Reviewer's report

Title: Ankle Blood Pressure as a Predictor of Total and Cardiovascular Mortality

Version: 1 Date: 29 October 2007

Reviewer: Jackie F Price

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General

I found this an interesting paper. It is becoming increasingly accepted that the ankle brachial index (ratio of systolic blood pressure at the ankle to that in the arm) is a useful indicator of cardiovascular risk in populations aged over 50 years, with a low ratio (a reduced BP in the ankle and/or a raised brachial BP, both taken at rest) associated with increased cardiovascular morbidity and mortality. It is also known that at the extreme upper end of the ABI distribution (generally above 1.4), there is also an increase in cardiovascular risk, which may be due to reduced compressibility of the vessels. However, the value of the ankle systolic BP alone (without conversion to a ratio) as a risk factor for CVD has not been widely researched.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

The authors are tackling two issues, which they argue are related. These are (i) in middle aged, generally healthy subjects, is the resting ankle systolic BP associated with subsequent cardiovascular and all cause mortality, and (ii) is brachial systolic BP, measured during exercise, similarly associated with subsequent mortality. To answer the first of these questions, I would like to see an analysis of morbidity across various categories of ankle systolic BP, before introducing the exercise brachial BP. As described above, it is generally found that, at least in older populations, it is a LOW ankle pressure that is indicative of increased CV risk (when combined with the brachial BP in the ABI). Therefore, to categorise an ankle pressure of <175 as 'normal' is contrary to current thinking and would require justification i.e. by showing that there is a steady increase in CV risk associated with increasing ankle pressure over the entire range of ankle BP readings, rather than what one might expect (a J or U shaped curve). If this analysis finds that particularly low ankle pressures are associated with increased CV risk in this population, then I would argue that those measurements should not be counted as 'normal'.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. In the abstract, 'exercise blood pressure' and 'normal ankle pressure' need to be more precisely defined. Mention is made of resting brachial BP but this is not
used to define the BP groups as implied in the abstract.

2. Under 'study population', please give more detail on who the patients were and why they were referred for exercise testing.

3. Which 'exercise BP' was used in the analysis - that measured at 2 minutes or that measured immediately prior to test termination

4. Would be useful to have results of 'self-reported history of CVDs' at baseline in table 1

5. Throughout document, care needs to be taken to specify exactly which BP is being refered to eg 'resting ankle systolic BP' and 'brachial systolic BP during/after exercise'

6. Table 1. Combination of baseline and follow-up data in table 1 is slightly confusing - please separate out final two rows and clearly indicate that these refer to follow-up. Also give 'proportion male', explain 'METs', explain whether 'medication' is ANY medication (including topical treatment for unrelated conditions) or oral medications only or CVD medications only, and give 'n' for all proportions

7. Figures - in my pdf version, it was not possible to tell which group was which from the way the lines were shown

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.