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## Patient information: Aspirin and cardiovascular disease (Beyond the Basics)

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### ASPIRIN AND HEART DISEASE OVERVIEW

Aspirin is a nonsteroidal antiinflammatory drug (NSAID) that has been used at moderate to high doses to decrease pain and reduce swelling. More recently, low dose aspirin has been used to treat and prevent cardiovascular disease (CVD).

Cardiovascular disease includes conditions such as heart attack, stroke, and peripheral artery disease (poor circulation) in the legs; these conditions cause more than 900,000 deaths each year in the United States alone.

Many large trials have shown that aspirin has benefits for the following groups:

- Virtually all people who have had a heart attack, stroke, or peripheral artery disease, as well as angina, stents, or bypass surgery
- Men and women who have no signs or symptoms but have an increased risk of a first heart attack (eg, due to diabetes or other risk factors)

However, the benefits of aspirin must be weighed against its possible side effects. People with a higher risk of heart attack have a greater potential for benefit. Thus, it is important to discuss the overall risk of cardiovascular disease with a healthcare provider to determine if aspirin could be of benefit.

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### ACTIONS OF ASPIRIN

Aspirin inhibits the clumping of platelets (even in low doses), has pain killing effects (in medium doses), and has antiinflammatory effects (in high doses).

Platelets are tiny cell fragments circulating in the blood that have a role in blood clotting. Under normal circumstances, platelets clump together and help form blood clots that stop bleeding. However, in coronary heart disease, platelets clump together in narrowed arteries, which leads to the development of a clot within the artery; the platelet "plug" itself and/or the clot that forms can block blood flow ([figure 1](#)).

This blockage can have significant consequences. When the arteries that supply blood to the brain are blocked, the supply of oxygen to the brain is decreased. The consequences of this depend upon the duration and the extent to which blood flow is cut off.

- When the arteries that supply blood and oxygen to the heart are blocked briefly, the result is an episode of chest pain, called **angina**. A blockage that is of longer duration can result in a **heart attack** (also called myocardial infarction).
- In the brain, when the blockage is brief, the result is a **transient ischemic attack** (TIA), and when the blockage is longer, the result is an ischemic **stroke**. (See "[Patient information: Stroke symptoms and diagnosis \(Beyond the Basics\)](#)".)

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## BENEFITS OF ASPIRIN

The benefits of aspirin have been studied in a wide range of patients, including the groups discussed below.

**Prevention of heart attack or stroke** — Several large trials, primarily among men, have shown that aspirin can prevent a first heart attack in people who have no signs or symptoms of cardiovascular disease (this is called primary prevention). However, these trials could not detect the effects of aspirin on the risk of stroke and death related to cardiovascular disease. In one trial of women, aspirin reduced the risk of a first stroke and also decreased the risk of a first heart attack among those 65 years and over [1].

The risk of a first heart attack or stroke in healthy men and women is far lower than among those who are having or have had an event. As a result, the benefit of reducing the risk of a first heart attack must be weighed against risks, such as gastrointestinal bleeding and other side effects. (See "[Side effects of aspirin](#)" below.)

Expert groups recommend aspirin to prevent heart attack or stroke for healthy men and women when the benefits outweigh the risks; this includes people with a 10-year risk of a coronary event of at least 6 to 10 percent. The 10-year risk can be calculated here for women ([calculator 1](#)) and for men ([calculator 2](#)).

For healthy men and women at low risk of a first event, the benefit of aspirin (prevention of heart attacks or strokes) is similar to the risk of harm (gastrointestinal bleeding). Thus, it is important to discuss your absolute benefits of aspirin on a first heart attack or stroke and your risks of aspirin with your healthcare provider.

The recommended daily dose of aspirin for prevention of heart attack and stroke is between 81 mg and 162.5 mg.

**During a heart attack** — Aspirin can be life-saving for people who are actively having a heart attack. Healthcare providers recommend that anyone who believes they may be having a heart attack immediately take 162 to 325 mg of plain aspirin (one half to one whole adult aspirin tablet). If only enteric coated aspirin is available then the pill should be crushed or chewed to obtain an immediate effect. (See "[Patient information: Heart attack \(Beyond the Basics\)](#)".)

**After coronary events** — Aspirin is recommended for people who have a history of the following:

- Heart attack
- Stable or unstable angina
- Coronary bypass graft surgery or percutaneous coronary intervention (angioplasty)

(See "[Patient information: Heart attack recovery \(Beyond the Basics\)](#)" and "[Patient information: Recovery after coronary artery bypass graft surgery \(CABG\) \(Beyond the Basics\)](#)" and "[Patient information: Heart stents and angioplasty \(Beyond the Basics\)](#)".)

