Reviewer's report

Title: Comparison of Various Formulae for Estimating Low Density Lipoprotein-Cholesterol by a combination of Ages and Genders in Taiwanese Adults

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Reviewer: Johann Auer

Reviewer's report:

The authors investigated the efficiencies of various formulae by age and by gender to determine which formula might give more accurate estimations in terms of mean square error and underestimating and overestimating low density lipoprotein-cholesterol performance.

Based on the results, the authors conclude that this study provides the benchmarking of formula when age and gender is considered in the low density lipoprotein-cholesterol test.

According to different age and gender, a specific formula is suggested. That would give better accuracy of low density lipoprotein-cholesterol estimation when the age and gender are considered.

There are some shortcomings with presentation and discussion of this study:

Using different formulae in different population subsets clearly introduces confusion in daily practice.

Thus, creation of a dedicated formula that meets the characteristics of the total population would be helpful in practice.

Such a formula could be established in a derivation cohort and evaluated in a validation cohort.

The authors included patients with Tg >400 mg/dL (up to 1252). This may have introduced error. Sensitivity analysis by excluding this patients should be performed.

External validation of this approach in a second population should be performed.

Extrapolation of findings to other populations could introduce error. This should be added as a shortcoming of this study.

Minor comments:
The paper has some flaws concerning grammar, phrasing and style and has to be revised for this.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

none