein Cholesterol (LDL-C) can be estimated from total cholesterol, High Density Lipoprotein Cholesterol (HDL-C), and triglyceride (TG) measurements.

### LABORATORY ANALYTIC ISSUES

- LDL cholesterol can be estimated from total cholesterol, HDL-C, and TG determinations.
- Non-HDL-C is determined reliable when fasting or nonfasting.
- Advanced lipoprotein tests (e.g., LDL particle number, small dense LDL-C, remnant cholesterol) lack appropriate standardization and cross comparison of these tests utilizing different measurement techniques is difficult.

### RECOMMENDATION: PRECISION

- It is recommended that lipid laboratories participate in programs that monitor accuracy and precision.



### LABORATORY POST-ANALYTIC ISSUES

Lipid lab reports are more informative when desirable values are noted

### EXAMPLE OF A LIPID MEASUREMENT LABORATORY REPORT

Patient Name: \_\_\_\_\_ Fasting: Yes ( ) No ( )

Measurement	Desirable Values*	Results	High Alert Values* (Refer to Lipid Specialist)
Total cholesterol	<200 mg/dL		
HDL-C	>40 mg/dL for men >50 mg/dL for women		<20 mg/dL
Non-HDL-C	<130 mg/dL <100 mg/dL for ASCVD or high risk pts		>220 mg/dL Consider inherited hyperlipidemia
LDL-C	<100 mg/dL <70 mg/dL for ASCVD or high risk pts		>190 mg/dL Consider inherited hyperlipidemia
TG	<150 mg/dL fasting <175 mg/dL nonfasting		500-999 mg/dL – severe >1000 mg/dL – critical value
Lp(a)	<30 mng/dL <75 nmol/L		>50 mg/dL >125 nmol/L