

## Is too much “good” cholesterol a health risk?

There are thought to be good and bad types of cholesterol. High-density lipoprotein cholesterol (HDL-C) is thought to be a good type of cholesterol because it is believed to remove bad types of cholesterol from blood vessel walls. Indeed, early studies showed that an increase in HDL-C concentration was associated with a decrease in mortality risk. However, more recent studies found that the association between HDL-C and mortality was U-shaped, with both extremely high and extremely low concentrations being associated with an increase in mortality risk.

We conducted a study to investigate whether there was a U-shaped association between HDL-C concentration and mortality risk. We used data from 37,059 apparently healthy men and women who took part in the Scottish Health Survey or the Health Survey for England between 1995 and 2008. HDL-C concentration was measured when each participant entered the study and deaths were recorded until 2009 in Scotland and until 2011 in England. We created a statistical model in order to look for a U-shaped association between HDL-C concentration and mortality. We adjusted the model for differences in age, sex, smoking and other characteristics or behaviors that might be related to HDL-C and mortality. We defined desirable HDL-C concentration as between 1.55 and 1.99 mmol/L. There were 2,250 deaths during the study and there was a U-shaped association between HDL-C concentration and mortality risk; compared to the desirable HDL-C concentration, both extremely high and extremely low concentrations were associated with an increased risk of mortality.

Early studies were much smaller than our study and were not designed to look for a U-shaped association between HDL-C concentration and mortality. HDL-C concentration was defined as low, medium or high and a linear association between HDL-C concentration and mortality was found because the few people with extremely high concentrations were grouped together with the people with only modestly high concentrations. Our study included lots of people with extremely high HDL-C concentrations and we were able to detect a U-shaped association with mortality. Doctors and patients should be aware that adults with extremely high HDL-C concentrations may be at increased risk of mortality.

**Gary O'Donovan, Mark Hamer**

*School of Sport, Exercise and Health Sciences, Loughborough University, Loughborough, United Kingdom*

*School of Medicine, Universidad de los Andes, Bogotá, Colombia*

### Publication

[High-Density Lipoprotein Cholesterol and Mortality: Too Much of a Good Thing?](#)

Hamer M, O'Donovan G, Stamatakis E  
*Arterioscler Thromb Vasc Biol.* 2018 Mar