

PDL UPDATE:

New Equation for Calculation of Low-Density Lipoprotein Cholesterol (LDL-C)

March 2021

WHAT IS NEW

Effective March 16, 2021, Pacific Diagnostic Laboratories (PDL) has replaced the Friedewald equation for all lipid panels that report calculated low-density lipoprotein cholesterol (LDL-C) with the National Institutes of Health (NIH) equation.

BACKGROUND

Low-density lipoprotein cholesterol (LDL-C), a key cardiovascular disease marker, is often estimated by the Friedewald calculation, which requires a patient to be fasting. Furthermore, calculating LDL-C is less accurate in patients with a low LDL-C level or hypertriglyceridemia (triglyceride [TG] levels ≥ 400 mg/dL).

The NIH calculation provides a more accurate LDL-C result than the Friedewald equation, particularly in patients with low LDL-C concentrations (< 70 mg/dL). The NIH equation gives valid LDL-C results with triglyceride (TG) concentrations up to 800 mg/dL. When the triglyceride concentration is > 800 mg/dL, the LDL-C will not be calculated and a direct LDL-C should be ordered.

The NIH equation performs equally well in both fasting and non-fasting states.

NIH equation: $LDL-C = TC/0.948 - HDL-C/0.971 - (TG/8.56 + [TG \times nonHDL-C]/2140 - TG /16100) - 9.44$

The following algorithm is implemented for the reporting of calculated LDL-C values:

- A TG value up to 800 mg/dL; the LDL-C will be reported using the NIH equation.
- When the TG value is > 800 mg/dL, the LDL-C will NOT be reported.

WHAT ACTIONS ARE NEEDED

NO ACTION IS NEEDED.

- ***The NIH calculation will be applied for any testing submitted on or after March 16, 2021.***
- There is no additional cost with this change.

REFERENCE

Sampson M, Ling C, Sun Q, Harb R, Ashmaig M, Warnick R, Sethi A, Fleming JK, Otvos JD, Meeusen JW, Delaney SR, Jaffe AS, Shamburek R, Amar M, Remaley AT. A New Equation for Calculation of Low-Density Lipoprotein Cholesterol in Patients With Normolipidemia and/or Hypertriglyceridemia. *JAMA Cardiol.* 2020 Feb 26;5(5):1-9. <https://pubmed.ncbi.nlm.nih.gov/32101259/>

FOR MORE INFORMATION PLEASE CONTACT CLIENT SERVICES AT (805) 879-8100

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