

The International Classification of Primary Care: capturing and sorting clinical information

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Abstract *The International Classification of Primary Care-2 (ICPC-2) is the result of forty years of continuous development. It originates in the second half of the twentieth century after the concern of general practitioners about the need to record and encode data specifically related to primary care, both in the reasons for encounter and procedures and conditions or diagnoses. The World Health Organization endorsed the classification, as did the developer committee after the Alma Ata meeting, since it also identified specific needs. Two forms of use are employed now in gathering information: by encounter or by an episode of care. The latter is more complex and controversial. Recently, an eleventh version of the International Classification of Diseases has been released, and the third edition of ICPC is being developed. One cannot predict how new technologies, classifications, and international organizations will interact. The role of front line health professionals and patients will define the course.*

Key words *International classification of primary care, General practice, Primary health care*

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Background

Researchers have been equipped with a tool for classifying and studying death and disease since the 1893 International List of Causes of Death and its sixth revision in 1948 that included morbidity in a single list giving rise to the International Classification of Diseases (ICD). In the mid-twentieth century, general practitioners from various countries, especially England, began to study the demands of patients from their clinics^{1,2}.

At this time, an English family doctor named Donald Crombie published a paper that showed from his practice some important specificities of primary health care³. He argued that the establishment of an accurate diagnosis was possible in less than 50% of visits, and this was achieved mainly when performing the clinical history and focused physical examination only. Complementary examinations generally did not help in establishing the diagnosis, but the opinion of an expert collaborated. The five conclusions listed by Crombie still apply to this day despite the progress of medicine³:

Many “conditions” are self-limiting and only require active observation.

Patients often require administrative services only.

The underlying pathophysiology of undefined, non-severe “conditions” is unknown.

Laboratory tests and technology do not contribute to the complicated diagnostic process of frequent “conditions”.

It is bad practice to vigorously attempt to define a diagnosis for a vague “condition”, especially if it is accompanied by psychological components.

Crombie uses the term “minor disabilities” which was translated as “conditions”, but as an approximation, was enclosed in quotation marks; the term “conditions” with quotation marks was chosen in this text to describe the medical description or diagnosis, and the term “diagnosis” was avoided because it is not always a disease; the most commonly used term was “problems”, but “condition” has replaced it because it is broader; for example, pregnancy is a “condition”, but not a “problem”.

The last item deserves attention, and we have yet to grasp the size of the harmful effects that the exaggeration in the search for an etiological diagnosis can ensue. The recommendation not to vigorously attempt to diagnose a vague “condition” is not at odds with the importance of accu-

racy for effective treatment because most of the vague “conditions” do not include a disease, and insistence could lead to a wrong path, far from accuracy.

The first classification for use in general practice was developed in 1959 by the British College of General Practitioners⁴. Family physicians and general practitioners from many countries have noted the importance of taxonomy in this particular field in preventing the misuse of a classification based on disease and causes of death. This could be dangerous since, if a disease were chosen as a diagnosis, treatment would be authorized; however, as already shown, a specific diagnosis was only possible in approximately 50% of doctor-patient encounters.

The Reason for Visit Classification (RVC) and its development process in the United States, including the establishment of the National Ambulatory Medical Care Survey (NAMCS) by the National Center for Health Statistics (NCHS) in 1973 was a critical step^{5,6}. The first reason for visit classification system was developed by Sue Meads, a taxonomist, daughter of a rural doctor, for the use of NAMCS⁷.

A second step was the organization of the generalists. Family physicians and general practitioners interested in the field of taxonomy met in 1972 during the World Conference of General Practitioners/Family Doctors that founded the World Organization of National Colleges, Academies and Academic Associations of General Practice/ Family Medicine (WONCA), in Melbourne, Australia, and concluded that they should develop their classification system. General practitioners Bent Bentsen (Norway), Charles Bridges-Webb (Australia), Robert Westbury (Canada), Philip Sive (Israel) were working on this topic⁸⁻¹¹. They then organized the WONCA Classification Committee (whose name would be changed to WONCA International Classification Committee - WICC) to develop a system based on ICD-8. This group organized a list of “conditions” commonly found in ICD 8-based primary care, and tested it in 300 offices over nine countries, resulting in the International Classification of Health Problems in Primary Care (ICHPPC) presented in 1974, and published in 1975 by the American Hospital Association and the Royal British College of General Practitioners. It was revised, and the second version (ICHPPC-2) was published in 1979 to maintain comparability with ICD-9 (Figure 1). While prepared by family doctors for use in daily practice, only the last chapter was devoted to the signs and symptoms reflecting

the patients' perspective. The two versions of the ICHPPC were, in this sense, a selection of ICD-8 and 9 instead of a primary care-focused classification.

Concomitantly with the development of the ICHPPC, a direction from the North American Primary Care Research Group (NAPCRG) for the development of the Process Code for Primary Care¹² involving diagnosis, prevention, examination, treatment, and other therapeutic procedures has been in place since 1977. The first version was a NAPCRG product that formalized its classification committee. This has joined the WONCA Classification Committee and developed an international version called the International Classification of Process in Primary Care (IC-Process-PC), which has been tested in ten countries involving approximately 100 physicians and finally published in 1986. Typical primary care behaviors such as "observation", "watchful waiting", "non-intervention" or "rest as a therapeutic modality" were included.

Following the Alma Ata conference in 1978, the World Health Organization identified the importance of appropriate information and tools for primary health care. It appointed a task force to develop the Reason for Encounter Classification (RFEC) that would focus on the patient's perspective rather than the disease¹³⁻¹⁵. RFEC is defined as "an agreed term that conveys the reasons why a patient enters the health system and represents the person's demands"¹³. Most of the members of this World Health Organization's working group were from the WONCA Classification Committee. The Reason for Encounter Classification was tested in 1980 in the Nether-

lands¹⁴ and nine countries in 1983 (Brazil, Australia, Barbados, Hungary, Malaysia, the Netherlands, Norway, the Philippines, and the United States of America)¹⁶. In Brazil, the study was under the responsibility of the Brazilian Center for the Classification of Diseases and coordinated by Professor Ruy Laurenti. The Brazilian part of the pilot was conducted by researchers Ruy Laurenti and Maria Lucia Lebrão and, besides doctors, employed nurses and community health workers. The study was backed by the WHO, WONCA, and NCHS^{14,17}.

The process of developing the Reason for Encounter Classification (RFEC) allowed us to conclude that the three main classifications developed so far by researchers linked to primary care or family doctors and published (International Classification of Health Problems in Primary Care – ICHPPC, Reason for Visit Classification – RVC, and International Classification of Process in Primary Care - IC-Process-PC) would be considered in the RFEC because it also provided the components for procedures and diagnoses.

The result of the work of the WHO and WONCA group was a biaxial classification with sixteen chapters based on anatomical criteria (and organic system) plus seven components underlying each chapter. The reproduction chapter ("Pregnancy, Childbirth and Family Planning")¹⁴ was included after the first pilot in the Netherlands. Using anatomy and the organic system as an essential criterion and including the "General and Nonspecific", "Psychological", and "Social Problems" chapters to develop the classification system was a crucial decision because these chapters would primarily reflect the patient's aspects

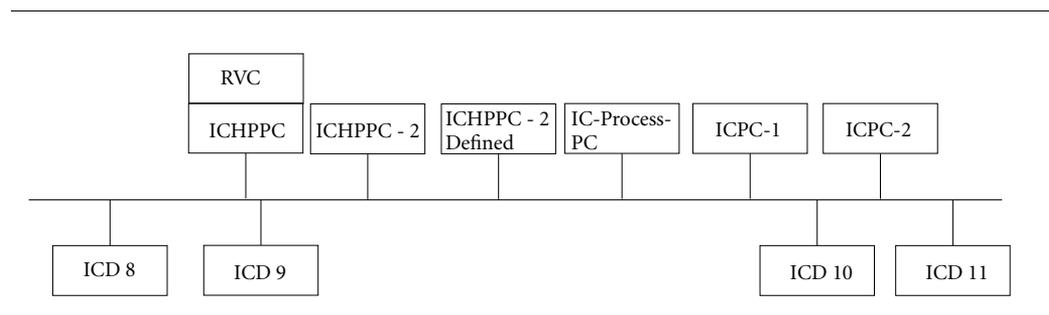


Figure 1. Timeline – Background of the Development International Classification of Diseases (lower line) and International Classification of Primary Care (upper line).

rather than the diseases, manifestations or etiologies. Subdivisions by etiologies such as trauma, infectious diseases, neoplasms, and congenital anomalies were included in the seventh component (diagnoses and diseases) and distributed in the respective chapters (Chart 1). This was of fundamental importance because it avoided possible conflicts with classificatory principles such as exclusionary mutuality¹⁸, that is, each concept to be found only in one place. If specific chapters were created for infectious diseases or trauma, there would be no clear hierarchy between location and etiology and double coding would be allowed, since the disease could be in the etiological and anatomical chapters. This is the case with the ICD, which since the ninth review has used the cross/asterisk system to try to avoid double coding¹⁹.

The main criterion to incorporate a heading became the arbitrary rule of prevalence of 1:1000 in the population served¹³. The working group understood that it would be the minimum prevalence for a generalist to be responsible for the condition. When the condition was less prevalent, it was under a heading called “rag bag”, which became, in each chapter, codes 29 for symptoms and 99 for diagnoses.

While seemingly simple, the RFEC was inspired by classifications that were in use or being developed at the time¹³. The first component (complaints and symptoms) used elements of the

Reason for Visit Classification (RVC) of the outpatient arm of the National Ambulatory Medical Care Survey (NAMCS)^{5,20-23}; the second to sixth components (care processes) were based on the 9th Revision of the International Classification of Medical Procedures²⁴, and the new North American Primary Care Research Group NAP-CRG Process Code^{25,26}; the seventh component (diagnoses and diseases) was elaborated from the ICHPPC-2-defined. Chapters P (psychological) and Z (social) were inspired by the WHO²⁷ tri-axial classification based on the psychological, social, and organic axes, which has never been put into practice. Thus RFEC encompassed the Reasons for Visit, Care Processes, and Diseases.

While there were signs that RFEC could be at the heart of the 10th revision²⁸ because it had incorporated diseases and processes beyond the reasons for the visit, WHO changed this direction and decided not to alter the traditional ICD structure. But WONCA went ahead and published RFEC after pilots as the first version of the International Classification of Primary Care (ICPC) in 1987²⁹, with the possibility of mapping with the ICD-9 (Figure 1). The ICPC is now part of the WHO Family of International Classifications. A revision was published in 1993³⁰. The second version of the ICPC with inclusion and exclusion criteria was released in 1998 and has since been translated into several languages. A summary version that can be printed on an A4

Chart 1. ICPC Biaxial Structure.

Chapters	A – General and unspecified
	B – Blood, Blood forming organs and lymphatics, spleen
	D – Digestive
	F – Eye
	H – Ear
	K – Circulatory
	L – Musculoskeletal
	N – Neurological
	P – Psychological
	R – Respiratory
	P – Skin
	T – Endocrine, metabolic, nutritional
	U – Urology
	W – Pregnancy, childbirth and family planning
	X – Female genital system
	Y – Male genital system
	Z – Social problems
Components (standardized for the chapters)	1. Symptoms, complaints
	2. Diagnostic screening, prevention
	3. Treatment, procedures, medication
	4. Test results
	5. Administrative
	6. Other
	7. Diagnoses, diseases

sheet of paper is also available on the website of the Brazilian Society of Family and Community Medicine³¹.

The ICD was scheduled to be reviewed every ten years. It was regular at the beginning, but a delay occurred between the ninth and the tenth revision, which increased between the tenth and the eleventh. The advancement of computerization and the creation of SNOMED International by gathering the English nomenclature known as “Read Codes” and the Systematized Nomenclature of Medicine (SNOMED) of the American College of Pathologists has brought complexity to the universe of classifications, although SNOMED is a nomenclature³².

Nomenclatures are commonly described as synonymous with terminologies, and unlike classifications, they do not have to follow the rules, such as having exclusionary mutuality, having a well-defined hierarchy, and being complete in the field they intend to operate¹⁸. The World Health Organization and its committees that develop the ICD have been slow to find a path compatible with the rapid advance of computerization in health³³.

Essential rules

The ICPC-2 can be used both for encoding the reason of visit records, which is the synthesis of the subjective in the systematization of the Problem-Oriented Clinical Registry³⁴, as well as care processes (objective data or plan) and conditions (evaluation).

The Reason for Encounter encoding rules (SOAP “Subjective” field overview)¹³ are:

The patient must agree with the selected code, so the inclusion and exclusion criteria of the heading are not valid for the registration of the Reason for Encounter but the term used by the patient.

The word is more important than the concept (encoding “jaundice” if the patient uses this term, even if they do not know precisely what it is).

Choose the most specific chapter as per how the patient expresses himself. For example, if patients report chest pain, they should be asked if they think it is related to the heart (chapter K), lung (chapter R), or muscular (chapter L), or they do not know (chapter A).

The three ICPC-2 axes can be used: symptoms (codes 1 to 29), care process (codes 30 to 69), or diagnoses (codes 70 to 99).

The Conditions encoding rules (SOAP “Assessment” field overview)¹³ are:

Maximum specificity should be sought: if there is sufficient data for a diagnosis even without the existence of complementary examination, it should be recorded and encoded; if there is insufficient data, the highest degree of specificity should be sought, which often implies the use of the “symptom as a diagnosis”³⁵ and the replication of the Reason for Encounter code (s).

Inclusion or exclusion criteria cannot be used to formulate a diagnosis, but only for consultation after formulated diagnosis, i.e., classification should not be used as a protocol.

Put two codes/concepts when necessary. For example, in the case of atrial fibrillation and anxiety with no evidence that one causes the other, record as two distinct conditions.

Avoid General chapter (A) when possible and Pregnant Women codes/concepts (chapter W) when “condition” is unrelated to pregnancy.

In this field, the patient does not necessarily have to agree to the “condition” recorded, unlike the Reason for Encounter field, unless it is a social condition (chapter Z). This rule protects the doctor from the moralistic practice.

Only codes 1 to 29 or 70 to 99 should be used; care process codes (30 through 69) should not be used to encode “conditions”.

Care process components O and P of SOAP should only use codes 30 to 69 that repeat each chapter.

Forms of use

There are essentially two ways to use the International Classification of Primary Care both on paper and in digital media: per encounter or episode of care. When used per encounter, each visit is encoded without regard to the continuity of care of each “condition”. For example, weakness is encoded in one visit, and anemia in the next, but weakness is unrelated to anemia as an evolution of care, in this case, specified over time through laboratory tests. Each visit or encounter is coded independently from the previous one. When encoding by encounter, even if a patient is treated in the same week with the same flu picture, the condition is counted twice. Therefore, there is an impact on the incidence of the conditions. On the other hand, predictive analysis is possible if the reasons for the visit related to their particular conditions are recorded by creating “sub-encounters”. That is, it is possible to answer the questions “given such reasons for encounter, what were the most recorded conditions?” And “given the most recorded conditions, what were

the reasons for the encounter shown?” Therefore, although it is not mandatory to create “sub-encounters” with a SOAP record for each condition, this technique enhances the analysis^{36,37}.

Episode of Care is defined as “any kind of attention given to a particular individual with a condition, a health problem or a disease”¹³. Therefore, the concept is different from symptom episodes or disease episodes because it is based on the care given. Episodes (time frame) can have one or more encounters. Most episodes of care have only one encounter³⁵.

In the episode illustrated in Figure 2, the label of “condition” would be weakness at the end of the first encounter, nonspecific anemia at the end of the second, and then colon cancer at the end of the third encounter. This type of record contributes to answering epidemiological questions such as “how likely is a person with weakness to have colon cancer?”

Recording by episode of care is more complex and also contested because it implies necessarily creating “sub-encounters” so that each “condition” is recorded independently, thus ensuring that each episode is continuing. Criticism focuses

primarily on the inability to work each condition as independently as this type of record requires.

ICPC-3

The third version of the International Classification of Primary Care started to be developed by the Wonca International Classification Committee (WICC). In the beginning, the discussions were focused on the structure, since the second version, having three digits, namely, one letter and two numbers, did not allow for a significant extension. Therefore, it was decided that the third version would have four digits like ICD-11, but always two letters at the beginning and then two numbers.

In 2015, a consortium was started to fund the development of this third version as WICC members are volunteers. Belgium, Brazil, Finland, France, and the Netherlands joined the Wonca Europe initiative, and the working group of members appointed by the consortium participants began activities in January 2018 and are expected to complete them in three years³⁸. The first consortium reports presented at the 2018

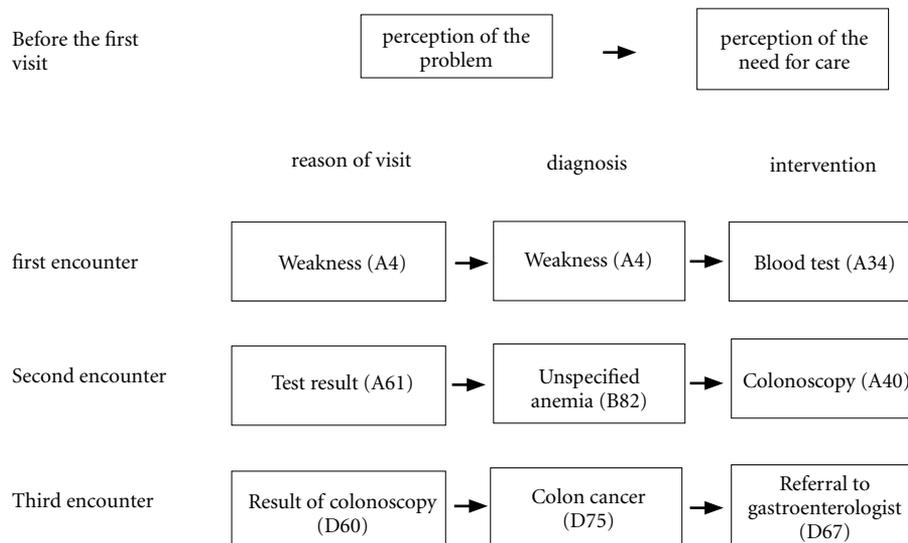


Figure 2. Example of Episode of Care with ICPC-2 Codes¹³.

and 2019 WICC annual meetings and the first version made available to consortium members point to the following characteristics:

Headings will bear four digits with two letters followed by two numbers.

Most chapters' first letter will be the same as ICPC-2, which follows the mnemonic organ rule as per the English term (B for "blood", S for "skin", P for "psychologic").

For most chapters, the second letter will be S for symptom and D for diagnosis, but unlike the second version, instead of each part having only 30 possible headings, has now 99 (from 01 to 99).

Chapters related to the male and female genital apparatus are merged into Chapter G (Gender).

There will be a chapter or subchapter for "reasons for contacting health services" such as screening, vaccination, contraception, lifestyle.

A chapter for functionality-related headings, such as the ability to drive, dress, relate, to remain open to experience will be created; This chapter can be mapped for the International Classification of Functionality³⁹.

There will be extensions to qualify the headings (post-coordination), such as severity (for pain, for example) and temporality (acute, sub-acute, and chronic), as well as regional extensions to detail headings with local specificities.

Thus, the ICPC-3 will allow the registration of the functionalities and detailing of some conditions. The frequency rule has been retained, although for new features such as those related to functionality lack data and end up coming in as a conceptual and epistemological issue, which was already the case with some ICPC-2 headings (headings -27 in each chapter are "fear of disease", and headings -28 are "functional limitation/disability").

A major controversy that always accompanies classification discussions in primary care is how to include "risk factors" since most of them are "conditions" in their own right. That is, while some advocate the creation of specific chapters for "risk factors" the decision so far has been to leave them in their respective chapters as conditions that may or may not be classified as risk factors in the various medical records.

Prospects

The world of classifications eventually merged with the world of information, artifi-

cial intelligence, and big data. The ICD began just over 100 years ago as a short list of causes of death. The ICPC was intended as a classification of reasons for encounter. Both developed a lot in the late twentieth century. Today there is a dispute for information control, and data structuring is an integral part of this process.

The U.S., England, Canada, and Australia are committed to SNOMED International, which has achieved the increased adherence of countries. Still, because it is a complex nomenclature with more than one million terms used to structure the data and return them as information to professionals, it demands classification systems that respect the field of each area, as well as sophisticated computerization of the care process. On the other hand, ICD-11 has been released but not yet implemented, which is to occur in the coming years. Its success is crucial to WHO's stance in this scenario of information and epistemology control. After all, classifications should not be used as protocols, but if diseases and conditions do not exist statistically if they are not listed.

In this sense, as it has done with the mental health part of ICD-10⁴⁰, the WHO has been pointing towards organizing a "subset" or selection of ICD-11 for specific use in primary care. However, the experience with ICD-10 has not been successful, as focus experts have organized each chapter of the latest versions of ICD, and general medicine, or even primary care, are not strengthened or well represented by expert amalgam. Thus, the WHO runs the risk of not valuing ICPC, which is part of its own "Family of International Classifications"⁴¹, as well as giving the message of support for fragmented primary care, consisting of a collection of infrequent conditions or conditions that are without a consistent epistemological basis and, most importantly, unrecognized as legitimate by those who practice and are on the front line.

Conclusion

One cannot predict how new technologies, classifications, governments, and international organizations will interact in the fight for information control. Front line professionals must get back the data they impute in the form of reports or information that is useful for clinical management. Only then can they be interested in knowing the data's route as they are communicated by the pa-

tient until they are used to predict the risk of the next patient. And then, front line professionals and patients can take together control of the organization of the information actually and exclusively used for the benefit of the people.

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