Optional Hierarchy as a Means of Increasing the Flexibility of a Morbidity Classification System

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Established systems of problem or morbidity classification do not always meet special needs for higher levels of specificity in coding. Optional hierarchy is a mechanism that may be employed to achieve the desired specificity for local use while permitting recombination into parent rubrics for external comparisons.

Optional hierarchy may be employed to develop subdivision rubrics when justified by the high incidence of specific problems, whether due to geographic or social circumstances or because of the special nature of individual practice(s). It may also be used to meet the sometimes esoteric needs of the researcher, the unique needs of the teacher, or the preferential needs of other individual recorders.

While the development of subdivision rubrics is simple, care is required to avoid pitfalls in reversion to the parent rubric. Failure to ensure the accuracy of this reversion can destroy a fundamental purpose of morbidity classification—the intercenter comparison of data.

Although this paper discusses the application of optional hierarchy to the International Classification of Health Problems in Primary Care (ICHPPC), it is equally useful in other systems of classification.

Unique difficulties are encountered in attempting to classify or code morbidity encountered in primary medical care. The forerunner of the present International Classification of diseases (ICD) was introduced by the International Statistical Association in 1898 as the International Classification of Causes of Death and has been periodically revised since then.[1] The key to ICD use, particularly for international comparisons of morbidity, is diagnostic accuracy. An adequate degree of accuracy in diagnosis is, in many instances, only possible in hospital practice and often only after autopsy. Many of the problems encountered in primary medical practice are unclassifiable using the ICD.[2]

The need for a suitable system of problem classification was quickly recognized when national primary-care (general practice or family medicine) institutions were established in many countries during the 1950s and 1960s.[2] The evolution from multiple regional and national systems, through recognition of the need for an international standard, to the testing and publication of the Interna-

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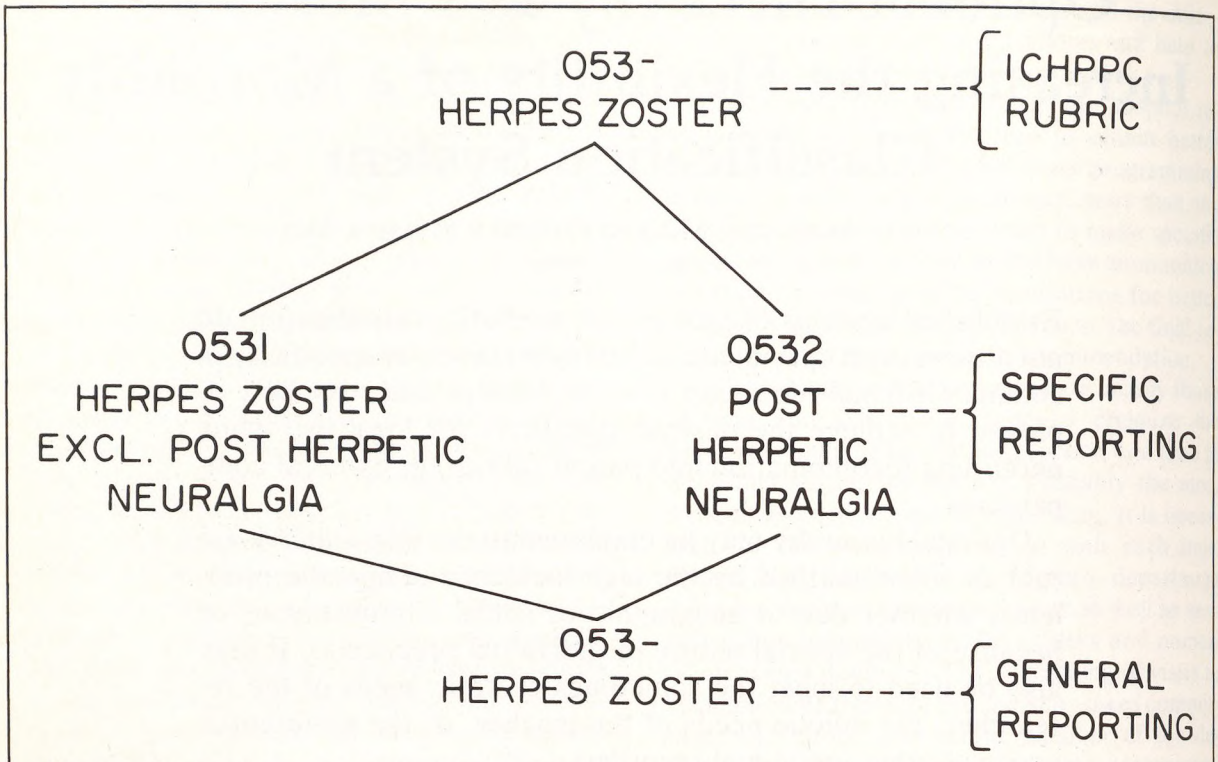

Figure 1. Schematic representation of the application of optional hierarchy to ICHPPC to provide a specific subdivision rubric for "post-herpetic neuralgia."

tional Classification of Health Problems in Primary Care (ICHPPC),[3] has been reviewed thoroughly.[3-5] This evolution came about only after the establishment of the World Organization of National Colleges, Academies, and Academic Associations of General Practitioners/Family Physicians (WONCA) in which the interests of the several national bodies of primary care were represented.

Optional Hierarchy

The principle intent of ICHPPC was to provide a vehicle for the international comparison of morbidity data. Another major objective was that the system should be flexible enough to permit local adjustment to accommodate problems which were of local but not international importance. To meet this objective, the principle of optional hierarchy was established: "A local rubric or subdivision code can be assigned to allow greater specificity of classification provided provision is made for its replacement in the parent ICHPPC thus allowing comparison of data for other purposes."[3]

The Department of Family Medicine at Queen's University, Kingston, participated in the original ICHPPC trial, providing data on 47,861 problem contacts made by 13,939 patients with 15 physicians.[6] One of the major recommendations of this group to the ICHPPC developers was that the use of optional hierarchy be emphasized and promoted in association with ICHPPC use.[7]

The concept of optional hierarchy is simple.[8] While it is also simple to use, care is required in the handling of the numerical data so that rever-

sion to the parent ICHPPC rubrics will be accurate.

The simplicity of the process is illustrated in Figure 1. Rubric 053- is assigned to "Herpes Zoster" but no separate rubric is assigned to associated conditions or complications, for example, "post-herpetic neuralgia." It may be that national or local authorities or individuals wish data on the incidence of post-herpetic neuralgia. The requirements of both ICHPPC and local interests can be met if the rubric 053- is divided: 0531, "herpes zoster, excluding post-herpetic neuralgia" and 0532, "post-herpetic neuralgia." Post-herpetic neuralgia data can thus be isolated but the needs of intercenter or international comparison retained by recombination of 0531 and 0532 (Figure 1).

Optional Hierarchy in Use

As a result of experience with the trial version, optional hierarchy was employed to expand 11 rubrics to 36 when the department's intramural data system was changed over to the published version of ICHPPC. During the first 12 months of operation, 6.7 percent (1,943) of all problem contacts were reported under these more specific rubrics. Two examples of the practical applications of optional hierarchy are provided below.

Example 1

For academic reasons it was desirable to separate diagnostic data for postmenopausal bleeding and intermenstrual bleeding within the department. These are both included in rubric 6269 along with "other disorders of menstruation." Thus, three new rubrics were developed (Table 1), all identifiably related to the original. Over the study period, 56 patients made 65 problem contacts labeled as "intermenstrual bleeding," ten patients made 14 contacts for initially undefined postmenopausal bleeding, and four made contacts for other problems within the categories covered by the original rubric. Identification and retrieval of the relevant patient records was facilitated by the use of the more specific rubrics.

For general ICHPPC reporting or comparisons of problems with other centers, simple addition of each subrubric provides the data covered by the original rubric, 6269 (Table 1).

Example 2

The ICHPPC combines angina pectoris, healed myocardial infarction, and asymptomatic ischemic heart disease with the more general term "chronic ischemic heart disease" under rubric 412-.

If one attempts to isolate patients suffering from angina pectoris by creating a rubric division, care is required in determining the quantitative value of the original rubric. Because of the cause-and-effect relationship between angina pectoris and chronic ischemic heart disease, the same patient might be classified under both of the new rubrics. This being the case, simple addition of the two could give an overestimate of rates and frequencies under the parent rubric, 412-.

In looking at the data under review (Table 2), it was found that simple addition indicated that 174 patients had made 323 problem contacts under rubric 412- during the study period. In fact, 17 patients had been classified under both diagnoses. Thus, there had been only 157 patients making the 323 problem contacts.

In this example, inattention to, or unawareness of one of the basic problems of rubric division and subsequent recombination could have resulted in an 11 percent error in reporting prevalence over the study period and a ten percent error in calculating the number of contacts per patient attending with this diagnosis.

Obviously, in this or similar instances, the divided rubric 4121 should specifically state "chronic ischemic heart disease without angina pectoris." Rubric 4122 would then be "angina pectoris only." In situations where there is close or overlapping relationship between the two subdivisions, the chances for error increase with the number of reporting persons. Rubric descriptions must be exact and mutually exclusive. Accurate identification of patients is essential.

Discussion

There are several advantages to using optional hierarchy in a classification system. This is especially true when the suitability of the classification for international comparisons of data is one of the primary objectives for which it was set up.

Each sector of the health-care delivery service has its own requirements for data, but there remains the overriding necessity of having accurate

Table 1. Number of Patients Encountered, Number of Problem Contacts, and Prevalence Rate, Using Subdivisions of ICHPPC Rubric 6269. Illustrates the Usual Simplicity of Recombination to Parent Rubric

	Patients	Problem Contacts	Prevalence (per 1,000)*
Intermenstrual bleeding	56	65	1.9
Postmenstrual bleeding	10	14	0.3
Other menstrual disorders	4	4	0.1
Parent ICHPPC (#6269)	**70**	**83**	**2.4**

*In attending population

comparable information available for international or intercenter use. Some primary care problems in country A might be unknown in country B, data required by the research worker might be of no interest to the administrator or national health authority, while the teacher has his/her own specific needs for information.

Thus if the attempt is made to list the reasons for building optional hierarchy into a classification system, they might be (a) numeric, (b) research, (c) educational, or (d) preferential.

The numeric category includes those problems which have particular geographic, social, economic, or cultural significance. Such a problem would be the separation of sickle cell anemia from the parent rubric 282- which combines it with thalassemia and other hereditary anemias. This same category also provides for the needs of other primary care specialties in which morbidity patterns may differ. Although ICHPPC was developed and tested by family physicians/general practitioners, it has been suggested that other disciplines, eg, pediatrics, should adopt ICHPPC as well.[4,8] Selective application of optional hierarchy to ICHPPC is the most effective means of ensuring comparability of data across the sector.

The research worker often has very esoteric requirements for data. His/her field of research may be so narrow in terms of the diversity of activity in primary health care generally, that the main rubrics are of little or no value to him. Thus the worker wishing to study urogenital herpes must have some means of separating that particular data from the parent rubric 054-, "herpes simplex, all sites."

Teaching, both of undergraduates and postgraduates, demands its own particular information. The recent growth of facilities for the preparation of physicians entering the primary care field has brought these particular needs into focus. For example, the ICHPPC lumping of postmenopausal and intermenstrual bleeding under one rubric is unsatisfactory educationally. These two distinctly different problems must be separated if the educator is to make use of data banks or classification systems.

Table 2. Number of Patients Encountered, Number of Problem Contacts, and Prevalence Rate, Using Subdivisions of ICHPPC Rubric 412-. Illustrates the Caution Required in Reversion to the Parent Rubric

	Patients	Problem Contacts	Prevalence (per 1,000)*
Chronic ischemic heart disease	78	171	2.7
Angina pectoris	96	152	3.3
Apparent total (#412-)	**174**	**323**	**6.0**
Number patients doubly reported	17	—	—
True total (412-)	**157**	**323**	**5.4**

*In attending population

Finally, there can be personal preferences in rubric contents. For example, some may have philosophical arguments against a classification which includes abnormal electrocardiograms and some arrhythmias with "all other heart disease" or ear pain with "other diseases of the ear and mastoid process." Optional hierarchy can be used to modify ICHPPC in such instances, although the incidence of such problems would not be likely to justify the effort.

Conclusion

Optional hierarchy is a logical, pragmatic system of increasing the flexibility and the practical value of morbidity or problem classifications. This paper attempts to illustrate briefly how it can be applied to ICHPPC, but its usefulness is not limited to this system of classification.[8] The use of optional hierarchy is simple, but its accuracy can be destroyed by failure to anticipate the pitfalls which can arise when parent rubrics are split and the subdivisions are subsequently combined to assign a value to the parent.

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