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Erika Scott, Bryan Weichelt & Jennifer Lincoln

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EDITORIAL

The Future of U.S. Agricultural Injury Surveillance Needs Collaboration

“It is a capital mistake to theorize before one has data.”
—Sherlock Holmes, “A Study in Scarlet” (Arthur Conan Doyle)

For injury epidemiologists, the hunt for data is an ongoing detective story. While there is a thrill in the chase, there is even more satisfaction in using those data to drive important public health research and programming. The size of the U.S. agriculture workforce and the declining number of work-related agricultural injuries made annual data collection costly. Therefore, in 2015, the National Institute for Occupational Safety and Health (NIOSH) discontinued interagency agreements with Department of Labor (DOL) and United States Department of Agriculture (USDA) to collect national agricultural worker injury data and developed a plan to seek alternative methods to obtain quality agricultural injury surveillance data. However, those means were not the only tool to gather agricultural injury data, and many alternative efforts persisted.¹ The ethos of the new model seeks to engage with extramural partners to fill the many identified gaps in agricultural injury data. While some may long for the “good old days” of the national injury surveys, we recognize several factors make such endeavors impractical.

Improved agricultural injury surveillance is framed by two factors: overall efforts to improve occupational injury surveillance for all industries, and targeted efforts that focus on why the agriculture industry is undercounted in many existing occupational injury surveillance efforts. A 2018 National Academies’ report on “A Smarter Surveillance System for Occupational Safety and Health in the 21st Century”, jointly commissioned by NIOSH, the Bureau of Labor Statistics (BLS), and the Occupational Safety and Health Administration (OSHA), emphasized the role of working collectively to address the myriad issues.² Further, a NIOSH-commissioned RAND report assessed the “feasibility and desirability” of agricultural surveillance activities given current agriculture, forestry, and fishing (AgFF) program resources and priorities.³

So where do we go from here? Collectively and collaboratively onward and upward. Although challenges exist, we have realized that change will never come unless we start to take action. For several years, an agricultural injury Surveillance Working

Group (SWG) has been adding volunteer members, while growing to meet the special demands of injury surveillance in this high-risk industry. This SWG meets quarterly to network, share methods, and collaborate. Recently, the SWG completed a review of the seven major implementation goals that NIOSH has outlined as a path forward for injury surveillance (Table 1).⁴ Workgroups were formed for each goal, with three to six expert members, providing feedback on the goal’s definition, accomplishments in this area to date, and suggestions for future work. Below are the highlights from that endeavor.

Identify and use consistent terminology

Consistency in terminology allows an “apples to apples” injury comparison, something that is occasionally difficult given the current patchwork of surveillance systems. Systems such as the Occupational Injury and Illness Classification System (OIICS)⁵ and the Farm and Agricultural Injury Classification (FAIC) Code provide a framework for many variables in an injury record.⁶ In 2008, the National Occupational Research Agenda AgFF Council led an effort to compile a dictionary of terms for the agriculture, forestry, and fishing industries. Updating this resource should reflect recent changes to the OIICS and FAIC. In addition, experts from agriculture, forestry, and fishing should be engaged to ensure that industry-specific terms are accurate and up to date, and the dictionary should be shared widely among AgFF stakeholders.

Develop and evaluate new methodologies for using multiple data systems

It will be beneficial to document what common variables exist in a given dataset and how they are coded. For example, knowing if a dataset contained variables on work-relatedness, industry, and occupation by standardized classification system, injury description (narrative text vs. OIICS or another classification system), employment information (seasonal, year-round, self-employed, pay systems), and worker information (demographics, race/ethnicity, protected health information available) will be extremely valuable.

Table 1. Surveillance implementation goals outlined by NIOSH.

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- (A) Identify and use consistent terminology
 - (B) Develop and evaluate new methodologies for using multiple data systems
 - (C) Maximize regional or population-specific data collection to fill gaps
 - (D) Explore existing surveys and data managed by other agencies for feasibility in the agricultural sector
 - (E) Use existing data to identify, describe, track, and evaluate risks and injuries
 - (F) Promote and facilitate the use of surveillance information for prevention efforts
 - (G) Present more comprehensive information on the extent, distribution, and characteristics of injuries and exposures
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Maximize regional or population-specific data collection to fill gaps

Surveillance and prevention efforts should be regionally tailored when possible, given labor, establishment characteristics, and commodities differ regionally. Existing secondary data sources can be valuable, but some lack critical variables necessary for injury prevention, such as the type of event, source of injury, or root causes. Identifying the gaps and missing data will illuminate a path forward on how to fill them.

Explore existing surveys and data managed by other agencies for feasibility in the agricultural sector

Adding industry and occupation modules to existing and established federal surveys, especially those occurring outside of NIOSH, holds considerable promise. We suggest outlining what an ideal industry and occupation module would look like, including prioritizing questions from most important to least important. Lessons can be gleaned from the Behavioral Risk Factor Surveillance System (BRFSS) Industry and Occupation (I/O) module.⁷ Encouraging adequate sampling of rural areas to allow for AgFF stratification and analysis is also important. Cross-agency efforts ensuring industry and occupational classification are included in Electronic Health Records and third-party payor systems would be beneficial. Moreover, given the unique aspects of AgFF as it relates to Workers' Compensation (WCP) systems, collaborations with the insurance sector (for instance, at the state or national levels) would also be warranted. Lastly, engaging with other partners, such as the extramurally funded NIOSH Centers, the state-based occupational health surveillance programs, and Council of State and Territorial Epidemiologists (CSTE) members, can help push this vision forward.

Use existing data to identify, describe, track, and evaluate risks and injuries

Many researchers are already using existing data to describe injuries and risks in agriculture. Advancements in public health methodologies in recent years have made it faster and less expensive to identify injury cases, especially fatalities. Examples include the move from print reporting to electronic media and the respective aggregation techniques, as well as the use of machine learning algorithms in identifying injuries in free-text. Moreover, given many AgFF injuries and fatalities involve transportation, mining individual reports and data collection systems surrounding motor vehicle crashes could enhance surveillance initiatives in this space.

Promote and facilitate the use of surveillance information for prevention efforts

Consideration must be given to the hosting, facilitation, promotion, and dissemination of the available dataset(s). Ideally, a searchable repository would benefit users (including the media) in accessing burden data by hazard and/or source. Ideally, support would accompany such a repository to assist users with finding, interpreting, and communicating data of interest. An interagency effort of standardizing denominator data for agriculture could significantly improve data utility and decision-making, as rates might more accurately point to what issues need to be addressed.

Present more comprehensive information on the extent, distribution, and characteristics of injuries and exposures

This goal is broad and complex, and success will require the actions of researchers and stakeholders from across disciplines. The SWG could serve as an administrative or advisory hub with support and participation from NIOSH. However, sustained effort is necessary to collect comprehensive surveillance data and/or combine regional data on a regular and consistent basis, even if that means a strategic partnership with those already reaching these populations with regular surveys, such as the USDA or other regional entities, as described for goal D.

Databases (e.g. Worker Health Charts, State-based Occupational Health Surveillance Clearinghouse, National Ag Safety Database) exist that could help serve as a model for administrative, advisory, and collection of agricultural injury surveillance.⁸⁻¹⁰ Additional partnerships or cross hosting of existing databases (National Agricultural Statistics Service

Census and Survey, Census of Fatal Occupational Injuries (CFOI), NIOSH Worker Health Charts, AgInjuryNews, etc.) and peer-reviewed manuscripts/journals could further achieve our overarching goal.

Overarching themes

Two opposing approaches were emphasized in the respective work groups' discussions: (1) surveillance on a national scale with consistent definitions and variables, thus allowing for region-to-region comparison, and (2) tailored regional surveillance systems to fill in the nuances needed to target meaningful injury prevention research. Adequate resources were consistently raised as a factor for many of the implementation goals. A good next step would include the SWG revisiting their suggestions and prioritizing them. While some efforts may require additional resources, others will require collaboration, ingenuity, and institutional support allowing staff to pursue projects beyond the scope of normal duties. We will continue with our bootstrap efforts to improve injury surveillance and better inform agricultural safety and health stakeholders.

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Erika Scott

Northeast Center for Occupational Health and Safety in Agriculture, Forestry, and Fishing, Bassett Medical Center, Cooperstown, New York, USA

 Erika.scott@bassett.org

 <http://orcid.org/0000-0002-3526-9638>

Bryan Weichelt

National Farm Medicine Center, National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS), Marshfield, Wisconsin, USA

Marshfield Clinic Health System, Marshfield Clinic Research Institute, Marshfield, Wisconsin, USA

 <http://orcid.org/0000-0003-2862-3114>

Jennifer Lincoln

Office of Agriculture Safety and Health, National Institute for Occupational Safety and Health