

# **HOW STATES ARE COLLECTING AND USING CAUSE OF INJURY DATA: 2004 UPDATE TO THE 1997 REPORT**

**A Survey on State-Based Injury Surveillance,  
External Cause of Injury Coding Practices, and  
Coding Guidelines in the 50 States, the District of Columbia and Puerto Rico**

**A Report by the Council of State and Territorial Epidemiologists;  
Data Committee Injury Control and Emergency Health Services Section,  
American Public Health Association; and State and Territorial  
Injury Prevention Directors Association  
March 2005**

**Funded by  
The Council of State and Territorial Epidemiologists  
Atlanta, Georgia**

**THIS REPORT WAS PREPARED BY:**

**John Abellera, MPH**

Associate Research Analyst  
Council of State and Territorial Epidemiologists  
Atlanta, Georgia

**Joseph L. Annest, PhD**

Co-chair, Data Committee, ICEHS, APHA  
Director, Office of Statistics and Programming  
National Center for Injury Prevention and Control  
Centers for Disease Control and Prevention  
Atlanta, Georgia

**Judith M. Conn, MS, EMBA**

Statistician, Office of Statistics and Programming  
National Center for Injury Prevention and Control  
Centers for Disease Control and Prevention  
Atlanta, Georgia

**Mel Kohn, MD, MPH**

Council of State and Territorial Epidemiologists,  
Member At-Large  
State Epidemiologist  
Oregon Department of Human Services  
Portland, Oregon

## ACKNOWLEDGMENTS

We wish to express our thanks and appreciation to Mark S. Johnson (AK); Carol Gaddis Mysinger (AL); Ed Carson (AR); Ardis Decker (AZ); Alex Kelter and Roger Trent (CA); Holly Hedegaard (CO); Marian Storch (CT); LaVerne Jones (DC); Denese Gregory (DE); Stephen Dearwater (FL); Lisa Dawson (GA); Dan Galanis (HI); Roger Chapman and Deb Roeder (IA); Kay Chicoine (ID); Evelyn Lyons (IL); Sandra Beck (IN); Lori Haskett (KS); Patricia Williams (KY); Shirley Kirkconnell (LA); Holly Hackman (MA); Tracey Serpi (MD); Dean Bailey (ME); Thomas Largo (MI); Jon Roesler (MN); Joy Oesterly (MO); Mary Reed (MS); Thomas B. Danenhowe (MT); Kay Sanford (NC); Rod Gilmore (ND); Keith Hanson and Ming Qu (NE); Elizabeth Burns (NH); Kathleen Mackiewicz (NJ); Shelly Moeller (NM); Wei Yang (NV); Julie Eisele (NY); Ed Socie (OH); Pam Archer and Kristen Eberly (OK); Janice Alexander (OR); Carol Thornton (PA); Jay Buechner (RI); Tracy Joyce (SC); Everett Putnam (SD); Tom Spillman (TN); David F. Zane (TX); John Morgan (UT); Cynthia Simpson (VA); Caroline Dawson (VT); Jennifer Sabel (WA); Richard Miller (WI); and Jimm Murray (WY).

We would also like to thank the APHA Injury Control and Emergency Health Services Section Data Committee members who helped prepare the 1997 E code survey report and provided helpful comments on this update, including Elizabeth McLoughlin, Lois Fingerhut, Donna Pickett and Susan Gallagher. Last, but not least, we would also like to thank David Scharf, Executive Director of the State and Territorial Injury Directors Association, and Tarajee Knight, Kevin Gibbs and LaKesha Robinson from the CSTE National Office. We would also like to thank Kimberly Brice for helping to prepare the detailed tables.

A copy of the survey instrument is available upon request. Please contact:

**Ms. Judy Conn or Dr. Lee Annest**  
National Center for Injury Prevention and Control  
4770 Buford Highway, NE, MS/K59  
Atlanta, GA 30341-3724  
Phone 770-488-4656  
FAX 770-488-1665

# **STATEWIDE E CODE SURVEY FINDINGS**

## EXECUTIVE SUMMARY

From December 2003 through July 2004, the Council of State and Territorial Epidemiologists, along with the Injury Control and Emergency Health Services Section (ICEHS) of the American Public Health Association (APHA) and the State and Territorial Injury Prevention Directors Association (STIPDA), conducted a survey of all 50 states, the District of Columbia, and Puerto Rico to assess the availability of external cause of injury data in statewide Hospital Discharge Data Systems (HDDS), Hospital Emergency Department Data Systems (HEDDS) and other ambulatory care data systems. The survey instrument was sent to state and territorial injury prevention directors to complete. In this report, we summarize the findings from the survey, discuss the results, and make recommendations for improving the quality and availability of statewide injury-related data for injury prevention activities. This 2004 survey provides an update and comparison to an earlier E code survey conducted in 1997.

The 2004 survey indicated that overall, there has been only very modest improvement in the availability and quality of E-coded hospitalization and emergency department data from 1997 to 2004. The future availability of high quality E-coded HDDS and HEDDS data in each state and the District of Columbia will require a focused, coordinated effort by federal and state public health partners.

Specific findings of this survey include:

- While three more states have acquired HDDS since the 1997 survey, five states are still without one. While the number of states with HEDDS has more than doubled since the 1997 survey, half of states still do not have an HEDDS.
- Even for states with these data systems the frequency of E-coding is far from optimal. In states that have evaluated their systems, only 43.8% of HDDS and 54.5% of HEDDS have more than 90% of injury records E-coded.

- 26 states and the District of Columbia now have mandates that require the routine collection of external-cause-of-injury data in their statewide HDDS. This represents only a slight increase since 1997, with three additional states having mandates. States with laws or mandates requiring external-cause-of-injury coding continue to have a higher percentage of completeness of injury-related data.
- There was great heterogeneity across states in the number and type of fields (i.e., generalized diagnostic code field versus a dedicated field only for E codes) available for E codes in these data systems, making aggregation and comparison of data across states problematic.
- Only about two-thirds of states with these data systems are able to identify the initial hospital visit for a patient who has had multiple visits for the same injury. This also makes aggregation and comparison of data across states problematic.
- The number of publications using E-coded data has increased markedly since 1997. This suggests that there may be more interest among policy-makers and public health practitioners in improving the availability of injury morbidity statistics based on E-coded HDDS and HEDDS data.

The challenge remains to work towards establishing in every state a statewide HDDS and HEDDS that collects high quality data on nonfatal injuries, just as all states currently have vital statistics systems that provide data on fatal injuries. The availability of these population-based data on both nonfatal and fatal injuries will provide a more complete understanding of the causes and types of injuries affecting our society, as well as an accurate basis for designing, implementing and evaluating injury prevention activities.

## RECOMMENDATIONS

- The injury control community should work together to approach this issue in a coordinated way. Although all partners have a stake in solving this problem, leadership in injury surveillance from CDC, in collaboration with CSTE and STIPDA, will be critical to improve state-based, E-coded HDDS and HEDDS data further.
- Efforts are needed to promote the development of HDDS and HEDDS, as well as the routine collection of E codes in those states without them.
- A “toolbox” of techniques to improve E-coding without mandating it should be compiled and promoted to state injury prevention programs to help states improve E-coding in these data systems.
- States that do have these data systems should be encouraged to evaluate the completeness and accuracy of E codes in these systems. Incentives for performing these evaluations should be considered. CDC, in collaboration with CSTE and STIPDA, should develop a standard methodology for this kind of evaluation analogous to the framework for evaluating surveillance systems that CDC has promulgated.
- Efforts to standardize the number and type of fields used in these systems to record E codes should be undertaken. The proposed UB-04 form with three designated spaces for recording E codes, which is being considered by the National Uniform Billing Committee, should be adopted and implemented as soon as possible.
- CDC, in collaboration with CSTE and STIPDA, should explore ways to facilitate the collection of external-cause-of-injury codes through standards and guidelines set by the ICD-9-CM Coordination and Maintenance Committee and the National Uniform Billing Committee and through billing

requirements of the Centers for Medicare and Medicaid Services, DHHS.

- Efforts should be undertaken to ensure that all states with HDDS and HEDDS have the ability to identify the initial hospital visit for a patient who has made multiple visits for the same injury.
- States should continue efforts to improve the availability and use of E-coded HDDS and HEDDS data by data providers, health information specialists, researchers, practitioners and policy-makers through the use of the Internet and publications. State-based injury prevention programs, which are involved in publishing a majority of the reports on these data, are important targets for these efforts.

## BACKGROUND

Injury is one of the leading causes of death and disability in the United States. In 2002, there were 161,269 deaths from injuries, accounting for 6.6% of all deaths among residents in the United States.<sup>1</sup> For every injury death, approximately 10 persons were hospitalized or transferred for specialized care, and 178 persons were treated and released from an emergency department for an injury.<sup>2</sup> Many of these injuries were preventable. Although the greatest cost of injury is in human suffering and loss, the financial cost is also staggering. The annual direct medical cost of injury in 2000 was estimated to be \$117 billion, equal to about 10% of total U.S. medical expenditures.<sup>3</sup>

Injury prevention efforts are under way at the national, state and local levels to reduce the burden of injury on society. Population-based data on fatal and nonfatal injuries are needed to set priorities for prevention programs and for monitoring, evaluating and improving the effectiveness of prevention activities. All states have vital statistics systems to provide data on injury deaths for priority setting. However, for less-populated states and for communities, the number of injury deaths is often too few to be useful in helping identify and characterize major injury problems. In addition, the leading causes of injury death differ from the leading causes of nonfatal injury. Priorities need to be set after taking both into consideration.

The purpose of this study was to provide a 2004 update to the 1997 E code survey conducted by the Injury Control and Emergency Health Services Section, American Public Health Association.<sup>4</sup> This follow-up survey will help assess progress in improving the collection and use of external cause of injury data in statewide morbidity data systems. These data are important for monitoring trends and planning and evaluating prevention efforts. A similar data collection instrument was used so that the data could be comparable between the 1997 and 2004 surveys. The 1997 survey was administered using a hard copy questionnaire through the mail, and the 2004 survey was conducted using a Web-based questionnaire. The new survey also provides an overview of current state-specific practices for obtaining data on nonfatal

injuries treated in health care facilities. This report focuses on the availability of statewide data on injury-related hospital discharges and hospital emergency department (ED) visits. More specifically, questions were asked about the collection and use of *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*<sup>5</sup> external-cause-of-injury codes, commonly called E codes. Background information is provided to assist readers who need a better understanding of the ICD coding systems for external cause of injury.

## WHAT IS THE ICD-9-CM?

ICD-9-CM<sup>5</sup> is a modification of the World Health Organization's (WHO) *Manual of the International Classification of Diseases, Injuries, and Causes of Death, 9th Revision (ICD-9)*.<sup>6</sup> The ICD-9 is the ninth version of a classification that originated as the International List of Causes of Deaths, adopted in 1893 by the International Statistical Institute. The classification generally has been revised at 10-year intervals.

At the Sixth Revision Conference in 1948—the first undertaken by WHO—the classification's scope was extended to include nonfatal conditions, and its use was recommended for morbidity statistics as well as for mortality. ICD-9-CM (the “CM” stands for “clinical modification”) was created by the United States to provide more specificity relevant to morbidity reporting. The term “clinical” is used to emphasize that ICD-9-CM is meant to be used to classify morbidity data for medical records indexing, medical care review, ambulatory and other medical care programs, as well as health statistics.

ICD-9-CM currently is used in the United States to classify diseases and injuries so they can be reported uniformly across institutions and jurisdictions. One of its current uses is for hospital reimbursement purposes. Effective January 1979, the ICD-9-CM became the standard classification system used for morbidity reporting in the United States.

The maintenance and revision of the ICD-9-CM for morbidity coding throughout the United States is the joint

responsibility of the National Center for Health Statistics (NCHS) and the Centers for Medicare and Medicaid Services (CMS). The WHO Collaborating Center for the Family of International Classifications for North America, located at the NCHS, is responsible for coordinating all official disease classification activities in the United States related to the ICD and its use, interpretation and periodic revision. CMS is responsible for coordinating and maintaining all inpatient surgical procedure classification activities in the United States related to Volume III of ICD-9-CM and its use, interpretation and periodic revision. The National Uniform Billing Committee maintains the uniform hospital billing form (currently called the UB-92) used in many states to bill for hospital services. The UB-92 form has fields for recording the principal diagnosis code as well as eight other ICD-9-CM diagnosis codes and a separate field for recording an ICD-9-CM E code. The National Uniform Billing Committee has proposed a new UB-04 form to replace the UB-92 form as of 2006. It is currently under review.<sup>7</sup> The current draft of the UB-04 form has fields for recording the principal diagnosis code as well as 17 other ICD-9-CM diagnosis codes and three designated spaces for capturing E codes.

Requests for modification to the classification system are handled through the ICD-9-CM Coordination and Maintenance Committee.<sup>5</sup> Established in 1985, this committee was formed to provide a public forum for discussing possible updates and revisions to the ICD-9-CM. The classification is reviewed and updated biannually to accommodate changes in medical technology and provide greater specificity in classifying diagnoses and external causes of injury (E codes). Modifications to the classification system, including the addition of new E codes, enhance data by adding specificity to facilitate better research and target prevention efforts.

## WHAT IS AN E CODE?

The ICD-9-CM E code is an alphanumeric three- or four-digit number that describes: (1) whether the injury was violence-related (e.g., assault, intentionally self-inflicted) or unintentional; (2) the mechanism of injury (e.g., motor vehicle crash, fall, burn, poisoning); and (3) location of occurrence (e.g., home, farm, industrial place). In hospitals, E codes are usually assigned by trained medical records personnel using the information provided in the medical record by physicians or other health care providers. E codes with four digits (e.g., E884.0—fall from playground equipment) generally provide more details about the cause of injury than those with three digits; however, assigning these codes requires that more detail about injury circumstances is available on the medical record. Therefore, health care providers have an important role in capturing detailed information on the injury incident in the medical record useful for coding specific ICD-9-CM E codes.

ICD-9-CM E codes currently are used widely to code external cause of injury for visits in hospital, emergency department, and ambulatory care settings across the United States. However, within the next few years, the ICD-9-CM classification system may be replaced with the 10<sup>th</sup> revision of the clinical modification of the ICD classification system.<sup>8</sup> NCHS is coordinating the effort to develop the ICD-10-CM coding system, including expansion of external-cause-of-injury codes.<sup>8</sup> When implemented, ICD-10-CM will allow for more detailed coding of the external cause of injury based on information in the medical record about injury circumstances (e.g., intentionality, mechanism, place of occurrence, and activity at the time of injury).

For mortality data systems in the United States, the WHO's *Manual of the International Classification of Diseases, Injuries, and Causes of Death, 10th Revision (ICD-10)*<sup>9</sup> has been used to code the underlying cause of death (i.e., an external-cause-of-injury code for injury deaths) as well as the injury diagnoses (multiple cause of death data) recorded on death certificates since 1999. In

ICD-10 and ICD-10-CM, external-cause-of-injury codes do not start with an “E” as they do in ICD-9, but with a V, W, X or Y.

### **WHY ARE E CODES NECESSARY FOR INJURY PREVENTION ACTIVITIES?**

ICD-9-CM E codes are a critical link in the public health approach to preventing injuries.<sup>10,11</sup> E codes can help us to: (1) describe the magnitude of injury morbidity by cause of injury; (2) identify population subgroups at high risk of a particular cause of injury (e.g., bicycle-related injuries in children aged 5–14 years); (3) identify specific high incidence causes of injuries in certain geographic locations (e.g., scald burns among 3-year-old children living in an inner city area); (4) develop prevention strategies targeting specific causes of injury (e.g., helmet give-away programs and educational campaigns to school-aged children); and (5) evaluate the effectiveness of intervention programs (e.g., the cost-effectiveness of helmet use programs in reducing bicycle-related injuries in children). With cause-specific data, we can more readily monitor specific injuries that are targeted by prevention programs (e.g., installing smoke detectors in homes to reduce burns and smoke-related injuries from house fires).

### **DO GUIDELINES EXIST FOR ASSIGNING E CODES TO HOSPITAL DISCHARGE AND EMERGENCY DEPARTMENT RECORDS?**

The Department of Health and Human Services has developed guidelines for assigning E codes.<sup>5</sup> These guidelines are reviewed each year. Use of these guidelines varies among states and hospitals within states. Some states with mandated E-coding have their own guidelines in addition to the DHHS guidelines. In hospital settings, medical information specialists are responsible for assigning E codes based on the guidelines adopted by the state. Ideally, it would be best if all states used the same uniform

guidelines to ensure the comparability of external-cause-of-injury data across all statewide morbidity data systems.

### **WHAT WAS THE PURPOSE OF THIS E-CODE SURVEY?**

This survey, which involved the participation of injury prevention and control programs of health departments in all states, the District of Columbia and Puerto Rico, was conducted to assess the current status of the collection and use of ICD-9-CM E codes throughout the United States. It provides an overview of external cause of injury data obtained in statewide HDDS and HEDDS in all 50 states, the District of Columbia and Puerto Rico. The purpose of this survey is to promote a better understanding of (1) current E-coding guidelines and practices used by states, and (2) the uses and usefulness of E-coded data from statewide morbidity data systems for planning and evaluating injury prevention programs. Information in this report can help educate public health officials about the investments of numerous states toward improving the quality, availability and uses of data on external causes of injury. Our hope is that the report will be a catalyst for states to collect, improve and use external-cause-of-injury data in statewide morbidity data systems.

# HIGHLIGHTS OF THE E-CODE SURVEY

## STATES WITH ROUTINE AND MANDATED E-CODING BY DATA SYSTEM

### Hospital Discharge Data Systems

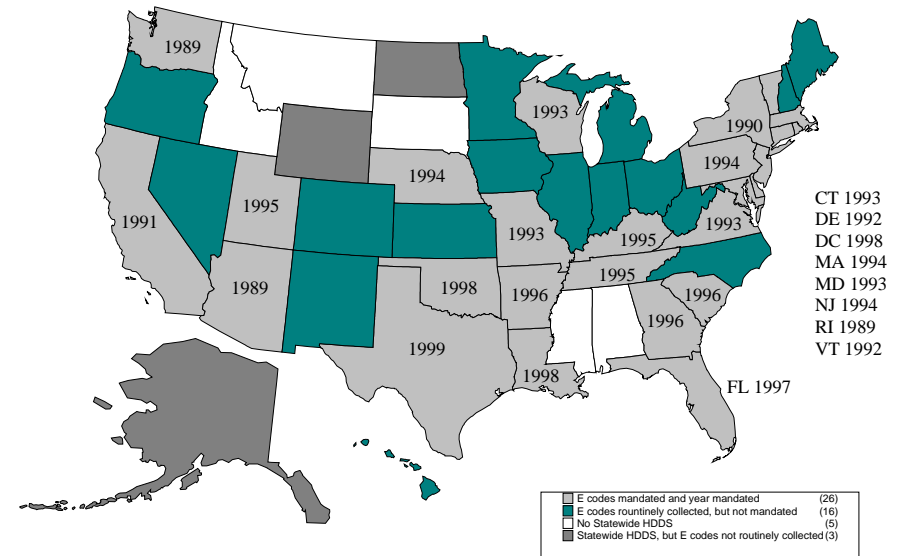
- 45\* (90%)<sup>†</sup> of the 50 states and the District of Columbia (D.C.) currently have a statewide<sup>‡</sup> HDDS in place (Figure 1, Table 1). This is an increase from 42 states in the 1997 survey.
- 42\* (93.3%) of the 45 states that have a statewide HDDS and D.C. routinely collect some level of E codes in their statewide HDDS (Table 1). This is an increase from 85.7% in the 1997 survey.
- 26 (61.9%) of the 42\* states that routinely collect some level of E codes and D.C. have mandated E-coding in their statewide HDDS (Figure 1, Table 2). This is an increase from 23 states in the 1997 survey. Many states (69.2%) mandated E-coding in 1993 or later.
- Seven (16.7%) of the 42\* states that routinely collect E codes in their statewide HDDS and D.C. record only one E code; another four states (9.5%) record two E codes; 28\* states (66.7%) and D.C. can record from three to 23 E codes, while three states (7.1%) did not indicate the number of E codes their statewide HDDS can record (Table 2). Compared to 1997, seven more states can record more than two E codes.
- 23 (71.9%) of the 32 states that capture more than one E code can record an E code for the place of occurrence of the injury either some or most of the time, when applicable (Table 2). This is an increase from 59.3% reported in the 1997 survey.

\* Includes 1997 survey data for West Virginia because this state did not participate in the 2004 survey.

<sup>†</sup> District of Columbia is not factored in the denominator.

<sup>‡</sup> The term statewide is used throughout this report to include the District of Columbia and the territory of Puerto Rico, where appropriate.

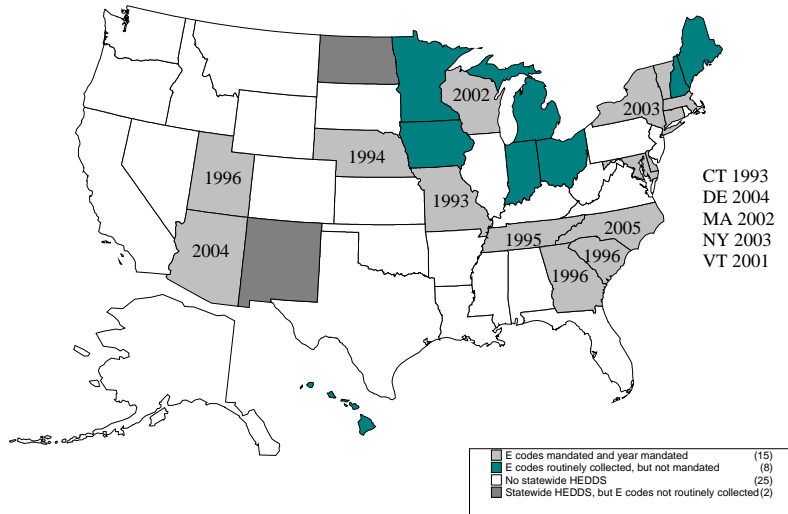
Figure 1. Statewide Hospital Discharge Data Systems and E-Coding



### Hospital Emergency Department Data Systems

- 25 (50%) of the 50 states and D.C. have a statewide HEDDS (Figure 2, Table 1). This is a large increase from 12 states in the 1997 survey. Seven (77.8%) of the nine states that indicated in 1997 that they had plans for a statewide HEDDS still do not have a system in place (Table 1).
- 23 (92%) of the 25 states and D.C. routinely collect some level of E codes in their statewide HEDDS. This percentage is unchanged from the 1997 survey.
- 15 (65.2%) of the 23 states that routinely collect some level of E codes have mandated E-coding of their statewide HEDDS (Figure 2, Table 3). Although this percentage is decreased from 81.8% in the 1997 survey, the total number of HEDDS with E-coding mandated has increased from the nine reported in 1997.

**Figure 2. Statewide Hospital Emergency Department Data System and E-Coding**



**STATES THAT HAVE EVALUATED THE COMPLETENESS AND/OR ACCURACY OF E CODES**

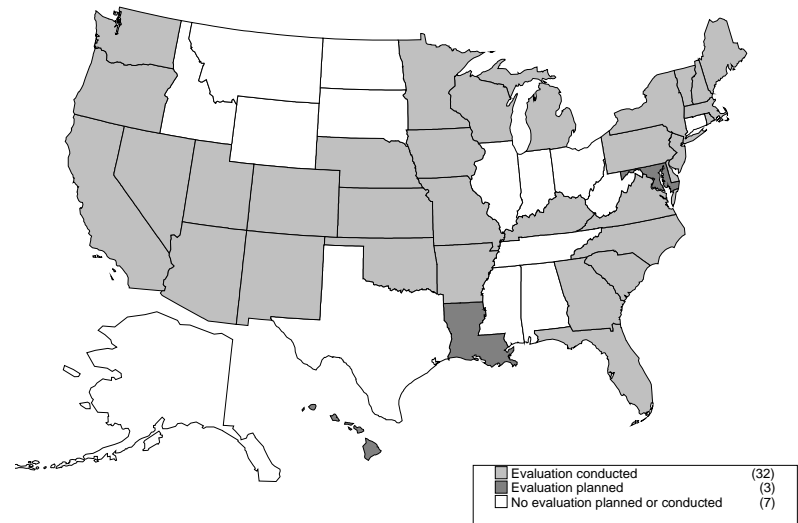
**HDDS**

- 32 (76.2%) of the 42\* states that routinely collect some level of E codes and D.C. have conducted an evaluation of the E codes for completeness and/or accuracy in their statewide HDDS (Figure 3, Table 4). This is an increase from 63.9% in the 1997 survey. Hawaii, Louisiana and Maryland have plans to conduct or are currently conducting an evaluation of E-coding in their HDDS.

\* Includes 1997 survey data for West Virginia because this state did not participate in the 2004 survey.

- 14 (43.8%) of the 32 states that conducted an evaluation indicated over 90% of the injury-related discharge records were E coded (Figure 4). States with mandated E-coding were more likely, on average, to have a higher percentage of their injury discharges E coded than states without mandated E-coding (Table 4; 92.5% vs. 80.3 %).
- 7 (21.9%) of the 32 states that conducted an evaluation provided information about the percentage of injury discharges E-coded accurately. The percentage ranged from 80.0% to 99.5%, with a median of 90%.
- Six (18.8%) of the 32 states reported that evaluation had an effect on their statewide HDDS E-coding process.

**Figure 3. Evaluation of E Codes: HDDS**



**Figure 4. Percentage of Injury-Related Hospital Discharges E Coded: HDDS**

Percentage E Coded	Number of States <sup>+</sup>
51 – 60	2
61 – 70	1
71 – 80	2
81 – 90	3
91 – 100	14
Unknown	10
<b>Subtotal</b>	<b>32</b>
No Evaluation	10
<b>Total</b>	<b>42</b>

**HEDDS**

- 11 (47.8%) of the 23 states that routinely collect some level of E codes have conducted an evaluation of E-coding in their statewide HEDDS, and Hawaii, Maryland and Vermont have plans to conduct or are currently conducting an evaluation of E-coding in their HEDDS (Table 5). This is a large increase from two states that reported conducting such an evaluation in the 1997 survey.
- In six (54.5%) of the 11 states that had conducted an evaluation, greater than 90% of the injury-related ED records were E coded.

<sup>+</sup> Excludes the District of Columbia, which reported unknown.

**ORGANIZATION WHERE DATA SYSTEM IS BASED**

**HDDS**

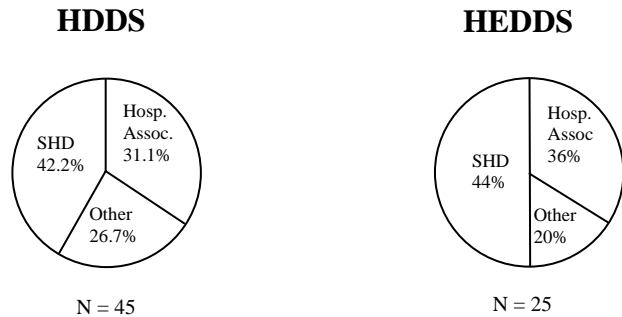
- 19\* (42.2%) of the 45 states with statewide HDDS have their system based at the state health department (Figure 5, Table 6). Another 14 states (31.1%) and D.C. have their HDDS based in the state hospital association, and 12 states (26.7%) have their HDDS based in other agencies, such as state health care administrations, state budget and control boards and private companies. This pattern is very similar to that reported in the 1997 survey.
- States with mandated E-coding were more likely to have their statewide HDDS based at the state health department than those without mandated E-coding (57.7% vs. 18.8%\*, respectively) (Table 6). Again, this pattern is very similar to that reported in the 1997 survey.
- 30 (66.7%) of 45 states that have a statewide HDDS and D.C. indicated they have a method for identifying the initial hospital visit for an injury (Table 6). This is an increase from 57.1% reported in the 1997 survey.

**HEDDS**

- 11 (44%) of the 25 states with a statewide HEDDS have their system managed in the state health department (Figure 5, Table 7). Another nine states (36%) have their statewide HEDDS housed in the state hospital association, and five states (20%) have their HEDDS located in another agency.
- 16 (64%) of the 25 states indicated they can distinguish the initial ED visit from subsequent visits for a given injury incident (Table 7). This is an increase from the 41.7% reported in the 1997 survey.

\* Includes 1997 survey data for West Virginia because this state did not participate in the 2004 survey.

**Figure 5. Where State Data Systems Are Based**



**HOW OFTEN REPORTS ARE PUBLISHED AND WHO PUBLISHES THE DATA**

**HDDS**

- 34 (81%) of the 42\* states that routinely collect E codes and D.C. also publish reports of the E-coded data. This is an increase from the 50% of states that reported publishing reports in the 1997 survey. Most of this increase is in states publishing annual reports: 18 states (52.9%) publish annual reports, three states (8.8%) publish bi-annual reports, and another 13 states (38.2%) and D.C. publish reports periodically (Table 8).
- In 18 (52.9%) of the 34 states that publish E-coded data reports, the reports are published by the injury control section of the state health department. In four additional states (11.8%), the injury control section publishes reports jointly with other state health department sections and other organizations. In total, the injury control section is involved in publishing these reports in 22 (64.7%) states. This is an

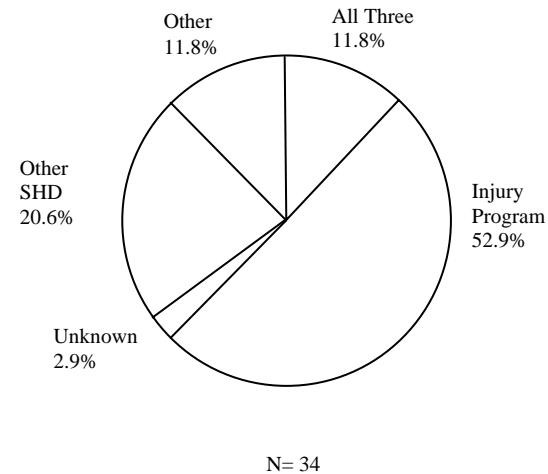
\* Includes 1997 survey data for West Virginia because this state did not participate in the 2004 survey.

increase from the 55.6% found in the 1997 survey. In 2004, seven states (20.6%) reported that data are produced by another section of the state health department (Figure 6). Another four states (11.8%) reported that data reports are published by organizations other than an injury program or another section of the state health department. One state (2.9%) responded unknown.

**HEDDS**

- 15 (65.2%) of the 23 states that routinely collect E codes also publish reports of the E-coded data; nine states (60%) publish annual reports, two states (13.3%) publish bi-annual reports, and another four states (26.7%) publish reports periodically (Table 13).

**Figure 6. Who Publishes E-Coded Injury Data: HDDS**

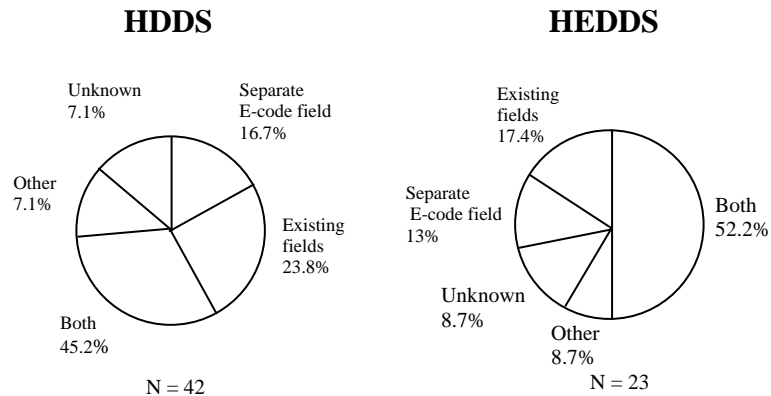


## HOW E CODES ARE INITIALLY RECORDED AND GUIDELINES USED

### HDDS

- For the 42\* states, that routinely collect E codes in their statewide HDDS, and for D.C., E codes are recorded initially on a separate E-code field in seven states (16.7%), on existing diagnostic fields in 10 states (23.8%) and D.C., or on both the separate E-code field and the existing diagnostic fields in the remaining 19\* states (45.2%) (Figure 7, Table 9). Three states (7.1%) responded as other. This pattern is similar to that reported in 1997.

Figure 7. How States Initially Record E Codes

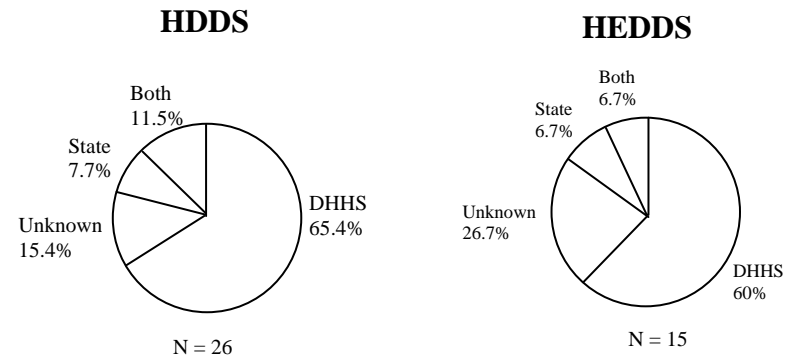


- 17 (65.4%) of the 26 states with mandated E-coding in their statewide HDDS use the DHHS official ICD-9-CM guidelines.

\* Includes 1997 survey data for West Virginia because this state did not participate in the 2004 survey.

three states (11.5%) use DHHS and state guidelines and two states (7.7%) use only state guidelines (Figure 8, Table 9). This pattern is similar to that reported in 1997.

Figure 8. What Guidelines Are Used for Mandated E-Coding



### HEDDS

- Three (13%) of the 23 states that routinely collect some level of E codes initially record E codes for their statewide HEDDS using a separate E-code field; four (17.4%) states use the existing diagnostic fields; 12 states (52.2%) reported using both a separate E-code field and the existing diagnostic fields; and two states (8.7%) indicated another means for recording E codes (Figure 7, Table 10). This pattern is similar to that reported in 1997.
- Nine (60%) of the 15 states with mandated E-coding in their statewide HEDDS used the DHHS official ICD-9-CM guidelines, One state (6.7%) used only state guidelines and one other state used both DHHS and states guidelines (Figure 8, Table 10). This is a change from 1997, when all states with mandated E-coding in their HEDSS reported using DHHS guidelines.

## USEFULNESS OF E-CODE FIELD ON THE UB-92 BILLING FORM

### HHDS

- 34\* (68%) of the 50 states and D.C. stated they were aware of a designated E-code field on the UB-92 uniform billing form for hospital charges (Table 9). Of the 34\* states with statewide HHDS that are aware of the unique E-code field on UB-92 form and D.C., 21\* states (61.8%) stated that this E-code field was useful. This is similar to the pattern reported in the 1997 survey.

## USEFULNESS OF E-CODED DATA

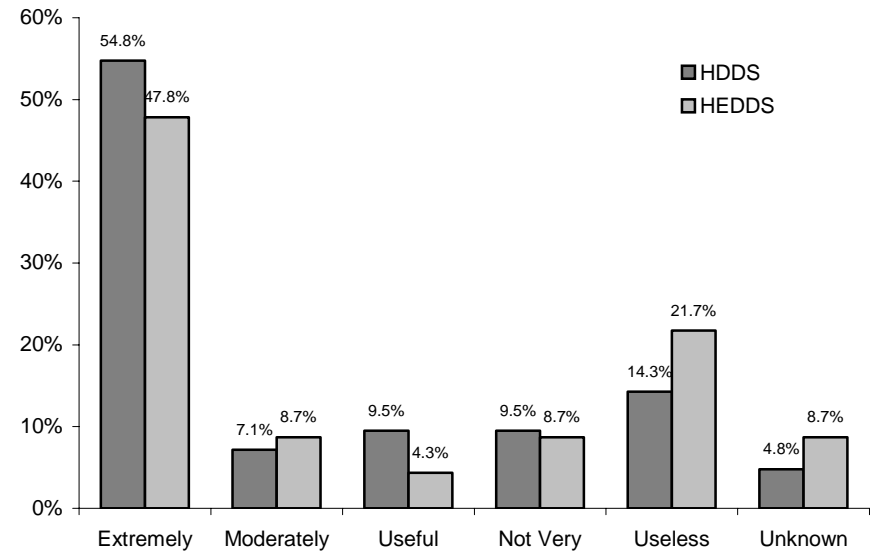
### HHDS

- 23 (54.8%) of the 42\* states that routinely collect E codes in their statewide system and D.C. indicated that the E codes were extremely useful (Figure 9). The average usefulness was 2.2 on a scale of 1 to 5, where 1 denotes extremely useful and 5 denotes useless (Table 11). This is a decrease from the average usefulness of 1.5 reported in the 1997 survey.
- Among the 42\* states that routinely collect E codes, E-coded statewide HHDS data are used most often in 37\* states (88.1%) for planning programs, in 35 states (83.3%) for monitoring trends, in 34\* states (81%) for assessing injury-related health care costs, and in 33 states (78.6%) for setting priorities (Figure 10, Table 11). 29 states (69%) use E-coded HHDS data for making policy decisions, and 28 states (66.7%) for evaluating programs. 13 states (31%) also use E-coded HHDS data to assess the quality of care. In the District of Columbia, E-coded statewide HHDS data are used for all of the above activities. Compared with what was reported in the 1997

\* Includes 1997 survey data for West Virginia because this state did not participate in the 2004 survey.

survey, there has been an increase in the percentage of states reporting each of these uses.

**Figure 9. How State Respondents Rated the Usefulness of E Codes**

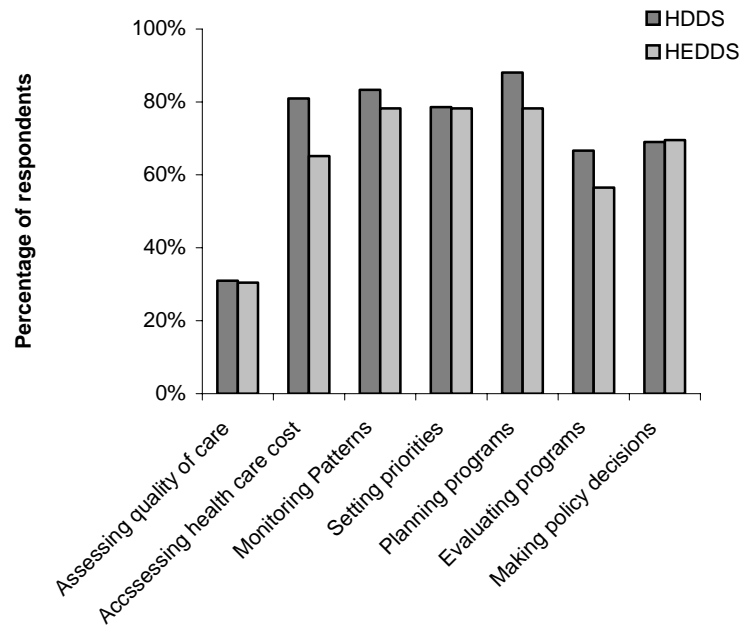


### HEDDS

- In 18 (78.3%) of the 23 states that routinely collect E codes, E-coded ED data are used most often for monitoring trends, setting priorities and program planning (Figure 10, Table 12). 16 states (69.6%) use E-coded ED data for making policy decisions, 15 states (65.2%) for determining injury-related health care costs for evaluating programs, and 13 states (56.5%) for evaluating programs. Seven states (30.4%) use E-coded ED data for assessing quality of care. In the District of Columbia, E-coded statewide HHDS data are used for all of the above activities. Compared with what was reported in the 1997 survey, there has been a decrease in the

percentage of states reporting each of these uses, except for evaluating programs and assessing quality of care, which both increased.

**Figure 10. How States Use E-Coded Data**



## DISCUSSION

The ability to access quality state and local data on nonfatal injuries is vitally important for designing, developing and evaluating the effectiveness of injury prevention efforts. Despite this pressing need, this survey indicates that substantial additional efforts are needed to achieve the availability of E-coded HDDS and HEDDS data in each state. While three more states have acquired HDDS since the 1997 survey, five states are still without one. Progress in the development of HEDDS has been better; the

number of states with HEDDS has doubled since 1997. However, half of states still do not have an HEDDS in 2004.

In addition to gaps in the availability of the data sources themselves, the completeness of E-coding in those data sources is lacking. Only 44% of states for which data were available had more than 90% of injury hospitalization records E coded in their HDDS. For HEDDS, this percentage was only 55%.

One approach to improving the rate of E-coding is to mandate the use of E-coding in these data systems. In this survey, we found that 26 states and the District of Columbia have passed mandates or laws for collecting E codes in their statewide HDDS. This includes three new states that now have mandated E-coding. New Hampshire was the only state that reported its E-coding mandate expired in 2002. However, hospitals in New Hampshire continue to observe the mandate and routinely collect E codes. While a mandate is associated with more complete E-coding in HDDS, the political and logistical barriers to putting mandates in place may not be easily surmountable for many states at this time.

Other approaches also may be helpful. One such approach documented in this survey is simply to evaluate the completeness of E-coding in these systems. Several states reported that the act of evaluating E-coding levels itself helped improve the E-coding rate. Quality assurance methods such as routinely evaluating the completeness and accuracy of E codes and providing feedback to data providers might help improve the quality of E-coded data.

Similar to the 1997 survey, this survey also documented heterogeneity across states in the number and type of fields (i.e., generalized diagnostic field versus a dedicated field only for E codes) available for E codes in these systems. This heterogeneity makes aggregation and comparison of data across states problematic. In addition, when only one dedicated field is available, as is the case in seven states, place-of-occurrence E codes are not likely to be recorded routinely, thus limiting the information available. For prevention efforts, it is important to consider ways to improve our ability to capture the place of occurrence of the injury. The capacity of states to record multiple

external-cause-of-injury codes in their statewide HDDS and HEDDS can be helpful in describing the injury incident more fully.<sup>12</sup> This in turn, can help programs to use cause-specific data effectively to monitor specific injuries used by targeted prevention programs. A recommended national standard of at least three dedicated E-code fields in state-based HDDS and HEDDS could help improve the extent and quality of E-coded data. This is consistent with the new proposed UB-04 form under review by the National Uniform Billing Committee.<sup>6</sup>

Another important gap in these systems is related to their ability to identify the initial hospital visit for a patient who has made multiple visits for the same injury, which is important if these data are to be used to count the incidence and costs of these injuries accurately. Only about two-thirds of states with these data systems are able to determine the initial hospital visit. Standardization in this area also would enhance the ability to aggregate and compare data across states.

As in 1997, this survey documented that these data systems are not housed in the same type of agency in all or even most states. The differing needs, constraints and cultures of these agencies may make achieving standardization more complicated.

The number of publications using E-coded data has increased markedly since 1997. Consensus recommendations for using HDDS data for injury surveillance proposed by an expert workgroup should help improve comparability of injury-related data reported within and across states.<sup>13</sup> The increasing use of these data by agencies and policy-makers suggests that there may be growing interest in injury morbidity statistics based on E-coded HDDS and HEDDS data. Efforts to capitalize on this increasing interest should be undertaken to improve the completeness and accuracy of E-coding.

We recognize some limitations of this survey, especially when one attempts to compare information from two different time periods, from different respondents. Recall bias and system changes over time become issues. Although well-informed respondents completed the survey, there were some inconsistencies in some

states regarding “What year E-coding began?” in both the statewide HDDS and HEDDS systems. One possible explanation is that states confused the year the data were actually made available or, in some cases, when the data became reliable as the initial point of E-coding. There was also similar confusion for the year that E-coding was mandated versus the year the mandate was actually enforced.

Overall, we notice a decline in the number of ambulatory care data systems (i.e., trauma registries, head and spinal cord registries, outpatient facilities) used to collect E codes. We believe the online skip pattern in our Web-based 2004 survey instrument unintentionally forced some respondents to loop out of the questions that listed other types of health-care data systems used to collect E codes. For instance, substantially fewer statewide trauma registries were reported in the 2004 survey than in the 1997 survey. The 1997 survey did not experience this problem because a hard copy questionnaire was used to collect the data. Because of the high potential for underreporting in our 2004 survey, information on other ambulatory care systems (including trauma registries, head and spinal cord registries, and others) are not included in this report. Another report by the U.S. Department of Health and Human Services’ Health Resources and Services Administration provides information about trauma registries in the United States.<sup>14</sup>

In conclusion, there has been only a modest improvement in the availability and quality of statewide E-coded hospitalization and emergency department data from 1997 to 2004. The challenge remains to work towards establishing a statewide HDDS and HEDDS in every state that collects high quality data on nonfatal injuries, just as all states currently have vital statistics systems that provide data on fatal injuries. The availability of these population-based data on both nonfatal and fatal injuries will provide a more complete understanding of the causes and types of injuries affecting our society. In addition, for those states collecting fatal and nonfatal injury data, a coordinated effort is needed to develop standard methods of analyzing and reporting injury-related data (e.g., annual summaries) from statewide data systems and making these data available to hospital administrators, public health professionals and policy-makers to enhance their interpretation and

usefulness. State-based injury prevention programs, which are involved in publishing a majority of the reports on these data, are important targets for these efforts. As we work together to improve the quality and usefulness of these data, partnerships can be formed to determine the best prevention strategies for reducing the burden of injury in our society.

## RECOMMENDATIONS

- The injury control community should work together to approach this issue in a coordinated way. Although all partners have a stake in solving this problem, leadership in injury surveillance from CDC, in collaboration with CSTE and STIPDA, will be critical to improve state-based, E-coded HDDS and HEDDS data further.
  - Efforts are needed to promote the development of HDDS and HEDDS, as well as the routine collection of E codes in those states without them.
  - A “toolbox” of techniques to improve E-coding without mandating it should be compiled and promoted to state injury prevention programs to help states improve E-coding in these data systems.
  - States that do have these data systems should be encouraged to evaluate the completeness and accuracy of E codes in these systems. Incentives for performing these evaluations should be considered. CDC, in collaboration with CSTE and STIPDA, should develop a standard methodology for this kind of evaluation analogous to the framework for evaluating surveillance systems that CDC has promulgated.
  - Efforts to standardize the number and type of fields used in these systems to record E codes should be undertaken. The proposed UB-04 form with three designated spaces for recording E codes, which is being considered by the National Uniform Billing Committee, should be adopted and implemented as soon as possible.
- CDC, in collaboration with CSTE and STIPDA, should explore ways to facilitate the collection of external-cause-of-injury codes through standards and guidelines set by the ICD-9-CM Coordination and Maintenance Committee and the National Uniform Billing Committee and through billing requirements of the Centers for Medicare and Medicaid Services, DHHS.
  - Efforts should be undertaken to ensure that all states with HDDS and HEDDS have the ability to identify the initial hospital visit for a patient who has made multiple visits for the same injury.
  - States should continue efforts to improve the availability and use of E-coded HDDS and HEDDS data by data providers, health information specialists, researchers, practitioners and policy-makers through the use of the Internet and publications. State-based injury prevention programs, which are involved in publishing a majority of the reports on these data, are important targets for these efforts.

## REFERENCES

1. Kochanek KD, Murphy SL, Anderson RN, Scott C. Deaths: Final Data for 2002. National vital statistics reports; vol 53 no 5. Hyattsville, Maryland: National Center for Health Statistics. 2004.
2. Vyrostek SB, Annest JL, Ryan GW. Surveillance for fatal and nonfatal injuries—United States, 2001. In: *Surveillance Summaries*, September 3, 2004. *MMWR* 2004;53(No. SS-7):1-57.
3. Finkelstein EA, Fiebelkorn IC, Corso PS, Binder SC. Medical expenditures attributable to injuries—United States, 2000. *MMWR* 2004;53(01);1-4.
4. Annest JL, Conn JC, McLoughlin E, Fingerhut LA, Pickett D, Gallagher S. How states are collecting and using cause of injury data. Injury Control and Emergency Health Services Section, American Public Health Association, 1997. Available at <http://www.tf.org/tf/injuries/apha.shtml>.
5. U.S. Department of Health and Human Services. International Classification of Diseases. 9<sup>th</sup> Revision, Clinical Modification (ICD-9-CM). Hyattsville, MD: National Center for Health Statistics, 2004. Available at <http://www.cdc.gov/nchs/about/otheract/icd9/abtcd9.htm>.
6. World Health Organization. *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, 9<sup>th</sup> Revision*. Geneva: World Health Organization. Volume 1, 1975.
7. National Uniform Billing Committee. UB-04 Billing Form. Available at <http://www.nubc.org>. January 2005.
8. U.S. Department of Health and Human Services. International Classification of Diseases, 10<sup>th</sup> Revision, Clinical Modification (ICD-10-CM). Hyattsville, MD: National Center for Health Statistics, 2004. Available at <http://www.cdc.gov/nchs/about/otheract/icd9/abtcd10.htm>.
9. World Health Organization. *International Statistical Classification of Diseases and Related Health Problems, 10<sup>th</sup> Revision*. Geneva: World Health Organization. Volume 1, 1992.
10. Snieszek JE, Finklea JF, Graitcer PL. Injury coding and hospital discharge data. *JAMA* 1989;262:2270-2272.
11. Guyer B, Berenholz G, Gallagher SS. Injury surveillance using hospital discharge abstracts coded by external cause of injury (E code). *J Trauma* 1990;30:470-473.
12. U.S. Department of Health and Human Services. *Official ICD-9-CM Guidelines for Coding and Reporting*. Hyattsville, MD: National Center for Health Statistics, October 1997.
13. Injury Surveillance Workgroup. *Consensus Recommendations for Using Hospital Discharge Data for Injury Surveillance*. Marietta (GA): State and Territorial Injury Prevention Directors Association; 2003.
14. U.S. Department of Health and Human Services. *A 2002 National Assessment of State Trauma System Development, EMS Resources and Mass Casualty Events*. Available at <http://www.hrsa.gov/trauma/survey/>.

# **STATEWIDE E CODE SURVEY SUMMARY TABLES**

**Table 1: Statewide Morbidity Data Systems and E-Code Status, by State**

State	Hospital Discharge Data System				Hospital ED Data System			
	System in Place		E Codes Routinely Collected		System in Place		E Codes Routinely Collected	
	1997	2004	1997	2004	1997	2004	1997	2004
Alabama								
Alaska		X <sup>1</sup>						
Arizona	X	X	X	X	X	X	X	X
Arkansas	X	X		X	P <sup>2</sup>			
California	X	X	X	X	P			
Colorado	X	X	X	X				
Connecticut	X	X	X	X	X	X	X	X
Delaware	X	X	X	X		X		X
District of Columbia	X	X	X	X	P	X		X
Florida	X	X	X	X				
Georgia	X	X	X	X		X		X
Hawaii	X	X	X	X		X		X
Idaho								
Illinois	X	X	X	X	P			
Indiana	X	X	X	X		X		X
Iowa	X	X		X	P	X		X
Kansas	X	X		X				
Kentucky	X	X	X	X				
Louisiana	P	X		X				
Maine	X	X	X	X		X		X
Maryland	X	X	X	X	X	X	X	X
Massachusetts	X	X	X	X		X		X
Michigan	X	X	X	X	X	X		X
Minnesota	X	X	X	X	X	X	X	X
Mississippi					P			
Missouri	X	X	X	X	X	X	X	X
Montana					P			

Nebraska	X	X	X	X	X	X	X	X
Nevada	X	X	X	X				
New Hampshire	X	X	X	X	X	X	X	X
New Jersey	X	X	X	X	P			
New Mexico	X	X	X	X		X		
New York	X	X	X	X		X		X
North Carolina	X	X	X	X		X		X
North Dakota	X	X			X	X	X	
Ohio	X	X		X	P	X		X
Oklahoma	X	X	X	X				
Oregon	X	X	X	X				
Pennsylvania	X	X	X	X				
Rhode Island	X	X	X	X				
South Carolina	X	X	X	X	X	X	X	X
South Dakota								
Tennessee	X	X	X	X	X	X	X	X
Texas		X		X				
Utah	X	X	X	X	X	X	X	X
Vermont	X	X	X	X		X		X
Virginia	X	X	X	X	P			
Washington	X	X	X	X				
West Virginia*	X		X					
Wisconsin	X	X	X	X		X		X
Wyoming	X	X						
Territory: Puerto Rico*					X			

<sup>1</sup>X = Yes

<sup>2</sup>P = Planned

\* Last reported in 1997

**Table 2: E-Coding in Statewide Hospital Discharge Data System, by State**

State	Year E-Coding Began		E-Coding Mandated		Year Mandated		Maximum Number E Codes		Place-of-Occurrence E Code Recorded	
	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004
	Alabama									
Alaska										
Arizona	1988	1988	X <sup>1</sup>	X	1989	1989	2	2	U <sup>2</sup>	X
Arkansas		1996		X		1996		1		
California	1990	1991	X	X	1990	1991	5	5	X	X
Colorado	U	1990					14	3	S <sup>3</sup>	X
Connecticut	1993	1993	X	X	1993	1993	9	9	S	X
Delaware	1994	1994	X	X	1992	1992	1	6		X
District of Columbia	1998	1998	P <sup>4</sup>	X	1998	1998	1	10		
Florida	1997	1997	X	X	1997	1997	9	9		X
Georgia	1988	1988	X	X	1996	1996	10	10		
Hawaii	1993	U					10	11	S	X
Idaho										
Illinois	1985	1985					8	8		
Indiana	1992	1992					5	15	X	X
Iowa		1990						10		X
Kansas		1995						1		
Kentucky	1995	1995	X	X	1995	1995	1	9		X
Louisiana		1998		X		1998		U		X
Maine	1980	1998					9	6	U	X
Maryland	1993	1993	X	X	1993	1993	16	16	S	X
Massachusetts	1994	1994	X	X	1994	1994	2	15	U	X
Michigan	1979	1979					7	3	S	X
Minnesota	1990	1997					1	3		X
Mississippi										
Missouri	1993	U	X	X	1993	1993	U	23	S	X
Montana										
Nebraska	1994	1995	X	X	1994	1994	9	3	S	X

Nevada	1988	1988	P		1999		2	15	U	U
New Hampshire	1995	1995	X		1995		1	9		U
New Jersey	1994	1994	X	X	1994	1994	1	1		X
New Mexico	1995	1995					1	1		U
New York	1990	1990	X	X	1990	1990	2	2	X	X
North Carolina	1997	U					1	U		X
North Dakota										
Ohio		U						15		U
Oklahoma	1995	1998	P	X	1999	1998	3	15	S	X
Oregon	U	1997					2	2	U	X
Pennsylvania	1993	1993	X	X	1993	1994	8	U	X	
Rhode Island	1989	1989	X	X	1989	1989	6	11	S	
South Carolina	1994	1996	X	X	1994	1996	10	10	X	X
South Dakota										
Tennessee	1995	1996	X	X	1995	1995	9	1	U	U
Texas		1999		X		1999		1		U
Utah	1995	1995	X	X	1995	1995	9	9		S
Vermont	1982	1989	X	X	1990	1992	2	20	S	U
Virginia	1994	1994	X	X	1993	U	9	10		U
Washington	1989	1989	X	X	1989	1989	1	1		
West Virginia*	1990						10			
Wisconsin	1994	1994	X	X	1994	1993	9	2	U	X
Wyoming										

Territory: Puerto Rico\*

<sup>1</sup>X = Yes

<sup>2</sup>U = Unknown

<sup>3</sup>S = Sometimes

<sup>4</sup>P = Planned

\* Last reported in 1997

**Table 3: E-Coding in Statewide Hospital ED Data System, by State**

State	Year E-Coding Began		E-Coding Mandated		Year Mandated		Maximum Number E Codes		Place-of-Occurrence E Code Recorded	
	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004
	Alabama									
Alaska										
Arizona	1997	2003	X <sup>1</sup>	X	1997	2004	2	2	U <sup>2</sup>	X
Arkansas										
California										
Colorado										
Connecticut	1993	1993	X	X	1993	1993	15	9	S <sup>3</sup>	X
Delaware		2004		X		2004		6		X
District of Columbia		1998						10		
Florida										
Georgia		2001		X		1996		10		
Hawaii		2001						11		X
Idaho										
Illinois										
Indiana		U						15		U
Iowa		U						2		X
Kansas										
Kentucky										
Louisiana										
Maine		1998						6		X
Maryland	1997	1998	X	X	1997	1997	16	9	U	X
Massachusetts		U		X		2002		6		X
Michigan		1999						3		X
Minnesota	1997	1998					1	3		X
Mississippi										
Missouri	1993	1993	X	X	1993	1993	U	23	S	X
Montana										
Nebraska	1994	1995	X	X	1994	1994	9	3	X	X

Nevada											
New Hampshire	1995	1997	X		1995		1	9		U	
New Jersey											
New Mexico											
New York		2003		X		2003		2		X	
North Carolina		2000		X		2005				X	
North Dakota	1995						3			U	
Ohio		2001						15			
Oklahoma											
Oregon											
Pennsylvania											
Rhode Island											
South Carolina	1995	1996	X	X	1995	1996	10	10	X	X	
South Dakota											
Tennessee	1995	1996	X	X	1995	1995	9	1		U	
Texas											
Utah	1996	1996	X	X	1996	1996	9	9		U	S
Vermont		2001		X		2001		20			U
Virginia											
Washington											
West Virginia*											
Wisconsin		2002		X		2002		2			U
Wyoming											
Territory: Puerto Rico*											

<sup>1</sup>X = Yes

<sup>2</sup>U = Unknown

<sup>3</sup>S = Sometimes

\* Last reported in 1997

**Table 4: Evaluation of E Codes in Statewide Hospital Discharge Data System, by State**

State	Evaluation of E Code Conducted		Percentage of Injury Discharges E Coded		Percentage of Injury Discharges E Coded Accurately		E-Coding Process Changed as a Result of Evaluation	
	1997	2004	1997	2004	1997	2004	1997	2004
Alabama								
Alaska								
Arizona	X <sup>1</sup>	X	85	U <sup>2</sup>	U	U	X	X
Arkansas		X		85		80		X
California	O <sup>3</sup>	X	99	100	U	90		U
Colorado	X	X	95	98	U	95	X	
Connecticut								
Delaware		X		U		U		
District of Columbia	P <sup>4</sup>	X		U		U		
Florida	P	X		74		U		X
Georgia	P	X		U		U		
Hawaii	P	P						
Idaho								
Illinois								
Indiana	X		37		U			
Iowa		X		U		U		
Kansas		X		70		U		U
Kentucky	X	X	38	U	U	U		U
Louisiana		P						
Maine	X	X	79	95	U	U	X	
Maryland	X	P	85		U		X	
Massachusetts	X	X	90	95	U	U		
Michigan	X	X	60	85	U	U		
Minnesota	P	X		90		90		X
Mississippi								
Missouri	X	X	98	98	U	85	X	
Montana								
Nebraska	P	X		91		U		U

Nevada	P	X							
New Hampshire	X	X	99	98	U	U	X	U	
New Jersey	X	X	95	U	U	U		U	
New Mexico	X	X	38	51	U	U		X	
New York	O	X	100	100	91	U		U	
North Carolina		X		U		U		U	
North Dakota									
Ohio									
Oklahoma		X		80		90			
Oregon	X	X	40	55	U	U		U	
Pennsylvania	X	X	90	92	U	U			
Rhode Island	X	X	98	93	U	U	X		
South Carolina	X	X	81	99	86	99.5			
South Dakota									
Tennessee									
Texas									
Utah	X	X	73	91	U	U	X	X	
Vermont	X	X	84	97	U	U			
Virginia	X	X	85	U	85	U			
Washington	X	X	98	U	P	U			
West Virginia*									
Wisconsin	X	X	98	100	U	U		U	
Wyoming									
Territory: Puerto Rico*									

<sup>1</sup>X = Yes

<sup>2</sup>U = Unknown

<sup>3</sup>O = Ongoing evaluation process of completeness of E-coding

<sup>4</sup>P = Evaluation planned or currently going on

\* Last reported in 1997

**Table 5: Evaluation of E Codes in Statewide Hospital ED Date System, by State**

State	Evaluation of E Codes Conducted		Percentage of Injuries E Coded		Percentage of Injuries E Coded Accurately		E-Coding Process Changed as a Result of Evaluation	
	1997	2004	1997	2004	1997	2004	1997	2004
Alabama								
Alaska								
Arizona	P <sup>1</sup>	X <sup>2</sup>		U <sup>3</sup>		U		U
Arkansas								
California								
Colorado								
Connecticut								
Delaware		U						
District of Columbia								
Florida								
Georgia		U						
Hawaii		P						
Idaho								
Illinois								
Indiana								
Iowa		X		U		U		U
Kansas								
Kentucky								
Louisiana								
Maine								
Maryland	P	P						
Massachusetts		X		98		U		
Michigan		X		73		U		
Minnesota	P	X		90		90		X
Mississippi								
Missouri	X	X	98	98	U	85	X	
Montana								
Nebraska	P	X		95		U		U

Nevada									
New Hampshire	X	X	95	97	U	U	X	U	
New Jersey									
New Mexico									
New York		X		U		U			
North Carolina									
North Dakota	P								
Ohio									
Oklahoma									
Oregon									
Pennsylvania									
Rhode Island									
South Carolina	P	X		99		99.5			
South Dakota									
Tennessee									
Texas									
Utah	P								
Vermont		P							
Virginia									
Washington									
West Virginia*									
Wisconsin		X		100		U		U	
Wyoming									
Territory: Puerto Rico*									

<sup>1</sup>P = Evaluation planned or currently going on

<sup>2</sup>X = Yes

<sup>3</sup>U = Unknown

\* Last reported in 1997



Missouri	X	X							X
Montana									
Nebraska			X	X					X
Nevada						X	X	X	X
New Hampshire		X	X					X	X
New Jersey	X	X						X	
New Mexico						X	X		X
New York	X	X						X	X
North Carolina	X	X							
North Dakota	X						X	X	X
Ohio			X	X				X	X
Oklahoma		X				X		X	X
Oregon			X	X					
Pennsylvania						X	X	X	X
Rhode Island	X	X						X	
South Carolina						X	X	X	X
South Dakota									
Tennessee	X	X						X	U
Texas		X							U
Utah	X	X							
Vermont	X	X							U
Virginia						X	X	U	X
Washington	X	X							X
West Virginia*	X								
Wisconsin	X			X				X	X
Wyoming			X	X					X
Territory: Puerto Rico*									

<sup>1</sup> X = Yes

<sup>2</sup> In this state, statewide HDDS also maintained by the hospital association

<sup>3</sup> U = Unknown

\* Last reported in 1997



Missouri	X	X						X
Montana								
Nebraska			X	X				X
Nevada								
New Hampshire		X	X			X		X
New Jersey								
New Mexico		X						X
New York		X						X
North Carolina				X				
North Dakota	X				X	X		
Ohio				X				
Oklahoma								
Oregon								
Pennsylvania								
Rhode Island								
South Carolina					X	X	X	X
South Dakota								
Tennessee	X	X					X	U
Texas								
Utah	X	X					U	
Vermont		X						U
Virginia								
Washington								
West Virginia*								
Wisconsin				X				X
Wyoming								
Territory: Puerto Rico*	X							

<sup>1</sup>X = Yes

<sup>2</sup>U = Unknown

\* Last reported in 1997

**Table 8: How Often Reports Are Published and Who Publishes Statewide Hospital Discharge Data System Reports, by State**

State	Organization Publishing Reports							
	Frequency of Reports Published		Injury Control Section		Other State Section		Other Organization	
	1997	2004	1997	2004	1997	2004	1997	2004
Alabama								
Alaska								
Arizona	P <sup>1</sup>	O <sup>2</sup>	X <sup>3</sup>		X	U <sup>4</sup>	X	U
Arkansas		A <sup>5</sup>						X
California	P	O	X	X		X		X
Colorado		O		X				
Connecticut		O				X		
Delaware		A		X		X		
District of Columbia		P				X		
Florida								
Georgia		A				X		X
Hawaii		O		X				
Idaho								
Illinois								
Indiana	P				X			
Iowa		A		X		X		X
Kansas		O		X				X
Kentucky		O						X
Louisiana		A		X		X		
Maine	A				X			
Maryland	P	A	X	X				X
Massachusetts	P	A	X	X		X		
Michigan	P	B <sup>6</sup>	X	X	X	X	X	
Minnesota		A		X				
Mississippi								
Missouri		A		X		X		

Montana									
Nebraska		B							X
Nevada		A					X		X
New Hampshire	P	O	X	X	X	X	X	X	X
New Jersey	P	O				X	X		
New Mexico	A	P			X		U	X	X
New York	P	B	X	X			X		
North Carolina		O			X		X		U
North Dakota									
Ohio									
Oklahoma	P		X					U <sup>4</sup>	
Oregon		A			X				
Pennsylvania	P	A			X			X	
Rhode Island	A	A				X	X		
South Carolina		A							X
South Dakota									
Tennessee		A					X		
Texas		O			X				
Utah		A			X		X		
Vermont	P	O			X	X	X		X
Virginia	A	A	X	X				U	
Washington	A		X						
West Virginia*									
Wisconsin	A	A				X	X	U	
Wyoming									

Territory: Puerto Rico\*

<sup>1</sup>P = Periodically

<sup>2</sup>O = Other

<sup>3</sup>X = Yes

<sup>4</sup>U = Unknown

<sup>5</sup>A = Annually

<sup>6</sup>B = Bi-Annually

\* Last reported in 1997

**Table 9: How E Code is Initially Recorded, Guidelines Used, and Usefulness of UB-92<sup>1</sup> E-Code Field for Statewide Hospital Discharge Data System, by State**

State	E Code Initially Recorded						Guidelines for Mandated E-Coding						Aware of E-Code Field on UB-92		Is E-Code Field on UB-92 Useful?	
	Separate E Code Field		Using Existing Diagnostic Field		Both/ Other		DHHS		State		DHHS and State		1997	2004	1997	2004
	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004
Alabama													X <sup>2</sup>		N <sup>3</sup>	
Alaska													X	X	N	U <sup>4</sup>
Arizona		X				O <sup>5</sup>	X	X					X	X	X	X
Arkansas						B <sup>6</sup>					X		X	X	N	X
California	X	X						X			X		X	X		
Colorado			X	X									X	X		
Connecticut			X	X			X	X					X		U	
Delaware		X	X					X	X				X	X	X	X
District of Columbia			X	X									X	X	U	U
Florida	X			X			X							X		
Georgia			X			O	X	X								
Hawaii					B	B								X		U
Idaho													X		N	
Illinois			X	X									X	X		
Indiana			X	X									X	X		X
Iowa						B							X	X	N	X
Kansas				X									X	X	N	X
Kentucky	X			X			X						X		X	
Louisiana				X				X					X	X	N	X
Maine					B	B							X		U	
Maryland					B	B	X						X		X	
Massachusetts					B	B	X				X		X	X		X
Michigan				X	B								X			
Minnesota	X					B							X	X	X	X
Mississippi													X		N	

Missouri			B		X	X			X			U
Montana									X			N
Nebraska			B	B	X				X	X	X	X
Nevada		X							X			
New Hampshire	X			B	X				X	X	X	
New Jersey	X			O			X	X	X		X	
New Mexico	X			B					X	X	X	X
New York	X				X	X			X	X		X
North Carolina			U	B					X	X	X	X
North Dakota									X	X	N	
Ohio		X										
Oklahoma			B	B		X			X	X	X	X
Oregon	X			B					X	X	X	
Pennsylvania			B	O		X		X	X	X	X	X
Rhode Island		X		B		X	X		X	X		
South Carolina			B	B	X			X	X	X	X	X
South Dakota									X		N	
Tennessee	X		B		X	X			X	X	U	X
Texas	X					X			X	X	N	
Utah			B	B	X	X			X	X	X	
Vermont			O	B	X	X						
Virginia			B	B	X	X			X	X	X	X
Washington	X	X						X	X	X	X	X
West Virginia*			B						X		X	
Wisconsin	X		B		X	X			X	X	X	X
Wyoming									X	X	N	
Territory: Puerto Rico*												

<sup>1</sup> UB-92 = Uniform billing form for hospital charges

<sup>2</sup> X = Yes

<sup>3</sup> N = Not Applicable

<sup>4</sup> U = Unknown

<sup>5</sup> O = Other

<sup>6</sup> B = Both separate diagnostic fields and existing diagnostic fields

\* Last reported in 1997

**Table 10: How E Code is Initially Recorded and Guidelines Used for  
Statewide Hospital ED Data System, by State**

State	E Code Initially Recorded						Guidelines for Mandated E-Coding					
	Separate E-Coding Field		Using Existing Diagnostic Field		Both/ Other		DHHS		State		DHHS and State	
	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004
Alabama												
Alaska												
Arizona					O <sup>1</sup>	B <sup>2</sup>	X <sup>3</sup>	X				
Arkansas												
California												
Colorado												
Connecticut			X	X			X	X				
Delaware		X						X				
District of Columbia												
Florida												
Georgia						O		X				
Hawaii						B						
Idaho												
Illinois												
Indiana				X								
Iowa							B					
Kansas												
Kentucky												
Louisiana												
Maine							B					
Maryland					B <sup>3</sup>	B	X					
Massachusetts							B					X
Michigan				X								
Minnesota	X						B					

Mississippi						
Missouri			B		X	X
Montana						
Nebraska			B	B	X	
Nevada						
New Hampshire	X			B	X	
New Jersey						
New Mexico						
New York						
North Carolina				O		
North Dakota			B			
Ohio		X				
Oklahoma						
Oregon						
Pennsylvania						
Rhode Island						
South Carolina			B	B	X	X
South Dakota						
Tennessee	X		B		X	X
Texas						
Utah			B	B	X	X
Vermont				B		X
Virginia						
Washington						
West Virginia*						
Wisconsin	X					X
Wyoming						
Territory: Puerto Rico*						

<sup>1</sup> O = Other

<sup>2</sup> B = Both separate diagnostic fields and existing diagnostic fields

<sup>3</sup> X = Yes

\* Last reported in 1997

**Table 11: Uses of ICD-9-CM E-Coding and Usefulness of E Codes for Program Planning for Statewide Hospital Discharge Data System, by State**

State	Quality of Care		Injury-Related Health Care Costs		Monitoring Trends		Setting Priorities		Program Planning		Evaluating Programs		Policy Decisions		Other		Usefulness of Having E Codes for Planning <sup>1</sup>		
	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	
	Alabama																		
Alaska																			
Arizona		U <sup>2</sup>	X <sup>3</sup>	U	X		X	U	X	U	U	U	X	U	X		1	5	
Arkansas		X		X		X		X		X		X		X				4	
California			X	X	X	X	X	X	X	X	X	X	X	X	X		1	5	
Colorado	U	X	U	X	X	X	U	X	U	X	U	X	U	X	U		1	1	
Connecticut			X	X				X		X				X			2	1	
Delaware			U			X		X		X		X		X	X	X	U	4	
District of Columbia	X	X	X	X	X	X	X	X	X	X	X	X	X	X	U	U	1	1	
Florida	X		X	X	U	X	U	X	X	X	X	X	U				1	5	
Georgia	X		X	X	X	X	X	X	X	X	X	X	X	X			1	1	
Hawaii		U	X	X	X	X	X	X	X	X	X	X	X	X			1	4	
Idaho																			
Illinois	U		U	X	U		U		U	X	U		U				1	3	
Indiana			X		X	X	X	X	X	X	X	X	X				1	1	
Iowa		X		X		X		X		X		X		X		X		4	
Kansas						X		X		X		X		X				1	
Kentucky			X	X	X	X	X		X						U		1	1	
Louisiana		X		X		X		X		X		X		X		X		1	
Maine			X		X		X		X		X		X		X	X	1	5	
Maryland	U	X	X	X	X	X	X	X	X	X	X	X	X	X			1	1	
Massachusetts			X	X	X	X	X	X	X	X	X	X	X	X	X		1	1	
Michigan				X	X	X		X		X				X			3	2	
Minnesota	U		X	X	X	X	X	X	X	X	U		X	X	U		1	1	
Mississippi																			
Missouri	X		X	X	X	X	X	X	X	X	X	X	X	X	U		1	1	

Montana																		
Nebraska	U		U	X	X	X	X	X	X	U		X	X		X	1	5	
Nevada	X	X	X						X	X	X					5	1	
New Hampshire			X	X	X	X	X	X	X			X	X	X		1	1	
New Jersey	U	X	X	X	X	X	X	X	X	U	X	X		U	X	1	1	
New Mexico				X	X	X	X	X	X	X	X	X	X			1	1	
New York		X	X	X	X	X	X	X	X	X	X	X	X			1	1	
North Carolina		U		X		X		X		X		X				U	1	
North Dakota																		
Ohio				X		X			X								3	
Oklahoma	X		X	X	X	X										1	1	
Oregon			X	X	X	X	X	X	X	X	X	X	X			1	3	
Pennsylvania	U	X	X	X	U	X	X	X	X	U	X	U	X	U	X	2	2	
Rhode Island		X	X	X	X	X	X	X	X		X	X	X			4	1	
South Carolina			X	X	X	X	U	X	X	X	X	X		X		1	5	
South Dakota																		
Tennessee	X		X		X		X		X		X		X			2		
Texas		X		X		X		X		X		X		X			1	
Utah		X	X	X	X	X	X	X	X		X	U	X	X	X	4	2	
Vermont				X	X	X	X	X	X			U		U		1	1	
Virginia	U		X	X	X	X	X	X	X	X	X	X	X			1	1	
Washington			X		X	X	X	X	X	X	X	X	X	X		1	3	
West Virginia*	U		X					X						X		U		
Wisconsin	U	X	X	X	X	X	U	X	U	X	U	X	U	X	U	X	U	1
Wyoming																		

Territory: Puerto Rico\*

<sup>1</sup> Usefulness Codes: 1 = Extremely Useful, 2 = Moderately Useful, 3 = Useful, 4 = Not Very Useful, 5 = Useless

<sup>2</sup> U = Unknown

<sup>3</sup> X = Yes

\* Last reported in 1997

**Table 12: Uses of ICD-9-CM E-Coding and Usefulness of E Codes for Program Planning for Statewide Hospital ED Data System, by State**

State	Quality of Care		Injury-Related Health Care Costs		Monitoring Trends		Setting Priorities		Program Planning		Evaluating Programs		Policy Decisions		Other		Usefulness of Having E Codes for Planning <sup>1</sup>	
	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004	1997	2004
Alabama																		
Alaska																		
Arizona		U <sup>2</sup>	X <sup>3</sup>	U	X	U	X	U	X	U	U	U	X	U	X		1	5
Arkansas																		
California																		
Colorado																		
Connecticut								X		X				X			3	1
Delaware						X		X		X		X		X		X		4
District of Columbia		X		X		X		X		X		X		X		X		3
Florida																		
Georgia				X		X		X		X		X		X				3
Hawaii				X		X		X		X		X		X				5
Idaho																		
Illinois																		
Indiana																		1
Iowa		X		X		X		X		X		X		X				2
Kansas																		
Kentucky																		
Louisiana																		
Maine																		5
Maryland		X	X		X	X	X	X	X	X	X	X	X	X			1	1
Massachusetts				X		X		X		X		X		X				1
Michigan		X				X		X		X								4
Minnesota				X	X	X	X	X	X	X		X	X	X			2	1
Mississippi																		
Missouri	X		X	X	X	X	X	X	X	X	X	X	X	X			1	1

Montana																		
Nebraska			X	X	X	X	X	X	X	U		X	X		X		1	5
Nevada																		
New Hampshire		X	X	X	X	X	X	X	X			X	X	X			1	1
New Jersey																		
New Mexico																		
New York	X		X		X		X		X		X		X					1
North Carolina	X		X		X		X		X		X		X					1
North Dakota		X		X		X		X				X						2
Ohio			X		X				X									
Oklahoma																		
Oregon																		
Pennsylvania																		
Rhode Island																		
South Carolina		X	X	X	X		X		X	X	X	X		X			1	5
South Dakota																		
Tennessee	X		X		X		X		X		X		X					2
Texas																		
Utah	U	X	X	X	X	X	X	X	X	X	X	X	X	X	U	X	5	2
Vermont			X		X		X											1
Virginia																		
Washington State																		
West Virginia*																		
Wisconsin		X		X		X		X		X		X		X		X		1
Wyoming																		
Territory: Puerto Rico*																		

<sup>1</sup> Usefulness Codes: 1 = Extremely Useful, 2 = Moderately Useful, 3 = Useful, 4 = Not Very Useful, 5 = Useless

<sup>2</sup> U = Unknown

<sup>3</sup> X = Yes

\* Last reported in 1997

**Table 13: How Often Reports Are Published and Who Publishes Statewide Hospital Emergency Department Data System Reports, by State**

State	Organization Publishing Reports							
	Frequency of Reports Published		Injury Control Section		Other State Section		Other Organization	
	1997	2004	1997	2004	1997	2004	1997	2004
Alabama								
Alaska								
Arizona								
Arkansas								
California								
Colorado								
Connecticut								
Delaware		O <sup>1</sup>		X <sup>2</sup>		X		
District of Columbia								
Florida								
Georgia		A <sup>3</sup>		X		X		X
Hawaii								
Idaho								
Illinois								
Indiana								
Iowa		B <sup>4</sup>		X		X		X
Kansas								
Kentucky								
Louisiana								
Maine								
Maryland		A		X				
Massachusetts		A		X		X		
Michigan		A		X				
Minnesota		A		X				
Mississippi								
Missouri		A		X		X		

Montana					
Nebraska	B				X
Nevada					
New Hampshire	O	X		X	X
New Jersey					
New Mexico					
New York	O				
North Carolina	O				X
North Dakota					
Ohio					
Oklahoma					
Oregon					
Pennsylvania					
Rhode Island					
South Carolina	A				X
South Dakota					
Tennessee	A			X	
Texas					
Utah					
Vermont					
Virginia					
Washington State					
West Virginia*					
Wisconsin	A			X	
Wyoming					
Territory: Puerto Rico*					

<sup>1</sup>O = Other

<sup>2</sup>X = Yes

<sup>3</sup>A = Annually

<sup>4</sup>B = Bi-Annually

\* Last reported in 1997