Lowering cholesterol to 'levels of a new-born' cuts heart attack risk

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Credit: Imperial College London

Reducing our cholesterol levels to those of a new-born baby significantly lowers the risk of cardiovascular disease, according to new research.

Although previous studies have suggested lowering cholesterol levels may be associated with a lower risk of heart attack, recent evidence has questioned whether very low levels are beneficial.

In the latest study, led by scientists at Imperial College London, researchers analysed data from over 5,000 people taking part in cholesterol-lowering trials.

These studies utilised a new therapy to reduce cholesterol to much lower levels than previously possible.

The team, who published their research this week in the journal *Circulation*, wanted to assess whether reducing cholesterol as low as possible is safe, and whether it was more beneficial than the current levels achieved with existing drugs.

The scientists found that dropping cholesterol to the lowest level possible – to levels similar to those we were born with – reduced the risk of heart attack, stroke or fatal heart disease by around one third.

Professor Kausik Ray, lead author of the research from the School of Public Health at Imperial, said: "Experts have long debated whether very low cholesterol levels are harmful, or beneficial. This study suggests not only are they safe, but they also reduced risk of heart disease, heart attack and stroke."

In the paper, the scientists examined levels of low density lipoprotein (LDL) cholesterol. This is considered to be 'bad' cholesterol, as it is responsible for clogging arteries.

LDL carries cholesterol to cells, but when there is too much cholesterol for cells to use, LDL deposits the cholesterol in the artery walls.

Official advice suggests most people should aim to keep their LDL cholesterol at 100 mg/dL or below, though this number can vary depending on a person's risk of cardiovascular disease.

In the study, the team analysed data from 10 trials, involving 5000 patients. Most had cardiovascular disease, and already had some furring of the arteries or were at very high risk of furred arteries.

All of the patients had previously been diagnosed with high cholesterol, and many were slightly overweight. The average age was 60, and the researchers tracked the patients for between three months and two years.

The average cholesterol reading was around 125 mg/dL, and they were all deemed at risk of heart problems or stroke.

Hard-to-treat cholesterol levels

Mostly patients were taking a cholesterol-lowering statin therapy, but just over half were also taking an additional novel drug, called alirocumab, every two weeks via a small injection, to further lower cholesterol levels.

This drug may be needed when patients' cholesterol levels are not sufficiently lowered by statins.

Some patients find their cholesterol levels aren't adequately reduced by statins, possiby because they carry a faulty gene.

The combined effect of the new drug and the statin in the trials meant that patients reached very low cholesterol – lower than 50mg/dL. This is comparable to the levels we are born with, but is only achievable in adulthood through medication – lifestyle and exercise alone would not drop levels so low.

The researchers found lowering levels of cholesterol reduced the risk of heart attack, stroke, angina or death from heart disease, and that for every 39mg/dL reduction in LDL, the risk reduced by 24 per cent.

Professor Ray added: "This study not only confirms that LDL can trigger heart problems, but also suggests reducing it in adults to very low levels—to those of a new-born baby—is both safe and beneficial."

He explained the team now need to gather longer-term data, to see if the beneficial effects continue. He added we need to wait until these trials have been fully analysed before we can fully assess the benefits of alirocumab.

More information: Kausik K. Ray et al. Reductions in Atherogenic Lipids and Major Cardiovascular EventsClinical Perspective, *Circulation* (2016). DOI: 10.1161/CIRCULATIONAHA.116.024604