

The Need for Industry and Occupation Standards in Hospital Discharge Data

Jennifer A. Taylor, PhD, MPH, and Leslie T. Frey, JD

Occupational injuries and illnesses affect the productivity of the US workforce, yet public health surveillance in the United States does not adequately track and report these incidents. Adding industry and occupation standards to US hospital data collection would enable physicians, researchers, and payors to accurately account for occupational injuries and illnesses as well as support prevention initiatives. The authors petitioned for the inclusion of standards for industry and occupation within hospital data; however, additional support from the occupational and environmental health community is needed to move the petition to adoption. This article discusses the policy implications and benefits to occupational medicine and public health provided by collecting industry and occupation in hospital discharge data, as well as the process of initiating a data change request with the National Uniform Billing Committee.

Every day in the United States, work-related incidents result in not only nearly 13 deaths¹ but also approximately 8200 nonfatal injuries and illnesses.² The nonfatal numbers are based on a probability sample and almost certainly underestimate the true injury burden.³ Existing nonfatal occupational health data have many limitations, including (1) the exclusion of data on a large section of workers such as the self-employed and federal employees, (2) underestimation of work-related diseases, and (3) reliance on a statistical sample that limits regional and local analysis.⁴

Occupational injuries and illnesses are preventable. Prevention is based upon the how, why, and when of any given health condition, yet currently there is no comprehensive nationwide system to track work-related injuries in the United States.⁴ In its 2011 "National Prevention Strategy," the National Prevention Council, headed by the US Surgeon General, recommends that businesses and employers "expand and improve occupational injury and illness reporting systems," while calling on health care systems, insurers, and clinicians to "include occupational and environmental risk assessment in patient medical history-taking."⁵ Adding industry and occupation (I/O) to hospital data collection is a critical step toward building this type of comprehensive database of nonfatal events that can be used to prevent future injuries and illness. Through collaboration between the Council of State and Territorial Epidemiologists (CSTE) and the National Institute for Occupational Safety and Health (NIOSH), states have already begun exploring opportunities and methods for occupational health surveillance. The CSTE's 2010 report on occupational health indicators specifically identifies hospital discharge data as a key information source. Thirteen states have participated in generating occupational health surveillance data in

partnership with CSTE, with hospital discharge data included among the data sources for this pilot.⁶

This article focuses on inpatient and emergency department visits as examples of the clinical benefits of collecting I/O. Nevertheless, the benefits of collecting these data extend into other areas of patient care, including physician office visits, outpatient, and ambulatory care settings.

USE OF EXISTING STANDARDS FOR I/O CODING

A mechanism to add I/O standards to hospital discharge data is to include them in the Uniform Bill (UB). The UB is used by public and private payors in the United States to (1) submit health care claims for reimbursement and (2) report important data to state governments. Reporting data to state governments enables the use of hospitals' administrative data for the public good. The repurposing of administrative data to obtain population-level health information for injury and illness prevention is efficient in the following several ways:

- minimizes the need for additional resources by avoiding data duplication;
- the addition of only two codes to the UB will make it possible to identify the I/O of all persons presenting to hospitals;
- these codes fill the information gap in I/O data, generating tremendous public health dividends for the public and for researchers;
- these codes will enable health care providers, hospitals, physicians, public health authorities, and researchers to better identify and understand illnesses and injuries associated with particular occupations, and ultimately improve prevention;
- these codes allow quantitative evaluation of programs and interventions to reduce occupational illness, injury morbidity, and mortality.

Two existing federal standards, the North American Industrial Classification System (NAICS) and the Standard Occupational Classification (SOC), can be used to uniformly collect industry and occupation data. Using standards already in existence would close the information gap identified by CTSE and NIOSH without the burden of creating a classification system. In addition, because NAICS and SOC are federal standards, data collection will be uniform throughout the country, enabling the creation of a comprehensive and comparable set of data that will be consistent among states throughout the United States. These standards are complementary to, and cross-walk with, the alternatively used US Census Bureau Industry and Occupation codes.⁷ Using data collection mechanisms that are already in place instead of creating de novo systems is a cornerstone of public health practice, and utilizing hospital discharge data is no exception.

The NAICS originated in the 1930s as the Standard Industrial Classification system, created to establish comparability among businesses in the United States. The NAICS was designed to accommodate new developments in the global economy and new approaches to classifying economic activity.⁸ The NAICS features a 6-digit coding system, with the first five digits fixed by international agreement to provide standardization between the United States, Canada, and Mexico.⁸ Each digit in the code is part of a series of progressively narrower categories, and more digits in the code signify greater classification detail. The first two digits designate the economic sector, the third digit designates the subsector, the fourth digit designates

From the Department of Environmental & Occupational Health, Drexel University School of Public Health, Philadelphia, Penn.

This research was supported by the Federal Emergency Management Agency (FEMA) FY 2009 Assistance to Firefighters Grant Program, Fire Prevention and Safety Grants (Research & Development). Grant No. EMW-2009-FP-00427.

The authors declare no conflicts of interest.

Address correspondence to: Jennifer A. Taylor, PhD, MPH, Department of Environmental & Occupational Health, Drexel University School of Public Health, 1505 Race St, MS 1034, Philadelphia, PA 19102 (Jat65@drexel.edu).

Copyright © 2013 by American College of Occupational and Environmental Medicine

DOI: 10.1097/JOM.0b013e318293af12

the industry group, the fifth digit designates the NAICS industry, and the sixth digit designates the national industry. The five-digit NAICS code (Table 1) is the level at which there is comparability in code and definitions for most of the NAICS sectors across the three countries participating in NAICS (the United States, Canada, and Mexico). The six-digit level allows for the United States, Canada, and Mexico each to have country-specific detail.

The SOC was first published in 1980 and revised in 1998 and 2010 to create comparable data among all government agencies and private industries.⁹ Both NAICS and SOC are designed hierarchically, allowing data collection with a manageable number of categories. All workers are classified into 1 of 840 detailed occupations. Detailed occupations are combined to form 461 broad occupations, 97 minor groups, and 23 major groups. The structure is comprehensive and encompasses all occupations in the US economy. If a specific occupation is not listed, it is included in a residual category with similar occupations. The SOC code (Table 2) uses six digits: the first two digits represent the major group, the third represents the minor group, the fourth and fifth represent the broad occupation, and the sixth represents the detailed occupation.

Adoption of the NAICS and SOC codes will achieve the critical task of providing a single national standard for the definition of I/O across the United States. Adoption of a uniform standard lays the groundwork for state-level implementation of data collection as well as future developments in health information, such as systems for electronic health records (EHRs). To ensure the ability to compare and unify data from different sources, it is critical that common coding standards guide the collection of I/O data for all facets of the health care system. It is also important to collect I/O data for all patients, regardless of whether the presenting problem is reported as work-related. Occupational hazards are not always understood initially, and some illnesses and injuries are only gradually recognized to be related to a particular occupation. As new workplace hazards and disorders emerge, the NAICS and SOC codes will enable researchers to historically review discharge data to examine causal relationships.

PROCESS OF ADOPTING DATA STANDARDS IN THE UNITED STATES

The American National Standards Institute (ANSI) Accredited Standards Committee (ASC), X12, is a Designated Standard

TABLE 1. Example of NAICS Codes

For example, industry coding according to the online NAICS database (<http://www.naics.com/info.htm>):

- 11 Agriculture, forestry, fishing, and hunting
- 111 Crop production
- 1114 Greenhouse, nursery, and floriculture production
- 11141 Food crops grown under cover
- 111411 Mushroom production

NAICS, North American Industrial Classification System.

TABLE 2. Example of SOC Codes

For example, in the online SOC database (<http://www.bls.gov/soc/>):

- 29-0000 Health care practitioners and technical occupations
- 29-1000 Health diagnosing and treating practitioners
- 29-1060 Physicians and surgeons
- 29-1062 Family and general practitioners

SOC, Standard Occupational Classification.

Maintenance Organization (DSMO) designated by the Secretary of Health and Human Services to maintain electronic data interchange standards for national and global markets. The National Uniform Billing Committee (NUBC) is a DSMO that acts as the standards-setting body for the UB. The NAICS code source is currently an approved external code source defined for use in the ANSI ASC X12 standard. The SOC code source was approved in September 2011 as an external code source defined for use in the ANSI ASC X12 standard. Inclusion of NAICS and SOC in the X12 standard is an integral step to adding the standards to the UB; ANSI ASC X12 is a Standards Development Organization, occupying one branch of the DSMO system, whereas the NUBC is a Data Content Committee (DCC), occupying the complementary branch of the DSMO system. Approval from a Standards Development Organization can bolster the strength of a proposal for a new standard with the NUBC. Adoption of NAICS and SOC codes to the UB is necessary because the majority of states have specific language in their legislative rules to follow the NUBC standards as they are revised. The remaining states specify particular data elements through rulemaking or legislative mechanisms.

The authors, with support from the Public Health Data Standards Consortium and the National Association of Health Data Organizations, submitted a change request for the addition of I/O standards to the UB to the NUBC in February 2011 in compliance with the submission process delineated by the NUBC.¹⁰ The change request was brought to the attention of the NUBC membership at the March 2011 NUBC meeting in Chicago, Illinois. Reasonable questions about the proposal were raised by the NUBC membership, so a vote was not pursued and a white paper was written in response to the questions raised. The white paper can be found on the Fire-fighter Injury Research and Safety Trends project Web site, <http://publichealth.drexel.edu/firstwhitepaper>. The committee inquired as to who would benefit from the addition of I/O codes should the committee add the standards to the UB. The examples in the following section were provided to the committee in the white paper and are reproduced here.

After disseminating the white paper, garnering letters of support (Table 3), and communicating with NUBC leadership, the proposal was again brought to consideration for the committee in August 2011. Nevertheless, a vote on the change request to add I/O coding to the UB was not taken, resulting in neither an adoption of the proposal nor a denial of approval by the committee. According to NUBC protocol, “a response to the requestor of the change will be made within a reasonable amount of time.”¹¹ The NUBC protocol further states that requests that are not approved by the NUBC will include the reason for disapproval along with any specific recommendations.¹¹ At the time of the submission of this manuscript, no response from the NUBC had been received despite the authors’ multiple requests for information as to the current standing of the I/O proposal. Such inaction by the NUBC is not acceptable, particularly because the subsequent attempts by the requestors to meet the ever-increasing demands of the NUBC to prove the feasibility of I/O data collection are not a part of the data content change request process as promulgated by the NUBC.

USE OF I/O CODES IN HEALTH CARE

Adding NAICS and SOC to patient billing is beneficial in many ways; three such examples are illuminated in the following scenarios.

Clinical Benefits: Improved Efficiency

Case Example: Wheezing and Shortness of Breath

A 45-year-old man with new onset of wheezing, coughing, “chest tightness,” and shortness of breath presented to his physician’s office. The diagnosis could be any one of a number of

TABLE 3. Letters of Support for Adoption of Industry and Occupation Standards**National partners**

Occupational Safety and Health Administration, US Department of Labor

Assistant Secretary for Labor, David Michaels, PhD, MPH

National Institute for Occupation Safety and Health, Centers for Disease Control and Prevention

Director, John Howard, MD

American Public Health Association, Injury Control and Emergency Health Services Section

Chair, T. Bella Dinh-Zarr, PhD, MPH

Council of State and Territorial Epidemiologists

President, Thomas Safranek, MD

National Safety Council

President and CEO, Janet Froetscher

Association of Occupational and Environmental Clinics

Executive Director, Katherine H. Kirkland, DrPH, MPH

Workers Compensation Research Institute

Executive Director, Richard A. Victor, JD, PhD

State partners

Michigan State University, Division of Occupational and Environmental Medicine

Chief, Kenneth D. Rosenman, MD

New Hampshire Division of Public Health Services, Occupational Health Surveillance Program

Principal Investigator, Karla Armenti, ScD

Florida Department of Health, Occupational Health Surveillance Program

Principal Investigator, Sharon M. Watkins, PhD

New Jersey Department of Health and Senior Services, Consumer, Environmental and Occupational Health Service

Supervisor, Margaret E. Lumia, PhD, MPH

conditions, including asthma, bronchitis, chronic obstructive pulmonary disease, etc. The man was actually developing new onset occupational asthma. He recently lost his engineering job due to economic downturn, and to tide his family over, he took a new job working in a local bakery. The physician had no basis to diagnose (or even suspect) occupational asthma, because the physician had no occupational data.¹²

The correct diagnosis and treatment (including reducing exposure) may be significantly delayed, resulting in prolonged and unnecessary treatments, continued exposure, and worsening of clinical condition. These outcomes will increase health care costs and absenteeism and reduce productivity. A 1998 study published in the *American Journal of Industrial Medicine* determined that 21% of the asthmatic patients in the study population had symptoms attributable to occupational exposures, yet only 15% of physicians even asked about work-related symptoms, and physicians tended not to diagnose asthma as work-related.¹³

Health Care Delivery Benefits: Value for Providers

Under the Patient Protection and Affordable Care Act, Accountable Care Organizations (ACOs) will play a significant role in the US health care system's effort to reorganize for increased cost-efficiency and quality of care.¹⁴ The goal of ACOs is to successfully assume responsibility for the full range of care of the population in a region, including care utilization, outcomes and efficiency, and overall management within a budget. The ACOs will need to gather additional patient data to enhance the management of patient care

on a large scale. Industry and occupation data will support ACOs' efforts to achieve payment reform by ensuring that the correct payor is billed for the encounter, enabling a better understanding of the health care needs of local populations, and improving planning and oversight of local health care delivery.

Furthermore, I/O data will facilitate the identification of occupational injuries in all fields of employment, improving each industry's capacity to design and implement new safety measures and policies. New safety innovations should result in better financial security for employees and their families, as well as productivity gains and cost savings to employers.¹⁵

Public Health Benefits: The Example of Work-Related Amputations in Michigan

Michigan State University's Division of Occupational and Environmental Medicine created a surveillance system for work-related amputations within the state, beginning with data from 2006. The project was based on hospital data using International Classification of Diseases, 9th Revision—Clinical Modification codes, supplemented by workers' compensation data. Michigan hospitals are required by law to report work-related amputations. The NAICS codes were used to define the industries in which the amputations occurred, and both nature and cause of injury were also recorded. For 2007, the surveillance system identified 708 work-related amputations, a rate of 15.2 per 100,000 workers (the US Department of Labor estimate for 2007 was 160; 77% lower). Eighty-four percent of these cases were identified using hospital data, and workers' compensation claims identified the remaining 16%. Among the findings, the research showed that

- 88% of workers sustaining an amputation were male,
- the highest amputation rate was for males aged 20 to 24,
- power saws were the overall leading cause of amputations, and
- paper and primary metal were the two manufacturing groups with the highest incident rates.¹⁶

Results from the surveillance system allowed the Michigan Occupational Safety and Health Administration to inspect as many as 68 worksites and find hazards that might have otherwise remained undetected. The detection and correction of such occupational hazards are critical to reducing these serious injuries and their economic and human costs.¹⁶

IMPLEMENTATION STRATEGIES FOR I/O CODES

The following section on implementation conveys a realistic vision of how the standards could be operationalized if states choose to implement the NAICS and SOC data collection. Although the NUBC may be concerned with the burden of implementation, the decision to implement is solely a state-level decision. If the NUBC decides to include I/O standards in the UB, this does not translate into a directive to the states. The goal of petitioning the NUBC is to ensure that if states choose to implement I/O data collection, they would use the same standard, thus enabling comparisons of the data to be made between the states. States could choose to create their own I/O standards, but this would seriously impair comparisons of state-to-state variation in occupational illness and injury.

Although the first step in collecting I/O information is adoption of the I/O standards, implementation with minimal burden is a weighty consideration. There are two pieces of good news in this regard: a successful pilot study on asking patients about I/O during health care encounters and an efficient technological solution to coding I/O data.

Reasons for Geographic and Racial Differences in Stroke Pilot Study

The Reasons for Geographic and Racial Differences in Stroke (REGARDS) study is a US study focusing on the factors that

increase a person's risk of having a stroke. Using a telephone survey, REGARDS researchers asked thousands of adults 45 years and older four questions about their employment I/O to identify possible causes of stroke mortality disparities. In 2011, the REGARDS project found that I/O data collected from study participants using the four I/O questions could be obtained in less than 2 minutes for the majority of cases in the study (Leslie MacDonald, written personal communication, 2011).

NIOSH Industry and Occupation Computerized Coding System

Capturing I/O as free text during patient registration is an economical and labor-efficient method to record data in a standardized manner. An automated coding algorithm greatly expedites the conversion of free text to numeric codes by avoiding the costly and labor-intensive process of manually coding free text. Such an algorithm can be used by hospital personnel (registrars, IT professionals, or medical records coders) or by the state-designated data collection agency. In 2008, NIOSH began developing an I/O coding algorithm using NAICS and SOC standards. The algorithm, NIOSH Industry and Occupation Computerized Coding System (NIOCCS), currently converts I/O free-text to coded data at the rate of 2 to 3 records per second and has been shown to perform with 90% accuracy (Susan Nowlin, written personal communication, 2011). Optimal performance of the algorithm was achieved by NIOSH partnerships to beta-test NIOCCS with six pilot states, the US Bureau of Labor Statistics, and Drexel University. The NIOCCS is available free of charge to all health care facilities.

INTERNATIONAL I/O DATA COLLECTION & RIPENESS OF US POLICY LANDSCAPE FOR ACTION

Discussion of I/O data collection is currently focused in the United States. Research on I/O data collection as a standardized and compulsory inpatient procedure in hospital encounters in the United Kingdom and Australia has yielded no policies mandating the collection of I/O information. The United Kingdom collects data on workplace injuries through employer reporting to the Health and Safety Executive in a procedure similar to that in the United States, where workplace injuries are reported by employers to the Occupational Safety and Health Administration. Australia collects industry (but not occupation) information in the patient medical record only if an injury is reported to physicians as occurring in the course of employment. Even in countries with public health systems, such as the United Kingdom and Australia, the need for I/O data collection is relevant beyond ensuring the proper allocation of treatment costs for work-related injuries. The clinical benefits, as well as the public health surveillance opportunities presented by a national database of I/O data, are applicable outside of the United States and should be pursued internationally by countries with infrastructure to support the data collection.

Because of the broad range of advocacy and policy discussions about I/O data collection in the United States that are currently ongoing, the time to act on the standardization and implementation of I/O data collection is upon us. The National Trauma Data Bank has included both I/O information in their data standard since 2011. The National Trauma Data Bank uses NAICS and SOC as their coding standards, citing the need for national standardization of information collected by trauma registries in each state.¹⁷

In June 2011, the Institutes of Medicine (IOM) convened a workshop on Occupational Information and Electronic Health Records and released a subsequent report directed to the NIOSH. The report calls for stakeholders (including NIOSH, the Bureau of Labor Statistics, and the NUBC, among others) to develop models for reporting I/O in EHRs in ways that are meaningful for clinical and public health use.¹⁸ The committee organized its report around the five health care outcomes and policy priorities used to categorize the Stage 1 "meaningful use" objectives set by the Centers for

Medicaid & Medicare Services regarding implementation of EHRs under the Health Information Technology for Economic and Clinical Health (HITECH) Act. The five policy priorities used by Centers for Medicaid & Medicare Services and the IOM are as follows:

Improve the quality, safety, and efficiency of care and reduce health disparities; engage patients and families in their health care; improve care coordination; improve population and public health; and ensure adequate privacy and security protections for personal health information.¹⁸

After gathering and reviewing the available evidence, the IOM committee concluded that "occupational information could contribute to fully realizing the meaningful use of EHRs in improving individual and population health care"¹⁸ by fulfilling the identified policy priorities. The IOM committee concluded that the NAICS and SOC standards should be used to effectuate these priorities.¹⁸ The process of adding I/O to the UB is a complementary and contemporaneous component of the ongoing effort to have these components added to EHRs.

Building on the IOM recommendations, the American Public Health Association adopted a policy recommendation at the annual meeting in October 2012 specifically modeled on the IOM recommendations to add I/O data collection to EHRs. The recommendation elaborates on the opportunity to improve public health surveillance through adding I/O information to EHRs and emphasizes the time-sensitive nature of the issues because the implementation of EHRs is well under way in the United States.¹⁹

Also in 2012, the National Committee on Vital and Health Statistics (NCVHS) wrote a letter to the secretary of Department of Health and Human Services (DHHS), outlining the emerging responsibilities of DHHS to set health information standards under the Affordable Care Act.²⁰ The NCVHS, the US advisory committee charged with providing recommendations on health information policy and standards to DHHS, recommended that occupation and industry should be asked of all patients as a core demographic variable along with level of education and income. The standardized collection of this demographic data, according to NCVHS, is a necessary element in measuring health disparities, especially socioeconomic status, and its relationship to health.²⁰

Collecting I/O in hospital administrative data is a first and partial step toward a comprehensive surveillance system of work-related injuries and illnesses. The next step is to collect I/O data in physician office visits, outpatient, and ambulatory care settings, where the majority of patients present with work-related injuries and illnesses. The process of collecting I/O data from these data would involve submitting a change request to the National Uniform Claim Committee (NUCC) to include NAICS and SOC in the NUCC Data Set.

CONCLUSION

Industry and occupational data are the missing components that would make hospital data useful for significant occupational health advances. Adding I/O standards to the UB would create an opportunity in the US to use these data, allowing industry and public health practitioners nationwide to understand more about their patient populations, better identify work-related injuries and illnesses, and design prevention strategies. Preventing occupational injury and illness enhances quality of life for workers and their families, while reducing health care expenditures and improving economic performance by keeping workers healthy and on the job. Because NAICS and SOC codes are already used by federal entities, consistent and comparable data can be readily collected if the codes are adopted into the UB. A technological solution to expedite coding has been developed by NIOSH and is ready to be used by health care organizations. By using existing coding structures and technological solutions, I/O

data collection makes comprehensive injury and illness prevention a reality in the United States.

REFERENCES

1. US Bureau of Labor Statistics. Revisions to the 2010 Census of Fatal Occupational Injuries (CFOI) counts. Available at: <http://www.bls.gov/iif/oshwc/cfoi/cfoi-revised10.pdf>. Accessed October 31, 2012.
2. US Bureau of Labor Statistics. Workplace injury and illness summary, news release: workplace injuries and illnesses 2011. Available at: <http://www.bls.gov/news.release/osh.nr0.htm>. Accessed October 25, 2012.
3. Ruser JW. Examining evidence on whether BLS undercounts workplace injuries and illnesses. *Mon Labor Rev.* 2008;131:20–32.
4. Horan JM, Mallonee S. Injury surveillance. *Epidemiol Rev.* 2003;25:24–42.
5. National Prevention Council. National prevention strategy 2011. Available at: <http://www.healthcare.gov/prevention/nphpphc/strategy/report.pdf>. Accessed October 26, 2012.
6. Council of State and Territorial Epidemiologists. Occupational health indicators: a guide for tracking occupational health conditions and their determinants. <http://public.health.oregon.gov/HealthyEnvironments/WorkplaceHealth/Documents/csteohitrackingguide.pdf>. Accessed October 26, 2012.
7. US Census Bureau. Industry and occupation. Available at: <http://www.census.gov/people/io/>. Accessed March 3, 2013.
8. NAICS Association. NAICS Association—information. Available at: <http://www.naics.com/info.htm>. Accessed October 26, 2012.
9. US Bureau of Labor Statistics. 2010 SOC user guide. Available at: http://www.bls.gov/soc/soc_2010_user_guide.pdf. Accessed October 26, 2012.
10. National Uniform Billing Committee. National Uniform Billing Committee Data Element Specifications Change Request Guidelines; 2010. Available at: <http://www.nubc.org/change.html>. Accessed December 5, 2012.
11. National Uniform Billing Committee. NUBC Protocol. Available at: <http://www.nubc.org/NUBC%20Protocol%20Approved%20July%2015,%202009.pdf>. Accessed November 30, 2012.
12. Tacci JA. Making meaningful change by integrating occupational information in electronic health records: improving efficiency in clinical practice. Available at: <http://www.iom.edu/~media/Files/Activity%20Files/Environment/OccupationalHealthRecords/Panel%201%20Tacci.pdf>. Accessed October 26, 2012.
13. Milton DK, Solomon GM, Rosiello RA, Herrick RF. Risk and incidence of asthma attributable to occupational exposure among HMO members. *Am J Ind Med.* 1998;33:1–10.
14. US Department of Health and Human Services. HHS announces 89 new accountable care organizations. Available at: <http://www.hhs.gov/news/press/2012pres/07/20120709a.html>. Accessed November 2, 2012.
15. National Center for Injury Prevention and Control. Recommended actions to improve external-cause-of-injury coding in state-based hospital discharge and emergency department data systems. Available at: <http://www.cdc.gov/injury/pdfs/ecode-a.pdf>. Accessed October 26, 2012.
16. Michigan Department of Community Health Bureau of Environmental Health, Michigan State University College of Human Medicine Division of Occupational and Environmental Medicine. Work-related amputations in Michigan. 2007. Available at: <http://www.oem.msu.edu/userfiles/file/Annual%20Reports/Amputations/2007%20MI%20WR%20amputations.pdf>. Accessed October 26, 2012.
17. American College of Surgeons National Trauma Data Bank. National Trauma Data Standard: data dictionary. Available at: <http://www.ntdsdictionary.org/dataElements/documents/MAIN2013NTDS.11282012.pdf>. Accessed December 12, 2012.
18. Institutes of Medicine. *Incorporating Occupational Information in Electronic Health Records: Letter Report*. Washington, DC: The National Academies Press; 2011.
19. Monforton C, Wegman DH. *Incorporating Occupational Information in Electronic Health Records*. Available at: <http://www.apha.org/NR/rdonlyres/3906C1E1-F018-4637-A573-A8B480064F04/0/ResubmissionB6OccInfoandEHRs.pdf>. Accessed December 17, 2012.
20. Carr JM. Development of standards for the collection of socioeconomic status in health surveys conducted by the Department of Health and Human Services. Available at: <http://www.ncvhs.hhs.gov/120622lt.pdf>. Accessed December 11, 2012.