CAUSE OF INJURY CODING RULES AND GUIDELINES IN THE UNITED STATES: THE EFFECT ON INJURY DATA INTEGRITY

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For many years, Berenholz Consulting Associates, (BCA), has been working on a standardized grouping of external cause codes. Today, we will discuss briefly the status of the work, and describe some of the problems in comparing causes of injury and poisoning leading to deaths, hospitalizations, and emergency department care in the United States.

Concern about the lack of comparability of E-code-based studies being reported in the literature, as well as the number and variety of suggested E code groupings which have been in general circulation in the United States was the impetus for the work. As part of a Small Business Innovative Research Grant (SBIR) in 1991-1992, BCA identified 42 references which used ranges of E codes to describe various causes of injury. The references included articles in scientific journals, as well as groupings of E codes that were most frequently referenced. The groupings by cause were compared, and the data were quantified by inserting 1988 National Center for Health Statistics (NCHS) mortality data for each code.

As an example, there were 23 references describing drowning and/or submersion. Ten (10) listed the same three E codes (E830, E832, and E910). Seven (7) listed E910 alone. Two (2) included intentional drownings, two (2) focused on assault by submersion. One listed a range of categories combining submersion with suffocation and other environmental factors. One group was entitled sports and recreation-related drowning and only included specific subcategories of E910. There were a different number of deaths associated with each grouping.

Another example showed eleven (11) references discussing injuries due to foreign bodies. Eight (8) references referred only to E914-E915. These codes describe foreign bodies in an orifice without causing asphyxia. Two papers included inhalation of foreign bodies plus other mechanical suffocation. One paper included drowning and submersion in addition to all of the above. The spread in the number of deaths was enormous.

It was very clear that researchers were using E codes to describe causes of injuries and poisonings, but they were not always comparing the same things. At that time, I began to formulate a detailed E code grouping which would be as accurate as possible in terms of the codes and coding rules and which would be accepted and endorsed by major coding organizations as well as by injury researchers. This would be an important collaboration between people who understood the coding requirements and people who understood the needs of injury research.

My approach was based on the dual axes of the ICD-9 E codes. That is, E codes are arranged

according to cause and intent. However, these axes do not apply to all E codes. There are six (6) exceptions. These are:
Adverse effects of drugs in therapeutic use
Medical misadventures
Complications of medicine and surgery
Legal intervention
Operations of war
Place of occurrence

According to the construction of the classification and through strict interpretation by coding groups in the United States, none of these six (6) groups should ever be included with intentional or unintentional injuries. They are and should remain in a class of their own.

In addition to the axes, the distribution of codes in the detailed groupings had to consider ICD coding principles, definitions, rules, and guidelines. When they are consistently applied, they provide the basis for E code assignments for the source document information, as well as the basis for review and analysis of coded data. The groupings needed to take into consideration the differences in the codes, the coding guidelines, and the definitions for mortality and morbidity reporting. Then the distribution of those codes for fatal and non-fatal injuries, poisonings and adverse effects of drugs needed to be examined.

Two of the most basic premises in this type of undertaking are:
a. The definitions used in assigning the codes must be the same definitions used in analyzing the data.
b. You can't judge a code by its title.

There were a number of problems. Primarily these were the definitional differences in using E codes for mortality and for morbidity; and within morbidity, the differences for inpatient and ambulatory coding.

First, we have the differences in diagnoses. In mortality, the underlying cause is of primary importance. This is defined as "the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury." For mortality, an E code can be the underlying cause.

According to nationally approved inpatient coding guidelines, the principal diagnosis is the first listed code, that is, "the condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care". And, according to nationally approved ambulatory coding guidelines, the first listed diagnosis is the reason for encounter, "the diagnosis, condition, problem, complaint, or other reason for the encounter/visit shown to be chiefly responsible for the outpatient services provided during the encounter/visit". For morbidity, an E code can never be a principal diagnosis or a reason for encounter. E codes will always be secondary to a nature of injury code.

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Morbidity E coding guidelines were approved for implementation on October 1, 1995 and are now being factored into the groupings. The intent of coding guidelines is to clarify coding, to eliminate subjective decisions, and in general, to assist coders in arriving at accurate E codes in a consistent manner. Some of the new guidelines are clearer than others.

It was firmly established that multiple E codes could be assigned and that the first listed E code would be most related to the principal diagnosis for patients admitted for treatment of an injury, poisoning or adverse effect of drugs. If multiple causes are mentioned as part of a chain of events, it was decided that the first E code would be for the proximal cause, not the underlying cause. This is in agreement with the principal diagnosis definition in morbidity.

For both mortality coding and inpatient coding, questionable diagnoses are coded as confirmed. For ambulatory coding, they are never coded as confirmed. The guidelines describe similar coding of questionable intent for inpatients and ambulatory care.

E codes for undetermined intent, E980-E989, are never to be used for morbidity coding according to the E coding guidelines. If the intent is unknown or unspecified, it is to be coded as accidental. This is quite different from mortality coding.

E codes are required for mortality coding, but there is still no national requirement for them for morbidity coding. There are currently about 15 states reporting E codes for inpatients through state law or regulation and two (2) states requiring E codes for ED reporting. These states have different reporting requirements so you cannot compare their data easily.

There are different E codes in ICD and ICD-9-CM. There have always been some differences, but now that E codes in the CM version are being reviewed and expanded, the differences will be more noticeable. There was one new E code added to CM on October 1, 1994, but 24 more were added on October 1, 1995, and even greater expansion is expected next October 1. None of these codes will be added to ICD-9. The new codes will conform as closely as possible with ICD-10.

We are expecting that mortality coding in the U.S. will switch to ICD-10 in 1998 with backcoding of deaths to 1996. We do not expect a change to ICD-10 for morbidity coding before the year 2000, so this will cause further problems.

The draft document of groupings was circulated in July 1995. It consisted of a discussion of the methodology used in grouping the E codes--first in a detailed listing and then into two minimum reporting frameworks, one for morbidity and one for mortality.

The data used to examine the distribution of E codes were the 1992 underlying causes of death in the United States from the NCHS mortality data tapes, the 1992 National Hospital Ambulatory Medical Care Survey (NHAMCS) also from the NCHS and hospital discharge data from California, Washington, and New York. These are three of the 15 states requiring E code reporting, and they are the states which have had this requirement for the longest time. Three

states were used, since the individual states requiring reporting of E codes do not have the same requirements, and it was important to try to neutralize any state-specific variations.

The percent distribution of E codes according to the detailed groupings was calculated for each data source to give an idea of the magnitude of each of the groupings. It was also used in constructing the minimum reporting framework.

The detailed groupings have been organized according to:
All injuries of a type
Unintentional
Intentional and undetermined
    Self-inflicted
    Assault
    Undetermined
Legal intervention
War operations

The purpose of this very detailed grouping was to be able to consider all possible types of injuries that people may want to study and to suggest the codes they should review. The codes in these groups are not mutually exclusive. They are for selective studies. For example, if someone wanted to review all intentional injuries they could select the codes for Assault and Suicide. However, if someone wanted to look at all poisonings, these codes would include intentional and unintentional poisoning codes.

The minimum reporting framework is a shorter form to examine and compare data. It is also organized by cause, with a delineation based on intent, legal intervention, and war operations. The codes in the framework ARE mutually exclusive. The framework needs to be flexible because in certain years, and even in certain countries, it may be necessary to present additional data. This would permit examination of injuries due to cataclysmic events or to operations of war, for example.

The data clearly point out the differences in causes of injuries treated in the ED, in the inpatient setting, or as causes of death. Certain causes seen in great numbers in the ED cause death so rarely, as to be unnecessary in a minimum reporting framework for mortality. Some of these same causes rarely are related to hospital admission. Although the circulated draft included a single minimum framework for morbidity, there is a group are now working on splitting morbidity into separate minimum frameworks for the ED and for inpatients.

The groupings are not to be used for assigning codes. They are for analyzing codes assigned in accordance with coding rules, definitions, and guidelines.

E coded data in the U.S. have certain limitations and cautions. First of all, E codes do not answer all questions about causes of injury, poisoning, and adverse effects of drugs. For example, we are

unable to identify accurately sports-related injuries or agricultural injuries. Second, the quality and quantity of the data depends on the documentation in the patient record, the knowledge and experience of the coder, and the jurisdictional requirements for E code reporting. Another limiting factor is the coding knowledge and experience of the data analysts. Many researchers only examine the first listed E code. They are often unaware of coding defaults, definitions, rules, or guidelines which would determine E code assignment and sequencing.

An important result of the work has been the slightly different organization and display of the data for morbidity and mortality. The groups of codes are the same in the minimum reporting frameworks, although the number of groupings is not the same.

As it has been pointed out throughout this discussion, the definitions and procedures for coding morbidity and mortality causes are different. What looks equal in a chart is really not the same in all instances. Comparison of the data will require numerous caveats.

Based on our efforts to date, we have immediate work to complete and on-going issues to consider in order to improve the quality of cause of injury data in the U.S.

IMMEDIATE CONSIDERATIONS
1. Complete a minimum reporting framework for ambulatory data
2. Add the new E codes to the appropriate groupings in the detailed list and the minimum reporting frameworks
3. Review the draft report and the groupings to see the impact of the E coding guidelines on the text or on the codes.
4. Incorporate comments from questionnaire respondents
5. Circulate the groupings to the agencies involved with coding and use of coded data and ask for support and agreement.

FUTURE ISSUES
1. Look for clarification of E coding guidelines.
2. Propose E codes that will meet the needs of some of the respondents to this project.
3. Consider whether ICD-10/ICD-10-CM will be better than ICD-9/ICD-9-CM?

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