

COMMENTS AND RESPONSES

Response to Comment on: Hanssen et al. Associations Between the Ankle-Brachial Index and Cardiovascular and All-Cause Mortality Are Similar in Individuals Without and With Type 2 Diabetes: Nineteen-Year Follow-Up of a Population-Based Cohort Study. Diabetes Care 2012;35:1731-1735

Dr. Tasci (1) seems to have completely missed the main point of our article (2). He seems to think that we found no associations between the ankle-brachial index (ABI) and all-cause and cardiovascular mortality, whereas in fact we found strong associations, which, importantly, were similar in individuals with and without diabetes.

1. The most recent American Heart Association guideline indeed states that the most precise estimate of the ABI is obtained by measuring pressures in both ankle arteries (3). However, even if we misclassified some individuals as having a low ABI, we still found strong associations between the ABI and mortality. The same is true if we misclassified any individuals with a high ABI (>1.4) as having normal ABI. Therefore, this issue, if anything, would result in underestimation of the

- associations between abnormal ABI and outcomes.
2. The conclusion that the higher prevalences (ranging from 3 to 5.7%) of a high ABI reported in other Dutch cohort studies are attributable to the ABI measurement method used is unwarranted. These different prevalences may also be attributable to chance, and/or to higher prevalence of risk factors for having a high ABI (>1.4) in these cohort studies. In fact, in the (Dutch) Cohort on Diabetes and Atherosclerosis Maastricht (CODAM) study (4), a cohort study similar to the Hoorn Study but with ankle pressures determined in both arteries of each leg, the prevalence of a high ABI was also very low (1.6%).
 3. It is unlikely that including individuals with impaired glucose metabolism in analyses comparing individuals with and without diabetes confounded our results because we adjusted for the presence of impaired glucose metabolism in all analyses.

In conclusion, our data show a strong association between a low ABI and adverse outcomes, which was similar in individuals without and with diabetes. In individuals without diabetes, a low ABI may be used for refinement of risk stratification (5). It should now be formally investigated whether this is also the case in individuals with diabetes, an issue we could not address in our study because of lack of sufficient power.

NORDIN M.J. HANSSSEN, MD^{1,2}
 MAYA S. HUIJBERTS, MD, PHD^{1,2}
 CASPER G. SCHALKWIJK, PHD^{1,2}
 GIEL NIJPELS, MD, PHD³
 JACQUELINE M. DEKKER, PHD³
 COEN D.A. STEHOUWER, MD, PHD^{1,2}

From the ¹Cardiovascular Research Institute Maastricht, Maastricht University Medical Center, Maastricht, the Netherlands; the ²Department of Internal Medicine, Maastricht University Medical Center, Maastricht, the Netherlands; and the ³Department of Epidemiology and Biostatistics, EMGO Institute for Health and Care Research, VU University Medical Center, Amsterdam, the Netherlands.

Corresponding author: Nordin M.J. Hanssen, nmj.hanssen@maastrichtuniversity.nl.

DOI: 10.2337/dc13-0742
 © 2013 by the American Diabetes Association. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. See <http://creativecommons.org/licenses/by-nc-nd/3.0/> for details.

Acknowledgments—No potential conflicts of interest relevant to this article were reported.

References

1. Tasci I. Comment on: Hanssen et al. Associations between the ankle-brachial index and cardiovascular and all-cause mortality are similar in individuals without and with type 2 diabetes: nineteen-year follow-up of a population-based cohort study. *Diabetes Care* 2012;35:1731–1735 (Letter). *Diabetes Care* 2013;36:e25–e26
2. Hanssen NM, Huijberts MS, Schalkwijk CG, Nijpels G, Dekker JM, Stehouwer CD. Associations between the ankle-brachial index and cardiovascular and all-cause mortality are similar in individuals without and with type 2 diabetes: nineteen-year follow-up of a population-based cohort study. *Diabetes Care* 2012;35:1731–1735
3. Aboyans V, Criqui MH, Abraham P, et al.; American Heart Association Council on Peripheral Vascular Disease; Council on Epidemiology and Prevention; Council on Clinical Cardiology; Council on Cardiovascular Nursing; Council on Cardiovascular Radiology and Intervention, and Council on Cardiovascular Surgery and Anesthesia. Measurement and interpretation of the ankle-brachial index: a scientific statement from the American Heart Association. *Circulation* 2012;126:2890–2909
4. Jacobs M, van Greevenbroek MM, van der Kallen CJ, et al. Low-grade inflammation can partly explain the association between the metabolic syndrome and either coronary artery disease or severity of peripheral arterial disease: the CODAM study. *Eur J Clin Invest* 2009;39:437–444
5. Fowkes FG, Murray GD, Butcher I, et al.; Ankle Brachial Index Collaboration. Ankle brachial index combined with Framingham Risk Score to predict cardiovascular events and mortality: a meta-analysis. *JAMA* 2008;300:197–208