

# Use of Low Density Lipoprotein Particle Number Levels as an Aid in Statin Treatment Decisions for Intermediate Risk Patients: A Cost-Effectiveness Analysis

## Article Publication

### Background

- For patients with an intermediate risk for cardiovascular disease (CVD; 5%–7.5% 10-year risk), the 2013 guidelines of the American College of Cardiology and the American Heart Association (ACC/AHA) recommend either no statin therapy or moderate-intensity statin therapy (MST).<sup>1</sup>
- The guidelines also note that markers other than the traditional risk factors may help with treatment decisions for patients with intermediate CVD risk.<sup>1</sup>
- Low-density lipoprotein particle (LDL-P) levels have been shown to be independently associated with CVD risk among patients with low or intermediate risk and could inform treatment decisions in these patients.<sup>2</sup>
- **Objective:** The investigators modeled the outcomes and costs of different strategies of statin therapy and evaluated whether using LDL-P levels as an independent risk factor could be a cost-effective aid in statin treatment decisions.

### Methods

- For patients with intermediate CVD risk, 5 hypothetical care strategies were evaluated:
  1. **No statin therapy:** All patients treated with no statin therapy
  2. **MST:** All patients treated with MST
  3. **HST:** All patients treated with high-intensity statin therapy (HST)
  4. **LDL-P + MST:** Patients in the top 10% of LDL-P levels treated with MST; others not treated
  5. **LDL-P + HST:** Patients in the top 10% of LDL-P levels treated with HST; others treated with MST
- A Markov model was developed to evaluate costs (payer perspective) and utilities for each care strategy in a hypothetical cohort of 100,000 individuals at intermediate CVD risk over a 5-year time horizon. Outcomes included CVD events, revascularization events, statin-related adverse events (eg, diabetes), and quality-adjusted life years (QALYs).

### Results

- The HST strategy reduced costs and resulted in fewer CVD and revascularization events compared to other strategies. However, it was associated with 739 more cases of diabetes than the MST strategy.
- Compared to the MST strategy, the LDL-P + HST strategy reduced costs by \$4.67 million and resulted in 134 fewer CVD events, 81 fewer revascularization events, 74 additional diabetes diagnoses, and 115 additional QALYs.
- Compared to the no-statin-therapy strategy, the LDL-P + MST strategy reduced costs by \$3.25 million and resulted in 97 fewer CVD events, 97 fewer revascularization events, 36 additional diabetes diagnoses, and 44 additional QALYs.

### Conclusions

- In this hypothetical intermediate-risk cohort, use of HST in all individuals saved costs and improved outcomes compared to other tested strategies.
- However, for clinicians and patients who are considering no-treatment or MST (consistent with ACC/AHA guidelines) LDL-P testing can help identify patients who might benefit most from MST (for those considering treatment) or HST (for those considering MST).

## Article published in *BMC Cardiovascular Disorders*

### Authors

Dov Shiffman,<sup>1</sup> Andre R Arellano,<sup>1</sup> Michael P Caulfield,<sup>1</sup> Judy Z Louie,<sup>1</sup> Lance A Bare,<sup>1</sup> James J Devlin,<sup>1</sup> Olle Melander<sup>2</sup>

### Affiliation

<sup>1</sup>Quest Diagnostics, San Juan Capistrano, CA

<sup>2</sup>Department of Clinical Sciences, Lund University, Malmö, Sweden; Department of Internal Medicine, Skåne University Hospital, Malmö, Sweden

### Citation

*BMC Cardiovasc Disor.* 2016;16:251.

### Webpage

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5142314/>

### References

1. Stone NJ, Robinson JG, Lichtenstein AH, et al. *J Am Coll Cardiol.* 2014;63:2889-2934.
2. Melander O, Shiffman D, Caulfield MP, et al. *J Am Coll Cardiol.* 2015;65:2571-2573.