

Prognostic Value of Fasting vs. Non-Fasting Low Density Lipoprotein Cholesterol Levels on Long-term Mortality: Insight from the National Health and Nutrition Survey III (NHANES-III)

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Abstract

Background—National and international guidelines recommend *fasting* lipid panel measurement for risk stratification of patients for prevention of cardiovascular (CV) events. Yet, the prognostic value of fasting vs. non-fasting low density lipoprotein cholesterol (LDL-C) is uncertain.

Methods and Results—Patients enrolled in the National Health and Nutrition Survey III (NHANES-III), a nationally representative cross-sectional survey performed between 1988 to 1994, were stratified based on fasting status (≥ 8 hours or < 8 hours) and followed for a mean of 14.0 (± 0.22) years. Propensity score matching was used to assemble fasting and non-fasting cohorts with similar baseline characteristics. The risk of outcomes as a function of LDL-C and fasting status was assessed using receiver operating characteristic (ROC) curves and bootstrapping methods. The interaction between fasting status and LDL-C was assessed using Cox proportional hazards modeling. Primary outcome was all-cause mortality. Secondary outcome was CV mortality. One-to-one matching based on propensity score yielded 4,299 pairs of fasting and non-fasting individuals. For the primary outcome, fasting LDL-C yielded similar prognostic value as non-fasting LDL-C [C-statistics=0.59 (95% CI 0.57–0.61) vs. 0.58 (95% CI 0.56–0.60; $P=0.73$], and LDL-C by fasting status interaction term in the Cox proportional hazard model was not significant ($P_{\text{interaction}}=0.11$). Similar results were seen for the secondary outcome [fasting vs. non-fasting C-statistics=0.62 (95% CI 0.60–0.66) vs. 0.62 (95% CI 0.60–0.66); $P=0.96$; and $P_{\text{interaction}}=0.34$].

Conclusions—Non-fasting LDL-C has similar prognostic value as that of fasting LDL-C. National and international agencies should consider re-evaluating the recommendation that patients fast before obtaining a lipid panel.