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SECONDARY PREVENTION AFTER A HEART ATTACK - a patient's guide

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This article considers treatment to prevent further heart attacks (after discharge from hospital).

Overview

Survivors of heart attacks (myocardial infarction, MI) are at a much greater risk of further heart problems than the general population.

Fortunately, lifestyle changes, diet and medication can substantially reduce the risk of further problems and the risk of death from heart disease.

Unfortunately much of the knowledge in this area is not fully implemented by both patients and doctors.

General concepts to understand after a heart attack:

The heart is a muscular pump; the blood supply to the heart muscle itself is through three main (coronary) arteries.

Because of a permanent blockage in one of the main arteries supplying the heart, an area of the heart muscle pump will have died. The more severe the heart attack, the more muscle that will have died. The area that has died will heal and leave a scar.

Because the heart is a large muscle, the remaining undamaged muscle continues to function, usually quite adequately.

If a lot of muscle is damaged in a heart attack, heart failure can result. This is also usually treatable to a large extent with medication.

Because of narrowing in the other arteries, and lack of a full blood supply after a heart attack, angina can develop. This is a pain in the chest which is brought on with exercise, although it can occur at rest.

As approximately 25% of heart attack sufferers die before reaching hospital, survivors are in fact lucky and can further greatly improve their chances of long-term survival with treatment.

The risk of a further heart attack is not to be taken lightly, with a 10% death rate in the year after discharge, then declining to approximately 5% annually. If current knowledge was fully implemented, this could almost certainly be improved a lot. In fact many survivors may well become much healthier than they have ever been and be at lower risk than others who have not tried to attend to the known risk factors.

Some important tests often done before discharge:

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Echocardiogram (echo)

This shows how the heart muscle is pumping (referred to as ejection fraction), and gives an indication of how much damage has taken place.

The normal is around 70% in the general population.

A more severe heart attack would be associated with an ejection fraction of 40% or less after the heart attack.

Exercise test (usually not to full capacity)

This will help clarify if there is a lack of oxygen to the heart muscle and shows as electrical changes while walking/running on a treadmill.

Blood tests

These will include kidney function, cholesterol levels, sugar, and possibly others like homocysteine.

Lifestyle and medications all play a very important role.

Lifestyle factors

Psychological state is very important:

Patients are often feeling confused and vulnerable following discharge from hospital. It is very important to realise there is a strong emotional component to regaining health and fitness. Many patients go on to have many years of high quality active life after recovery from a heart attack and it is important to realise how good the future can be with proper rehabilitation, lifestyle changes, and medication.

It is important to understand what has happened and resolve to make positive changes for future benefit.

Various studies have shown that depression is common in the year after a heart attack in particular and it is important to be able to share feelings with someone. Do not delay seeking professional help if you are feeling depressed as treatment and support can make a big difference.

Smoking:

If you have been a smoker, it is absolutely vital to try and stop. Patients who stop will substantially reduce their risk of further heart attacks; the risk declines rapidly after stopping smoking. The risk of death from a further heart attack is reduced by approximately 50% by stopping smoking.

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It can be very difficult to stop smoking and patients should consider a professional stop smoking programme. Nicotine patches may be helpful.

Exercise:

This is a very important part of rehabilitation and has been shown to reduce the risk of further heart attacks. It should be built up gradually and under supervision; any chest pain should be reported to your doctor.

An exercise test can provide some guidance as to what sort of heart rates can be comfortably achieved without problems.

Walking on the flat is a very good way to start and this can be increased over a period of weeks. It is important to note that the exercise does not need to be particularly intense or vigorous to have substantial benefits for your heart. Aim for 30-40 minutes per day if possible.

Other good exercises include cycling and swimming.

The main thing is to find something you enjoy doing on a regular long term basis.

Many patients may become much fitter than they have been for years.

Extreme exercise like squash and sprinting should be probably be avoided.

Diet:

The aim of dietary change is to provide a balanced diet to achieve ideal body weight, reduce cholesterol levels and also to provide nutrients that may provide some protection against heart disease.

It is advisable to see a dietitian who can provide guidance as to what foods are suitable.

A few key points:

Fat:

Avoid foods high in saturated fat; generally this would include fatty meats (e.g. sausages, salami), full fat dairy products (butter and cheese). There are many tasty low fat dairy products (cottage cheese, yogurt). Lean red meat such as good steak or veal and venison are actually fairly low fat, so patients in no way need to become vegetarian.

Processed food such as most biscuits, chocolate, and cakes are very high in saturated fat. Practise looking at the fat content on labels if possible.

It is the reduction in the total amount of fat which is most effective in causing weight loss.

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Monounsaturated fats are generally good as they may help decrease certain cholesterol levels (LDL); they are found in olive oil, canola oil, nuts and fish, and form a large part of the "Mediterranean diet" which has been shown to be good for the heart.

It is important to note that all fats are high calorie and should not be consumed in large amounts. It is just better to make sure the fats you do consume are of the healthier variety.

Carbohydrates:

These are the bulk of the energy intake (55-60%) and include bread, pasta, rice, potatoes, and are an essential and healthy part of your diet.

The addition of extra dietary fibre (30 gm/d) can further lower cholesterol levels.

Lots of refined carbohydrates (e.g. sweets) should be avoided, but small amounts are fine.

A high fruit and vegetable diet (even more than 5 servings per day), may lower cholesterol and blood pressure, and is thought to be very beneficial for cardiac health.

Proteins:

These are essential and good sources include lean chicken or turkey (no skin), lean red meat, and fish. Vegetarians will gain enough protein from a balanced vegetarian diet.

Recent evidence indicates that the regular consumption of oily fish 3 times a week may be beneficial in reducing the risk of further heart attacks (29% risk of death reduction) (examples: tuna, king fish, salmon, sardines and eel).

Alcohol:

A protective effect is offered by the moderate consumption of alcohol. Moderate means one to two standard drinks per day. It is probable that there is a risk reduction of further heart attacks by some 30% with modest drinking.

However, there is insufficient evidence to suggest that teetotalers should start drinking alcohol if they are not inclined to.

There has been attention paid to red wine in the media, but all alcohol seems to offer the same protective effect.

The exact mechanism is unclear, but probably involves an increase in HDL (the good protective cholesterol) and perhaps an effect on platelet (one of the main blood cell types) function. It is worth noting that heavy binge drinking may be dangerous for patients with heart conditions.

Medication:

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Several classes of medications have been well shown to offer substantial benefits in terms of reducing the rate of death from further heart attacks. To be effective patients need to continue taking such medication on a permanent basis, even when they feel 100% well, and the frightening memory of a heart attack may be fading.

Such medications include:

Aspirin

The humble aspirin has been well studied in this role and offers benefits in terms of reducing death (12% reduction), further heart attacks (31% reduction) and even strokes (42% reduction).

Low doses of around 75 to 150 mg are effective. Some patients may not be able to take aspirin because of other problems (e.g. gastric bleeding or allergy).

Warfarin

There may be some patients who could benefit from this (e.g. enlarged poorly functioning hearts, rhythm or valve problems) who may benefit from this, but in general, aspirin is adequate for most patients and there is no additional benefit from taking warfarin.

Beta Blockers

(These include drugs like atenolol, metoprolol, propranolol).

Studies have shown that taking these drugs can reduce sudden cardiac death by 34%.

They can also be helpful in treating any angina if present and are effective in lowering high blood pressure if this is present, as indeed it is in a high proportion of patients who have had heart attacks. Research shows that they tend to be underutilised, yet can offer substantial benefits.

Patients with certain conditions such as certain slow heart rates, bronchitis and asthma, may not be able to take these drugs.

Ace inhibitors

(These include drugs such as accupril, captopril, enalapril).

These drugs are particularly useful if the heart muscle has been significantly damaged (ejection fraction < 40%) or there is a degree of heart failure. In such cases they have been shown to increase life expectancy. They also control high blood pressure if present.

There may also be some benefit to patients with lesser degrees of heart muscle damage, and much research is underway on the role of these drugs in preventing circulation problems.

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Kidney function needs to be monitored regularly (with blood tests) in patients taking these medications.

Lipid (cholesterol) lowering drugs

This includes the "statins"; simvastatin and pravastatin, and the "fibrates" including bezalip.

A low fat diet forms the cornerstone of controlling cholesterol levels; the addition of medication to further lower cholesterol has shown substantial benefits as well.

There is now good evidence that by substantially lowering total cholesterol, especially "LDL" the low density lipoprotein, can substantially reduce the risk of cardiac death (by some 42%). This was shown in the Scandinavian simvastatin study.

Studies with pravastatin have shown similar benefits, and also that it is beneficial to lower cholesterol levels that were previously thought to be normal e.g. around 5.5 mmol/l.

It is recommended that patients with a low density lipoprotein level of over 3.37 be treated and a level of 2.57 be aimed for.

Studies have shown some regression of narrowings in coronary arteries with lowering cholesterol, but most of the benefit probably comes from the stabilising of the lining of the arteries that comes with sustained lowering of cholesterol levels.

Other treatments and possible protective interventions

Antioxidants:

There has been much interest in this. A study looking at the benefits of vitamin E has shown some benefits (reduced heart attacks), but no reduction in risk of death. For patients wishing to hedge their bets, a dose of 400 iu appears to be adequate.

There may be some as yet unrecognised protective vitamin or factor in a high fruit and vegetable diet which should be consumed. Certainly fruit and vegetables are high in "antioxidants".

Hormone replacement therapy for women:

There is observational evidence that this offers protection, but recent concerns that more healthier woman taking HRT have brought about this observation. The pendulum is perhaps swinging towards being conservative in recommending HRT for cardioprotection, and doctors are awaiting a number of important trial results in this area.

Recent evidence suggests that there is no compelling reason to start HRT if you have recently had a heart attack. However, if you have been taking it for a few years already, it appears that it is safe and possibly beneficial to continue.

Discuss your own individual requirements with your doctor.

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Homocysteine:

High levels are associated with greater risk of heart attacks and can usually be safely and easily reduced by taking folic acid; to what extent this reduces risk of death from heart disease remains unknown. Patients may wish to make their own decisions pending further studies.

Iron levels:

There is some interest that raised levels of these may put some people at greater risk than others.

Poor dental hygiene:

This has been shown to be linked with heart disease; to what degree intervention may reduce this risk is unknown.

Infective agent:

There is research into whether infective agents such as chlamydia or helicobacter may influence the risk of heart disease, but probably no evidence strong enough to make clinical treatment decisions on.

The future

Although much research into the various risk factors and genetics of heart disease is likely to continue, the greatest benefit at present will come from carefully applying what we already know, while keeping an open mind.