

Honorary Editor: Dr. Milan Chag



Aspirin is available all over the world since 1899. Its benefit as antiplatelet drug for secondary prophylaxis outweigh the risk of bleeding and is widely used for this purpose. It's use for primary prophylaxis for prevention of CV events has not been clear because the bleeding risk outweighs the benefits.

Three large randomized trials were published in 2018 and have thrown more light on role of aspirin for primary prevention. These trials and the latest data is summarized in this discussion.

Should We Use Aspirin for Primary Prevention?

Aspirin is widely used all over the word since more than a century. In fact, its use has been so wide that a dictum was coined: "One Aspirin a Day Keeps the Doctor Away!" It was not uncommon that people used to take Aspirin after age 40 or 50 for primary prevention even without doctor's prescription as it used to be and is still OTC (over the counter) drug! It's role for life-long secondary prophylaxis for atherosclerotic cardiovascular, cerebrovascular and peripheral arterial disease is well established and must be continued unless contraindicated. Its role as the first time use is vital and well established in acute conditions like acute coronary syndrome, stroke, and percutaneous coronary interventions. However, its use for primary prophylaxis of cardiovascular events is not clear even in patients with high cardiovascular risk (like presence of DM, HT, dyslipidaemia or tobacco use). Marginal benefits of reduction in MI and

ischemic stroke were outweighed by increased incidence of major bleeds in GI tract and increased haemorrhagic stroke. Several meta-analyses in past also showed same concern. In ESC 2018 meet, three large, randomized trials (ASCEND, ARRIVE and ASPREE) were presented and simultaneously published in NEJM and the Lancet. Later, meta-analysis on same was published this year in JAMA. These new data and their conclusions are presented here.

ASCEND (A Study of Cardiovascular Events in Diabetes: L Bowman et al. N Engl J Med August 26, 2018) was a large randomized trial where 15,840 adults who had diabetes but no evident cardiovascular disease were randomized to receive aspirin at a dose of 100 mg daily or matching placebo and followed for 7.4 years. The rate of composite of serious vascular events (MI, stroke or CV death) was 8.5% with aspirin as compared with 9.6% with placebo (rate

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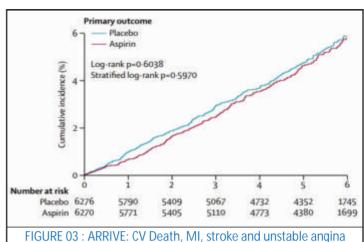






ratio, 0.88; 95% confidence interval [CI], 0.79 to 0.97; P = 0.01). This 12% decrease in the rate of serious vascular events came at the cost of a 29% increase in the rate of major bleeding events (4.1% with aspirin vs. 3.2% with placebo; rate ratio, 1.29; 95% CI, 1.09 to 1.52, P = 0.003). Allcause mortality was not different between the groups (rate ratio, 0.94; 95% CI, 0.85 to 1.04). GI or other cancers were also not different between the groups. The absolute lower rates of serious vascular events were of similar magnitude to the absolute higher rates of major bleeding, even among participants who had a high vascular risk (estimated 5-Yr Risk of Serious Vascular Event at Baseline of >10%) (Figure 1 and 2).

ARRIVE (Aspirin to Reduce Risk of Initial Vascular Events, J M Gaziano et al. The Lancet August 26, 2018) was a large randomized trial where 12,546 adults who had moderate risk of cardiovascular



disease (10-year risk of coronary heart disease 10-20%) but no evident cardiovascular disease or diabetes were randomized to receive aspirin at a dose of 100 mg daily or matching placebo and followed for 5 years. Aspirin was not associated with a

reduction in adverse cardiovascular events. The incidence of the composite primary outcome of myocardial infarction, stroke, unstable angina, transient ischemic attack, or death from cardiovascular causes was 4.3% with aspirin and 4.5% with placebo (hazard ratio, 0.96; 95% CI, 0.81 to 1.13; P = 0.60), whereas the incidence of gastrointestinal bleeding events with aspirin was twice the incidence with placebo (hazard ratio, 2.1; 95% CI, 1.36 to 3.28; P<0.001). All-cause mortality was also similar between the groups. Authors concluded that the event rate was much lower than expected, which is probably reflective of contemporary risk management strategies, making the study more representative of a lowrisk population. The role of aspirin in primary prevention among patients at moderate risk could therefore not be addressed. Nonetheless, the findings with respect to aspirin's effects are consistent with those observed in the previously published low-risk primary prevention studies (Figure 3).

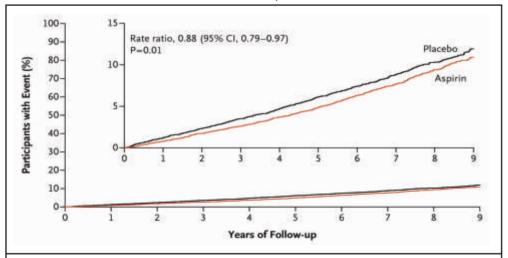


FIGURE 01: ASCEND: The primary efficacy outcome: 3 point MACE

Type of Event	Aspirin (N =7740)	Placebo (N=7740)		Rate Ratio (95)	% CI)	P Value
	no of problèmes	الأفارة ومعالماتها				
Wajor B eading						
huationis hemonrage	55 (0.7)	45 (0.6)		-	1 22 (0.82-1.81)	
sight-threatering hidesing in eye.	57 (0.7)	54 (0.8)	88		0.89 (0.5227)	
Serious gostrointestinal bleeding	107 (1.5)	101 (1.2)		-	- 1.36 (1.35 1.75)	
Office may receip	24 (1.0)	43 (0.6)		040 Page	170 (178-274)	
Any major bleeding	314 [41]	245 (3.2)		-	1.29 (1.08-1.52)	0.003
		2.5	32	10 19	20	
		-	9000	65250 5550	S 2000	
			Aspirin Bell	ter Placebo B	elter	

FIGURE 02: ASCEND: The primary Safety outcome: Bleeding Events





ASPREE (Aspirin in Reducing Events in the Elderly, J.J. McNeil et al. N Engl J Med Sept 16, 2018) was a large randomized trial where 19,114 70 years and no CV participants disease, dementia, and disability were randomized to receive aspirin at a dose of 100 mg daily or matching placebo and followed for 5 years. In the ASPREE trial, the use of aspirin conferred no benefit with respect to the prespecified composite primary end point of death, dementia, or persistent physical disability, an issue of considerable importance in the elderly (hazard ratio with aspirin vs. placebo, 1.01; 95% Cl, 0.92 to 1.11; P = 0.79). Of the primary end-point events that occurred, half were death, 30% dementia, and 20% persistent physical disability. Similar to the ARRIVE trial, the ASPREE trial showed no evidence of a cardiovascular benefit of aspirin (hazard ratio for cardiovascular disease with aspirin vs. placebo, 0.95; 95% CI, 0.83 to 1.08), yet the risk of major bleeding was again 39% higher with aspirin than with

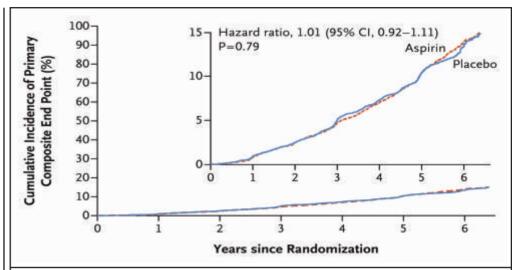


FIGURE 05 : ASPREE :
Primary Endpoint:(death from any cause, dementia, or persistent physical disability)

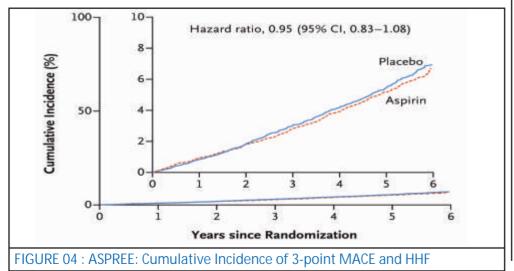
placebo (hazard ratio, 1.39; 95% CI, 1.18 to 1.62; P<0.001).

In ASPREE study, secondary end point of death from any cause was potentially higher with aspirin than with placebo (hazard ratio, 1.14; 95% CI, 1.01 to 1.29). This finding is at odds with the results of previous primary prevention trials of aspirin and with the results of the ASCEND and ARRIVE trials. The potentially higher mortality with aspirin was limited to the Australian cohort and was driven by an

unexpectedly higher risk of cancer-related death with aspirin than with placebo (hazard ratio, 1.31; 95% CI, 1.10 to 1.56). These latter data should be interpreted with caution. No other trial has shown increased incidence of cancer with aspirin. Authors concluded that the use of low-dose aspirin as a primary prevention strategy in older adults resulted in a significantly higher risk of major haemorrhage and did not result in a significantly lower risk of cardiovascular disease than placebo. (Figure 4 and 5).

Conclusion:

From these three trials and Metaanalysis of Aspirin in primary prevention (Figure 6) for cardiovascular events, for primary prevention, in which risk is determined largely by age and the presence or absence of diabetes, the benefit–risk ratio for prophylactic aspirin in current practice





is exceptionally small compared to risk of increased bleeding. If we really want to advocate something for primary prevention beyond healthy lifestyle of diet, exercise and tobacco free life, is use of Statin in persons with high cardiovascular risk. In primary prevention trials, the use of statins was associated with a 25% decrease in the risk of major vascular events for every 1 mmol per litre (approximately 38 mg/dL) decrease in the LDL cholesterol level (rate ratio with statin vs. placebo, 0.75; 95% CI, 0.69 to 0.82) without any serious side-effects (Figure 7).

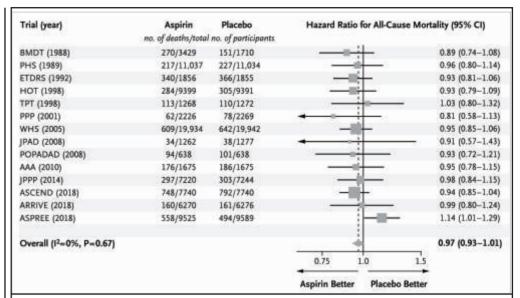


FIGURE 06: Meta-analysis: Aspirin and All-Cause Mortality in 14 Primary Prevention Trials

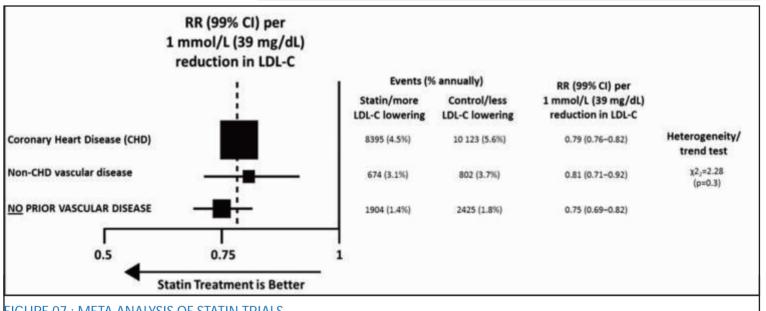


FIGURE 07 : META ANALYSIS OF STATIN TRIALS

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- 1. ASCEND: Effects of Aspirin for Primary Prevention in Persons with Diabetes Mellitus. Louise Bowman et al. N Engl J Med 2018: 379:1529-1539
- 2. ARRIVE: Aspirin to Reduce Risk of Initial Vascular Events, J M Gaziano et al. The Lancet August 26, 2018
- 3. ASPREE: Effect of Aspirin on All-Cause Mortality in the Healthy Elderly. John J. McNeil et al. N Engl J Med 2018; 379:1519-1528
- 4. Editorial: Paul M Ridker. Should Aspirin Be Used for Primary Prevention in the Post-Statin Era? N Engl J Med 2018; 379:1572-1574





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