

2. Violence Related Injury Prevention Research

Deaths and injuries associated with interpersonal violence and suicidal behavior are also a major public health problem in the U.S. and around the world. In 1999, over 46,000 people died from homicide and suicide in the U.S. Among 15 to 24 year olds, homicide and suicide ranked as the second and the third leading causes of death. Violent deaths are the most visible consequence of violent behavior in our society. Morbidity associated with physical and emotional injuries and disabilities resulting from violence, however, also constitute an enormous public health problem. For every homicide that occurs each year there are over 100 nonfatal injuries resulting from interpersonal violence. For every completed suicide it is estimated that there are 20 to 25 suicide attempts. The mortality and morbidity resulting from violence are associated with a variety of types of violence including child maltreatment, youth violence, intimate partner violence, sexual violence, elder abuse, and self-directed violence or suicidal behavior.

3. Injury Related Acute Care, Disability, and Rehabilitation

Each year, Americans make between 30 and 40 million emergency department (ED) visits for injuries. While most injured patients are treated and released, many are admitted to inpatient trauma units and later receive rehabilitative services. The most favorable outcomes are achieved when acute care and subsequent rehabilitation are as early as possible and focus on returning patients to baseline or to an optimal level of functioning. Trauma systems are designed to match trauma patients with the acute care and rehabilitative facilities they need, but in many parts of the U.S. trauma systems are not fully operational or are nonexistent. Also, as many as 30 to 40 percent of deaths among trauma patients are due to preventable problems in clinical care, including missed diagnoses and treatment delays.

Injuries are a major cause of disabilities in the U.S. Central nervous system injuries (those to the brain and spinal cord) are most likely to result in serious long-term disability. Each year, an estimated 80,000 Americans sustain a traumatic brain injury (TBI) that results in disability; an estimated 5.3 million Americans live with TBI-related disability. Although physical impairments from the injury may contribute to TBI disability, cognitive deficits are the hallmark, frequently

resulting in secondary conditions such as depression and other adverse outcomes such as the inability to work. An estimated 177,000 to 200,000 people in the U.S. live with spinal cord injuries (SCI), and this number increases annually by as many as 20,000 individuals.

4. Biomechanics

The field of biomechanics quantifies the response and tolerance of the human body to impact (e.g., motor vehicle collisions, playground falls, and child battering) and addresses the underlying mechanisms of injury, the forces deforming the body and the physiologic effects of injury to infants, children, adults and the aged population. Based on interdisciplinary research, the engineering factors are determined that deform the body and the medical consequences are quantified that affect vital functions. This knowledge is used to modify the design of protective systems to improve safety. Improved safety systems protect an individual from impact forces that can injure, and they can include protective equipment (cycling helmets) and environments (playground surfaces), occupant restraints (airbags and safety belts), and policies (rules to minimize spearing in football). Biomechanical knowledge can also be used to improve post-injury outcomes through physiologic models to address emergency medical treatments, pharmacologic interventions and rehabilitation to advance recovery.

An overview of the role of biomechanics in a national effort for injury control was included in the landmark NAS study "Injury in America: A Continuing Public Health Problem-Committee on Trauma Research" (Commission on Life Sciences, National Research Council and the Institute of Medicine, National Academy Press, Washington, DC, 1985). The role is described in more detail in a follow-on paper from the NAS study: Injury Biomechanics Research: An Essential Element in the Prevention of Trauma (Viano DC, King AI, Melvin JW, Weber K. *Journal of Biomechanics*, 22(5): 403-417, 1989).

This program attempts to build on the basic knowledge of biomechanics and encourage interdisciplinary intervention-oriented injury control research as supported in the "CDC Injury Research Agenda" (See Attachment 2 as posted on the CDC Web site).

C. Eligible Applicants

Applications may be submitted by public and private nonprofit and for profit organizations and by governments

and their agencies; that is, universities and colleges (including but not limited to schools or departments of public health, medicine, nursing, criminal justice, bioengineering, or the behavioral or social sciences,) technical schools, research institutions, hospitals, other public and private nonprofit and for profit organizations, community-based organizations, faith-based organizations, State and local governments or their *bona fide* agents, including the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, the Commonwealth of the Northern Mariana Islands, American Samoa, Guam, the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau, Federally recognized Indian tribal governments, Indian tribes, or Indian tribal organizations, and small, minority, and/or women-owned businesses.

Note: Title 2 of the United States Code section 1611 states that an organization described in section 501(c)(4) of the Internal Revenue Code that engages in lobbying activities is not eligible to receive Federal funds constituting an award, grant or loan.

Applicants must have a research or a health-professional doctorate-level degree from an accredited program and have demonstrated the capacity or potential for highly productive research in the period after the doctorate, commensurate with level of experience. Applicants must be within three years of having completed their doctoral or equivalent graduate work (including dissertation, where appropriate), or redirecting their research to injury-related research. Documentation of such redirection such as letters indicating recent substantive involvement in injury research or injury-related publications must be included in the application. Applicants who have been the principal investigator on a Public Health Service (PHS) injury-related research grant or who have had equivalent injury-related research support from an existing Injury Control Research Center (ICRC) are not eligible. Exceptions are researchers who have redirected their research areas from one area of injury research, e.g., acute care or biomechanics, to another area, e.g., violence prevention research. Recipients of dissertation research grants or National Institutes of Health (NIH) Small Grant Awards are eligible to apply.

Applications that are incomplete or non-responsive to the following requirements will be returned to the applicant without further consideration: