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The NIOSH Construction Program: Research to practice, impact, and developing a National Construction Agenda

Matt Gillen *

The National Institute for Occupational Safety and Health Office of Construction Safety and Health, 395 E Street, SW, Washington, DC 20201

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ABSTRACT

The U.S. National Institute for Occupational Safety and Health (NIOSH) conducts research to improve and protect the health and safety of workers. This paper describes the experience of the NIOSH Construction Program with two recent program planning initiatives intended to improve the program: (a) an independent external review of work over the past decade and (b) the development of strategic goals organized into a "National Construction Agenda" to guide a decade of future work. These goals, developed with input from construction industry stakeholders and researchers, are a part of the NIOSH National Occupational Research Agenda (NORA) initiative. The NORA goals are intended to provide an ambitious set of goals for all construction stakeholders to work together on. Both efforts relate to insuring the relevance and impact of research, reflecting an emerging policy perspective that research programs should be judged not just by the quality and quantity of science produced, but by the industry impact and tangible benefit resulting from the research. This paper describes how views on research planning have evolved to incorporate lessons learned about how research leads to improved safety and health for workers. It also describes the process used to develop the goals and the resulting strategic and intermediate goals that comprise the National Construction Agenda.

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1. Introduction

The core mission of the National Institute for Occupational Safety and Health (NIOSH) is to conduct research to improve and protect the health and safety of workers. NIOSH Construction Program supported researchers have generated high quality research directed at key construction needs over the last two decades. While the fundamental nature of scientific research itself has not changed over this period, there have been important changes in policy drivers that shape and influence the direction of research. Evolving government-wide perspectives on program performance, accountability, and evaluation have led to changes to priority-setting, research planning, and program evaluation efforts. Research must not only be of high quality – it must also be relevant and make an impact. This evolving direction can be captured by a very fundamental question: What do programs need to do to insure that research leads to improved safety and health for workers?

The connection between research and real world relevance and impact is increasingly important to policymakers. It is also of interest for researchers, not only because they want their work to make a difference, but also because they know that demonstrating research impact is important to the policymakers who determine research budgets. NIOSH has undergone a number of management changes to provide a performance orientation for all its research and service activities. For example, NIOSH launched a new initiative called "Research to Practice" (r2p) in 2004 to emphasize and strengthen efforts to move research findings into the workplace. Other examples include working with stakeholders to develop strategic goals targeting industry sector priorities, and external evaluation of NIOSH programs to determine both the relevance and impact of research as well as whether programs are meeting goals and objectives.

This paper describes the NIOSH Construction Program experience with two of these performance management initiatives:

- An external program review conducted by a National Academies of Science committee to evaluate the impact and relevance of research performed over the previous 10 years.
- Development of a National Occupational Research Agenda (NORA) for the construction sector, intended to guide research work to meet national objectives over the coming decade.

* Tel.: +1 202 245 0651.
E-mail address: mgillen@cdc.gov.

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These two initiatives, one looking retrospectively and one prospectively, have provided valuable insights for improving our construction research program. We developed an expanded research process model for our program that was used for both initiatives.

2. Moving to an "impact" mission – What are the issues?

Defining research program success as demonstrating real world impact is a challenging and ambitious goal. A case can be made that basic research discoveries have their own value. The very nature of research also means that not every idea will succeed, but all contribute to the body of knowledge. Researchers are most often specialists and most lack the training or skills to take on additional activities to support and encourage the use of research findings. Kreuter and Bernhardt (2009) suggest that asking researchers to be central players in dissemination of research is unrealistic and inefficient. They suggest that scientists lack the basic training for research dissemination, just as automobile engineers lack the training to deliver, sell, and service the cars they design. Furthermore, the research world is competitive, and researchers are judged primarily on their peer-reviewed publications and the citation of their work by other researchers. Researchers do not typically get recognition or career credit for activities associated with encouraging research translation or making an impact. Finally, there are many factors affecting adoption of research recommendations by stakeholders and these are beyond the direct control of either NIOSH or externally supported researchers. NIOSH is a research institute with no regulatory powers other than for a narrow area of respiratory protection certification.

While these are all valid concerns and challenges, they do not trump increasing interest in insuring that scientific discoveries are translated into tangible human benefit. This is a larger policy issue with its own momentum cutting across most research disciplines. For example, it has been a major issue for medical research (Sung et al., 2003; Kasdin, 2008), where the focus is to first insure that promising lab research findings transition to relevant clinical research, and then to insure that clinical findings are transferred into medical practice. Psychology (Wandersman et al., 2008) and Community Safety (Cherney, 2009) are examples of other fields where research to practice is a topic of increasing interest. Science organizations can have a built-in tendency to direct research towards priorities of narrow research specializations, reflecting that researchers are specialists and publish in scientific journals on topics of clear interest to fellow specialists (Howard, 2009). Active program coordination of research serves to counterbalance this tendency and helps to insure that research efforts are aligned with relevance and impact considerations. Much construction safety and health research is by nature applied research, and improvements in end outcomes are an appropriate focus for applied research. An orientation towards relevance and impact also inform more effective partnerships between industry, government, and academic researchers. Effective partnerships and demonstration of impact are key ingredients for expanding support for construction safety and health research.

3. The NIOSH "Research to Practice (r2p) initiative

The r2p initiative was established in 2004 to ensure NIOSH-generated research findings were transferred into everyday practice of occupational safety and health to reduce injury, illness, and death. The r2p term was coined to help communicate this new emphasis on providing solutions to real world problems. The concept emphasizes that research conducted or funded by NIOSH should be relevant to acknowledged needs for evidence-based practice in the field of occupational safety and health, and the relevant research must be usable by the organizations that have the power to improve the safety and health status of workers (Howard, 2009).

Research to Practice adds several dimensions to planning and conducting research. It encourages upfront collaboration with occupational safety and health partners to identify relevant research needs and provide input into the design of studies. It also adds a dimension as research nears completion, to ensure that research results can be diffused effectively to industry leaders, safety and health professionals, opinion leaders, and innovators. This diffusion can involve development of secondary information products tailored to specific audiences, and use of communication science to inform transfer efforts. For example, the literature on diffusion of innovations theory (Rogers, 1995) has shown the important role that opinion leaders and early adopters can have on getting new ideas and approaches adopted. The "stages of change" model (Prochaska & DiClemente, 1982) provides insight on how to tailor safety messages to encourage change.

All new NIOSH proposed internal projects now include r2p planning, and advice is available to researchers from a NIOSH Office of Research to Practice. For example, worksheets and checklists are available to help researchers think proactively about what occupational groups are likely to be affected by the research, and what key stakeholder groups are likely to be interested. Specialized technology transfer guidance is available to researchers developing or evaluating inventions or technologies. Information on partnership agreements and social marketing basics are available. Researchers are asked to seek research partners at the conceptual stage and to include letters of support in their research proposals. Researchers are encouraged to think not only about those partners needed for conducting or supporting the research, but also about involving new types of additional partners. For example, *research translation* partners are intended to translate or convert research findings into outputs such as regulatory requirements, consensus standards, professional standards, training materials and programs, and other workplace recommendations, as well as language and communication products readily understood by industry or lay audiences. *Research dissemination* partners can assist with distributing research findings to the target audience(s). For example, a trade association may include a short summary of research findings and related workplace recommendations in a quarterly newsletter, or may provide membership lists for mass distribution of relevant publications to key audiences. *Research evaluation* partners can provide worksite access and employee data for intervention evaluation trials to measure the outcomes and overall impact of the project. In addition, NIOSH-supported external researchers are also encouraged to include similar r2p planning as part of their project development process.

4. The National Academies review of the NIOSH Construction Program

This independent external review was performed by an expert panel committee organized by the National Academies. The review was based on an evaluation framework developed specifically for evaluation of NIOSH programs by the National Academies[1]. The framework also incorporated features from the governmental Office of Management and Budget (OMB) Program Assessment Rating Tool (PART), a standardized

[1] The NA Framework document is available at http://www.cdc.gov/niosh/nas/pdfs/Framework081007.pdf.

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