Reviewer’s report

Title: Applicability of the ankle-brachial-index measurement as screening device for high cardiovascular risk: an observational study

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Reviewer: Victor Aboyans

Reviewer’s report:

This paper is of importance in the field of use of the Ankle-brachial Undex (ABI) for CVD-risk stratification in general practice. It is well and clearly written. The authors are commended to perform such an analysis because data regarding the applicability of guidelines to use the ABI in general practice are very rare. However, at this point, I must raise several issues which need to be addressed in a compulsory revised version of the manuscript prior to its acceptance for publication:

Major points:

- Very recently the new ACCF/AHA guidelines on PAD have changed the recommendation on the use of ABI as follows: "The resting ABI should be used to establish the lower extremity PAD diagnosis in patients with suspected lower extremity PAD, defined as individuals with 1 or more of the following: exertional leg symptoms, nonhealing wounds, age 65 years and older, or 50 years and older with a history of smoking or diabetes." While the authors were probably unaware about this while writing the manuscript, I am sorry to say that they should now redo their analysis using this new recommendation.

- Page 6: I am afraid the estimations of risk factors prevalence are too approximative. As for example, the authors provided a mean prevalence of 22.5% of active smoking for the Dutch population over 50, by averaging the prevalence of smoking in people between 50-64 (29%) and those older than 65 (14%). But it is not sure that the number of people in these 2 age groups living the Netherlands would be the same. The age band distribution within the Dutch population should be taken into account. Same issue for all the other risk factors.

- Page 7, 2nd paragraph: the authors estimate that only 10% of people >50 yrs are risk-factor free, "...largely explained by current and former smoking behaviour". But to reach this result, the only considered current smokers....

- Page 7 and Table 1: I don’t have the details of what needs so much time to measure ABI, but the authors should exclude arm pressures measurement, because they should have be done even in the absence of the ABI, and unclothing-clothing time should also be excluded (if they had been included) because the patient should be undressed for an adequate clinical examination. Only the marginal time corresponding to the measurement of ankle arteries pressures should be taken into account.
- Page 7, paragraph on feasibility: it is unclear how the authors estimate that the target population for ABI screening (according to the old AHA guidelines...) is 31.1%. I have seen nowhere the calculus.

- Page 9, paragraph 3: the authors calculated that using the PREVALENT model, 63% of asymptomatic PAD patients would have been detected. I think the calculus is wrong, because based on Figure 1, the screening according to the PREVALENT model lead to the detection of 55 cases of PAD out of 117 total cases: 47% only! I cannot consider this result acceptable. Maybe this rate would be higher after recalculations done to apply the new AHA guidelines. Also, it is interesting to see whether the average ABI of patients detected through PREVALENT model is lower than when ALL subjects are screened. In other words, maybe the PAD patients missed by the PREVALENT model have less severe PAD, for example ABI between 0.80 and 0.89, and the PEVALENT model would have detected those at higher CVD risk because of lower ABI levels.

- In the PREVALENT model, how "pst smokers" have been defined? The definition may affect the model's output.

Minor points:

Page 1 - It is not true that the ABI presents 90% sensitivity to detect 50%+ PAD. Please read Lijmer et al Ultrasound Med Biol 1996.

Page 3- Last paragraph: the reference 12 does not really support your point. Please consider Mohler et al, Vasc Med 2004 (a GP survey from PARTNERS study).

Page 5 - I am a bit confused by the "Results and Discussion" subchapter, going back and through between results and comments. If this is the journal's request, I am OK. Otherwise, please separate Results and Discussion.

Page 6 - all the data presented in this page could have been more clearly presented in a table.

Table 1 - what is "PA"? Physicians assistant??

**Declaration of competing interests:**

I have no conflicts of interest to disclose.