

CANCER PREVENTION: ANOTHER POTENTIAL BENEFIT OF LOW-DOSE ASPIRIN

Cancer killed close to 607,000 Americans in 2019, accounting for 1 in 4 deaths.¹ While aspirin reduces the risk of developing heart attacks in men and strokes in women,² this inexpensive medication also shows promise to prevent certain cancers.^{1,3}

Cancer prevention

Cancer cases are expected to increase by 57% worldwide in the next 20 years.⁴

- Half of all cancers are preventable and could be avoided by fully implementing current guideline-based recommendations
- Simple strategies for lowering the risk of heart disease also help prevent many types of cancer.
- New efforts are required to put this knowledge into practice.

Aspirin and cancer

- The benefits of aspirin in secondary prevention of heart attacks are well documented. Individuals at high risk for a first heart attack or stroke benefit as well. New evidence suggests that aspirin is also useful in cancer prevention.^{1,3}
- While the evidence for aspirin is strongest for prevention of colorectal cancer, the benefits of aspirin appear to apply to other types of cancer.
- Scientific data to support cancer prevention by aspirin come from:
 - Clinical trials of aspirin originally conducted to study heart disease and stroke prevention, including long-term follow-up after trial completion.
 - Clinical trials of aspirin in pre-cancerous conditions, such as polyps in the colon.
 - Clinical trials of aspirin in patients with familial cancer syndromes, such as Lynch syndrome.
 - Long-term observational studies of aspirin use in populations.
 - Case-control studies of specific cancer types.^{1,3}

Any decision to recommend aspirin to patients must balance the potential harms of aspirin against aspirin's potential benefits. Aspirin should not be recommended for individuals whose risk of future cancer, heart attacks and/or strokes is not elevated.

MECHANISMS PROPOSED FOR THE ACTION OF ASPIRIN IN CANCER PREVENTION

Blocking inflammation:

Inflammation is a normal response to tissue injury or infection that helps clear infection or helps heal injured tissue. Over time, however, chronic inflammation can cause DNA mutations and promote tumor development and growth. Aspirin reduces chronic inflammation and the production of inflammatory proteins (prostaglandins) that may promote cancer.⁵

Inhibiting platelet function:

Platelets can promote cancer spread by shielding cancer cells from the immune system. Aspirin may interfere with platelets' shielding effect and make cancer cells less likely to metastasize.



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Aspirin and cancer prevention: What's the evidence?

- Data from several clinical trials whose primary endpoints were vascular events, shows that aspirin taken daily for 4 or more years was associated with an 18% reduction in overall cancer deaths.¹
- This risk reduction was due mainly to fewer cancer deaths among participants who took aspirin for at least 5 years.¹
- Long term follow-up of a large aspirin clinical trial showed a 20% reduction in risk of colorectal cancer over extended follow-up.³
- Long-term follow-up of patients with a hereditary cancer syndrome (Lynch) showed a 30-40% reduction in risk of new cancers over extended follow-up.⁶
- Long-term daily aspirin use (≥ 325 mg/day for ≥ 5 years) is associated with reduced incidence of colorectal cancer compared with non-users.^{1,3}
- Clinical trials using 75–325 mg per day of aspirin for 3 years reduced the risk of recurrence of precancerous colorectal polyps by 17%.^{3,7}
- The use of aspirin for 5 years or longer reduced the incidence and mortality of colorectal cancer by 30%–40% after 20 years of follow-up.³
- Use of a daily low dose aspirin lowers the risk of ovarian cancer by about 20%.⁸
- A recent study found that women who took aspirin on a regular basis reduced their risk of developing melanoma by 21%.⁹
- However, a recent clinical trial did not show a benefit, and maybe even harm, for aspirin use among older adults who initiated aspirin at an older age.^{10,11}

Mounting evidence supports the use of aspirin for the primary prevention of certain cancers. Aspirin prescription should be based on careful evaluation of individual risk factors and potential harms from bleeding.

Aspirin prescribing: how to decide

- Universal use of aspirin is not recommended even in high-risk populations.
- Aspirin has potential harms, especially risk of bleeding.
- Aspirin may be less effective or even harmful if started for the first time at an older age
- The decision to prescribe aspirin should be individualized.
- Before prescribing aspirin, consider the balance of potential benefits vs. potential harms and discuss this with your patient.

Aspirin harms

- Excessive bleeding is the greatest potential harm from aspirin, including gastrointestinal bleeding and hemorrhagic stroke.^{1, 12}
- These harms increase with age and are greater for men than women.¹²
- Harms are more strongly related to dose than duration of aspirin use.⁴
- In women and men without risk factors for gastrointestinal bleeding, the rate of excess serious bleeding associated with aspirin is as follows:²

Age (years)	Bleeding Events per 1,000 Person-Years	
	Women	Men
60-69	1.2	2.4
70-79	1.8	3.6
>79	3.0	6.0

Aspirin benefit

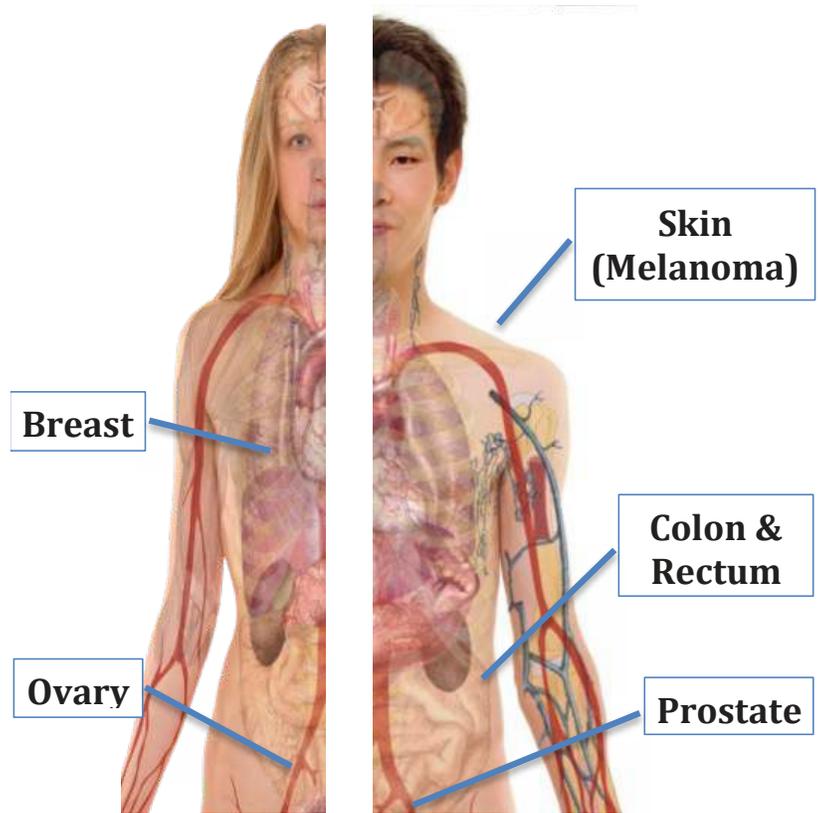
Aspirin reduces some cancers by 18% overall.^{3,8,13} Aspirin may be especially effective in preventing:

- Colorectal Cancer
- Prostate Cancer
- Breast Cancer
- Melanoma
- Ovarian Cancer

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ASPIRIN DOSE AND OTHER FACTORS AFFECTING THE IMPACT OF ASPIRIN ON CANCER

- Factors that affect aspirin's impact on cancer include age, population characteristics, dose and duration of use.^{1,2}
- Most studies have not seen a sizable difference in the benefits from aspirin between low-dose aspirin (e.g., 81 mg) and higher doses.¹
- Certain genetic and lifestyle factors impact the extent to which aspirin can reduce cancer risk or cancer progression, but these factors are still under investigation.⁹
- Certain cancer subtypes may show greater potential benefit from aspirin. For example, in colorectal cancer patients, aspirin treatment was particularly effective in patients with overexpression of tumor COX-2 (an enzyme that triggers inflammation).¹⁵
- The benefits of aspirin in cancer prevention increase with duration of use.



Cancer Sites Affected by Aspirin

“Talk with your patients about aspirin therapy for both cardiovascular disease and cancer prevention.”

A practical approach

- Aspirin should be considered for those at high risk of colorectal cancer.
- Current US Preventive Services Task Force (USPSTF) recommendations on aspirin use include colorectal cancer prevention in the rationale for aspirin use.
- Until new guidelines are available, it may be appropriate to consider aspirin's cancer prevention benefits, particularly in patients who are:
 - At very high risk for colorectal cancer.
 - At moderate-high risk for a first heart attack or stroke who are not already taking aspirin.
 - [Click to see the American Heart Association Risk Estimator.](#)



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