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Please note: Dr. Spence has reported that he has no relationships relevant to the contents of this paper to disclose.

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The Role of Heart Rate in Diastolic Coronary Perfusion and Subclinical Myocardial Ischemia

We read with interest the paper by McEvoy et al. (1) describing the association between low diastolic blood pressure and adverse clinical and subclinical (elevated troponin level) cardiovascular outcomes. The authors postulate that low diastolic blood pressure impairs coronary perfusion and thus causes adverse cardiac events. This mechanism is certainly plausible, but we wonder whether heart rate could have had an influence on the observed results. Heart rate affects diastolic pressure-time index, which is more important than diastolic pressure alone in determining coronary perfusion (2). Diastolic perfusion index is strongly influenced by heart rate and cardiac ejection duration, as demonstrated in large cohorts of both cardiology outpatients (3) and healthy volunteers (4). Additionally, the role of systolic pressure-time loading and its relationship to diastolic pressure-time index and overall myocardial oxygenation (i.e., myocardial demand-supply ratio) (2–4) is important to consider, and is itself strongly affected by heart rate and cardiac ejection duration. The findings of McEvoy et al. (1) highlight an important clinical issue—maintenance of adequate diastolic blood pressure to facilitate coronary perfusion. We would be interested to know to what extent heart rate interacted with their findings.

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In the Treatment of Hypertension, Lowering of Diastolic Pressure to <70 mm Hg Is Often Unavoidable

In the treatment of hypertension, lowering of diastolic pressure to <70 mm Hg is often unavoidable. McEvoy et al. (1) examined the association of diastolic blood pressure (DBP) with coronary heart disease (CHD), stroke and death using the ARIC (Atherosclerosis Risk In Communities) study cohort. They noted increased CHD risk of 1.5, 1.2, and 1.2 for DBP <60, 70, and 80 mm Hg, respectively. A similar relationship was seen in subjects treated for hypertension at baseline. The authors concluded that in the treatment of hypertension it may be prudent to ensure that DBP levels do not fall to <70 mm Hg. In our opinion, the linkage between