Medical classification systems in Canada: moving toward the year 2000

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Abstract

THE USE OF DIFFERENT STANDARDS FOR CODING DIAGNOSES and procedures has been identified as a major obstacle to the collection and analysis of data across the various jurisdictions in Canada. In this article the authors briefly describe the current and future situation of medical classification systems in Canada and discuss some of the potential benefits and implications of adopting the 10th revision of the *International Statistical Classification of Diseases and Related Health Problems* and a revised procedure classification, the Canadian Classification of Health Interventions, as national standards for classification systems in Canada. They further describe some of the key features of the proposed new classification systems and highlight some of the actions being taken by the Canadian Institute for Health Information to support implementation of these standards in Canada over the next few years.

Résumé

L'UN DES PRINCIPAUX OBSTACLES à la collecte et à l'analyse de données entre les diverses régions du Canada est l'utilisation de normes différentes pour coder les diagnostics et les procédures. Dans cet article, les auteurs décrivent brièvement la situation actuelle et future des systèmes de classification médicale au Canada et abordent une partie des avantages et des répercussions qui découleront de l'adoption de la 10^{e} révision de la *Classification statistique internationale des maladies et des problèmes de santé connexes* et d'une classification révisée des procédures, la Classification canadienne des interventions en santé, à titre de normes nationales pour les systèmes de classification au Canada. Les auteurs décrivent aussi certaines caractéristiques clés des nouveaux systèmes de classification proposés et font ressortir certaines mesures que prend actuellement l'Institut canadien d'information sur la santé afin de faciliter la mise en oeuvre de ces normes au Canada dans les années à venir.

Since 1979 a variety of medical classification standards have been used to collect national and provincial statistics on death, illness, surgical procedures and treatments. Currently 2 standards are in use at the national level for diagnosis classification: the ninth revision of the *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death* (ICD-9)[1] and the ICD-9 *Clinical Modification* (ICD-9-CM).[2] There are also 2 standards for procedure classification: the *Canadian Classification of Diagnostic, Therapeutic, and Surgical Procedures* (CCP)[3] and the procedure section of the ICD-9-CM. In addition, in the case of physician claims, provincial schedules of benefits are also used.

This mixture of standards (i.e., ICD-9/CCP combination and ICD-9-CM) across jurisdictions has resulted in major obstacles to compiling national databases and conducting interprovincial comparisons. Given this situation, the adoption of new, single, national standards for diagnosis and procedure classification has been under consideration for several years in Canada.

In 1994 the Canadian Institute for Health Information (CIHI) carried out a study to assess the implications of implementing the 10th revision of the *International Statistical Classification of Diseases and Related Health Problems* (ICD-10)[4] and a revised or new CCP as the national standards for diagnosis and procedure classification. The study findings included recommendations to adopt ICD-10 and a

Education

Éducation

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revised CCP (the Canadian Classification of Health Interventions [CCI]) as the new national standards.[5] These recommendations were recently endorsed by the Conference of Deputy Ministers of Health and the Chief Statistician of Canada, with phased-in implementation to start in April 1999.

In this article we describe some of the features and benefits of ICD-10 and the proposed CCI.

Benefits of ICD-10

More comprehensive scope

ICD-10, which is developed, maintained and published by the World Health Organization (WHO), has been available for implementation since 1993. It represents the broadest scope of any previous ICD revision to date. ICD-10 is more comprehensive than current standards and extends well beyond the traditional causes of death and hospital admission. The expansion of content and specificity to conditions and situations that are not diseases are particularly relevant for use of the classification system outside the hospital setting. Table 1 gives examples of some of the subcategories provided in ICD-10 for the capture of risk factors to health, such as lifestyle, life management, psychosocial circumstances, and the occupational or physical environment.

Such an expanded scope may attract new users to ICD-10 and may increase the number of databases in which the codes appear. This is important given the evolution of integrated health information systems.

Improved specificity and currency

The results of a mapping from ICD-9-CM to ICD-10 carried out in Australia showed that, of a total of 13 600 ICD-10 codes, 50.8% were more specific than the ICD-9-CM codes, 31.5% were as specific, and only 11.5% either were less specific or could not be compared.[6] Although the study did not address ICD-9, the gains in specificity from ICD-9 to ICD-10 should be even more significant because ICD-9 is less specific than ICD-9-CM (ICD-9-CM, a US modification of ICD-9, contains additional detail and specificity not found in ICD-9). This increased specificity contributes to more relevant data for epidemiologic, research and decision-support purposes. Gains in the level of specificity also increase the sensitivity of the classification when making refinements in applications, such as grouping methods.

Because the current standards were developed for implementation in the late 1970s, their terminology and content continue to become less and less current. ICD-10 introduces both new terminology and new clinical concepts, giving it a higher level of clinical credibility and acceptance.

Table 1: Examples of subcategories provided in the 10th revision of the *International Statistical Classification of Diseases and Related Health Problems*[4] for capture of risk factors to health

Code	Title
Z56.3	Stressful work schedule
Z57.2	Occupational exposure to dust
Z57.7	Occupational exposure to vibration
Z58.1	Exposure to air pollution
Z58.2	Exposure to water pollution
Z59.1	Inadequate housing
Z63.0	Problems in relationship with spouse or partner
Z72.0	Tobacco use
Z72.3	Lack of physical exercise
Z72.4	Inappropriate diet and eating habits
Z73.0	Burn-out
Z73.2	Lack of relaxation and leisure

Ongoing maintenance and updating

Adaptability, maintenance and updating are critical if a classification system is to be dynamic enough to be used in our rapidly changing world. Unlike previous revisions, ICD-10 allows for enhancements to accommodate newly discovered diseases, such as AIDS. WHO has established an ongoing maintenance and updating process that ensures input from member states, such as Canada, as well as from interested professional bodies. In addition, there are plans to share updates internationally by means of the latest technology. This enhances the long-term viability of the classification system.

International compatibility

As a member state of WHO, Canada is governed by its nomenclature regulations, which make ICD-10 the international standard for reporting of illness and death. Implementation of ICD-10 began in a few countries in 1994. It is expected that at least 38 countries will have adopted this standard by 1998, with several other countries planning to adopt it between 1999 and 2001. Canada's implementation of ICD-10 will thus ensure internationally comparable data.

More effective structure, presentation and guidelines

Structural changes introduced in ICD-10 should contribute to its effectiveness. Significant enhancements to the system's structure and presentation include an enlarged coding frame (i.e., more than double the number

of available codes through the use of alphanumeric characters), hierarchic and logical presentation of codes, increased use of combination codes and improved format of the classification.

ICD-10 includes an additional volume of interpretation guidelines for both illness and death. This should make the application of the codes easier and enhance training.

Canadian Classification of Health Interventions

Need for a Canadian classification

Although there continues to be some interest in the development of an international classification of procedures to accompany ICD-10, particularly from smaller countries, WHO has not undertaken this task. Review of international initiatives and literature indicates that the application of procedure classifications varies widely from country to country.[7] The availability and rapid evolution of technology is also somewhat country specific. This factor generates a need for ongoing updating of the classification standards to ensure continued relevance and usefulness. Therefore, many countries are developing one or more procedure classifications for use in various settings. This highlights the importance of developing a new procedure classification relevant to Canadian needs and controlled by Canadians for the necessary updating to reflect medical and technologic advances. This task has been undertaken by the CIHI as part of its mandate relating to the maintenance and development of national health information standards.

Improved scope and content

When the CCP was originally developed, in the 1970s, it was designed primarily for use in the acute, inpatient setting. Its scope was heavily weighted toward surgical procedures. Diagnostic and therapeutic procedures, especially those done by nonphysicians, were not as well covered.

The new CCI provides for a comprehensive range of interventions. It reflects the broad spectrum of providers and the variety of its potential applications across the continuum of health care services.

The structure of the current CCP and that of the procedure section of the ICD-9-CM are relatively inflexible and prohibit comprehensive updating to accommodate new procedures and techniques. Over the past few years there has been a significant move to perform many operative procedures in a minimally invasive way, through the use of endoscopic approaches and lasers, for example. Such technologic advances mean more procedures can now be carried out as day-surgery procedures rather than as inpatient procedures, with an associated shift in resource use. The lack of space within the existing coding structure hampers the systematic capture of this detail. The new CCI will provide for the identification of this type of information. It will also include significant enhancements and additions in the area of diagnostic and therapeutic services.

Structure and presentation

In 1993 Statistics Canada and the Hospital Medical Records Institute (one of the founding organizations of the CIHI) investigated options for the best way to approach the overall coding structure of the new classification.[8] An approach involving the use of a prefix to define broad types of procedures or interventions (e.g., diagnostic, therapeutic) was finally adopted. This prefix would become an integral part of each intervention code.

This approach has the advantage of allowing sections or modules of the classification to be developed and published independently of each other while still maintaining conformity with the overall coding structure. The proposed prefixes (sections) of the new classification are shown in Table 2.

In the new coding structure the prefix is followed by 3 additional fields that allow for the identification of the specific intervention with a greater level of detail and specificity than currently exists. The overall code length may vary from 7 to 10 alphanumeric characters depending on the level of detail required. For surgical interventions, for example, the 3 fields will identify respectively the anatomic site, the specific surgical procedure being performed (e.g., excision) and procedure-specific qualifiers for elements such as approach, technology or device (e.g., laser). Thus, the code for total excision of the

Table 2: Proposed prefixes and corresponding sections of the Canadian Classification of Health Interventions

Prefix	Section
1	Physical and physiologic therapeutic interventions (including surgical and nonsurgical therapies)
2	Other diagnostic interventions/procedures not classified elsewhere
3	Diagnostic imaging interventions/procedures
4	Diagnostic laboratory interventions/procedures
5	Obstetric and fetal interventions
6	Cognitive, psychosocial, vocational and communication therapeutic interventions
7	Personal care, activities of daily living, service planning and coordination, clinical and administrative support activities
8	Manufacturing/compounding
9	Other interventions not classified elsewhere

parathyroid gland(s) via an open substernal approach would be 1.FV.89.PZ (1 = surgical intervention, FV = parathyroid gland[s], 89 = total excision and PZ = open substernal approach).

Because of the additional level of detail that is provided in CCI (more than 15 000 codes, as compared with 4000 in CCP), electronic search capabilities will be provided to facilitate its use. The "built-in" hierarchic structure will also allow data aggregation and analysis to an extent that is not easily done with current classifications.

Development and validation

Development of the draft classification, which started in early 1996, has recently been completed. The CCI project team is currently revising the various sections in response to comments received during the external review process. This review process involved various users or interested parties, including clinicians, health records personnel, governments and researchers.

As well, a national advisory group was established to provide overall guidance to the CCI project team, and a number of forums and meetings with various health care professional groups were held. These forums provided input into the development of CCI, ensuring that the classification will meet the information needs of users, including utilization management, quality reviews and research.

Distribution of the final classification is scheduled for April 1998.

Implementation of the new standards

Implementing the new standards will require considerable support. Several key activities will be required to ensure smooth and effective implementation. These include training and education, development or acquisition of the new standards, and client support during and after implementation. In addition, the use of natural language systems for data capture merits further study.

Training and education

Training and education will be required to support implementation efforts at the facility, regional, provincial and national levels. Numerous specific target audiences have already been identified, including coders and abstracters, health care professionals, software vendors, health record educators and governments.

Given that these standards will likely be used beyond the traditional acute care institutional setting, users in other health care sectors will need to be educated. An especially challenging audience, primarily because of numbers and locations, will be physicians in private practice. The CIHI is developing a detailed plan to identify and meet these training and education needs.

Client support

As with the introduction of any new standard, a process for managing issues and questions raised from the field will be required. This process will include the provision of "help lines" to deal with coding queries, the development and dissemination of communication bulletins via various media (e.g., the Internet) and the provision of other advice and assistance.

Use of natural language systems

Encoded diagnostic and procedural data submitted to the CIHI and to provincial ministries of health are generally derived from patient medical records. Increasingly, these records are being captured electronically for use in direct patient care through systems based on controlled clinical vocabularies. Natural language, or "terming," systems allow detailed electronic clinical records to be created through direct entry by health care practitioners at the point of service. Further studies will be needed to determine the utility of such systems in facilitating data capture and coding with ICD-10 and CCI.

Other implementation considerations

In addition to the issues already described, several other implications need to be considered, including the effect of the new standards on information technology, hospitals, physicians, researchers and the CIHI itself.

The introduction of ICD-10 and CCI (and their associated coding structure and specificity) will have an effect on federal and provincial or territorial health information systems as well as those at the facility and physician office level. Vendors providing abstracting, encoding and grouping-related software will need to have access to complete new sets of specifications, algorithms and reference tables to facilitate the effective transition to the new standards. Reporting or data submission standards from physician offices may be affected.

Hospitals will also likely experience some disruption during the transition to the new standards, including temporary loss of productivity (during the learning curve), effect on trend analysis and increased need for implementation support, such as training and information technology. The ability of the new classification systems to capture increased specificity and detail will be fully realized only if practitioners provide sufficiently detailed documentation.

In the move to ICD-10 and CCI, conversion programs will need to be developed and maintained to allow data

coded in one classification to be converted to another (e.g., from ICD-9 to ICD-10, or vice versa). These conversions will be required to ensure longitudinal comparability of data. The new classifications will also provide an opportunity to substantially enhance existing grouping methods (e.g., Case Mix Groups and Day-Procedure Groups), which are used in determining funding in some provinces.

The introduction of ICD-10 and CCI will present both opportunities and challenges in using the data for epidemiologic and research purposes. Improved diagnostic specificity and more detailed information on the types of intervention provided will need to be balanced against the potential effect on longitudinal research that crosses classifications (e.g., studies that started using ICD-9/CCP data and continue with ICD-10/CCI data).

Conclusion

The current mixture of outdated medical classification standards used in Canada presents challenges in an era when there is increasing use of information based on coded data for health care policy. Updated standards such as ICD-10 and CCI are available or are being developed. Although the implementation of these new standards will present challenges, the gains could prove to be substantial, in terms of better information about the types of clients receiving health services and the actual services provided to them. More information about implementation timetables will be forthcoming from the CIHI and the provincial or territorial ministries of health.

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