Aspirin as an anti-aging drug

In my book, *Stop the Clock: The Optimal Anti-Aging Strategy*, I discussed how aspirin has the potential to be a true anti-aging drug. But I also emphasized that aspirin comes with the risk of major bleeding, and that most doctors would likely recommend against taking it, unless one had had a previous heart attack.

But aspirin is readily available over-the-counter and is cheap, and lots of people have heard about its ability to prevent heart attacks, so many of them are taking it anyway. There’s also a large body of data on aspirin, because starting several decades ago, doctors began recommending it for primary prevention of heart attacks; millions of people have taken aspirin for many years.

**Primary and secondary prevention of heart attacks**

Let’s start with the basics. Primary prevention refers to the prevention of heart attacks or other cardiovascular events in someone who has never previously had such an event. The person may be considered to be high risk, meaning that signs and symptoms of cardiovascular disease (CVD) exist, signs such as blocked arteries, or symptoms such as *angina pectoralis* (chest pain). Current recommendations are that aspirin should not be used for primary prevention, since risks may outweigh benefits, but millions of people are doing so anyway.

Secondary prevention refers to those who have already had a previous cardiovascular event; doctors may or may not recommend aspirin in secondary prevention, depending on the patient.

Why the difference in recommendations? Because aspirin can cause major, possibly fatal, bleeding.
Aspirin and major bleeding

Long-term daily use of low-dose aspirin, approximately 80 mg a day, is associated with about a 50% relative increase of major bleeding events compared to those taking no aspirin.\(^1\) The absolute rate of bleeding — and we’ll see why this is important — was 5.6 bleeding incidents per 1000 person-years for aspirin, and 3.6 without aspirin. Major bleeding includes gastrointestinal bleeding and intracerebral hemorrhage, both of which are medical emergencies.

According to my calculations, you would need to take daily low-dose aspirin for 180 years to expect to experience one major bleeding event. Obviously that will vary depending on a number of individual factors; also, experiencing a major bleeding event would be extraordinarily bad, and the averages would be little consolation.

It’s useful to add that, “irrespective of aspirin use, diabetes was independently associated with an increased risk of major bleeding episodes” of about 36% — compare to aspirin use risk of about 50%. (From same reference as above.)

A major review (meta-analysis) of aspirin studies concluded that it is “of uncertain net value” in primary prevention because the risk of bleeding may outweigh the reduction in coronary events; there’s a better risk/benefit ratio for secondary prevention.

Aspirin prevents cancer

So, I’m sure you’re asking, if risks outweigh or equal the benefits in prevention of heart attacks, why are we discussing aspirin use? Because aspirin prevents cancer too, and this must be added to the risk/benefit ratio to determine the true utility for health of aspirin use.

A meta-analysis led by Peter Rothwell found that long-term, low-dose aspirin users had more than 20% lower risk of dying from cancer.\(^2\) Reduction in risk of gastrointestinal cancers was more than 50% (hazard ratio 0.46).

Aspirin also reduces the risk of cancer metastasis by more than one third.\(^3\)

In contrast, in primary prevention of heart attacks, while there’s a small reduction in coronary events, the death rate due to vascular causes is no different between aspirin users and non-users.

Therefore it seems that aspirin works far better at cancer prevention than at heart attack prevention.

According to the American Cancer Society, a man’s lifetime risk of developing any cancer is about 43%, and his risk of dying from cancer is about 23%.

According to the Rothwell analysis, the absolute reduction in cancer deaths from taking aspirin over a 20 year period is about 7%. Therefore if you take aspirin for that long, your risk of death from cancer may drop from from 23% to 16%. Many other factors are involved here, however; for instance, lung
cancer is still one of the major causes of cancer death, and not smoking cigarettes reduces that risk to next to nothing.

Let’s say you take aspirin over the next 20 years, and you don’t smoke, thus taking lung cancer risk, at about 7% lifetime, out of the equation. Without aspirin, your risk of dying from cancer may be on the order of 16%. (This is lifetime risk, and I’m assuming that you are older, not say in your twenties or thirties.) With aspirin, your risk of cancer death may drop to about 9%. Meanwhile, your risk of a major bleeding event over that 20 years is about 10%.

But, even if you don’t take aspirin, you have a risk of major bleeding over 20 years of about 7% (3.6 x 20/1000). So your absolute risk of major bleeding with aspirin is only 3% more over 20 years (relative risk more like 50% greater).

Meanwhile, you’ve just about cut your risk of death from cancer in half. Aspirin also has efficacy against heart disease, stroke, and possibly dementia. (Rothwell et al. found that aspirin lowers risk of cancer by 20%; the difference here, where I’m saying 50%, is due to a 20-year timeline, and not smoking.)

I haven’t been able to find how many people die from episodes of major bleeding, but it does not make the top ten. Heart disease is the leading cause of death, and cancer is the second, and aspirin has efficacy in preventing both. It’s also important to keep in mind one’s relative risk for any of these diseases; for instance, a man in his twenties has a low risk of heart disease and cancer, and taking aspirin would likely have a risk/benefit ratio much more skewed toward risk than benefit. A man in his sixties (like me) likely has a much more favorable risk/benefit ratio, since his risk of heart disease and cancer is much higher, while the risk of bleeding is not nearly as increased.

Peter Rothwell, the neurologist who had led many of the most recent studies, has said, “It does look like a good bet for men over 50. When you add the cancer benefits to the vascular benefits, it looks more compelling.” He takes it himself.

How does aspirin work?

Most of the speculation on the mechanism of aspirin on cancer has focused on inflammation, which aspirin reduces, or platelets, which aspirin inactivates.

While these could very well be at work, there’s another possible mechanism, which is lowering of body iron stores. The ability of aspirin to cause bleeding may turn out to be both a bug and a feature. Most of the iron in the body is contained in red blood cells, and bleeding lowers these levels. In turn, high iron levels are linked to many diseases and perhaps even to aging itself.

Low-dose aspirin is 80 mg a day, while one adult size aspirin tablet is 325 mg. Risk of major bleeding rises considerably with dose, and a higher dose of
aspirin has not been shown to be more effective in prevention of cancer and heart attacks than low-dose.

**Conclusion: aspirin as an anti-aging drug**

Aspirin is cheap, over-the-counter, and could be one of the strongest disease prevention and life-extending interventions available, but it is not without risks. Recommendations on aspirin seems to have gone through two phases, and are entering a third: first recommended to prevent heart attacks; then, when it was discovered that primary prevention and bleeding risks cancelled out each other, it was recommended only for some people who were at high risk for a (or another) heart attack; now, this is changing again, since it’s been discovered that aspirin helps to prevent cancer – and if iron-lowering is the mechanism, possibly many other diseases as well.

Should you take low-dose aspirin? Ask your doctor. (Please see our disclaimer.)

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