

# An Urgent Call to Action in Support of Injury Control Research Centers

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Injury, including unintentional injury and violence, is the third-leading cause of death in the U.S., disproportionately affecting lower-income and minority populations.<sup>1,2</sup> Lifetime costs for U.S. injuries occurring in 1 year alone (2000) totaled \$406 billion,<sup>3</sup> with medical expenditures in just 1 year (2006) of \$68.1 billion, exceeded only by heart disease expenditures at \$78 billion.<sup>4</sup> Globally, injury is responsible for 9.8% of the world's recorded mortality annually, killing an estimated 5 million people, as many deaths as malaria, TB, and HIV combined.<sup>5</sup> This burden persists despite evidence that support for injury research and its translation into effective policies and programs can result in injury reduction and improved health outcomes.

This essay draws on several IOM reports to argue for an increase in the investment in injury control research centers as a mechanism to accelerate progress in the field. The authors were prompted to write this as a result of the reduction in injury control research centers from 13 to 11 in the 2009 funding cycle.

## Research Funding

Funding disparities for research are enormous across health problems, with funding for injury far out of proportion to the magnitude of the problem. Although inju-

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ries are responsible for more years of potential life lost before age 65 years (31%) than cancer (16.3%) and heart disease (12.2%) combined, federal research support for injury falls far behind that allocated for either cancer or heart disease. For example, the National Cancer Institute received more than \$4.8 billion in FY 2008 while an additional \$309 million supported the CDC cancer control.<sup>6,7</sup> Likewise, federal funding to the National Heart, Lung, and Blood Institute totaled \$2.9 billion in FY 2008 while \$50 million was allocated to CDC for heart disease and stroke.<sup>6,7</sup> In FY 2008 the Center for Chronic Disease, Health Promotion and Genomics at CDC received an allocation of \$833 million.<sup>7</sup> In stark contrast, CDC's National Center for Injury Prevention and Control, the lead federal agency for injury and violence prevention, received a meager \$134 million.<sup>7</sup>

No NIH agency has a primary mission to investigate injury. Even the Clinical Translational Science Awards (CTSAs), more than 50 of which have been funded at major medical centers, have not identified injury as part of their scientific agendas.

## History of the Federal Response to Injury

In 1985, the IOM report *Injury in America* named injury and violence as the "last major plague of the young,"<sup>8</sup> while noting the preventability of injury and attempting to steer discourse away from the popular conception of "accidents" as unpredictable and uncontrollable events. The report promoted injury control as a scientific discipline and highlighted the need for research in biomechanics, prevention, acute care, and rehabilitation of injury as well as for the implementation of quality surveillance and intervention programs. It recommended CDC as the lead federal agency to build the field and called for the creation of academically based "centers of excellence" to drive scholarly development of the field, stating that "training health professionals and other scientists in injury research and the basic concepts of injury control is crucial."<sup>8</sup>

**Table 1.** Injury control research centers currently funded by the National Center for Injury Prevention and Control

Name and location of center	Year initially funded by CDC
Johns Hopkins Center for Injury Research and Policy Johns Hopkins University Baltimore, Maryland	1987
University of North Carolina Injury Prevention Research Center University of North Carolina, Chapel Hill Chapel Hill, North Carolina	1987
San Francisco Injury Center for Research and Prevention University of California San Francisco San Francisco, California	1989
Injury Prevention Research Center University of Iowa Iowa City, Iowa	1990
Colorado Injury Control Research Center Colorado State University Ft. Collins, Colorado	1995
Injury Research Center Medical College of Wisconsin Milwaukee, Wisconsin	2001
West Virginia University Injury Control Research Center West Virginia University Morgantown, West Virginia	2004
Mount Sinai Injury Control Research Center Mount Sinai School of Medicine New York, New York	2007
Center for Injury Research and Policy Nationwide Children's Medical Center Ohio State University Columbus, Ohio	2008
Emory Center for Injury Control Emory University Atlanta, Georgia	2009
Brown Center for Violence and Injury Prevention Washington University in St. Louis St. Louis, Missouri	2009

Note: Previously, the CDC has funded injury control research centers at Harvard University; University of Alabama, Birmingham; University of California Los Angeles; University of Pittsburgh; University of Washington; and Wayne State University.

Congress soon appropriated \$10 million to CDC which, in turn, established in 1987 the first five academically based centers of excellence, currently called Injury Control Research Centers (ICRCs). Over the next 2 decades, the number of centers rose to 13 in 2008, but was reduced to eleven just 1 year later. A list of currently funded centers appears in Table 1. Resources have been stagnant for the past decade, with each of the current ICRCs receiving less than \$1 million annually to support

a comprehensive, mandated portfolio of research, outreach, education, and translation activities. In contrast, the much larger number of NIH research centers funded in 2008 each averaged \$1.67–1.97 million per year.<sup>9</sup> The ICRCs' foci span local, state, national, and global injury problems. As a result of funding not keeping pace with inflation, the ICRCs' need to maintain infrastructure support for training and translational activities hampers scientific advances and recruitment of new investigators.

Inadequate support also threatens the future of injury control. The Association of American Medical Colleges and the Association of Schools of Public Health each have documented that unlike cancer, cardiovascular, or infectious disease, injury is conspicuously absent in most medical and public health schools' curricula.<sup>10,11</sup> Few injury-related training grants are available for graduate students and postdoctoral fellows, further hindering the ability to prepare new scholars.

### **The Case for Injury Control Research Centers**

In reviewing NIH's centers in 2004, the IOM stated that centers are important when "the scientific opportunities and/or public health needs that the program would address have high priority."<sup>12</sup> The same holds true for injury control, a clearly justified priority. In combination with investigator-initiated research, centers can help attract both new scholars, including graduate students and postdoctoral fellows, and more seasoned investigators willing to try a new area of research. The IOM argued that disease-focused research centers at academic institutions are important in providing a platform supportive of interdisciplinary collaborations by facilitating multi-investigator teams that can develop activities often not possible under other funding mechanisms. Successful injury control initiatives typically require a wide range of expertise, drawing on biomechanics, epidemiology, behavioral sciences, policy research, intervention and evaluation research, health services research, and multiple clinical specialties.

ICRCs provide environments that engage both junior and senior investigators and allow interdisciplinary collaboration to flourish. They are critical in bridging the enormous training chasm that substantially limits opportunities to introduce future scientists and practitioners to injury problems and solutions. Also, as NIH and CDC increasingly stress translational activities, the need for injury centers to organize and catalyze multidisciplinary and multi-organizational efforts has become even more critical.

## **Progress of Injury Control Research Centers to Date**

Despite the meager support provided, ICRCs have made substantial progress over the past 2 decades, demonstrating their continuing potential to advance the science and practice of injury control. Collectively, the accomplishments of the CDC-funded ICRCs demonstrate the conclusions in the 2004 IOM report about NIH centers that such centers can (1) foster stable long-term institutional multidisciplinary focus on complex problems that are not likely through ROIs alone where investigators often are more isolated; (2) enhance the quality, productivity, and promotion of other externally supported research projects, while encouraging interdisciplinary collaboration; (3) support pilot research; (4) enhance visibility and prestige of a research area in a way that helps attract additional competitive funding; (5) provide a network of similar centers that can combine resources to ask questions that no single institution could address; and (6) build research infrastructure to respond to emerging issues.<sup>12</sup>

Federal investment in centers also has a powerful multiplier effort, with some ICRCs garnering as much as \$7 in new research funding for each \$1 of CDC core support. Researchers supported with CDC funds or resources leveraged as a result of ICRC support have demonstrated the value of trauma care systems,<sup>13</sup> devised brief alcohol screening as a new standard of acute care,<sup>14</sup> and developed a surveillance system currently monitoring violent deaths in 17 states.<sup>15</sup> Researchers based at ICRCs also have advanced understanding of the epidemiology and prevention of traffic-related injury, residential injuries, occupational injuries, sports and recreational injuries, and all types of violence while also making advances in both theoretic and methodologic approaches and developing and translating evidence-based interventions. But much more needs to be done to understand risks and develop interventions so as to prepare for large-scale translational activities, including addressing problems like terrorism and disaster management.

In addition, ICRCs have been instrumental in reframing the injury issue from “freak accidents” or reckless behavior to a preventable public health problem. They have broadened the scope of violence prevention from individual-based crime control to population-based primary prevention and have reframed suicide prevention from a strictly mental health issue to one that also can be addressed through public health approaches (e.g., reducing access to more-lethal means).

Domestically, ICRCs collaborate closely with practitioners in their regions, including with tribal, state, and local health departments, to facilitate dissemination of

evidence-based solutions. Centers also are enhancing implementation of evidence-based practices in community and clinical settings globally. U.S.-based ICRCs have alliances in the developing world through NIH’s Fogarty International Collaborative Trauma and Injury Research Training Program ([http://www.fic.nih.gov/programs/training\\_grants/trauma/index.htm](http://www.fic.nih.gov/programs/training_grants/trauma/index.htm)) working in ten countries (Argentina, China, Croatia, Colombia, Egypt, Ghana, Mozambique, Pakistan, Poland, South Africa). Others are collaborating, without Fogarty funding, with institutions on multiple continents. Through these international liaisons, ICRCs share expertise through training and mentoring, building training capacity in partner countries, translating strong science, and creating data systems.

These selected examples of the successes of the ICRC program demonstrate its utility for moving the field forward. However, given the size of the problem, the fact that the entire U.S. has only eleven such comprehensive research programs is very troubling.

## **Future Directions—A Call to Action**

No other “plague” of this magnitude is tolerated in modern society. Further advances in reducing the toll of injury domestically and globally require substantial growth in research and practice. Reductions in mortality, disability, and suffering, both domestically and internationally, requires deepening the understanding of the epidemiology of injury, including identification of biological, behavioral, and social risk and protective factors; designing and testing environmental and behavioral interventions in controlled and natural settings; and engaging in both translational and advocacy activities. For example, deaths from residential fires could be virtually eliminated if investments were made in proven strategies such as lithium battery-powered smoke alarms and residential sprinkler systems. Falls among older adults, one of the most expensive and deadly problems, requires research to evaluate integrating preventive services into healthcare delivery as well as to uncover new prevention strategies. Making sufficient gains requires the commitment of appropriate resources, paralleling the experience combating chronic and infectious diseases.

Consequently, we call for Congress and the USDHHS to take the following critical actions:

1. Cultivate investigator interest in injury control and further development of cutting-edge research by increasing funding to nurture, sustain, and expand both the ICRC program and individual investigator projects. Funding should be at a level commensurate with the magnitude of the problem. Using funding to the Na-

tional Cancer Institute as the standard and calibrating based on total deaths, the figure should exceed \$1.4 billion (more than ten times the current NCIPC budget). If funding were proportionate to years of potential life lost before age 65 years for cancer, annual federal support for injury control research should exceed \$8 billion.

2. Support training in the science of injury control to ensure an adequate flow of new graduate-trained researchers and practitioners prepared to advance the field and to provide continuing education for those already working, enabling them to improve their expertise in advancing the injury control agenda.
3. Foster public support for eradication of injury as a health problem by launching a comprehensive national campaign that reframes the issue such that the public comes to expect safety in the same way they expect clean water and pasteurized milk.
4. Support a comprehensive, multi-agency review to determine how best to fund basic, applied, and translational research to advance the science of injury control and reduce its burden on society.

## Conclusion

We agree with the statement in the 1998 IOM report *Reducing the Burden of Injury* that ICRCs “must be considered one of the major advances in the field of injury prevention since the publication of *Injury in America*.”<sup>7</sup> However, the lack of sufficient ongoing funding reduces the likelihood that the substantial successes of the past are going to be realized in the future. Rather than improvements in injury morbidity and mortality, progress will be slow and we can expect to see unnecessary human suffering, lives lost, and healthcare dollars spent both domestically and globally. The issue demands urgent and immediate action.

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