



**14-OH-02**

**Committee:** Environmental/Occupational/Injury

**Title:** Inclusion of Work Information as data elements in CDC surveillance systems

**I. Statement of the Problem:**

The U.S. population currently exceeds 308 million, and nearly 60 percent of the population is employed. These employed U.S. residents spend almost half their waking hours at work. CSTE has long recognized that occupational illnesses, injuries, and exposures are important causes of morbidity and mortality in the US. Approximately 6,500 job-related deaths from injury, 13.2 million nonfatal injuries, 60,300 deaths from disease, and 862,200 illnesses are estimated to occur annually in the civilian workforce. The total direct (\$65 billion) plus indirect (\$106 billion) costs have been estimated to be \$171 billion annually.

The work environment can have a significant impact on workers' health, the health of family members, and the public at large. Work is a well-recognized influence on health through exposures to physical, chemical, radiological, biological, and ergonomic hazards; psychosocial factors; and organizational attributes of the workplace. Less well understood by public health practitioners is how work influences both risk factors and health conditions. CSTE has produced a white paper on this issue, "The case for collecting occupational health data elements in electronic health records" (available on CSTE website).

Recent efforts in other federal health surveys are important to note. In 2012, the National Committee on Vital and Health Statistics (NCVHS) Subcommittee on Population Health heard presentations on key components of socioeconomic status (SES) as they considered minimum standards for SES measurement in federal health surveys. In a June 2012 letter to DHHS Secretary Sebelius [NCVHS 2012], the NCVHS confirmed that the collection of information on occupation is a key data element necessary for the measurement of socioeconomic status and provides important information related to health and health outcomes. The Committee further stated that a minimum of two standardized questions should be implemented, one to collect industry and one to collect occupation.

Current public health surveillance systems do not fully capture the impact of the work environment on morbidity and mortality partly because information in Centers for Disease Control and Prevention (CDC) surveillance systems typically does not include work information, such as the occupation of patients or the industry in which cases worked. Thus while most existing surveillance systems do not typically include industry and occupation (I/O) information, when they do, they may include a single occupation of programmatic interest, e.g., Hepatitis



A surveillance collection focusing only on the occupation of “food handler.” CSTE recommends an approach in which this type of collection of information on single occupations be replaced with the systematic collection of I/O, e.g., see common core data element recommendation for nationally notifiable diseases (NND) developed by the CSTE Case Reporting Standardization Workgroup. Further, work data elements are minimally present in few current draft message mapping guides (<http://wwwn.cdc.gov/nndss/script/DraftMMG.aspx> and <http://www.cdc.gov/phin/resources/PHINguides.html>) as future elements or in reference to specific occupations. In addition, the important distinction of usual occupation versus current occupation is also not typically captured. In the few instances where usual industry and occupation has been collected, including cancer registry data and mortality data, the information has been put to very good use for understanding risk factors and carrying out prevention efforts. Much has been learned about work-related cancer from occupational information obtained by cancer registries.

Further, occupational public health surveillance is important for the detection, control, and prevention of occupational illnesses, injuries, and exposures. The collection of occupation and injury in the medical record is strategically important for states and CDC to identify risk factors and causes of diseases and injuries. Routine inclusion of information about work would facilitate early event detection, rapid assessment, and timely intervention by designated authorities to emerging diseases threats. Situational awareness of the incidence of disease or illness by industry and occupation can assist in identifying clusters, determining the magnitude of a problem, and targeting high risk groups for interventions to prevent and reduce disease transmission through a better understanding of exposure-disease/injury relationships. For injury, information associated with an acute event exists as part of the injury external cause code sets.

It is important to note that some CDC surveillance systems currently do collect work information variables for select infectious diseases (e.g., blood borne pathogens, needle stick injuries), chronic disease (e.g., work-related asthma), injury, cancer, and other conditions. CDC also does have surveillance systems primarily dedicated to occupationally related disease such as for silicosis, pesticide-related poisonings and for elevated adult blood lead (ABLES). The ability to capture work information, such as at a minimum, industry and occupation, within other CDC surveillance systems may prove especially critical during emergency response scenarios, like pandemic influenza. Occupation and industry information is important for identifying the health impacts of the disaster on workers in critical services such as health care, including medical transport workers and laboratory technicians, as well as nurses and physicians; medical waste treatment facility workers; emergency response workers; decontamination workers; postal workers; and power, water, and transportation industry employees.

Including occupational information within CDC surveillance systems provides an opportunity to improve both public health interventions and clinical medicine. A 2011 Board on Health Sciences Policy, Institute of Medicine

(IOM) report, in light of the Health Information Technology for Economic and Clinical Health Act of 2009, made a series of recommendations directed at the U.S. Department of Health and Human Services. This report outlined the potential benefits of including information about individuals' occupations, industry, and work environment in their electronic health records. A person's job title or occupation may already be asked of patients for administrative and reimbursement purposes, but is rarely integrated into most CDC surveillance systems.

NIOSH and others continue to work to ensure successful incorporation of industry and occupation (I/O) and other work information into EHRs based on interoperability standards. Among the tools developed by NIOSH, is a relational information model describing information about patient work, and a Clinical Document Architecture (CDA) standard template for "occupational data for health (ODH)". The relational information model describes ODH, i.e., the most important data elements associated with work (including I/O) that are useful in supporting patient care and public health. (The information model was published as a Draft Standard for Trial Implementation as part of the Integrating the Healthcare Enterprise (IHE) Healthy Weight (HW) profile. The model was demonstrated at the 2014 Public Health Informatics Conference.  
[http://www.ihe.net/uploadedFiles/Documents/QRPH/IHE\\_QRPH\\_Suppl\\_HW.pdf](http://www.ihe.net/uploadedFiles/Documents/QRPH/IHE_QRPH_Suppl_HW.pdf).)

NIOSH has also partnered with the Public Health Data Standards Consortium (PHDSC) to develop a reusable Clinical Document Architecture (CDA) standard template for ODH, including I/O. The template is designed to fit within the existing "social history" section of the EHR, for application across various clinical settings and domains to structure and collect work related information.

NIOSH has also participated in the Public Health Reporting Initiative (PHRI) of the Standards & Interoperability Framework to develop Public Health Reporting Specifications and Implementation Guides that include sections on "Employment Information" (i.e., patient I/O and other data elements) for exchange via Clinical Document Architecture (CDA). PHRI has included I/O in the "common core" data set for the PHRI Data Harmonization Profile. Additional information may be found by reviewing the following [USDHHS (U.S. Department) Health and Human Services [2012]. Office of the National Coordinator for Health IT, Standards & Interoperability Framework: Public Health Reporting Initiative - Data Harmonization Profile Version 1.5, October 31, 2012. Available at: [http://wiki.siframework.org/file/detail/DRAFT\\_DataHarmonizationProfile\\_V1%205.docx](http://wiki.siframework.org/file/detail/DRAFT_DataHarmonizationProfile_V1%205.docx).]

## II. Statement of the desired action(s) to be taken:

1. As part of the current CDC strategic surveillance initiative, CSTE recommends that occupation and industry, and other work information as appropriate, be included as data elements within CDC surveillance systems where feasible.
  - A. To advance this recommendation, CSTE requests that the CDC Office of Public Health Scientific Services (OPHSS) collaborate with the National Institute for Occupational Safety and Health (NIOSH) to assess work information in existing CDC surveillance systems. CSTE recommends that during scheduled assessments of CDC surveillance systems, an examination be made of the data collection within each system related to work (e.g., employment status, usual and/or current occupation and/or industry, work-relatedness). OPHSS should collaborate with CSTE and NIOSH to determine the potential work information data elements to be evaluated.
  - B. Based on each assessment, CDC, with input from CSTE, should identify which work information data elements should be included in that data system and develop a timeframe for implementation.
  
2. CSTE recommends that CDC OPHSS consult with NIOSH on the structuring of I/O data captured in surveillance systems and to adopt the use of a standardized system to code occupation and industry information within CDC surveillance systems.

CSTE supports the NIOSH recommendation for use of the CDC\_Census system. The CDC\_Census system augments the Census Industry and Occupation Classification Systems with NIOSH codes for unpaid workers and some military positions. NIOSH has recommended this system for electronic health records and public health surveillance.

3. CSTE recommends that CDC OPHSS collaborate with NIOSH to further improve automated coding of I/O variables, given that manual coding is not a realistic expectation for surveillance systems.

NIOSH has developed the NIOSH Industry and Occupation Computerized Coding System (NIOCCS), which can accomplish automated coding of some I/O records. NIOSH has also begun to explore approaches for real-time coding of patient I/O to streamline this effort.

4. CSTE recommends CDC, in conjunction with CSTE, assess which CDC-supported state-based programs will benefit from the inclusion of work information data elements. CDC should suggest, but not require, collection of these data elements as components within their funding announcements.

### III. Public health Impact:

The inclusion of industry and occupation, and other work information as appropriate, in CDC surveillance systems will enable public health agencies to track and prevent significant causes of morbidity and mortality in the US and help identify vulnerable working populations with higher risk of acute and chronic conditions and the risk factors that contribute to poor health outcomes.

### IV. References

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## V. Coordination

### Agencies for Response:

- (1) Centers for Disease Control and Prevention  
Thomas Frieden, MD, MPH  
Director  
1600 Clifton Road, NE  
Atlanta GA 30333  
Telephone: 404-639-7000  
Email: [txf2@cdc.gov](mailto:txf2@cdc.gov)
  
- (2) National Institute for Occupational Safety and Health



John Howard, MD, MPH, JD, LLM  
Director  
395 E Street, S.W., Suite 9200  
Patriots Plaza Building  
Washington, DC 20201  
Telephone: 202 245-0625  
Email: [john.howard@cdc.hhs.gov](mailto:john.howard@cdc.hhs.gov)

**VI. Submitting Author:**

- (1) Sharon M. Watkins  
Chief, Bureau of Epidemiology  
Division of Disease Control & Health Protection  
4025 Esplanade Way, Room 215L  
Tallahassee, Florida 32399  
850-245-4115  
[Sharon.watkins@flhealth.gov](mailto:Sharon.watkins@flhealth.gov)