

# Updated BLS Occupational Injury and Illness Classification System

*The evolving nature of the U.S. workplace, along with medical and technological advances, necessitated a revision to the Occupational Injury and Illness Classification System employed by the BLS Occupational Safety and Health Statistics program; the new version also incorporates a number of enhancements to the original, first released in 1992*

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Occupational injuries and illnesses require a context to be best understood. Falls, for example, account for more than 10 percent of fatal work injuries and more than 20 percent of nonfatal work injuries requiring time away from work. What more is known about workplace falls? Can we identify where the worker fell from, the distance fallen, or any precipitating environmental factors? What was the nature of the injury that resulted from the fall: a fracture, a sprain, or some other condition? And to what body part did the injury occur? The stories behind falls and other workplace injuries are of vital importance for their analysis and prevention. A consistent and comprehensive coding system can categorize much that is known about these injuries, thus providing the research tools necessary for developing prevention strategies. The Bureau of Labor Statistics (BLS, the Bureau) uses the Occupational Injury and Illness Classification System (OIICS)<sup>1</sup> to furnish this information in the agency's Occupational Safety and Health Statistics program, in which funding is split between the federal government and partnering states.

The OIICS has a uniform method for statistically classifying occupational injury and illness data in a simple, yet detailed, hierarchical structure.<sup>2</sup> Originally released in 1992, the system has been used to code case circumstance data from the BLS Cen-

sus of Fatal Occupational Injuries (CFOI) and Survey of Occupational Injuries and Illnesses (SOII) for incidents requiring days away from work.

The Bureau published its first major revision to the OIICS (version 2.0) in September 2010. An updated version, 2.01, was released in January 2012 and is being used in the CFOI and SOII beginning with 2011 data, to be published in 2012.<sup>3</sup> This article discusses the history and structure of the OIICS, justifies the need for a revision, outlines the objectives of the update, and details the substantive changes that were implemented. Throughout the article, any mention of the updated or new OIICS refers to version 2.01, whereas references to the older version of the OIICS refer to the original 1992 version.

## History and structure

The Occupational Safety and Health Act (also known as the OSH Act) of 1970 required the Department of Labor to “develop and maintain an effective program of collection, compilation, and analysis of occupational safety and health data.”<sup>4</sup> In 1973, the Bureau began conducting an annual survey to collect this information from employers. In response to criticisms that the data were not specific enough to be an effective tool for surveillance and prevention

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efforts, the Bureau redesigned the survey to collect details on cases that result in days away from work and launched the CFOI program to enumerate fatal occupational injuries.<sup>5</sup> By the early 1990s, the Bureau was using its own entirely new classification structure, the OIICS, to collect and classify case circumstances for occupational injuries, illnesses, and fatalities. The new structure provided more guidance and detail than the older American National Standards Institute (ANSI) Z16.2 codes on which it was loosely based, and in 1995 ANSI adopted the OIICS as the American National Standard for Information Management for Occupational Safety and Health (ANSI Z16.2-1995).<sup>6</sup>

The OIICS was designed to provide a simple, but complete, account of workplace injuries and illnesses. Numerically coded sections allow for complex scenarios to be easily coded, for large numbers of cases to be quickly coded, and for vast amounts of data to be easily cross-tabulated and analyzed. Other systems, such as the International Statistical Classification of Diseases and Related Health Problems (ICD-10),<sup>7</sup> the authority in the classification of diseases, offer comprehensive encyclopedias of illnesses that provide perhaps too much detail and complexity for occupational safety and health surveillance.<sup>8</sup> In addition, traumatic injuries are common in occupational safety surveillance, and the OIICS manual gives more detail on work-related events than the ICD-10 does.<sup>9</sup>

The OIICS is composed of four major coding structures used to classify the circumstances of an occupational injury or illness. Each section is hierarchically arranged into divisions, which are then stratified into more specific groupings. Sections have corresponding sets of selection and coding rules, indexes, and copious examples. The sections incorporate a significant amount of detail, including codes for those circumstances most often associated with workplace injuries and illnesses. All coding groups also have (1) an “unspecified” code, to accommodate ambiguous case descriptions, as well as (2) a “not elsewhere classified” code, to recognize instances in which a particular item, disease, or circumstance is reported in the source documents but lacks a specific OIICS code.

The four sections are Event or Exposure, Source and Secondary Source of Injury or Illness, Nature of Injury or Illness, and Part of Body Affected:

- Event or Exposure, or simply Event, is the manner in which the injury or illness occurred. Vehicular collisions, fires, falls, and overexertion are types of events. This section is now arranged in order of precedence, which dictates how an inci-

dent is coded when two or more event categories could apply to it.

- Source of Injury or Illness and Secondary Source identify the objects, substances, equipment, and other factors that were responsible for the injury or illness or that precipitated the event. Although some events have only one source (rendering Secondary Source blank), many incidents have two sources. The coding of Source and Secondary Source is dictated by rules of selection, based on the Event or Exposure associated with the incident. The entries in this section emphasize the importance of the Secondary Source in describing the incident, so that the SOII is now required to routinely report both the Source and the Secondary Source, rather than just the former.
- Nature of Injury or Illness, or simply Nature, describes the principal physical characteristics or symptoms of the injury or illness. The section is divided into traumatic injuries or disorders (such as fractures, lacerations, and other acute effects developed over a single exposure or work shift) and diseases and disorders resulting from longer term exposures.<sup>10</sup> Entries in this section are coded to reflect the initial injury or illness in the event of medical complications; sequelae and medical complications are rarely coded. For example, if a laceration gets infected later, only the laceration is coded. When two or more injuries are incurred simultaneously, the more severe one is coded; thus, a fracture would be chosen over a sprain. In the relatively uncommon circumstance that the more severe of two or more injuries cannot be determined, the relevant multiple injury or illness category is used.
- Part of Body Affected, or simply Part, is arranged in order from the head down to the feet and includes divisions for body systems and multiple body part combinations.

### OIICS revision: mission and objectives

The Bureau assembled a team of analysts to revise the OIICS manual over a 3-year period beginning in 2007. The primary objective was to update the first iteration of the manual on the basis of information and feedback from data users, coders, and other stakeholders. Among the issues considered were emerging diseases and disorders, as well as other current and emerging workplace hazards,

that did not exist or that remained unaccounted for in the previous version of the manual. Secondary objectives included the following:

- Clarification of existing coding rules to promote consistency and make coding easier. (Many of these changes are discussed later in this article.)
- Harmonization with other data sources, to the extent possible, in order to promote comparability. In this regard, the team regularly referenced definitions from the ICD-10 and regulations from the Occupational Safety and Health Administration (OSHA) to characterize the codes and structure of the OIICS.
- Development of an ongoing update process to maintain the OIICS in the future. The team has developed mechanisms for receiving questions and recommendations from data users on the basis of which it plans to make minor revisions and additions, and to correct errata, periodically.
- Expansion of coding categories that could yield more detail and useful safety prevention measures. The revision team analyzed microdata in existing “unspecified” and “not elsewhere classified” OIICS categories to determine whether an expansion of detailed codes elsewhere in the structure would reduce the size of these generic categories.
- Contraction of coding categories that were too detailed or too cumbersome or that simply never yielded enough cases to meet BLS publication standards.
- Production of a new OIICS manual and an Internet-based utility for using the OIICS.

The team solicited suggestions from the Occupational Safety and Health Statistics program’s state and regional office partners, from known data users, and from recipients of the *Federal Register*. As a result, the team received thousands of recommendations and comments. Each recommendation was documented, discussed, and adjudicated by the team in accordance with the aforementioned primary and secondary objectives.

## Changes and updates

Numerous changes were made to the OIICS, including (1) major revisions to the rules of selection for the Source, Secondary Source, and Event sections, (2) the addition and

deletion of various codes and code groupings, (3) changes to code titles, and (4) more detailed code descriptions. So extensive and substantive were these modifications that 2011 data coded with the use of OIICS version 2.01 will result in a break in series from previous years’ data produced with the older version. Changes were implemented with data users, safety and health professionals, and data coders in mind. Despite the changes, the new system will never leave a data user or researcher with less information than was previously available and will typically offer more information. It is worth noting that many things about the OIICS manual did not change: the overall philosophy of how the OIICS is used, the four-section breakdown of an occupational injury or illness, the hierarchy, and the utility of the system remain.

Given the hierarchical structure of the OIICS and the use of leading zeros in some codes, changes were needed to facilitate the manipulation of data in spreadsheets and to avoid conflating codes that seemed to be the same, but were not (such as 0319 and 319). The result was the elimination of all leading zeros. This seemingly minor change resulted in a renumbering of the majority of codes in the OIICS manual—a slight detriment to those with enough institutional knowledge and experience to have memorized much of the old coding structure, but an overall benefit to users of the system.

Rules for selecting codes have changed, and many new categories have been added to reflect new technologies and emerging diseases. Rules of selection that generated little or no beneficial information, such as coding “ground” as the Source of a fall, were changed, and several redundancies were removed, such as where a Nature or Event code also included the Source. A closer look at the major changes by section follows.

## Event or Exposure

The Event section underwent the most substantial revision. Some divisions were entirely restructured, and new, often more detailed codes were added throughout Event. Some of the new codes minimize the use of “not elsewhere classified,” thus providing more detail for injury and illness prevention. For example, the existing coding structure had only three coding choices for aircraft incidents, as a result of which all aircraft incidents could be categorized only as unspecified, having occurred during takeoff or landing, or not elsewhere classified. OIICS version 2.01 provides many more codes, such as codes for collisions with other aircraft, collisions with structures or ground vehicles, and collisions due to mechanical failure

during takeoff and landing or in flight.

Under the first version of the OIICS, when more than one Event code could be used to describe the circumstances surrounding an injury, an order of precedence directed the coding on a limited scale. In OIICS version 2.01, this order of precedence has been expanded and more clearly defined. All events are now listed in the following order of precedence:

- Violence and other injuries by persons or animals
- Transportation incidents
- Fires and explosions
- Falls, slips, and trips
- Exposure to harmful substances or environments
- Contact with objects or equipment
- Overexertion and bodily reaction
- Nonclassifiable

For example, if a fleeing robbery suspect purposefully ran down a police officer with a vehicle, the incident might be considered either a motor vehicle incident or an assault. However, the rules of precedence governing events dictate that the incident be coded as an *Intentional Injury by Other Person*, because it was a violent act. Prevention efforts aimed at reducing the typical motor vehicle crash would then do little to prevent these types of injuries. Similarly, motor vehicle crashes that resulted in a fire are classified in the *Transportation Incidents* division because the crash precipitated the fire.

The *Assaults and Violent Acts* division of the original coding structure has been renamed *Violence and Other Injuries by Persons or Animals* and now includes more distinct coding for intentional acts, unintentional acts, and acts of unknown intent.<sup>11</sup> In 2010, *Assaults and Violent Acts* included about 18 percent of all fatal injuries and more than 2 percent of nonfatal cases requiring days away from work. The share represented by this division is likely to increase with the new changes and clarifications to the manual. All injuries resulting from direct human contact are now explicitly included in this division, whether or not the injury could be defined as an assault. For example, an injury to a physical education teacher during a kickball game, to a police officer during a training exercise, to a professional football player during a game, and to a worker injured by a coworker during horseplay will all be classified into *Violence and Other Injuries by Persons or Animals*. In addition, the new division now includes codes for unintentional shootings. Under the previous version of the OIICS, unintentional shootings were coded as *Struck by Discharged Object or Substance* in the *Contact with Objects and Equip-*

*ment* division. Compiling similar events into one category represents a major improvement from a coding and surveillance perspective.

New codes have been added to assist with the classification of intentionally self-inflicted injuries. There are now separate codes for suicides by shooting, hanging, stabbing, drug overdose, or inhalation of a substance, including the intentional inhalation of vehicle exhaust. There is also a new category for self-inflicted injuries that are unintentional or where the intent is unknown. For example, an event in which a person dies in the workplace from a drug overdose, but it cannot be determined whether the worker intended self-harm, would be classified into this category.

The *Violence and Other Injuries by Persons or Animals* division now includes all animal-related injuries (unless the injury is transportation related), regardless of whether the injury seems intentional (such as a person being mauled by a tiger) or unintentional (such as a person injured by a startled horse). New codes have been added to further classify animal- and insect-related injuries, including being trampled, stepped on, bitten, or gored by an animal or being bitten or stung by an insect.

The *Transportation Incidents* division,<sup>12</sup> which represents the largest share of fatal occupational injuries—almost 40 percent in 2010<sup>13</sup>—now has more than twice as many codes as before, in order to better classify and tabulate the types of incidents resulting in occupational injuries. Transportation incidents were regrouped to reflect an augmented order of precedence so that incidents involving a number of transportation events, such as a vehicle striking a guardrail and then overturning, could be more easily and consistently coded. New codes were added to the *Transportation Incidents* division for falls, fires or explosions, and objects falling onto vehicles when no other incident, such as a collision with another vehicle, was involved. The number of codes for classifying incidents involving pedestrians increased, and the codes now include incidents involving pedestrians in work zones, in the roadway, on the side of the road, and in nonroadway areas. New codes were added for incidents involving pedestrians struck by forward- or backward-moving vehicles and by vehicles struck by another vehicle. There are also codes for transportation incidents involving nonmotorized vehicles—including incidents that occurred when the worker was riding an animal or a bicycle—and for parachuting incidents, collisions between water vehicles, capsized or sinking water vehicles, roadway vehicles striking objects or animals in the roadway or on the side of roadway, and injuries due to sudden starts or stops and to vehicles striking bumps, holes, or rough terrain.

The coding structure for *Fires and Explosions* now includes more detail on the characteristics of the fire, such as whether it was a structural or forest fire and whether the structure collapsed. New codes were added for incidents involving persons injured by vehicle or machinery fires, dust explosions, and demolition or blasting explosions.

The code for *Slips, Trips, and Losses of Balance—without Fall* has been combined with those for *Falls* to make up the new division *Falls, Slips, Trips*. Approximately 22 percent of injuries leading to days away from work in the private sector result from falls. *Slips, Trips, and Losses of Balance—without Fall* (previously included in the *Bodily Reaction and Exertion* category) account for another 3 percent. Because prevention measures would likely be similar for *Falls* and for *Slips, Trips, and Losses of Balance—without Fall*, the two categories are now combined. Among a number of new codes added to provide more analytical detail are codes for trips from stepping into a hole or on an uneven surface; falls onto the same level while sitting; falls while climbing stairs, steps, or curbs; falls due to tripping on uneven surfaces; and falls to a lower level but curtailed by personal fall arrest systems. Also, in order to ensure that all falls are combined into one category, falls no longer must include an impact. For example, a fall from a pier into a lake that results in drowning will now be included in *Falls, Slips, Trips*. Finally, the new coding structure for falls to a lower level now captures the distance fallen, such as whether a worker fell less than 6 feet, 6 to 10 feet, or some other distance. This enhancement will be especially useful for determining the severity of falls from certain heights and for evaluating fatal falls.

Several codes also were added to the *Exposure to Harmful Substances or Environments* division, including codes for direct and indirect exposures to electricity, for single and repeated exposures to noise, for single and repeated exposures to inhaled substances, for unintentional needlestick or sharps injury, and for medical injection exposures to harmful substances. In addition, there are now codes for various types of dermal exposure to harmful substances, such as exposure through an open wound or intact skin and contact with the eyes or other exposed tissue.

The *Contact with Objects and Equipment* division currently makes up more than a quarter of nonfatal injuries requiring days away from work. To improve the classification of contact-related injuries, new codes were added for various machinery and nontransport vehicle incidents and for injuries resulting from hand-held objects. Finally, the *Overexertion and Bodily Reaction* division, which currently accounts for almost two-fifths of nonfatal cases involving days away from work, was expanded to include

codes for single, prolonged, and multiple episodic injuries; injuries from catching falling objects or persons (such as patients); injuries from boarding or alighting vehicles; and injuries resulting from repetitive motions involving microtasks.

Table 1 lists fatal occupational injuries by selected events or exposures under the old coding structure.

## Source and Secondary Source

Source and Secondary Source are coded according to the previously identified Event and identify the objects or other factors that were responsible for the injury or that precipitated the event. Source and Secondary Source use the same coding structure. In OIICS version 2.01, the

**Table 1. Fatal occupational injuries, by selected event or exposure, 2010**

Event or exposure	Code	Number
Total	...	4,690
Contact with objects and equipment	0	738
Struck by object or equipment	01	404
Struck by falling object or equipment	021	265
Caught in or compressed by equipment or objects	03	228
Caught in running equipment or machinery	031	91
Caught in or crushed in collapsing materials	04	91
Falls	1	646
Fall to lower level	11	522
Fall from ladder	113	132
Fall from roof	115	117
Fall on same level	13	100
Transportation incidents	4	1,857
Highway	41	1,044
Collision between vehicles, mobile equipment	411	535
Moving in opposite directions, oncoming	4113	191
Vehicle struck stationary object or equipment on side of road	413	267
Noncollision	414	212
Jackknifed or overturned—no collision	4141	189
Nonhighway (farm, industrial premises)	42	276
Noncollision	423	233
Overturned	4233	158
Pedestrian struck by vehicle, mobile equipment	43	280
Aircraft	46	152
Fires and explosions	5	191
Fire	51	110
Explosion	52	80
Assaults and violent acts	6	832
Homicide	61	518
Shooting	613	405
Suicide, self-inflicted injury	62	270
Assault by animal	63	38

NOTE: Totals for major categories may include subcategories not shown separately. Based on the 2007 *BLS Occupational Injury and Illness Classification Manual*.

SOURCE: U.S. Bureau of Labor Statistics.

definition of Source has been revised. Source is now more closely aligned with what was responsible for the injury or illness, rather than, as with the old coding structure, what directly produced or inflicted the injury or illness. For example, under the old definition, the Source for falls to a lower level was the ground or other object that a worker struck; under the new definition, the Source is the platform or structure from which the worker fell. These changes lead to a more intuitive selection of the Source—a selection that is more useful for analyzing and tabulating what was responsible for the injuries. Many tabulations using the previous version of the OIICS required that Source and Secondary Source be added together to obtain a count of incidents involving a specific object; although some of this burden will still exist in OIICS version 2.01, many of the changes were designed to mitigate the issue. For example, under the old system, if an employee were murdered by a coworker, the Source of the fatal injury would be that which directly inflicted the injury. Thus, if the decedent were manually strangled, the Source would be the coworker. If, however, the decedent were instead shot, the object that inflicted the injury would be the bullet; the coworker would then be the Secondary Source. Consequently, in order to tabulate the number of homicides perpetrated by coworkers, it would be necessary to tabulate cases in which either the Source or the Secondary Source was coded as “coworker.” By contrast, under the revised coding structure, the Source for homicides is now the person responsible, which in both of the preceding cases is the coworker; any weapons used would be coded as the Secondary Source.

The new rules for coding Source and Secondary Source are as follows:

- For *Violence and Other Injuries by Persons or Animal*, the Source is the person or animal responsible for the injury or illness and the Secondary Source is the injury-producing weapon, object, or substance, if any. If, for example, a robber shoots a store clerk with a handgun, the Source is the robber and the Secondary Source is the handgun.
- For *Fires and Explosions*, the Source is now the burning substance or object or the item that exploded while the Secondary Source is the ignition source or contributing factor, if any. For instance, if a firefighter gets burned while extinguishing an electrical fire in a warehouse, the Source is the warehouse and the Secondary Source is the electrical wiring.
- For a *Slip or Trip without Fall*, the Source is bodily motion and the Secondary Source is the object or substance that contributed to the slip or trip, if that object or substance is known. For *Falls to Lower Level*, the Source has been changed to the equipment or part of the structure (the structural element) from or through which the worker fell. The Secondary Source is the object or substance, if any, that contributed to the worker’s fall. For example, if a worker fell to the ground after the roof truss on which he was standing gave way, the Source is the roof truss. There is no Secondary Source, because there is no contributing factor other than the roof truss.

The BLS team of analysts also effected a substantial restructuring of the Source and Secondary Source coding structure. One important change is that confined spaces are now included in a separate major group in the *Structures and Surfaces* division and should typically be named as a Secondary Source in incidents involving them. This change will enable more effective analysis of fatal injuries involving confined spaces. New codes also were added to reflect technological advances and products not listed in the older coding scheme. Among these advances and products are computer mice and laptop trackpads, laser pointers, and mobility scooters, to name just a few. Many new codes were added to provide further detail in areas of the coding structure. The number of detailed codes involving persons increased more than fourfold. These new codes include spouse or domestic partner, client or customer, and inmate or detainee in custody; all of the codes are ordered by precedence in the situation where an individual meets more than one criterion, such as being both a client and a robber. The BLS team also restructured the category of, and added codes for, vehicles. Codes were added for fire trucks, garbage trucks, cement trucks, and sport utility vehicles. The additions will make it easier to analyze injuries related to these vehicles and will substantially reduce the size of the “trucks, n.e.c.” category, which is now about 17 percent of all trucks coded as either Source or Secondary Source for fatal injuries. In other sections of the coding structure, detail was eliminated for rarely used codes, such as codes for certain chemicals.

### Nature of Injury or Illness

Traumatic injuries and disorders account for more than 93 percent of the nonfatal occupational injuries and illness involving days away from work reported in the SOII.

**Table 2. Nonfatal occupational injuries and illnesses involving days away from work, by selected nature of injury or illness, private industry, 2010**

Nature of injury or illness	Code	Number
Total	...	933,200
Traumatic injuries and disorders	0	872,320
Traumatic injuries to bones, nerves, spinal cord	01	80,180
Fractures	012	69,380
Traumatic injuries to muscles, tendons, ligaments, joints, etc.	02	375,220
Sprains, strains, tears	021	370,130
Open wounds	03	91,820
Amputations	031	5,260
Cuts, lacerations, punctures	034	69,800
Surface wounds and bruises	04	93,490
Bruises, contusions	043	76,960
Burns	05	19,480
Multiple traumatic injuries and disorders	08	41,620
Other traumatic injuries and disorders	09	128,400
Nonspecified injuries and disorders	097	121,080
Soreness, pain, including the back	0972–0973	101,290
Diseases and disorders	1–5	...
Carpal tunnel syndrome	1241	8,490
Hernia	153	13,680
Tendonitis	1733	4,010
Disorders of the skin and subcutaneous tissue	18	4,080

NOTE: Totals for major categories may include subcategories not shown separately. Based on the 2007 *BLS Occupational Injury and Illness Classification Manual*.

SOURCE: U.S. Bureau of Labor Statistics.

(See table 2.) Generally, a traumatic injury or disorder is the result of a single incident, event, or exposure over the course of a single work shift.

*Sprains, Strains, and Tears* constitute almost 40 percent of the cases with days away from work reported in the SOII. The category was, therefore, broken out into its components:

- *Major Tears of Muscles, Tendons, or Ligaments* include Achilles tendon tears, torn rotator cuffs, grade III sprains and strains, and tears to the anterior cruciate ligament or to the medial collateral ligament.
- *Sprains* include minor or medium-grade tears and pulls to ligaments and joints.
- *Strains* include minor or medium-level tears and pulls to muscles and tendons.

Several other changes were made to the major group of *Traumatic Injuries to Muscles, Tendons, Ligaments, and Joints*, of which *Sprains, Strains, and Tears* are a part. Dislocations will now be included in this category, to be more

consistent with the ICD-10. They were previously included in the *Injuries to Bones, Nerves, and Spinal Cord* group.<sup>14</sup> Also, two new subcategories for dislocations—*Herniated Discs* and *Dislocations of Joints*—were added, to assist in the compilation of data for musculoskeletal disorders.<sup>15</sup> Another change affecting the *Dislocation* category is the creation of a separate category outside of dislocations for cartilage fractures and tears when the description of the injury does not mention a dislocation. This category would include meniscus tears of the knee or shoulder, as well as fractures of the nose unless a bone was affected.

Codes also were created in the *Traumatic Injuries to Muscles, Tendons, Ligaments, and Joints* group for hernias due to a single or short-term episode of overexertion and for cases of whiplash when the specific injury that resulted is not included in the case narrative. In a review of the narratives for hernias, it was found that many seemed to have resulted from a short-term episode of lifting.

The new OIICS includes a modified definition for amputations, compared with what was in the 1992 version of the manual. Previously, the injury must have involved bone loss to be considered an amputation. This rule was difficult to adhere to in practice, however. Descriptions of injuries rarely indicate whether bone was actually lost. As a consequence, some cases described as “fingertip amputation” or “fingertip cut off” were coded as amputations and some as avulsions. The new manual clarifies how to code various descriptions for amputations and avulsions, as well as how to code their occurrence when accompanied by other injuries. In addition, the specific code for fingertip amputation was eliminated because Part of Body Affected can now identify injuries to fingertips.

Another major enhancement to the Nature of Injury or Illness section is better defined categories for injuries and symptoms related to short-term exposures to toxic, noxious, or allergenic substances. Dermatitis resulting from a single or short-term exposure will now appear in the *Traumatic Injuries and Disorders* division, along with the *Poisoning, Toxic, Noxious, or Allergenic Effects* category used for non-skin-related reactions to acute exposures. Because these effects often are described only in terms of symptoms, codes were created for the most common symptoms reported. Additional codes for commonly reported symptoms, such as inflammation and swelling and such as numbness, were developed for other types of traumatic injury cases as well. Another change was made to the *Nonspecified Injury and Disorder* category, namely, the combination of the two existing codes under “soreness, pain, hurt” into a single code. The previous version of the OIICS included one code for soreness and pain affect-

ing the back and another code for cases involving other parts of the body. Together, these two codes accounted for more than one-tenth of cases with days away from work in 2010.

Additional detail will also be available on cases involving burns. Categories for various degrees of burns were added to the classification. In addition, some burns that had been classified elsewhere, such as sunburn and welders' flash, are now included in the burns and corrosions category.

Various codes for multiple injuries were added to the coding structure. These codes are used for instances in which two or more injuries of equal severity were incurred or when it cannot be determined which injury was more severe. The following categories describing multiple injuries were added as a result of the data reviews that occur during the annual data-processing cycle or that were part of the OIICS revision process:

- *Skull Fracture and Intracranial Injury*
- *Sprains and Cuts*
- *Fractures and Burns*
- *Burns and Smoke Inhalation*
- *Fractures and Dislocations*

Several other codes that described how the injury occurred, rather than the injury itself, were deleted from the Nature of Injury or Illness section, given that these data can be acquired from either the Event or Source section. Those codes affecting the most cases are the codes for foreign bodies, nonvenomous animal or insect bites, and venomous bites and stings. The specific injury or symptom produced, such as a puncture wound, hives, or anaphylactic shock, will now be coded. Instructions are provided for cases in which the injury or symptom produced is not indicated in the case description.

Currently, only a small proportion of the days-away-from-work cases (7 percent in 2010) is classified outside the *Traumatic Injuries and Disorders* division. Although work-related injuries and acute illnesses are fairly easy to associate with the work environment, diseases that have a longer latency period are more difficult to associate with workplace exposures. Moreover, the affected employee already may have retired or switched employers before symptoms of the disease appear—resulting in the omission of the case from the SOII. In addition, some of the diseases listed among the codes have mainly nonoccupational origins or seldom appear in the United States. Consequently, many of the disease codes were rarely, if ever, used.<sup>16</sup>

During the revision process, an attempt was therefore made to shorten the extensive disease code listing by eliminating codes that were both rarely used and nonoccupational in nature. Major categories designated by eliminated codes were retained, as were detailed categories describing recognized occupational diseases—even if rarely reported in the current SOII. For example, the category of *Inflammatory Diseases of the Central Nervous System* in the Nature of Injury or Illness section was retained in OIICS version 2.01, but the detailed diseases in that category, such as aplastic anemia and methemoglobinemia, diseases that are rarely associated with workplace exposures, were eliminated.

Codes for several other conditions of interest that were less common, undefined, or otherwise excluded when the original OIICS was developed were added. Among the conditions coded are the following:

- Influenza, novel or new strains of influenza, such as H1N1
- Methicillin-resistant staphylococcus aureus (MRSA) infection, for cases in which no precursor cut or injury is described
- West Nile virus, which did not appear in the United States until around 2000
- Hepatitis C, D, and E
- Mesothelioma
- Damage to orthopedic devices, such as replaced joints, pins, rods, and medical implants
- Epicondylitis, commonly referred to as tennis or golfer's elbow

Finally, terminology was updated throughout Nature of Injury or Illness. Of note is the renaming of the *Rheumatism, except Back* category to *Soft Tissue Disorders, except the Back*. This category includes conditions, such as bursitis, trigger finger, synovitis, epicondylitis, and tendonitis, that are associated with repetitive activity and that affect muscles, bursae, tendons, and fibrous tissues.

### Part of Body Affected

The modifications to the Part of Body Affected section are less extensive than those to the other structures. After all, no new parts of the human body have been discovered in recent memory.

Most of the changes to this section involved the regrouping of some of its parts. For example, the code for the shoulder had been in the *Trunk* division, but was

moved to the *Upper Extremities* division to be more consistent with the ICD-10. Also, in the previous OIICS, the codes for the hands, excluding the fingers; fingers; and hands and fingers together appeared in separate sections. This grouping made it such that if, for example, a safety glove manufacturer wanted to look at the number of injuries involving any part of the hand, it would have to add the three categories together. Now there is a single grouping for injuries limited to the hands and fingers, with the parts of the hands listed as separate subcategories.<sup>17</sup> Similar changes were made to the sections relating to the feet and toes.

Another major change to the section was the addition of several codes for various combinations of parts that are commonly injured together, such as the head and neck, head and trunk, and ankles and knees. Several of these codes were requested by staff in states participating in the Occupational Safety and Health Statistics program or were deemed necessary from a review of case narratives.

## Limitations

The original OIICS has a number of structural and practical limitations that also apply to OIICS version 2.01. Foremost among them is a simplified, four-part characterization of the injury or illness, implemented to facilitate easy statistical analyses and cross-tabulations, but subject to the limitations of the SOII and CFOI programs for which it was crafted. Regarding the SOII, its data are collected from OSHA summary and case forms kept by employers throughout the course of the year, but the forms frequently lack detail and have only short narrative fields. As for the CFOI, it collects information from a variety of sources, but only for injuries, not illnesses.

The goal of coding cases is to capture data on the precipitating circumstances of an injury or illness for prevention purposes. Complex chains of events, for example, are described by a singular event code chosen by a carefully crafted order of precedence. The most severe injury is cho-

sen for Nature of Injury or Illness when in fact there may be several, and sequelae are rarely coded. Sources of the injury or illness are limited to two, such as “automobile” and “tractor trailer” for a vehicle collision, when in actuality there may be other relevant factors, such as ice on the road or animals crossing the highway. An attempt was made to include some additional hazards—such as uneven floors and mechanical failures of aircraft—in the structure, but capturing such root causes as inadequate training or failure to adhere to workplace safety rules is beyond the capability of the current data collection efforts.

Limited narrative information in source documents also may restrict the level of detail used in coding. For instance, the actual distance fallen and the degree of severity of a burn or corrosion in the Event or Exposure section and the Nature of Injury or Illness section, respectively, are available only in a portion of cases. Although even the limited amount of information available will yield useful results, it is unlikely that the Bureau will be able to characterize all of these types of cases with more specificity. Aggregate data reported are “rolled up” in the OIICS hierarchical structure to reflect more generalized *Falls to a Lower Level* or *Burns and Corrosions*.

The Bureau also acknowledges that long latent diseases may be underreported in the SOII.

THE PATCHWORK OF ADDITIONS, interpretations, clarifications, and errata used to prolong the first iteration of the OIICS, originally launched in 1992, necessitated an update that better reflected the evolution of the U.S. workplace, medical advances, and emerging technologies. In the new version, much of the content has been changed and the structure of the system has been reorganized, but much of the original structure remains: the four-part categorization, the hierarchical structure, the order of precedence for Event, and other features. The legacy of the original OIICS is that its successor kept the vast majority of it intact, that what has worked so well for decades will continue to do so for many more. □

## Notes

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<sup>1</sup> For more information, see *Injuries, Illnesses, and Fatalities: Occupational Injury and Illness Classification Manual* (U.S. Bureau of Labor Statistics, Mar. 6, 2012), <http://www.bls.gov/iif/oshoiics.htm>.

<sup>2</sup> The hierarchical structure of the OIICS comprises divisions and specific code groups within the divisions, all ordered within a nesting from

one to four digits. The division, or one-digit level, is the summation of the lower levels and is the broadest level of detail. The lowest, most detailed level is usually the four-digit individual code level, but is a two- or three-digit code for some code groups.

<sup>3</sup> Version 2.01 was released to correct a number of errata in version 2.0 and to provide some additional clarifications. Version 2.01 also will be used in the 2011 SOII to test the collection and coding of cases with days of restricted work activity.

<sup>4</sup> Occupational Safety and Health Act, Public Law 91-596, 84 Stat.

## Occupational Injury and Illness Coding

1590, 24, 1970.

<sup>5</sup> For more on the history and evolution of BLS safety and health data, see Dino Drudi, “A Century-Long Quest for Meaningful and Accurate Occupational Injury and Illness Statistics,” *Compensation and Working Conditions*, winter 1997, pp. 19–27.

<sup>6</sup> Guy Toscano, Janice Windau, and Dino Drudi, “Using the BLS Occupational Injury and Illness Classification System as a Safety and Health Management Tool,” *Compensation and Working Conditions*, June 1996, pp. 19–28.

<sup>7</sup> See *International Statistical Classification of Diseases and Related Health Problems*, 10th revision (World Health Organization, 1992).

<sup>8</sup> Examples of such complexity are an alphanumeric coding scheme with decimal numbers; codes that combine either the nature of the injury or illness and the part of the body affected or the event that occurred and the source of the injury or illness; and voluminous diseases and disorders that rarely, if ever, appear in occupational safety and health surveillance.

<sup>9</sup> *International Statistical Classification of Diseases*, chapter XX, “External causes of morbidity and mortality,” pp. 1011–1122.

<sup>10</sup> Note that whether or not a case is included in the traumatic injury and disorder category in the OIICS has no bearing on whether or not the case is considered an injury or illness on the recordkeeping log required by the Occupational Health and Safety Administration (OSHA). Although these two typologies will align in most cases, some categories—such as heat-related conditions—that are included as traumatic in the OIICS are specifically listed as illnesses in the OSHA recordkeeping instructions.

<sup>11</sup> Previously, the division excluded unintentional injuries, and some acts of unknown intent, such as a patient biting a dentist, were included in the assault category. Even though unintentional injuries are now included in the *Violence and Other Injuries by Persons or Animals* division, intentional and unintentional injuries will appear separately in tabulations.

<sup>12</sup> Transportation incidents involve transportation vehicles, animals used for transportation purposes, and powered industrial vehicles or powered mobile industrial equipment, in which at least one vehicle (or

mobile equipment) is in normal operation and the injury or illness was due to (1) a collision or other type of traffic incident, (2) loss of control, or (3) a sudden stop, start, or jolting of a vehicle, regardless of the location of the event. Among these events are roadway and nonroadway incidents, including those which occur in parking lots, industrial areas, or farms.

<sup>13</sup> Transportation incidents accounted for a much smaller share (4 percent) of nonfatal injuries and illnesses with days away from work in 2010.

<sup>14</sup> Previously, any cartilage-related injury was coded in the same major group as a fracture.

<sup>15</sup> The Department of Labor defines a musculoskeletal disorder as a case in which the nature of the injury or illness is a pinched nerve; a herniated disc; a meniscus tear; a sprain, strain, or tear; a traumatic hernia; pain, swelling, and numbness; carpal tunnel syndrome; tarsal tunnel syndrome; Raynaud’s syndrome or phenomenon; a nontraumatic hernia; or a musculoskeletal system and connective tissue disease or disorder, when the event or exposure leading to the injury or illness is rubbed, abraded, or jarred by vibration, unspecified overexertion and bodily reaction, overexertion involving outside sources, repetitive motions involving microtasks, other exertions or bodily reactions, or multiple types of overexertions and bodily reactions. This definition, updated for OIICS version 2.01, is similar to, but more inclusive than, the definition previously used.

<sup>16</sup> The Census of Fatal Occupational Injuries program does not publish data on fatal occupational illnesses, except for illnesses precipitated by an injury that happened at the workplace. Because of the latency period of many occupational illnesses and the resulting difficulty associated with linking those illnesses to work, it is difficult to compile a complete count of all fatal illnesses in a given year. Thus, information on illness-related deaths is excluded from the basic fatality count.

<sup>17</sup> There are some additional categories that include the hands in combination with other upper extremities.