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Reflecting on the 5th National Occupational Injury Research Symposium and looking forward ☆

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Abstract

For 2-1/2 days in October, 2011, more than 200 researchers convened at the 5th National Occupational Injury Research Symposium (NOIRS) to celebrate advances and successes in the field, to learn from each other about recent and ongoing occupational injury research, and to network and establish new professional relationships to advance occupational injury research in the future. This special issue highlights some of the research presented at that meeting. There has been considerable progress in research and worker safety since the first NOIRS in 1997, with demonstrated reductions in worker deaths and injury, an increased depth and breadth of research, and the development and validation of prevention strategies. Despite this progress, occupational injuries continue to exert too high a toll on workers, employers and society, and there are numerous challenges that need to be addressed to continue advancements in worker safety.

1. 5th National Occupational Injury Research Symposium (NOIRS)

In October 2011, the National Institute for Occupational Safety and Health (NIOSH), and its co-sponsors, the National Safety Council and the Liberty Mutual Research Institute for Safety, hosted more than 200 scientists and safety practitioners at the 5th National Occupational Injury Research Symposium – NOIRS 2011. The foremost researchers in occupational injury presented a broad and diverse range of cutting-edge research in support of the conference theme, “Future Directions in Occupational Injury Prevention and Research”. NOIRS 2011 provided a unique opportunity for national and international scientists to celebrate progress in improving the safety of workers and to present, discuss and assess the current knowledge about the latest research methods to address the causes and prevention of worker injury. NOIRS also continued to provide a forum for NIOSH scientists to network with scientists and practitioners outside the Institute to enhance existing and build new professional relationships. It is these partnerships among researchers, industry, labor, and stakeholder groups that serve as the foundation for anticipating and proactively addressing worker safety issues.

☆The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the National Institute for Occupational Safety and Health.

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2. Special issue of journal

NIOSH and its partners and co-sponsors were pleased to host NOIRS 2011 to provide a symposium where occupational injury prevention researchers could not only share their work with other researchers, but with practitioners with a common interest in the prevention of occupational injuries. This special issue of the *Journal of Safety Research*, highlighting research presented at NOIRS 2011, provides an opportunity to more broadly disseminate the research presented at NOIRS to a larger audience in the form of scientific papers. In addition to the papers being highlighted in this special issue, abstracts from all 185 of the oral and poster presentations are available on the NIOSH website (NIOSH, 2012). The slate of high quality papers included in this special issue were selected to cover the spectrum of the public health model and are organized in the order of the model starting with surveillance and finishing with intervention evaluation papers.

3. Reflections on the 2011 NOIRS

Since the first NOIRS was held in 1997, there have been demonstrated reductions in both the numbers and rates of worker death and injury. There were 1,500 fewer worker injury deaths recorded in 2010 than in 1997, and 2.1 million fewer injuries reported by private sector employers. The reported rates of deaths and nonfatal injuries decreased by more than 20% and 50%, respectively, during this timeframe (BLS, 2012a,b). As researchers we know that these statistics have limitations and that the recent downturn in the U.S. economy may have contributed to declines in the most recent years. However, it is clear that overall we are seeing improvements in worker safety and that workers are less likely to be killed or injured at work than in the late 1990s. We should celebrate this progress while committing to strive for continued improvement.

There is also cause to celebrate the breadth and depth of research at the 2011 NOIRS. The first NOIRS in 1997 had a preponderance of surveillance-related presentations. The 2011 NOIRS scientific program was more rounded, including numerous presentations on complex injury research factors (such as human factors, work schedules, sleep and fatigue, and safety climate) and intervention evaluations (NIOSH, 2012). Examples of downstream research highlighted in this issue are articles by Steiner et al., that address a visual feedback system to reduce human factor contributors to injuries, and articles by Kines et al., Schofield et al., Lincoln et al., and Kaskutas et al., that evaluate interventions. Research across the public health framework will help ensure that research and prevention efforts are guided by surveillance data identifying worker groups and environments most needing attention, that interventions are developed based on assessments of risk factors, and that there is rigorous research identifying interventions that not only sound or feel good, but are proven to be effective.

The multiple disciplines represented by 2011 NOIRS attendees, and also reflected in authorship of articles in this issue, speak to the depth and promise of the occupational injury field. Research in multiple disciplines expands the methods used to explore the causes and prevention of occupational injuries and the audiences and forums for translating research into practice or action. The commingling of disciplines at NOIRS also provides

opportunities for cross-fertilization. Disciplines that were represented at NOIRS include: public health (e.g., epidemiologists, statisticians, health policy and health communicators), medicine (e.g. physicians and nurses), economics, social science, psychology, engineering (e.g. industrial, mechanical, mining, safety, and civil engineers), and safety (e.g. ergonomists and safety specialists).

The partnerships displayed at the 2011 NOIRS should also be celebrated. Partnerships are critical to moving the field forward; no single group has the expertise, influence, or resources to do it alone. NOIRS partnerships spanned from co-sponsorship of the meeting by NIOSH, the National Safety Council and Liberty Mutual Institute for Research Safety, to the presentation of multi-institutional research (e.g. research involving different academic centers, government agencies, unions, and insurance companies). Research that crosses institutional boundaries illustrates networks of researchers with common and complementary interests, and the leveraging of expertise, resources, and access to datasets, study sites and populations. Multi-institutional work highlighted in this issue includes articles by Dong et al., Poplin et al., Steiner et al., Pollack et al., Pompeii et al., Tiesman et al., Kines et al., Schofield et al., and Kaskutas et al.

4. Looking forward

While there have been marked improvements in worker safety, the problem is by no means solved, and far too many workers are killed and maimed each year, with significant impacts on workers and their families, employers and their businesses, and communities. The articles by Biddle and Park in this issue provide quantifiable data and insights into some of these impacts, including societal costs of \$21 billion for the more than 22,000 workers who died from work injuries in the 4-year period 2003 to 2006 (Biddle, this issue). These costs are only the tip of the iceberg as they do not include costs for the millions of nonfatal injuries that occurred during this same time period. It is critical that we continue to strive to improve the safety of workers, building upon progress that has been made, filling in research needs and gaps, and working in a concerted fashion to ensure that research findings are put into practice to allow workers to live their lives to their full potential, free of disabling and life-ending injuries.

Surveillance is the foundation of the public health framework. It allows us to establish baseline measures of the magnitude and risks of public health problems, to identify goals for public health improvements, to target research and prevention resources towards the most important problems, and subsequently allows for tracking progress towards achieving goals. Several papers in this issue illustrate the value of occupational injury surveillance (Biddle, Dong et al., Menendez et al., Lincoln et al., this issue) and include recommendations for improvement (Poplin et al., Pompeii et al., this issue). Recent research and congressional hearings have raised concerns that existing occupational injury surveillance systems are severely underestimating the burden of occupational injuries, and may not adequately capture injuries among many workers (Boden & Ozonoff, 2008; Committee on Education and Labor, 2008; Leigh et al., 2004; Rosenman et al., 2006). NOIRS 2011 included several sessions that presented in-progress work to better understand and ultimately identify solutions to occupational injury underreporting. We look forward to the future publication of

findings from this line of research and concerted efforts to improve the quality and completeness of occupational injury surveillance systems.

Among the challenges for future progress are persistent problems that continue to kill workers despite knowledge on how to prevent them, such as falls in construction, addressed in the Dong et al., article in this issue. These persistent problems will require that we expand our research to better understand and address the intractability of some injuries in the face of proven prevention measures, and when feasible, more fully utilize engineering approaches to design-out or mitigate injury hazards.

Continued progress will require continued commitment to research to practice, with research institutions and researchers embracing their role in ensuring that their research findings are used by others to improve worker safety. This includes engagement with stakeholders throughout the research continuum to ensure that research is relevant to stakeholders and proactively identifying strategies and steps to promote or transfer findings for use by others to improve worker safety. We will also need to address challenges in transferring research to practice, including:

- translating theory and science into practical solutions that are persuasive to and actionable by employers, workers, and policy makers;
- assessing when sufficient evidence exists to warrant expansion to other settings, and identifying resources and mechanisms to scale-up these proven interventions; and
- reaching and improving worker safety in small businesses that lack occupational safety and health expertise and resources yet employ millions of workers collectively across the country.

Partnerships will continue to be crucial, to leverage resources, expertise and networks, and to capitalize among diverse perspectives and avenues for prevention.

The world is changing. Occupational injury research will need to adapt to these changes, including addressing emerging issues and developing methodologies to address changes in work organization that impact injury occurrence and complicate research, such as increased use of sub-contractors, less stable jobs, and more transient and informal work. The changing world of work includes demographic changes in the workforce, including an aging and more ethnically diverse workforce. The articles by Dong et al., and Menendez et al., in this issue speak to some of these trends. Recent declines in worker injury and deaths in the United States can likely be partially attributed to the economic crisis and fewer jobs, specifically in higher risk industries such as construction. The economic situation in the US and worldwide will continue to impact worker safety, and has the potential to simultaneously reduce some injuries due to higher unemployment while at the same time stress worker safety in individual workplaces and in employer and government safety infrastructures. The emergence of new technologies, such as green technologies, has the potential to introduce new safety hazards or lead to recognized hazards in new settings. Climate change also has the potential to impact worker safety, including increased worker exposure to extreme environmental conditions and their aftermath. While many changes will result in challenges

to worker safety and occupational injury research, there are also changes that provide opportunities. Advances in information technology open up new opportunities for research, such as the evolving electronic health record, and communication, such as new internet technologies and social networks. As researchers, it is incumbent that that we adapt our research to address changes in work and workers, and that we capitalize on new technologies to enhance worker safety and occupational injury research.

NOIRS has proven to be a valuable forum for bringing together occupational injury researchers to learn from each other, establish new partnerships, and collectively work together to identify and meet future challenges. The 2011 NOIRS highlighted much advancement in worker safety and the field of occupational injury research, and helped set the focus for future challenges and opportunities. We look forward to the next NOIRS. We are confident that there will be additional worker safety improvements to celebrate, as well as new challenges. We look forward to seeing examples of research partnerships and multi-disciplinary research spawned from the connections made at past NOIRS. Finally, we look forward to reconnecting with colleagues from previous NOIRS, as well as building professional relationships with researchers from multiple disciplines new to NOIRS and the occupational injury research field.

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Biography

Dawn Castillo, M.P.H., is the Director of the Division of Safety Research at NIOSH. The Division serves as the focal point for traumatic occupational injury research and prevention programs at NIOSH, the federal agency responsible for research on worker safety and health. Prior to being appointed as Division Director in July 2011, Ms. Castillo served as Chief of a Division Branch responsible for occupational injury data collection, analysis and interpretation. Ms. Castillo is an epidemiologist and has authored numerous articles, book chapters, and technical documents on occupational injuries.

James Collins, Ph.D., MSME, James Collins is a Captain in the U.S. Public Health Service and is the Associate Director for Science for the Division of Safety Research (DSR), with the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH). Dr. Collins received his Ph.D. in Health Policy and Management from Johns Hopkins University and his Masters in Mechanical Engineering

from West Virginia University and Undergraduate degree in Mechanical Engineering from Georgia Tech. He has 28 years experience as an Engineer and an Epidemiologist conducting laboratory and field research with the CDC/NIOSH. His recent research has focused on safe resident lifting and slip, trip, and fall prevention in nursing homes and hospitals. As Associate Director for Science for the Division of Safety Research, he is responsible for the quality control of the research being conducted by the Division's approximately 80 staff members. He is on the editorial board of the International Journal of Injury Control and Safety Promotion. He has authored 7 book chapters and published over 40 peer-reviewed manuscripts and NIOSH documents. His work has been published in American Journal of Industrial Medicine, Injury Prevention, Ergonomics, Applied Ergonomics, Statistics in Medicine, Occupational Medicine: State of the Art Reviews, Professional Safety, Ohio Monitor, Robotics Engineering, Sensors, Journal of Safety Research, Journal of Occupational Accidents, Public Power Journal, and Business Society and Review.

Dr. Collins received the 2010 James P. Keogh award for conducting rigorous scientific research to develop and test "best practice" interventions and for being an advocate for healthcare workers by promoting the widespread implementation of effective solutions to prevent patient-lifting and slip, trip, fall, and injuries in healthcare settings.

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