

## PRE-ARC

### Effect of Violent and traumatic Events [EVE]: An E-cohort study

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**BACKGROUND.** Prevalence of exposure to traumatic events in adults living in the United States is very high at 89%, and the majority reported multiple events of traumatic exposures. An individual's lifetime exposure to stressors and lifetime adversity contribute to increased risk of physical and psychological adverse events. Exposure to traumatic and violent events during childhood and adulthood increases the risk of depression, bipolar disorder, schizophrenia and substance abuse. Recent studies suggest that the risk also extends to early vascular aging, vascular injury, shortened leukocyte telomere length, stroke, cardiovascular diseases, hypertension and elevated cholesterol among traumatized individuals.

**KNOWLEDGE GAP.** The research regarding the long-term effects of exposure to childhood and adulthood traumatic experiences is still nascent and has not been studied as a life-course exposure. Current evidence focuses on lasting adverse effects on mental health and are strongly associated with impaired cognition and increased risk of developing psychopathologies. Recent evidence indicates that genetic variation and epigenetic changes in response to trauma significantly affects not only psychological health but also cardiovascular outcomes. *However, these observations are either based on cross-sectional relations, which may be confounded by historical and generational factors, and may not be recapitulated in longitudinal studies - which are critical to delineate the evolution of premature cardiovascular diseases related to traumatic exposures over the lifetime.* A comprehensive longitudinal evaluation of cardiovascular and cerebrovascular consequences and the associated individual and structural influencers of trauma, injuries and violent events, with added genetic and epigenetic evaluation, is a vastly understudied area by comparison with the scope of the problem. To address this gap, we propose a contemporary national e-cohort of US adults (>18 years old), using a unique in-house multiplatform software to enroll participants with trauma exposures to assess injury/disease progression from trauma to cardiovascular outcomes.

**Table 1. Trauma ARC Investigators**

<b>Investigator</b>	<b>Professional title</b>	<b>Role in the ARC</b>	<b>Affiliation (School, Dept, Section)</b>	<b>Expertise</b>
Bindu Kalesan, PhD, MPH	Assistant Professor	Co-Director	BUSM, DOM, Prev Med	Violence and trauma epidemiologist
Guanglan Zhang, PhD	Assistant Professor	Co-Director	Metropolitan, Computer Sci	Computer Scientist
Francesca Seta, PhD	Assistant Professor	Co-Director	BUSM, DOM, Vascular Biology	Basic scientist
Snezana Milanovic, MD, MSc	Assistant Professor	Co-Investigator	BUSM, Psych	Psychiatrist
Christina Borba, PhD, MPH	Assistant Professor	Co-Investigator	BUSM, Psych	Qualitative Scientist
Jacob Groshek, PhD, MA	Associate Professor	Co-Investigator	College of Comm	Communications
Sarah Parker Ward, MA	PhD candidate	Co-Investigator	College of Comm	Engagement and social media researcher
Robert Eschmann, PhD, MA	Assistant Professor	Co-Investigator	School of social work	Reducing disparities using social media
Richard Sherva, PhD, MPH	Assistant Professor	Co-Investigator	BUSM, Biomed Gen	Genetics
Thea James, MD, MA	Professor	Co-Investigator	BUSM, Emergency Medicine	Violence and trauma
Jeffrey Siracuse, MD, MPH	Assistant Professor	Co-Investigator	BUSM, Surgery	Health outcomes
Andrea Baccarelli, MD, PhD	Professor	Co-Investigator	Mailman School of Public Health, EHS	Epigenetics