ICD-10-CM  
International Classification of Diseases, 10th Revision,  
Clinical Modification

From Healthcare Coding and Classification by Vergil Slee, MD (Tringa Press, forthcoming).

The United States National Center for Health Statistics (NCHS), the Federal agency responsible for the use in the United States of the International Statistical Classification of Diseases and Related Health Problems (ICD-10), published by the World Health Organization (WHO) in 1992, has determined that ICD-10 is not sufficiently detailed for use in the National health care information system. Consequently, NCHS has commissioned the development of a clinical modification “for morbidity purposes,” to replace for Volumes 1 and 2 of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM), which has been in use since 1978.

A draft of the Tabular List of ICD-10-CM was placed on the Internet on 19 November 1997, with an invitation for comments which would contribute to “a more clinically robust classification.” The Alphabetic Index was to be completed after response to the request for reactions to the Tabular List. A “crosswalk” between ICD-9-CM and ICD-10-CM has been written. The Alphabetic Index will be available with the final version. The number of volumes to be required for the final product has not been announced.  

A comparison between ICD-9 and ICD-10, the “parents” of the clinical modifications, has been described in some detail elsewhere. To review some of the features:

The format of having the Tabular List in one volume and the Alphabetic Index in another is the same, but the Instruction Manual has been placed in a separate volume, Volume 2, in ICD-10. In ICD-9 it preceded the Tabular List in Volume 1. So ICD-10 is a 3-volume set rather than two. Total pages are:

<table>
<thead>
<tr>
<th>Volume</th>
<th>Page Counts of ICD-9-CM</th>
<th>ICD-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Tabular List</td>
<td>773</td>
<td>1,231</td>
</tr>
<tr>
<td>2: Instruction Manual</td>
<td>included in Volume 1</td>
<td>160</td>
</tr>
<tr>
<td>3: Alphabetic Index (Volume 2 in)</td>
<td>659</td>
<td>750</td>
</tr>
<tr>
<td>Totals</td>
<td>1,432</td>
<td>2,141</td>
</tr>
</tbody>
</table>

Much of the classification has been reorganized.

1 Volume 1 is the Tabular List of ICD-9-CM and Volume 2 is the Alphabetic Index. Volume 3 of ICD-9-CM, Procedures, will be replaced by ICD-10-PCS (Procedure Classification System), being developed by the Health Care Financing Administration (HCFA).

Most of the detail which was added to ICD-9 to form ICD-9-CM was incorporated in ICD-10.

Many categories have been added for “problems” which are not diagnoses or symptoms. Examples are:

- Occupational exposure to risk-factors
- General examination and investigation of persons without complaint or reported diagnosis
- Examination and encounter for administrative purposes
- Immunization not carried out

ICD-10 uses alphanumeric codes, with an alphabetic character in the first position. It includes the letters “I” and “O,” which are usually avoided in alphanumeric coding because of the likelihood of confusion with the numerals “1” and “0.” Somewhat surprising is the fact that chapters in ICD-10 do not necessarily start with new alphabetic characters: For example

- Chapter I, Certain infectious and parasitic diseases (A00 - B99)
- Chapter II, Neoplasms (C00 - D48)
- Chapter III, Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50 - D89)
- Chapter IV, Endocrine, nutritional and metabolic diseases (E00 - E90)
- Chapter IX, Diseases of the circulatory system (I00 - I99)
- Chapter XV, Pregnancy, childbirth and the puerperium (O00 - O99)

ICD-10 retains the “dagger and asterisk” dual coding system which was found in earlier generations of the classification. Dual coding applies to some, but not all, of the diagnostic statements, being used when the statement contains “…information about both an underlying generalized disease and a manifestation in a particular organ or site which is a clinical problem in its own right.” Where it is used, the dagger (†) marks the underlying disease, and the asterisk (*) marks an optional additional code for the manifestation. Discussion of this usage is found in Volume 2 of ICD-10 along with all the instructions for use of the classification. An example:

A dagger code is “A30.0† Meningococcal meningitis [use also code] (G01*).”

The asterisk code, “G01*,” is “Meningitis in bacterial diseases classified elsewhere.”

Dual coding, the “dagger and asterisk” feature of ICD-9, was not acceptable in North American clinical usage. Objections were that the user could not be depended on to use both codes consistently, as directed in the instructions. Both would always have to be searched, and there
would be no assurance as to whether cases were being counted once or twice. Elimination of the dual coding was one argument which led to the clinical modification of ICD-9 in the United States, so that this confusion simply could not occur. ICD-10-CM appears also to have eliminated dual coding.

These changes resulted in an increase in categories in the basic volume, ICD-10, from roughly 7,000 in ICD-9 to 13,000.

Some comparisons of the old and new clinical modifications, ICD-9-CM and ICD-10-CM may be of interest.

In October 1997, the official ICD-9-CM contained 12,562 diagnosis codes (categories). Effective October 1998, the number will rise to 12,628 diagnosis codes.

The draft version of ICD-10-CM as posted on the Internet, however, contained approximately 60,000 codes. Although most of the additions are at the 5th and 6th digit levels, there are also changes among the 3rd and 4th digits categories.

The enormous increase in numbers of categories (codes) appears to be primarily the result of an increase in the use of “combination coding.” One type of combination coding is to subdivide a disease or injury category by adding digits, in this case usually 4th and 5th digits, which describe the site of its manifestation.

Combination coding for site was used moderately in ICD-9-CM. For example, for several categories of “malignant neoplasms of lymphatic and hemopoietic tissue” ICD-9-CM offered 9 last-digit subdivisions in order to show the sites of the disease. These subdivisions were picked up by ICD-10-CM, and their use can be illustrated with category C81.1, “nodular sclerosis,” a subdivision of the Hodgkin’s disease category:

...  
C81.11 = nodular sclerosis of head, face, and neck  
...  
C81.18 = nodular sclerosis of multiple sites  
...

These same site codes are used with the other forms of Hodgkin’s disease: “C81.0, Lymphocytic predominance...,” “C81.3, Lymphocytic depletion...,” and so on in ICD-10-CM.

In the Hodgkin’s disease example, there was consistency in the use of the subdivisions, e.g., x.x8 was “unspecified.” Later, such consistency was abandoned, e.g., “unspecified” has different decimal locations here:

S55.11 Laceration of radial artery at forearm level  
S55.111 Laceration...right arm  
S55.112 ...left arm  
S55.119 ...unspecified arm
S93.2 Rupture of ligaments at ankle and foot level
  S93.20 Rupture...unspecified side
  S93.21 ...right...
  S93.22 ...left...

The second kind of combination coding puts several conditions, and perhaps sites, into the same category. In its explanatory preface to the draft which was placed on the Internet in November 1997, NCHS states in part

“Notable improvements in the content and format [of ICD-10-CM] include...the creation of combination diagnosis/symptom codes to reduce the number of codes needed to fully describe a condition.”

This usage and the great number of possible anatomical sites for injury are responsible for the fact that by far the greatest expansion of ICD-10-CM over ICD-9-CM occurs in the trauma categories. The complexity of the information in individual categories which results is illustrated by

“S02.974  Open fracture of skull and facial bones, part unspecified with subarachnoid, subdural, and extradural hemorrhage with prolonged [greater than 24 hours] loss of consciousness, without return to pre-existing conscious level, or when an unconscious patient dies before regaining consciousness, regardless of the duration.”

This code contains 2 fracture sites, 3 kinds of hemorrhage, a time duration (not a diagnosis), a statement about consciousness, and an ambiguous outcome. Each of these items of “diagnostic” information (entities) must be retrieved from the medical record and assembled in order to code (classify) the case.

If this approach, i.e., concatenation of entities into single categories to describe the entire case, were to be rigorously applied throughout the classification, the classification would be expanded by several orders of magnitude.

Furthermore, consider the problem of retrieval of information. Anyone wishing to find all cases with, for example, open fracture of the facial bones, would have to add this code (S02.974), and all other category codes in which the diagnosis of open fracture of the facial bones had been included, into the search criteria along with the code for the facial bone fracture alone, a category which surely exists. The same would be true, of course, for open fracture of the skull, the 3 kinds of hemorrhages, or coma. Designing searches in systems with combination categories is a nightmare.

It is this problem which has been handled in database management by the relational approach which avoids having to repeat the same information, for example, site, for each combination in which site is a necessary component.

It is clear that the modus operandi for coding employed in past versions of the classification, i.e., consulting the alphabetic index and then the tabular list, is expected to continue with ICD-10-
CM. It is intriguing to speculate on the format and conventions which will have to be employed in creating the alphabetic index. Clearly, there is little likelihood of users memorizing many codes.

Data management, i.e., coding and classifying, of this complexity demands computerization rather than education and monitoring of several hundred thousand “coders.”

End

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