

Atherosclerosis is the hardening and narrowing of the arteries. It is caused by the slow buildup of plaque on the inside of artery walls. This takes decades to build up and DOES NOT CAUSE ANY SYMPTOMS until the process is well under way.

Plaque is made up of fat, cholesterol, calcium, and other substances found in the blood. As it grows, the buildup of plaque narrows the inside of the artery and, in time, may restrict blood flow. When this happens, the organ supplied by the blocked artery starves for blood and oxygen. The organ's cells may either die or suffer severe damage. The resulting complications include: Coronary artery disease (heart attack and angina) – occurs if the arteries that feed heart are affected.

There are four classes of drugs that can help inhibit this process of atherosclerosis. Doctors like to use the acronym SAAB or SAAB-Convertible. These initials stand for 4 classes (or families) of drugs

S is for Statin

Statins eg Simvastatin or Atorvastatin work in the liver to turn off (or down) an enzyme called HMG-CoA Reductase which is responsible for making cholesterol.

A human makes roughly 80% of his cholesterol in the liver – statin will affect this 80%. 20% comes from food we eat (so need to follow a low cholesterol diet)

Cholesterol IS necessary in humans – to dissolve the fat soluble Vitamins A,D,E and K ; also it is the precursor of many hormones in the body. A cholesterol of 5 is the target for normal members of the community. A target of 4 or 3 for cardiac patients is recommended.

Recommendation used to be dose at night only – this was thought to coincide with highest level of cholesterol production – this myth has since been debunked. Studies have shown a small but insignificant benefit (3% better off if take statin at night)

Compliance is more of a problem - studies have shown compliance is better if taken in the morning (people have better routines in the morning).

One of the favourites, ATORVASTATIN or Lipitor® is a long-acting statin anyway – works for 24 hours, so it doesn't matter when you take it

The benefit of a statin is so great that doctors will encourage patients to take a statin IN SPITE OF muscle pain (if they get it). These people should take the maximum dose they can tolerate eg even if it is only 10mg Lipitor every alternate day,. If patients are intolerant to statins, there are alternative drugs which can be considered.

A is for Aspirin

As we grow older, our arteries tend to narrow with plaques deposits on the side walls. These plaques spots can be a bit “rough” if they rupture and break off. The rough spot then attracts an ingredient in the blood called platelets.

Platelets are one of the cells in the blood that cause clots . This is what we want on the surface of the skin if you cut yourself, without platelets you would bleed to death if you cut yourself.

However, we don't want platelets clotting INSIDE our body .

There are FOUR mechanisms by which platelets are “activated” or encouraged to clot.

Aspirin knocks out one of these mechanisms so we call it a weak “platelet inhibitor”. It makes the platelets less sticky so they are less likely to form a clot in any part of the body.

Occasionally, people need a second platelet inhibitor, especially after stenting. This drug is Clopidogrel. (The “C” part of the SAAB- Convertible)

Second A is for ACE Inhibitor (or Angiotensin Converting Enzyme Inhibitor)

ACE Inhibitors have been used traditionally to lower blood pressure. A very large study in the 1990’s showed that people taking this class of drug had a much less chance of adverse cardiac events. This class of drugs work on Angiotensin II enzyme, an enzyme that acts in the Renin- Angiotensin system to cause vasoconstriction. It also stimulates aldosterone – a hormone that acts in the kidneys, and it works in the pituitary to release vasopressin which acts on the kidneys to retain water.

This drug can actually reverse the damage caused to the heart tissue during a heart attack; it won’t heal scar tissue though.

The “B” is for Beta-blockers

Beta blockers have been used for a long time to lower blood pressure and regulate the heart rate. Studies have shown that they have a long term benefit in reducing cardiac events. We are not sure exactly how they work to do this – they “relax” the arteries in the heart thereby reducing the chance of a heart attack.

Under-use of medications in patients with chronic diseases is common.

US study of 200 people over 65 yrs found that 64% were not getting medications considered beneficial eg patients with CAD not getting ACE inhibitors.

The most underused medications are lipid-lowering drugs (including STATINS)

Under-users were missing out on an average of ONE medication pre patient REGARDLESS of the total number of meds taken.

More than 50% of people with CHRONIC conditions are considered non-compliant.

Studies done show that 10—25% of patients with newly prescribed cardiovascular medications discontinue their meds within 6 months of starting. This DOUBLES by 24 months out. I hope this is not you!