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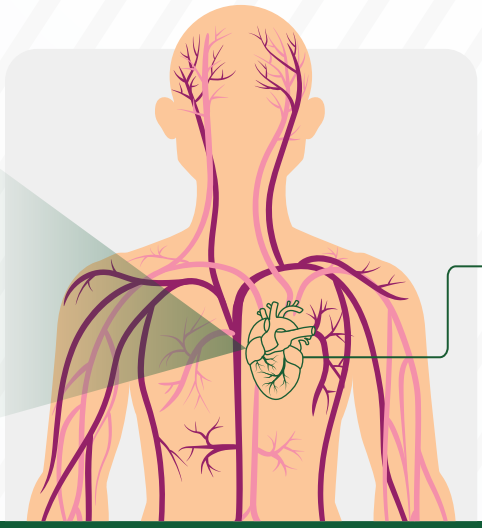
Coronary Artery Disease and the Benefits of Lipid-Lowering

What is coronary artery disease?

A cardiovascular condition caused by plaque deposition along the walls of blood vessels that carry blood from the heart (i.e., our arteries)[1]

Plaque deposition

Narrowing of arteries, known as atherosclerosis



- Reduced flow to other parts of the body, including back to the heart muscles, which is supplied by coronary arteries
- The plaque may also rupture, forming a blood clot that can block the blood supply to the heart if it travels there
- Increased risk of heart disease and heart attack[1,2]

What is the role of cholesterol and calcium in atherosclerosis?[3,4]

Contrary to popular belief, all cholesterol is not dangerous

Only low-density lipoprotein cholesterol (LDL-C) is known as the "bad" cholesterol

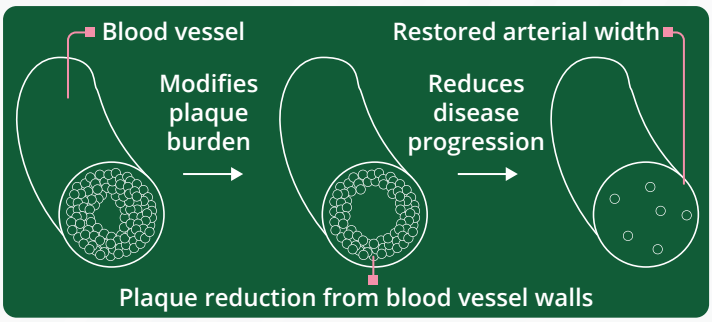
It has a fat-protein rim that surrounds a cholesterol (fatty) center

This LDL-C, along with other substances, contributes to the formation of atherosclerotic plaques

Calcium, meanwhile, helps stabilise the plaques by making them solid and tougher

How does intensive lipid-lowering help?[2]

Lipid-lowering, particularly LDL-C lowering, helps reduce atherosclerotic plaque deposition and prevents its calcification



Some effective lipid-lowering medications include:

- Statins
- Statins + ezetimibe
- Proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors

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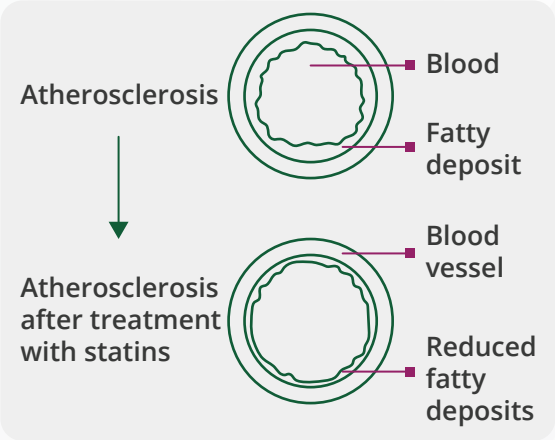
Targeting LDL-C reduction to achieve plaque shrinkage[2,6]

Statins, a type of cholesterol-lowering medication, present in drugs like Lipitor, Lescol XL, and Altoprev, have anti-inflammatory properties that could benefit the patient

- Plaque starts to shrink when LDL-C is lowered to 70 mg/dL
- Achieving and maintaining LDL-C <70 mg/dL can thus, help in the reversal of heart disease
- High-intensity statins can lower LDL-C such that symptoms and severity of atherosclerosis are reduced

Clinical trials show that intensive statin therapy and combining statins with ezetimibe or PCSK9 inhibitors—other types of lipid-lowering drugs—result in fewer cardiovascular events

Are statins less effective in women and older adults?[1,7]



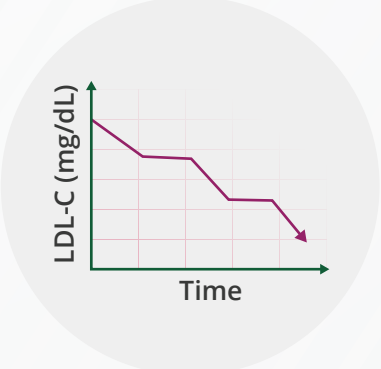
Approximately, a third of patients treated with high-intensity statin reported plaque shrinkage

As opposed to monotherapy, a combination of lipid-lowering therapies can provide additional benefit

PCSK9 for LDL-C lowering

PCSK9 inhibitors can substantially lower LDL-C levels in the majority of high-risk patients

Evolocumab, a PCSK9 inhibitor, offers similar efficacy and safety for a broad range of ages, in both men and women



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How are calcified plaques detected?[2]

- Primarily, via coronary angiography
- Newer coronary imaging approaches can better characterise plaques, going beyond the measurement of blood flow obstruction

Intravascular ultrasound
- High-resolution images of the arterial wall
- Helps measure the extent of atherosclerosis

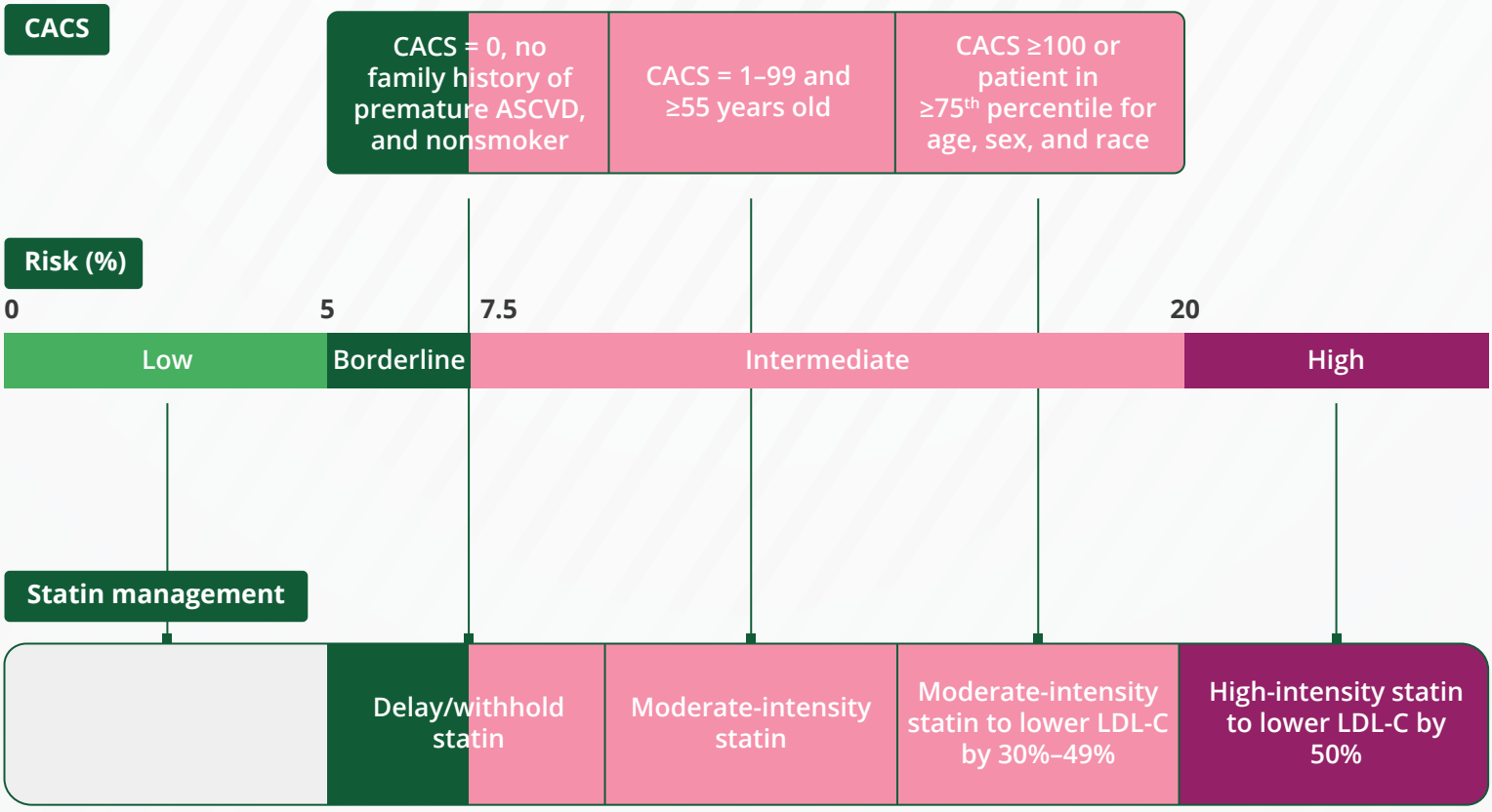
Optical coherence tomography
- Light-based high-resolution imaging
- Captures several useful characteristics of plaques

Near-infrared spectroscopy
- To find the chemical composition of the plaque

Serial computed tomography coronary angiography
- Non-invasive, low-risk way to comprehensively assess a plaque

Coronary artery calcium scoring (CACS)[5]
- Special computed tomography (CT) scan used to image the heart and assess disease risk
- Quantifies the amount of calcium in coronary artery walls
- Simple, quick, and non-invasive way to develop a statin plan for the patient

CACS in primary prevention



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Key takeaways

Atherosclerosis is caused by the formation of plaques on the walls of arteries

Patients with higher LDL-C levels have a higher risk of atherosclerotic coronary disease

Calcium deposition is responsible for stabilising plaque build-up inside arteries

Coronary imaging techniques are fast and can present a low risk for patients

These imaging techniques go beyond estimating the extent of disease and also help in determining the performance of lipid-lowering interventions

Combination of lipid-lowering therapies has demonstrated better effectiveness in shrinking arterial plaque

Evolocumab—a PCSK9 inhibitor—is effective in lowering LDL-C across a broad age range in both men and women diagnosed with atherosclerosis

New imaging techniques can provide greater accuracy in determining the extent of calcified plaque deposits

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