

2019 Chinese expert consensus statement on aspirin application in primary prevention of cardiovascular disease

Xiao-Ying Li, Zhong-Wei Shi, Dong Zhao, Da-Wei Yin, On behalf of the writing group of 2019 Chinese expert consensus statement on aspirin application in primary prevention of cardiovascular disease

Aspirin has been widely used in primary prevention of atherosclerotic cardiovascular disease (ASCVD).^[1-4] Aspirin for primary prevention of ASCVD does not significantly reduce all-cause mortality or cardiovascular mortality, and the main benefit of aspirin for primary prevention of ASCVD is a significant reduction in non-fatal ischemic events including myocardial infarction, transient ischemic attack, ischemic stroke, and major cardiovascular events (cardiovascular death, non-fatal myocardial infarction, and non-fatal stroke), whereas the main risk is a significant increase in non-fatal major bleeding events including gastrointestinal bleeding and intracranial hemorrhage.^[5-8] Obviously, it makes sense to prescribe aspirin for primary prevention only if the benefits clearly outweigh the risks. In Europe and the United States, the benefit-risk ratio of aspirin for primary prevention has gradually decreased compared to the past due to the wide application of other primary prevention measures such as blood pressure reduction, smoking cessation, and the use of statins. Three recent large-scale clinical trials have shown that aspirin has no net clinical benefit when used in low-risk populations.^[9-13] Therefore, aspirin must be used with caution in the primary prevention of ASCVD.

On the contrary, it is not clear yet that aspirin has primary prevention value. First, an up-to-date summary of all primary prevention clinical trial data shows that aspirin can still significantly reduce major cardiovascular events.^[6,7] Second, patients who are unable to take other primary prevention measures (such as statins) may need aspirin more often.^[14,15] Third, through careful evaluation, it is possible to identify individuals with a relatively reasonable benefit-risk ratio. Primary prevention of aspirin is mainly applicable to adults aged 40 to 69 years who still have high risk of ischemia ($\geq 10\%$ expected risk for 10 years) after taking active intervention, with low risk of bleeding and are willing to take low-dose aspirin for long-term prophylaxis use.^[3,15,16]

Based on the latest evidence-based medicine and China's national conditions, we propose the following recommendations of aspirin for primary prevention of ASCVD in Chinese population as follows:

1. For all patients who intend to use aspirin, four measures must be taken before medication (I, C):
 - (a) Carefully weigh the benefit-bleeding risk ratio, screen and exclude high-risk populations of bleeding, and periodically or dynamically assess the benefit-bleeding risk ratio during usage, solve the problems timely when any found.
 - (b) According to the relevant medical specialist regulations,^[17] take preventive measures to reduce the risk of gastrointestinal bleeding, treat gastrointestinal active pathological changes in advance (including *Helicobacter pylori*), if necessary, prophylactically apply proton pump inhibitor or H2 receptor antagonists.
 - (c) Adhere to a healthy lifestyle (smoking cessation, careful drinking, scientific diet and proper exercise) and positively control blood pressure, blood sugar, and blood lipid levels. Aspirin should be considered when hypertensive patients keep their blood pressure at $< 140/90$ mmHg.
 - (d) Doctors should communicate with patients and obtain their consent prior to prescribing aspirin.

2. The following ASCVD high-risk groups may consider taking low-dose aspirin (75–100 mg/day) for primary prevention (IIb, A):
 - (a) Adults aged 40 to 69 years, if the 10-year expected risk of ASCVD is $\geq 10\%$ for their initial risk assessment, and there are still ≥ 3 major risk factors that remain poorly controlled or difficult to change after active treatment intervention (eg, family history of early onset of cardiovascular disease), aspirin can be considered to reduce the risk of ischemic cardiovascular disease.

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Correspondence to: Xiao-Ying Li, Chinese People's Liberation Army General Hospital, No. 28, Fuxing Road, Haidian District, Beijing 100853, China
E-Mail: xyl301@163.com

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(b) ASCVD risk assessment can refer to relevant domestic guidelines.^[4,18,19] The main risk factors include: (1) hypertension, (2) diabetes, (3) dyslipidemia (total cholesterol ≥ 6.2 mmol/L or low-density lipoprotein ≥ 4.1 mmol/L or high-density lipoprotein < 1.0 mmol/L), (4) smoking, (5) family history of early onset of cardiovascular disease (first-degree relatives' age < 50 years), (6) obesity (body mass index ≥ 28 kg/m²), (7) coronary artery calcification score ≥ 100 ^[20-23] or non-obstructive coronary artery stenosis ($< 50\%$).^[24-27] Coronary imaging examination of primary prevention subjects is not recommended routinely.

3. The following populations are not recommended to take aspirin for primary prevention of ASCVD^[3,15,19]:

(a) Population aged ≥ 70 years or < 40 years old (III, B): The current evidence is insufficient to make a primary prevention recommendation, and individualized evaluation is needed.

(b) Population at high risk of bleeding (III, C): In use of other drugs that increase the risk of bleeding (including anti-platelet drugs, anti-coagulants drugs, hormones, and non-steroidal anti-inflammatory drugs), gastrointestinal bleeding, peptic ulcer, or history of bleeding in other sites, age ≥ 70 years, thrombocytopenia, coagulopathy, severe liver disease, chronic kidney disease stage 4 to 5, uneradicated *H. pylori* infection, uncontrollable hypertension.

(c) Patients whose risk of bleeding was assessed to be greater than the risk of thrombosis (III, C).

4. A brief flow chart of population screening for aspirin in primary prevention [Figure 1].

List of expert groups (sorted by last name): Xiao-Juan Bai, Lu-Yuan Chen, Jin Fan, Run-Lin Gao, Dong-Feng Gu, Yi-Fang Guo, Ming-Li He, Ying-Long Hou, Qi Hua, Yong Huo, Ai-Ping Jin, Wei Li, Xiao-Ying Li, Yan Li, Li Yong,

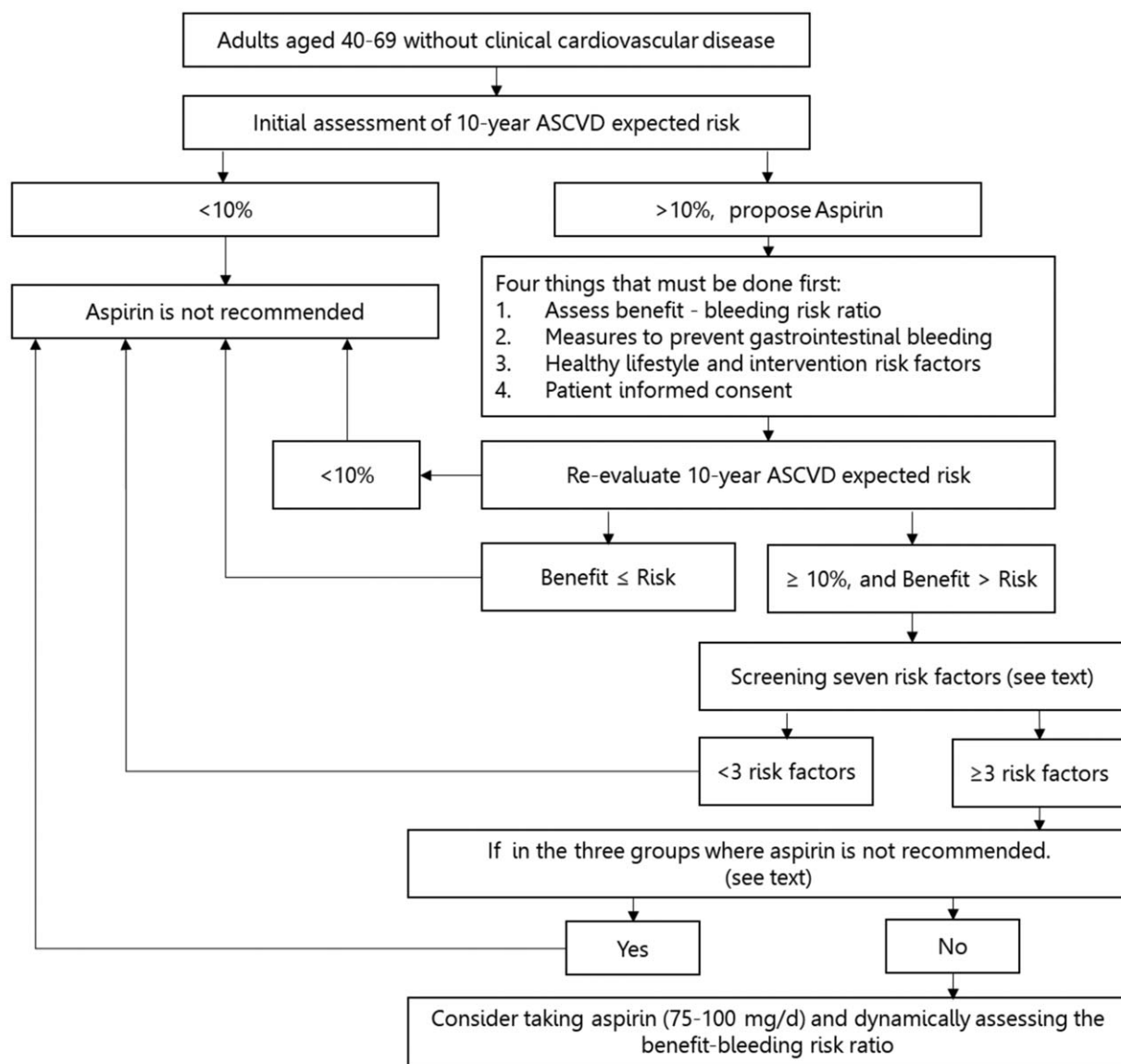


Figure 1: A brief flow chart of population screening for aspirin in primary prevention. ASCVD: Atherosclerotic cardiovascular disease.

Liu Chaozhong, Dai-Hong Liu, Jing Liu, Hong-Bin Liu, Mei-Lin Liu, Qiang Liu, Ming Lu, Bin Luo, Shu-Zhen Lu, Ming-Kang Pan, Dan-Tao Peng, Ming-Zhao Qin, Wei-Hong Sha, Pei-Yan Shan, Zhong-Wei Shi, Xu-Bo Shi, Zhi-Qiang Song, Yi-Hong Sun, Xi-cheng Wang, Xiao-Ming Wang, Di Wu, Yang-Feng Wu, Qian Xiao, Hao Xu, Feng Xu, Xiao-Wei Yan, Yun-Mei Yang, Da-Wei Yin, Hai-Tao Yuan, Cun-Tai Zhang, Dong Zhao, Ying-Xin Zhao, and Song-Bai Zheng.

Conflicts of interest

None.

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