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Principal Investigator: A. Rana Bayakly, MPH

Affiliation and Contact Information: Georgia Department of Public Health
2 Peachtree Street, NW 14th Floor,
Suite 14-440
Atlanta, Georgia 30303
(404) 657-2617
Rana.Bayakly@dph.ga.gov

Institution: Georgia Department of Public Health

Address: 2 Peachtree Street, NW 15th Floor
Atlanta, Georgia, 30303

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List of Terms and Abbreviations

American Association of Poison Control Centers (AAPCC)

Adult Tobacco Survey (ATS)

Council of State and Territorial Epidemiologists (CSTE)

Consortium of Occupational State-based Surveillance (COSS)

Georgia Board of Workers' Compensation (GBWC)

Georgia Department of Public Health (DPH)

Georgia Poison Center (GPC)

National Institute for Occupational Safety and Health (NIOSH)

National Occupational Mortality Surveillance (NOMS)

Occupational Health Indicators (OHIs)

Occupational Health Surveillance (OHS)

Occupational Safety and Health Administration (OSHA)

State-Based Occupational Health Surveillance in Georgia (OHS-GA)

State-Based Occupational Health Surveillance in Georgia; PI: A. Rana Bayakly; 404-657-2617; rana.bayakly@dph.ga.gov

Abstract

The Georgia Department of Public Health established a successful fundamental State-Based Occupational Health Surveillance System in Georgia to document the burden of occupational illnesses, injuries, and related factors. This surveillance is based on the 20 occupational health indicators that are recommended by the National Institute for Occupational Safety and Health (NIOSH) and the Council of State and Territorial Epidemiologists (CSTE). In Year One, an Occupational Health Epidemiologist was hired. This major accomplishment led to the collection of the occupational health surveillance indicator data and the timely annual submission of Georgia's data to NIOSH and CSTE. During the past five years, Georgia published its first Occupational Health Surveillance (2006-2009) Report in September, 2012. This report was followed by a five-year Occupational Health Surveillance (2008-2012) Report on Georgia workers published in September 2015. These reports were disseminated widely to the Georgia Department of Public Health occupational health collaborators, partners, and stakeholders. Reports and data summaries were posted on the newly created Georgia public health website <http://dph.georgia.gov/georgia-occupational-health-and-safety-surveillance-program> . These reports laid the foundation and provided a baseline for Georgia's occupational-health related morbidity and mortality.

To enhance Georgia's workers' health and safety, the OHS-GA unit successfully established a relationship with the Occupational Safety and Health Administration (OSHA) Region IV office and the Georgia Adult Blood Lead Epidemiology Surveillance (ABLES) Program. Additionally, the OHS-GA added occupation, industry, and injury-related questions on the Georgia Behavioral Risk Factor Surveillance System (BRFSS) in 2011 to routinely assess health conditions and health risk behaviors among Georgia's workers. Finally, OHS-GA became part of National Occupational Mortality Surveillance (NOMS) Program in May 2015 and submitted Georgia Death Records to NOMS for coding. This last activity should greatly enhance Georgia's future analysis of the leading causes of occupation related mortality.

The State-Based Occupational Health Surveillance in Georgia (OHS-GA) Unit established an active Advisory Committee that includes representatives of key partners and stakeholder organizations and agencies. The Advisory Committee met annually and reviewed Georgia's occupational health indicators, as well as provided feedback and consultation on major activities the unit needed to address.

In summary, the primary goal of OHS-GA was to establish a fundamental surveillance system for occupational health and safety, provide timely and ongoing data on all 20 indicators, and use this data as the basis to inform partners, stakeholders, policy makers, and the public about leading causes of morbidity and mortality from occupational injuries

and illnesses. As this information was previously absent in Georgia, the OHS-GA was successful in achieving its primary goal and greatly enhanced Georgia's capabilities to analyze traditional and non-traditional data sources to further advance Georgia's worker safety and health. By doing so, the OHS_GA increased awareness regarding occupational health and safety issues and informed public health programs and Georgia's scientific community on occupational health issues and priorities.

Section 1

Significant (Key) Findings

Specific Aim 1: Establish a surveillance program for occupational health and safety in Georgia

The establishment of State-Based Occupational Health Surveillance in Georgia was a new endeavor. Engaging and involving stakeholders and data source owners within DPH and outside DPH, was key to our success. During the past five-years, DPH secured ready access to data for all of the Occupational Health Indicators (OHIs). As of June 30, 2015, Georgia is able to conduct data analysis, produce reports and disseminate data on all the OHIs recommended by NIOSH and CSTE. Georgia included all the recommended indicators as part of its surveillance, in order to obtain a broad and well-informed perspective on occupational health and safety in Georgia. In addition, OHS-GA used non-traditional occupational health data sources to collect state-specific indicators on work-related asthma, arthritis among employees, and workplace secondhand smoke exposure.

Specific Aim 2: Collect, analyze, and report data on occupational illnesses, injuries, and related factors in the state, based on the recommended Occupational Health Indicators

The OHS-GA Epidemiologist produced two Occupational Health Surveillance reports; covering the period of 2006-2009 and the period of 2008-2012. In addition, two executive summaries based on the surveillance reports were prepared and tables on Georgia OHIs in comparison to the United States and several data summaries were produced and disseminated. These reports, data tables, and data summaries were all uploaded to the OHS-GA newly created website <http://dph.georgia.gov/georgia-occupational-health-and-safety-surveillance-program> to facilitate wide distribution.

Specific Aim 3: Establish and maintain an Advisory Committee representing partner organizations and stakeholders, to assess the surveillance system and the data it provides, and to make recommendations to enhance its impact and use.

The OHS-GA unit has established and maintained an active Advisory Committee since 2011. Advisory Committee members include members of the public, private, and research communities, such as the Georgia Poison Center, Georgia Board of Workers' Compensation, Georgia Worksite Health Initiative, University of Georgia, Emory University, Region IV OSHA, Georgia Hospital Association, and the DPH Emergency Preparedness, Environmental

Health, and Chronic Disease programs. Some of the Advisory Committee members are “owners” of the OHIs data sources.

Specific Aim 4: Participate fully in State-Based Occupational Health Surveillance, including regular meeting attendance and reporting of Georgia’s data to multi-state summaries.

OHS-GA’s principal investigator and epidemiologist participated on the planning committee for the 2013 State-Based Occupational Health Surveillance Partner’s meeting. The OHS-GA epidemiologist participated on the 2015 CSTE Conference planning committee for the OH Surveillance track and participated in planning the CSTE roundtable discussion entitled “Practical Issues in Exploring Industry and Occupation (I/O) in the BRFSS.” The OHS-GA epidemiologist currently serves as the state lead for Occupational Health Indicator 3, Fatal Work-Related Fatalities. Responsibilities of this lead role include participating in the CSTE OHS Workgroup, annually editing and updating CSTE’s guidance document, *Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants*, and serving as the contact for issues and concerns related to the indicator.

Translation of Findings

The OHS-GA provides the data to quantify and characterize leading causes of work-related injury and illness in Georgia. Partners and stakeholders regularly use the OHS reports, executive summaries, and data summaries. Data are used in worksite wellness meetings and workshop presentations and grant proposals. In addition, OHS-GA data were used to identify two health issues in the state: work-related pesticide poisonings and elevated blood lead levels among adults. This led Georgia to successfully apply for a new 5-year NIOSH cooperative agreement to implement prevention programs addressing employers with employees who are exposed to lead and to work with the DPH Environmental Health and Emergency Preparedness programs and the state’s Rural Health program to enhance pesticide surveillance activities in Georgia.

Outcomes/Impact

The main outcome is the establishment of the fundamental OHS-GA. Prior to receiving NIOSH funding, Georgia did not have a basic OHS system and did not monitor the problem, identify groups at increased risk, or provide data to focus prevention efforts. OHS-GA in collaboration with the DPH Worksite Wellness Health Initiative and the Georgia Institute of Technology “*EmployersLikeMe*” developed and piloted a Worksite Wellness Survey to document existing worksite policies and environments affecting physical activity, nutrition, injury, health screening, and tobacco use in Georgia. The survey will help to leverage the creation of workplace wellness programs in Georgia’s medium sized (100-249 employees) businesses and will assist the DPH in developing health promotion tools to support employers’ implementation of health promotion programs.

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Grant Number: 5U600H009870;
Principal Investigator: A. Rana Bayakly;
2 Peachtree Street, NW, Atlanta, Georgia, 30303; PH: 404-657-2617;
rana.bayakly@dph.ga.gov

Success Story

Poison Control Data Enhances Surveillance of Work-related Pesticide Poisonings

Georgia had the 18th highest incidence rate of reported work-related pesticide poisonings in the nation during 2011 —American Association of Poison Control Centers

The Challenge

Exposure to pesticides can lead to both short- and long-term health effects. Workers who handle pesticides, such as farmworkers, fumigators, and pesticide applicators, are at greatest risk for exposure. Data from the American Association of Poison Control Centers shows during 2006-2011 annual incidence rates of reported work-related pesticide poisonings in Georgia were higher than the national rate. In order to describe the burden and enhance surveillance of work-related pesticide illnesses and injuries in the state, access to detailed data is needed.

The Response

Work-related pesticide exposures have become an occupational health indicator of special interest in Georgia. In 2013, the Georgia Department of Public Health Occupational Health Surveillance Unit was granted full real-time access to the Georgia Poison Center's (GPC) database that allows for queries of all information calls and exposure cases. With access to this database, Georgia OH Surveillance is able to conduct special analyses and fulfill data requests for pesticide exposures.

The Impact

Access to GPC's database will be used to create resources that can bring attention to the need for more in-depth surveillance and prevention of work-related pesticide exposures in Georgia. A detailed *Work-Related Pesticide Exposure Data Summary* was created to further describe the burden of pesticide exposures among workers in Georgia. It includes information on case demographics, type of substance, route of exposure, and exposure effects. This summary will be available on GA DPH website, the NIOSH State-based Occupational Health Surveillance Clearinghouse, and shared with members of the OH Advisory Committee for further dissemination.

Section 2: Scientific Report

Background

The Georgia Department of Public Health (DPH) proposed, under CDC NIOSH PAR-09-184, to initiate surveillance for occupational illnesses, injuries, and related factors, based on the indicators for occupational health (OH) surveillance recommended by the National Institute for Occupational Safety and Health (NIOSH) and the Council of State and Territorial Epidemiologists (CSTE).¹ Occupational injuries and illnesses affect millions of workers in the United States every year. Over 4,000,000 people aged-16 years and older comprise Georgia's workforce. According to the Bureau of Labor Statistics (BLS), approximately 75,000 workers in Georgia were injured on the job or became ill from exposures to hazards at work in 2012. Some workers are employed in occupations or industries that may put them at higher risk of work related injuries or illnesses or being exposed to harmful substances such as lead, pesticides, or asbestos. Injuries, illnesses, and exposures on the job can affect workers' health for the rest of their lives. Many of these injuries and illnesses are preventable. Prior to receiving NIOSH funding, Georgia did not have a basic surveillance system for occupational health conditions and did not monitor occupational health and safety-related problems, identify groups at increased risk, or provide data to focus prevention efforts. The fundamental OH surveillance system provides a foundation for improving the health and safety of workers as it increases public awareness and informs prevention programs and guides their priorities.

The occupational health indicators (OHIs) have been designed to enable state-based surveillance to focus on important occupational health and safety problems, including the leading causes of work-related injuries, illnesses, hospitalizations, and deaths in the state. The ability to conduct surveillance for all the recommended OHIs relies on having access to the relevant data. DPH has ready access to the relevant data and we are able to conduct surveillance for all 22 recommended indicators. Georgia included all the recommended surveillance indicators in order to develop a broad and well-informed perspective on occupational health and safety in Georgia.

The development of an occupational health surveillance program was a new endeavor for the state. Engaging and involving stakeholders was key to the success of the program. In order to ensure stakeholder involvement, representatives from stakeholder organizations and agencies and key partners were invited to participate on the Occupational Health Surveillance Advisory Committee. We have also established collaborations with partners outside the traditional occupational health infrastructure, such as the Georgia Worksite Health Initiative, which will yield benefits in disseminating prevention strategies to reduce the incidence of occupational injuries and illnesses.

The primary goal of our project was to establish a fundamental surveillance system for occupational health and safety in Georgia. The surveillance system provides the basic data to quantify and characterize leading causes of work-related injury and illness in Georgia. This information base has provided the basis for informing partners, stakeholders, policy makers, and the public about leading causes of morbidity and mortality from occupational injuries and illnesses in Georgia.

Specific Aims

Specific Aim 1: Establish a surveillance program for occupational health and safety in Georgia

Specific Aim 2: Collect, analyze, and report data on occupational illnesses, injuries, and related factors in the state, based on the recommended Occupational Health Indicators

Specific Aim 3: Establish and maintain an Advisory Committee representing partner organizations and stakeholders, to assess the surveillance system and the data it provides, and to make recommendations to enhance its impact and use

Specific Aim 4: Participate fully in State-Based Occupational Health Surveillance, including regular attendance at meetings and reporting of Georgia's data to multi-state summaries

Specific Aim 1: Establish a surveillance program for occupational health and safety in Georgia

Methodology

An OHS-GA Epidemiologist Antionette Lavender, MPH was hired in May 2011. She has become thoroughly familiar with the *Guidelines for Minimum and Comprehensive State-Based Public Health Activities in Occupational Safety and Health*², the indicators for occupational health surveillance, the data sets on which the indicators are based, and the prescribed methods for obtaining and analyzing the data needed to produce the indicators. She is experienced in working with the Georgia hospital discharge, mortality, and the Behavioral Risk Factor Surveillance System (BRFSS) data. The OHS-GA Epidemiologist's work is monitored and mentored by the Principal Investigator Rana Bayakly, MPH. Ad hoc consultation and advice is readily available from fellow epidemiologists who work with the cancer registry and other relevant data systems. In addition, the OHS-GA Epidemiologist has established relationships with counterparts in other states who have experience conducting fundamental OH surveillance and with advisors at NIOSH. Thus, the Epidemiologist has been able to develop and maintain a system for surveillance of occupational health and safety indicators in Georgia and has had timely access to reliable advice and consultation as questions or problems arise.

Results and Discussion

Collecting data for the indicators has necessitated the program to establish working relationships with various agencies outside DPH, such as the Georgia Board of Workers' Compensation (GBWC), Region IV OSHA, Georgia Poison Center, and the Georgia Institute of Technology, all of which have been active participants on the OHS-GA Advisory Committee. The GBWC is an agency with whom the DPH did not previously work. The OHS-GA unit has now has a working relationship with GBWC to access data on workers' compensation claims for carpal tunnel syndrome and amputations. The Georgia Poison Center granted the OHS-GA unit full real-time access to the Georgia Poison Center's database that allows for queries of all information calls and exposure cases. With access to these data, we were able to do a special analysis and create a detailed *Work-Related Pesticide Exposure Data Summary*, which goes beyond the basic OHI for pesticide exposures and describes in detail the burden of pesticide exposures among workers in Georgia.

The program has also strived to add industry and occupation in statewide surveys and other datasets. Since 2011, the OHS-GA unit added two work-related injury questions to the Georgia BRFSS. A third question was added to capture the length of time a person has been or was employed in an occupation. Questions on industry/occupation were added to the 2012-2015 Georgia BRFSS surveys. These questions, recommended by NIOSH, will allow various programs to identify and analyze industry and occupation not only as demographic variables, but also as important determinants of health. Analyses of chronic conditions and health risk behaviors by industry and occupation have been shared with DPH Chronic Disease Section programs. In addition, the OHS-GA epidemiologist presented analyses of BRFSS data at Annual CSTE Conferences and at the 140th Annual American Public Health Association (APHA) Meeting and Expo.

The OHS-GA and Georgia Violent Death Reporting System (GVDRS) epidemiologists collaborated on re-coding the occupational text fields in the GVDRS database for all violent deaths (homicides and suicides) that occurred in Georgia during 2006-2009, according to the Bureau of Labor Statistics' 2010 Standard Occupational Codes. Over 8,000 deaths were recoded. Results of the analysis were presented at the 84th annual Georgia Public Health Association meeting (GPHA) and the 2013 Annual CSTE Conference. In early 2015, Georgia became a part of the NIOSH National Occupational Mortality Surveillance (NOMS) Program. Participation in this program will allow standard industry/occupation codes to be available in Georgia's mortality data and will help monitor work-related acute and chronic disease mortality among workers.

The OHS-GA in collaboration with DPH Maternal and Child Health Section has added employment-related questions to the 2016-2018 Georgia Pregnancy Risk Assessment Monitoring System (PRAMS) questionnaires. GA PRAMS is a statewide, ongoing,

population-based survey that collects information on women who give birth in Georgia. Georgia PRAMS supplements birth certificate data by collecting information on women's attitudes, experiences, and health risk behaviors before, during, and after they deliver a live-born infant. The addition of questions on employment, including industry/occupation, will allow the state to assess health outcomes of pregnant women by employment-related factors. This information can be useful to help inform and support various health promotion programs in the state, such as the Maternal and Child Health, Chronic Disease Prevention, and Tobacco Use Prevention programs.

Conclusions

The OHS-GA unit has been successful in expanding Georgia's epidemiologic capacity by engaging an OHS Epidemiologist; accessing all of the data needed for the occupational health indicators; adding of industry and occupational coding to non-traditional data sources, such as the BRFSS, and PRAMS; and coding occupation and industry fields on the Georgia Death file. Adding these fields will enhance the surveillance of occupational health and safety in Georgia. The surveillance activities conducted by the Epidemiologist provide the state with much needed data and resources on occupational injuries, illnesses, deaths, and exposures. This provides the foundation for improving the health and safety of Georgia's workers.

Specific Aim 2: Collect, analyze, and report data on occupational illnesses, injuries, and related factors in the state, based on the recommended Occupational Health Indicators

Methodology

The Occupational Health Epidemiologist has systematically collected, analyzed, interpreted, and disseminated the necessary data for the recommended occupational health indicators based on the CSTE guidance document, *Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants*.¹ The majority of data needed for the occupational health indicators can be accessed online or are available internally at DPH. Data located external to DPH such as Workers' Compensation claims and OSHA inspections data are obtained through communication with the respective organizations. Each external organization that provides data is represented on the OHS-GA Advisory Committee to ensure communication with the organization and to nurture relationships for future collaborations. The OHS-GA Epidemiologist accessed the publicly-available data required for the indicators, such as the Bureau of Labor Statistics (BLS) Geographic Profiles, BLS Current Population Survey, the Census of Fatal Occupational Injuries, the Annual BLS Survey of Occupational Illnesses and Injuries, the National Academy of Social Insurance estimate of workers covered by workers compensation, Bureau of the Census data,

member directories and rosters of occupational safety and health professional organizations, and Occupational Safety and Health Administration (OSHA) annual reports. The state data required for the recommended indicators are accessible at DPH and are regularly used by the OHS-GA epidemiologist. These include: 1) hospital discharge data from the Georgia Hospital Association; 2) cancer registry data available through the Georgia Comprehensive Cancer Registry (GCCR), which is overseen by the Principal Investigator; 3) data on blood lead levels are from the Adult Blood Lead Epidemiology and Surveillance (ABLES) Program in the DPH Environmental Health Section; 4) Vital Records data accessible from the DPH Office of Vital Records; 5) data on pesticide poisoning available from the Georgia Poison Center (GPC); and, 6) Workers' Compensation data available from the Georgia Board of Workers' Compensation (GBWC). Additionally, other data sources, including the Georgia Adult Tobacco Survey (ATS) and the Georgia BRFSS, will be analyzed annually to obtain data for two identified state-specific indicators, workplace secondhand smoke exposure and arthritis among employees.

Results and Discussion

All of the recommended occupational health indicators have been collected and analyzed annually since 2011. Occupational indicator data for years 2008 through 2012 were submitted to NIOSH each year for quality checks and have been uploaded onto CSTE's website for state occupational health indicators. The OHS-GA Epidemiologist has also summarized these data in reports and data summaries that include graphs, tables, and narratives. The indicator data have been shared with the OHS-GA Advisory Committee and posted on the DPH website and the NIOSH State-Based Occupational Health Surveillance Clearinghouse.

Georgia's first Occupational Health Surveillance Indicators Report and an Executive Summary, covering years 2006-2009, were published in 2012. The surveillance report estimates the burden of work-related injuries and illnesses in Georgia and was based on the 20 occupational health indicators that were recommended by CSTE/NIOSH. The report also included state-specific indicators for work-related asthma, arthritis among employees, and workplace secondhand smoke exposure. The report and executive summary, updated for years 2008-2012, includes all of the 22 occupational health indicators currently recommended. In addition, three data summaries for the occupational health indicators have been created. A work-related pesticide exposures data summary was also created to characterize work-related pesticide-associated illnesses and injuries reported during 2006-2011. This exposure data summary can be used to bring attention to the need for more in-depth surveillance and prevention of work-related pesticide exposures in Georgia. Dissemination of these reports and summaries can increase awareness of occupational

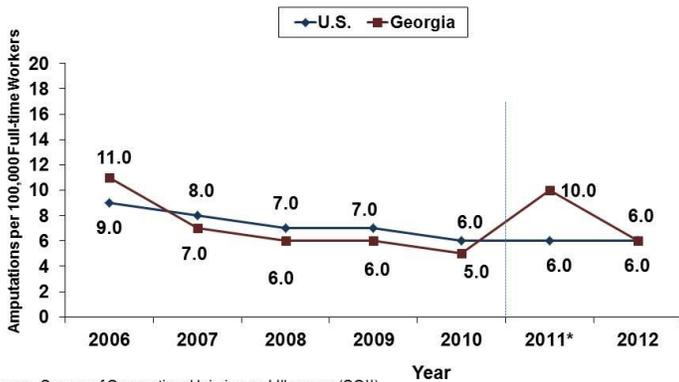
injuries, illnesses, and fatalities in Georgia, as well as increase program collaborations and interventions.

According to the 2012 BLS Current Population Survey, Georgia has an employed civilian workforce of over 4 million people, of whom 47% are female, 27% are Black, and almost 8% are Hispanic. The industries employing the largest proportions of the Georgia civilian workforce are education and health services (19.6%), wholesale and retail trade (14.6%), and professional and business services (12.8%). The occupational health indicator using data from the BLS Survey of Occupational Injuries and Illnesses show the incidence rate of non-fatal work-related injuries and illnesses in Georgia declined from 4,000 per 100,000 full-time workers in 2006 to 2,800 per 100,000 full-time workers in 2012. Georgia had 2,712 work-related hospitalizations in 2012, a decline from the 5,675 work-related hospitalizations observed in 2006. These non-fatal work-related injuries were most commonly due to falls on the same level (128 per 100,000 full-time workers), transportation incidents (50 per 100,000 full-time workers), and violence and other injuries by persons or animals (43 per 100,000).

According to the 2012 Census of Fatal Occupational Injuries (CFOI) there were 101 fatal work-related injuries in 2012, a rate of 2.4 per 100,000 full-time workers; this declined from the rate 4.5 per 100,000 full-time workers in 2006. The most frequent causes of fatal work-related injuries in Georgia are highway accidents, homicides, and falls. The highest rates of fatal injuries in Georgia during 2012 occurred among workers in the agriculture, forestry, fishing, and hunting industry (17.7 per 100,000), followed by the transportation and utilities (8.2 per 100,000), and construction industries (5.8 per 100,000). Data from the BLS SOII show the rate of work-related amputations reported by employers has been fairly stable in Georgia during 2008-2012 at about 6.0 per 100,000 full-time workers with an increase to 10.0 per 100,000 full-time workers in 2011 (Figure 1). The annual number of reported pesticide poisonings per 100,000 employed persons aged 16 years and older increased from 96 in 2009 to 151 in 2010. There was a corresponding increase in the incidence rate of pesticide poisoning cases, which increased from 1.8 per 100,000 in 2008 to 3.6 per 100,000 in 2010 before it declined to 2.0 per 100,000 in 2012. The rate of work-related pesticide poisonings in Georgia was higher than the national rate during 2008-2012 (Figure 2). The number of incident cases aged 16 years and older with elevated BLL of 10 µg/dL or greater reported to the Georgia Adult Blood Lead Epidemiology (ABLES) Program increased from 151 cases in 2008 to 514 cases in 2012 (Table 1). The elevated BLL incidence rate of 10 µg/dL or greater has more than doubled since 2008 (Figure 3). Although, there is much knowledge about the impact of secondhand smoke on the body, many non-smoking employees are still exposed to the dangers of secondhand smoke on the job. Analysis of the 2014 Adult Tobacco Survey for Georgia's state-specific indicator showed an estimated 12% of non-smoking Georgia employees (approximately 782,000

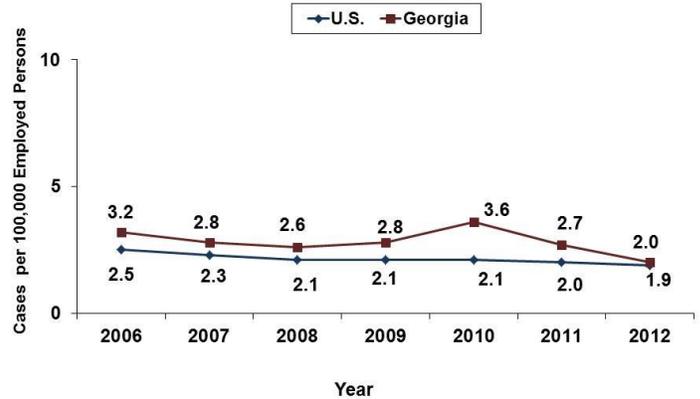
individuals) were exposed to secondhand smoke at work during the past seven days prior to the survey. Also analysis of the BRFSS showed an estimated 15% of employees in Georgia had doctor-diagnosed arthritis in 2013 (approximately 680,000 individuals), which represents a slight increase from the prevalence observed in 2011 (13%) and 2012 (14%). About 29% of employees (approximately 169,000 individuals) said that arthritis or joint symptoms affects whether they work, the type of work they do, or the amount of work they do. This measure of arthritis-attributable work limitation shows that a considerable number of Georgia employees can benefit from interventions that include simple workplace accommodations such as flexible work schedules, ergonomic work stations, and efforts to promote maintaining a healthy weight and physical activity; all of which may help ease the pain of arthritis.

Figure 1. Rate of work-related amputations with days away from work, Georgia and U.S., 2006-2012



Source: Survey of Occupational Injuries and Illnesses (SOII)
 *Data from 2011 – 2012 may not be directly comparable to data from previous years due to changes in coding structures for injuries and illnesses

Figure 2. Annual incidence rate of reported pesticide poisoning cases, Georgia and U.S., 2006-2012

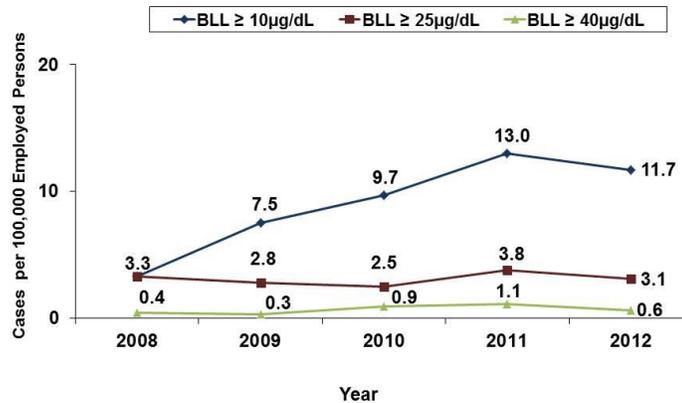


Source: American Association of Poison Control Centers

Table 1. Number of incident cases of elevated* blood lead levels, Georgia, 2008-2012					
	2008	2009	2010	2011	2012
Incident cases blood lead levels (≥10 µg/dL)	151	323	411	555	514
Incident cases blood lead levels (≥25 µg/dL)	151	120	108	163	137
Incident cases blood lead levels (≥40 µg/dL)	20	15	38	46	27

*Note: Elevated among persons aged 16 years or older

Figure 3. Annual incidence rate of elevated blood lead levels among persons aged 16 years and older, Georgia, 2008-2012



Source: Adult Blood Lead Epidemiology Surveillance (ABLES) Program

Conclusions

The occupational health indicators have been instrumental in identifying leading causes of work-related injuries, illnesses, and fatalities in Georgia. Collecting data for these indicators has enabled DPH to establish working relationships with external organizations, which will help when seeking opportunities for collaborations on future occupational health surveillance and prevention and intervention projects. Although there have been declines in work-related injuries and fatalities in Georgia, some indicators are of special interest because the rates are higher than national rates or because statewide declines in rates or number of cases were not observed. These indicators include: Work-related amputations with days away from work, reported by employers; Acute work-related pesticide poisonings reported to poison control centers; and Elevated blood lead levels among adults.

Specific Aim 3: Establish and maintain an Advisory Committee representing partner organizations and stakeholders, to assess the surveillance system and the data it provides, and to make recommendations to enhance its impact and use

Methodology

The OHS-GA unit has established and maintained an active Advisory Committee since 2011. Invitations to participate on the committee were sent to internal DPH programs as well as to external stakeholders and partners, including representatives from various agencies such as the Georgia Poison Center, Georgia Board of Workers' Compensation, Georgia Worksite Health Initiative, University of Georgia, Emory University, Region IV OSHA, Georgia Hospital Association, and the DPH Epidemiology Emergency Preparedness and Environmental Health programs. The Advisory Committee has met annually to share

knowledge, guide state surveillance priorities, identify relevant state-specific issues, and make recommendations to enhance the use and impact of the data provided by the surveillance system.

Current members of Georgia's Occupational Health Advisory Committee are: State Fire Marshall's Office--Rhett Black, (SOII) Survey of Occupational Injuries and Illnesses/ Census of Fatal Occupational Injuries (CFOI) Program Manager; Georgia Board of Workers' Compensation--Pamela Carter, IT Services Director; GA DPH Injury Prevention Program—Lisa Dawson, Director; GA Poison Center—Robert Geller, MD, Medical Director; OSHA-Region IV—Keith Hass, Industrial Hygienist; GA DPH Emergency Preparedness and Response—Betsy Kagey, PhD, Director; GA Tech Research Institute—Daniel Ortiz, Director Occupational Safety and Health; GA State Office of Rural Health—Charles Owens, Executive Director; GA DPH Environmental Health—Jane Perry, Director Chemical Hazards Program; Agnes Scott College—Li Qi, Professor of Economics; GA DPH Office of Tobacco, Policy, System, and Environmental Change—Kenneth Ray, Deputy Director; GA DPH Acute Disease Epidemiology—Wendy Smith, Epidemiology Preparedness Director; Emory University School of Public Health—Kyle Steenland, Professor Department of Environmental and Occupational Health; University of Georgia—Zolinda Stoneman, Ph.D., Director and Professor Institute on Human Development and Disability; and Georgia Hospital Association--Karen Waters, Senior Vice President.

Results and Discussion

During the Advisory Committee meetings, the Principal Investigator provides an update on the surveillance program and the Epidemiologist presents the latest OHI data and the results of analysis from special studies. Smaller meetings have been convened with members that were interested in further discussion of specific topics. For example, the OHS-GA Epidemiologist and Principal Investigator met with the Georgia Tuberculosis (TB) Surveillance Director and Region IV OSHA representative learn more about the TB investigation process and discussed the feasibility of referring work-related TB cases to OSHA. An ad hoc informal agreement was established between the TB surveillance unit and OSHA for referrals when a work-related TB case occurs. Separate meetings with stakeholders, such as the Office of Rural Health, Emory University, and University of Georgia, have also occurred to discuss the need for more detailed surveillance of work-related pesticide surveillance in Georgia. Stakeholders are also given the opportunity to give presentations during the Advisory Committee meetings and discuss their organizations need for OH data. For example, during our 2012 Advisory Meeting, a representative from GBWC gave a presentation on the workers' compensation system in Georgia and use of workers' compensation data. The possibility of establishing a data sharing agreement between DPH and GBWC was discussed.

Collaborations have also resulted through the Advisory Committee. The OHS-GA unit collaborated with the DPH Worksite Wellness Coordinator, Health Promotion, Cardiovascular Health, Tobacco Use Prevention, and Injury Prevention programs to develop a statewide Worksite Wellness Survey to help document the existing policies and environments affecting physical activity, nutrition, injury, health screening, and tobacco use in Georgia worksites. The results of the survey will help leverage the creation of more workplace wellness programs in Georgia's medium sized (100-249 employees) businesses. An online survey has been drafted and the survey has been piloted through the Georgia Institute of Technology *EmployersLikeMe* organization. Employers with medium sized businesses will be contacted using an employer data base provided through a data sharing agreement with the Georgia Department of Labor. The survey will assist the DPH in determining the proportion of worksites that offer their employees comprehensive health promotion programs and in developing health promotion tools to support employers' implementation of health promotion programs.

Conclusions

Having an Advisory Committee with representation from various entities has allowed different perspectives to be shared related to the occupational health surveillance needs of the state. This includes identifying priorities for state surveillance and the development of collaborations to enhance the surveillance, such as the worksite survey pilot that was conducted through *EmployersLikeMe*. Presenting data and disseminating reports to the Committee has also helped facilitate wide distribution of the occupational health indicator data.

Specific Aim 4: Participate fully in State-Based Occupational Health Surveillance, including regular meeting attendance and reporting of Georgia's data to multi-state summaries

Methodology

The OHS-GA Epidemiologist has actively participated in NIOSH- and recipient-convened meetings, conference calls, and planning committees. These include the annual State-Based OH Surveillance Partners meetings and the annual CSTE Occupational Health Subcommittee meetings held in conjunction with the Annual CSTE Conference.

Results and Discussion

The Principal Investigator and Georgia OHS-GA Epidemiologist participated on the planning committee for 2013 Occupational Health Surveillance Partner's meeting. During the meeting, the Principal Investigator provided a welcome and the OH Epidemiologist presented an update of Georgia's Occupational Health Surveillance Program's successes

and challenges. Georgia's State Epidemiologist, Dr. Cherie Drenzek, attended the meeting and presented an overview of epidemiology in Georgia. The OHS-GA Epidemiologist did an oral presentation entitled, "*Characteristics of healthcare workers who did not receive annual influenza vaccination, Georgia 2010,*" and an oral presentation entitled, "*Assessing Risk Factors for Arthritis: Occupation, Cigarette Smoking, and Frequent Mental Distress, Georgia, 2012,*" at annual CSTE conferences. The OHS-GA Epidemiologist participated on the 2015 CSTE Conference planning committee for the Occupational Health Surveillance track. This included helping to review more than 15 abstracts that were submitted to the conference. In addition, the OHS-GA Epidemiologist participated in planning a CSTE Conference roundtable discussion entitled, "*Practical Issues in Exploring Industry and Occupation (I/O) in the Behavioral Risk Factor Surveillance System (BRFSS)*". During this roundtable, the epidemiologist discussed Georgia's experiences and technical challenges with analyzing and using its first year of I/O coded data in the BRFSS.

The OHS-GA Epidemiologist currently serves as the state lead for Indicator 3, Fatal Work-Related Fatalities. Responsibilities include participating in the meeting of the CSTE Occupational Health Workgroup, annually editing and updating CSTE's guidance document, *Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants*, and serving as the contact for issues and concerns related to the indicator. The OHS-GA Epidemiologist has also been an active participant in the Southeastern States Occupational Health Network (SouthON), presenting an oral presentation entitled, "*Exploring Emergency Department and Inpatient Hospitalization Data for Work-related Injuries and Illnesses, Georgia, 2007-2011,*" at the SouthON 4th annual meeting and collaborating on a multi-state manuscript entitled, "*Occupational Heat-Related Illness: Emergency Department Visits and Inpatient Hospitalizations in the Southeast Region, 2007-2011*" that was published in the *American Journal of Industrial Medicine* (online Aug 2015).

Conclusions

Participating in conferences and meetings has allowed for discussions and networking with other states regarding current and emerging topics important for occupational health surveillance. In addition to leading to inter-state collaborations and providing lessons learned for other states, participation in the NIOSH- and recipient-convened meetings have provided more visibility for Georgia OH Surveillance Program.

References Cited

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4. Morano LH, Bunn TL, Lackovic M, Lavender A, Dang GT, Chalmers JJ, Li Y, Zhang L, Flammia DD: [2015] Occupational Heat-Related Illness Emergency Department Visits and Inpatient Hospitalizations in the Southeast Region, 2007-2011. American Journal of Industrial Medicine.
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6. Lavender A, Benson A, Bayakly AR: [2015] Georgia Occupational Health Surveillance Report, 2008-2012. Georgia Department of Public, Epidemiology Program, September 2015.
7. Lavender A, Benson A, Bayakly AR: [2015] Executive Summary: Georgia Occupational Health Surveillance Report, 2008-2012. Georgia Department of Public Health, Epidemiology Program, September 2015.

Data Sets

Data sets used by the OHS-GA unit were collated from publicly available data sets. These include the BLS Current Population Survey (CPS); BLS Geographic Profiles of Employment and Unemployment; BLS Survey of Occupational Injuries and Illnesses (SOII); BLS Census of Fatal Occupational Injuries (CFOI); Georgia Board of Workers' Compensation (GBWC) claims data; American Association of Poison Control Centers (AAPCC)/ Georgia Poison

Center (GPC); U.S. Census Bureau County Business Patterns (CBP); American Board of Preventive Medicine (ABPM); Annual roster of members of the ACOEM; American Board of Occupational Health Nurses Directory; Annual roster of members of the AAOHN member directory; American Board of Industrial Hygiene; AIHA member directory; BCSP member directory; ASSEE member directory; OSHA annual reports of total inspections and number of workers covered; BLS Covered Employers and Wages; and National Academy of Social Insurance. These data sets are well documented and show the extent of their completeness, accuracy and potential limitations.

Additionally OHS-GA uses internal DPH data sources. These include the Hospital Discharge Data; Georgia Mortality Data; Georgia Cancer Registry; Georgia Adult Blood Lead Exposure Surveillance data; Georgia BRFSS Asthma Call-Back Survey; Georgia Adult Tobacco Survey (state-specific); Georgia BRFSS (state-specific); and Georgia Violent Death Reporting System (state-specific). These data sets are well documented and the extent of the completeness, accuracy, and potential limitations of these data are available from each program that collects these data. These data sets are collected using in part federal funds, therefore data are made available based on the CDC/ATSDR Policy on Releasing and Sharing Data (CDC Data Policy.)

Other Materials available for other investigators

Substantive research materials and results are published on the OHS-GA public health website. Reports, data tables, and data summaries are all uploaded to the OHS-GA created website <http://dph.georgia.gov/georgia-occupational-health-and-safety-surveillance-program> for wide distribution.

Inclusion of gender and minority study subjects

The OHS-GA project does not involve any subjects based on their membership in a special class, such as fetuses, neonates, pregnant women, children, prisoners, institutionalized individuals, or others who may be considered vulnerable populations. If data on persons in these categories are included in the surveillance system, it is because they are members of the Georgia workforce, and not because of their status as members of vulnerable populations. In addition, Georgia is only collecting de-identified, existing data that are currently available on public websites and data from various data sources that cannot be linked. Only aggregated data reports will be published and made available to the public.

Inclusion of Children

The OHS-GA includes the entire working population aged 16 years and older; therefore, Georgia includes data on children that are 16 to 21 years of age. The Bureau of Labor Statistics (BLS) Current Population Survey estimates that about 5.7% of Georgia's 4.4 million workers are between the ages of 16-21 years. Most data required for this project are de-identified data currently available on public websites. These de-identified data from

various data sources cannot be linked to individuals. Only aggregated data reports will be published and made available to the public.

Additionally, the data Georgia collects from external data sources that are not publicly available contain only de-identified and aggregated information; information about age is not provided. Internal DPH datasets used for this project contain information about age; however, our experience with these data over the past five years has shown that less than 1% of the records are from workers aged 16-21 years.

Data Sources Used for Occupational Health Surveillance Indicators

List of external data sources:

- BLS Current Population Survey (CPS)
- BLS Geographic Profiles of Employment and Unemployment
- BLS Survey of Occupational Injuries and Illnesses (SOII)
- BLS Census of Fatal Occupational Injuries (CFOI)
- Georgia Board of Workers' Compensation (GBWC) claims data
- American Association of Poison Control Centers (AAPCC)/ Georgia Poison Center (GPC)
- U.S. Census Bureau County Business Patterns (CBP)
- American Board of Preventive Medicine (ABPM)
- Annual roster of members of the ACOEM
- American Board of Occupational Health Nurses Directory
- Annual roster of members of the AAOHN member directory
- American Board of Industrial Hygiene
- AIHA member directory
- BCSP member directory
- ASSEE member directory
- OSHA annual reports of total inspections and number of workers covered
- BLS Covered Employers and Wages
- National Academy of Social Insurance

DPH data sources:

- Hospital Discharge Data
- Georgia Mortality Data
- Georgia Cancer Registry
- Georgia ABLES data
- Georgia BRFSS Asthma Call-Back Survey
- Georgia Adult Tobacco Survey (state-specific)
- Georgia BRFSS (state-specific)
- Georgia Violent Death Reporting System (state-specific)

Furthermore, all data are maintained in a secure, password-protected information network environment accessible only to project staff. Any data in paper form is maintained in locked file cabinets. All these measures are in effect for the entire project period.

