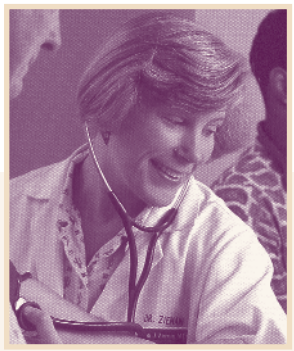
ASP—Society for Geriatric Cardiology—Junior Career Development Award in Geriatric Medicine



Award Recipient:

Susan Zieman, MD

Johns Hopkins University School of Medicine

Project:

The Effect of Vascular Stiffness on Endothelial Function

Mentorship Team:

John R. Burton, MD	Gary Gerstenblith, MD
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Edward G. LaKatta, MD	

I am currently an assistant professor in the Division of Cardiology at the Johns Hopkins University School of Medicine where I completed fellowships in both geriatric medicine and cardiology. In addition to being certified in both subspecialties, I am pursuing a PhD in clinical investigation at the Johns Hopkins School of Public Health. My long-term goal is to become a leader in the field of geriatric cardiology focusing on how age-associated alterations in vascular function modify the detection, management, and outcomes of cardiovascular disease in older adults.

To achieve my short-term goal to increase understanding and appreciation of cardiovascular aging and clinical cardiac syndromes in older adults, and to stimulate clinical and research interest in this field, I designed an institution-wide, multi-tiered educational program in geriatric cardiology. Comprising both didactic and clinical components, this educational plan will integrate cardiovascular aging and geriatric cardiology teaching into the existing academic structure for medical students, internal medicine residents, geriatrics and cardiology fellows, and faculty. I will draw upon the unique intellectual resources of the university and the Gerontology Research Center/National Institute on Aging faculty, which include international geriatric cardiology leaders. Additionally, I will implement a Williams Lectureship to attract geriatric cardiology experts to Johns Hopkins to speak at grand rounds and to interact with trainees and faculty.

Concurrent with the development of this educational plan, I will study the effects of vascular stiffness on endothelial function in older adults. The physiologic changes that render age the most significant risk factor for cardiovascular disease are unclear. Although increased arterial stiffness and endothelial dysfunction accompany aging and are associated with increased cardiovascular risk, the mechanisms by which they impart this increased risk are unknown. The recent development of novel agents which increase vascular distensibility by altering structural components of the vessel wall now allows exploration of these relationships. The guiding hypothesis of this proposal is that increased arterial stiffness itself impairs endothelial function and that an intervention which increases vascular distensibility will improve endothelial function. First, I will explore whether decreased vascular distensibility is associated with impaired endothelial flow-mediated vasodilation in the arteries of healthy volunteers. Next, I will test whether the endothelial vasoactive response to increased pulsatility following lower limb exercise is diminished in arteries with reduced distensibility. Lastly, I will test the hypothesis that increasing vascular distensibility improves endothelial function and exercise-induced pulse perfusion-mediated vasodilation in individuals with increased vascular stiffness. A novel therapeutic agent which breaks advanced glycation end-product collagen crosslinks in vessel walls will be tested in a prospective, randomized, double-blind, placebo-controlled, two-month trial to determine the effect of increasing vascular distensibility on endothelial function, both at rest and during exercise. The overall goal is to identify a novel, important mechanism whereby vascular stiffening contributes to atherosclerotic risk and thereby target efforts to reduce this risk by enhancing vascular distensibility. These projects and career development plans will provide me with the resources, collaborative relationships, and academic foundation necessary to pursue my long-term goals in geriatric cardiology.