

World Health Organization

Family of International Classifications:
definition, scope and purpose

Revised: August 2004

Introduction

This document defines a World Health Organization Family of International Classifications (WHO-FIC) and includes discussion of the scope and purpose for which the Family has been developed. This version has been updated to incorporate suggestions made at the WHO-FIC Network meeting in October 2003, comments received from WHO Headquarters and to align the WHO-FIC more closely with international standards.

The WHO Family is a suite of classification products that may be used in an integrated fashion to compare health information internationally.

Internationally endorsed classifications facilitate the storage, retrieval, analysis, and interpretation of data and their comparison within populations over time and between populations at the same point in time as well as the compilation of internationally consistent data. Populations may be Nations, States and Territories, regions, minority groups or other specified group.

The purposes of the WHO-FIC are to:

- Improve health through provision of sound health information to support decision making at all levels;
- provide a conceptual framework of information domains for which classifications are, or are likely to be required for purposes related to health and health management;
- provide a suite of endorsed classifications for particular purposes defined within the framework;
- promote the appropriate selection of classifications in the range of settings in the health field across the world,
- establish a common language to improve communication; permit comparisons of data within and between member states, health care disciplines, services and time; and to
- stimulate research on health and the health system.

In order to achieve its purpose, members of the WHO Family must:

- be based on sound scientific and taxonomic principles;
- be culturally appropriate and internationally applicable;
- focus on the multi-dimensional aspects of health;
- meet the needs of its different and varied users;
- enable derivation of summary health measures; and
- provide a platform for users and developers.

Classifications are used to support statistical data across the health system. To this end WHO has developed two reference classifications that can be used to describe the health state of a person at a particular point in time. Diseases and other related health problems, such as symptoms and injury, are classified in the International Classification of Diseases, now in its

10th revision (ICD-10)¹. Functioning and disability are classified separately in the International Classification of Functioning, Disability and Health (ICF)². A third reference classification, the International Classification of Health Interventions (ICHI), is under development.

The individual health experience in general can be described using the dimensions of the ICD and ICF. The needs of the user will determine the number of dimensions, and the level of specificity used. Other classifications needed to describe other aspects of the health experience and the health system have been adopted as related classifications (e.g. ATC/DDD³ classifies therapeutic chemicals). The WHO Family Development Committee has developed a matrix to describe the scope of the WHO Family of International Classifications (WHO-FIC).

The United Nations Statistical Division (UNSD) has defined the UN family of international economic and social classifications and published basic principles for standard statistical classifications. 'The family of international economic and social classifications is comprised of those classifications that have been internationally approved as guidelines by the United Nations Statistical Commission or other competent inter-governmental board on such matters as economics, demographics, labour, health, education, social welfare, geography, environment and tourism'⁴.

The WHO-FIC has sought consistency with the UNSD approach. The UN family of classifications includes the ICD-10 and ICF under social and economic classifications.

Adapting the UN definition the WHO-FIC is defined as:

The WHO family of international classifications is comprised of those classifications that have been prepared by the World Health Organization, or other groups on its behalf, and approved by the Organization's governing bodies. It also includes those classifications on similar subjects which are derived from or related to the international classifications and are primarily, but not solely, used for regional or national purposes.

Health Language

In recent years there has been much discussion on the definitions of terms used to describe the language of health. Even within the international standards setting bodies there is inconsistency in the definitions. In general there is agreement that there are different levels of structured language for different purposes.

The confusion in defining terms may, in part, have arisen because many of the products developed for the electronic management of health information have characteristics of

¹ World Health Organization. International Statistical Classification of Diseases and Related Health Problems (10th Edition). Geneva, WHO, 1994.

² World Health Organization. International Classification of Functioning, Disability and Health. Geneva, WHO, 2001.

³ WHO Collaborating Centre for Drug Statistics Methodology. Guidelines for ATC classification and DDD assignment 6th Edition Oslo: Norwegian Institute of Public Health. 2003.

⁴ Hoffman E, Chamie M (1999) Standard Statistical Classifications: Basic Principles. New York: United Nations.

different types of terminology. They may contain terms used in the exchange of information between health care provider and recipient, so called 'natural language'. The product may be organised in such a way that synonyms are brought together, thus containing elements of a thesaurus. The structure of the product may aggregate like concepts, a characteristic of classifications.

'Health language' is used in this document as an umbrella term for the language of health from unstructured (natural language) to structured language for specific purposes within the health system. Terms that may have broader meaning within the wider community may have specific meaning within the context of health language.

Terminologies

Terminology is defined as 'a set of terms representing the system of concepts of a particular subject field'⁵, or 'a collection of terms used in a particular discipline'⁶.

The need for electronic communication requires a common 'health language' covering all the basic elements of health and health care: hence the need for the development of controlled terminologies. Each entry incorporates sufficient elements to differentiate one individual entity from another. The essential characteristic of a terminology is that of discrimination.

Different health professionals use their own sets of terms for their own purposes. Terminologies are crucial for communication of meaning across health settings. As far as possible, it should be ensured that one word or one code only has one meaning, and the context in which it is being used should be apparent.

Terminologies have varying levels of structure. Clinical terminology is the least structured and describes various health language systems. Interface terminologies provide the interface between the user and the electronic system that is being used to record clinical information. Reference terminologies are sets of uniquely defined concepts which relate to a number of interface terminologies and to classifications. A reference terminology is a collection of terms that provide a common reference point to classifications for reporting and statistical use.

Classifications

A classification is an "arrangement of concepts into classes and their subdivisions to express the semantic relations between them; the classes are represented by means of a notation."⁷ Classification normally involves the categorisation of relevant natural language for the purposes of systematic analysis. The categorisation is based on one or more logical rules.

It is normally possible to create a cross-reference 'map' from each individual entry in a terminology to the 'appropriate' and corresponding classification through cross references, such that meaning is retained. However there is need to take into account, and make provision for, various types of exception to the general relationship.

There is no single logical criterion that differentiates between terminologies and classifications. One criterion is the level of detail to which the data values are defined. Thus, individual entities are identified by natural language or in electronic vocabularies (fine

⁵ ISO 1087: Terminology work – Vocabulary – Part 1: Theory and application 1990

⁶ CENTC251 <http://www.centc251.org/GInfo/glossary>

⁷ International Organization for Standardization. 1988 ISO Standards Handbook 1, 3rd Edition. Documentation and information. Switzerland: ISO.

granularity). Other levels increasingly involve clustering according to logical rules. The classification rules that govern the grouping of terms are designed to fulfil a specific purpose. Thus individual concepts may be grouped in different ways for different purposes; for example, the concepts of paid and unpaid work are classified in the ICF as domains of Activities and Participation and in the ICECI as Activities when injured.

Existing classifications like ICD-10, its modifications and the ICF can be viewed as having a structure and content typical of the 'second' level or 'intermediate' granularity.

The professional languages of the health sector have a limited number of terms which can be used to describe problems, items and concepts. So it is possible for an apparently individual concept to be identifiable at all levels of granularity. Users need to be aware that the same term may have different meanings depending on its context. This is important because detail in the information is inevitably lost by moving from a finer to a coarser level. Individual 'granules' at the coarser level frequently embrace multiple discrete concepts at the finer one. The essential characteristic of a classification is aggregation according to logical rules.

Classifications are a necessary adjunct to terminologies for standardised coding of information for statistical purposes. Terminologies and classifications should be considered as complementary. Any mapping from a terminology to a classification should be acceptable to the proprietors of both the terminology and the classification.

Systems that combine data from multiple data sources

In spite of the analytic potential of the hierarchical nature of classifications, there is an increasing need to develop combinations which incorporate concepts from two or more subject areas for specific purposes.

In the health sector, an example is the diagnosis related group (DRG) (used in casemix systems) which combines data on the individual patient such as diagnoses and procedures and other characteristics such as age and gender.

Combination systems differ from the two lower levels first and foremost by being comprised of outputs from various data sources of which only some are based on the use of classifications in the WHO Family. They are characterized by a very 'coarse' granularity, which do not necessarily hierarchically aggregate the concepts in the WHO Family classifications. These systems will not be discussed further in this document.

The WHO Family is to confine itself to classifications, the intermediate level of granularity.

Types of classifications in the WHO Family

The classifications in the WHO-FIC and the broader United Nations family of economic and social classifications are of three major types. Figure 1 represents the types of classifications in the WHO-FIC.

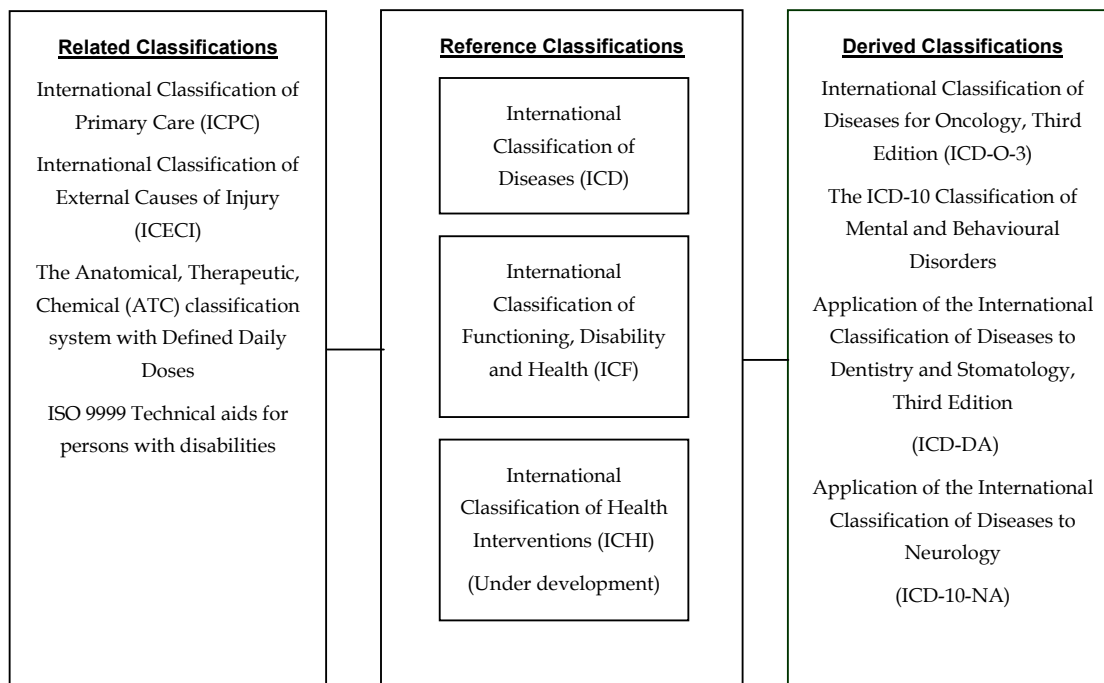


Figure 1: Schematic representation of the WHO-FIC

Reference classifications

These are the classifications that cover the main parameters of the health system, such as death, disease, functioning, disability, health and health interventions. WHO reference classifications are a product of international agreements. They have achieved broad acceptance and official agreement for use and are approved and recommended as guidelines for international reporting on health. They may be used as models for the development or revision of other classifications, with respect to both the structure and the character and definition of the categories.

Derived classifications

Derived classifications are based upon reference classifications. Derived classifications may be prepared either by adopting the reference classification structure and categories, providing additional detail beyond that provided by the reference classification or they may be prepared through rearrangement or aggregation of items from one or more reference classifications. Derived classifications are often tailored for use at the national or multi-national level.

Within the WHO-FIC the derived classifications may include specialty-based adaptations of ICF or ICD, such as the International Classification of Diseases for Oncology (ICD-O-3), the Application of the International Classification of Diseases to Dentistry and Stomatology, 3rd Edition (ICD-DA), the ICD-10 for Mental and Behavioural Disorders and the Application of the International Classification of Diseases to Neurology (ICD-10-NA).

Related classifications

Related classifications are those that partially refer to reference classifications, or that are associated with the reference classification at specific levels of the structure only. Procedures

for maintaining, updating and revising statistical classifications of the family encourage the resolution of problems of partial correspondence among related classifications, and offer opportunities for increased harmony over time. Within the WHO-FIC the related classifications include: the International Classification of Primary Care (ICPC-2), the International Classification of External Causes of Injury (ICECI), Technical aids for persons with disabilities (ISO9999) and Anatomical Therapeutic Chemicals Classification with Defined Daily Doses (ATC).

Scope of the WHO Family

Health has been defined as ‘a state of complete physical, mental, and social well being and not merely the absence of disease or infirmity’⁸. Health or state of health can only be defined in terms of an individual and that person’s goals and expectations. For example a professional gymnast with a need to be extremely flexible, will feel unhealthy at a level most people would consider healthy; or a person born with cystic fibrosis may never know the level of energy most people associate with health. The individual defines when their state of health generates a health problem either by accessing or seeking access to the health system or by describing the issues of concern to that person. The health system includes ‘all activities whose primary purpose is to promote, restore or maintain health’⁹.

Health concepts may be defined as concepts that are related to the description and documentation of the health status of an individual and the services and interventions available for examining, improving, maintaining and supporting it.

Health and health systems defined by WHO are very broad and include areas not traditionally considered by Government health administrations. Some areas of public health are funded and administered by other agencies, for example road safety programs designed specifically to reduce deaths and injury due to road accidents. Sometimes services, which seek to maintain the health state of a person with a disability, are not considered health services; for instance some home care services. The following are included within scope for WHO-FIC purposes.

Health status	Environmental health
Health care (including rehabilitation)	Food standards and hygiene
Health policy and planning	Health screening
Disability policy and planning	Prevention of hazardous and harmful drug use
Communicable disease control	Public health research
Selected health promotion	External causes of injury
Organised immunisation	Occupational health

Although the United Nations Family of Classifications covers a wide spectrum, it is considered that the scope of the WHO Family should be limited to concepts relating directly

⁸ World Health Organisation, 1946. Constitution of the WHO. Reprinted in: Basic documents, 37th ed. Geneva: WHO.

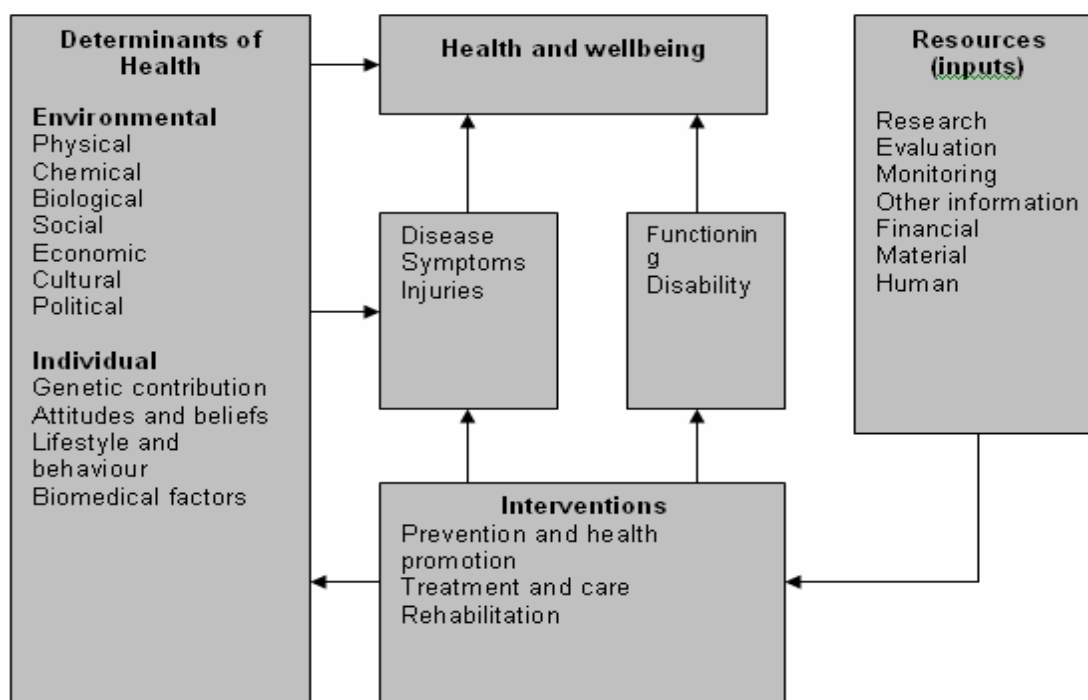
⁹ World Health Organisation, 2000 The World Health Report 2000 Health systems: improving performance. Geneva: WHO.

to health. The contents of some UN classifications are relevant to the health sector (for example occupation).

To specify a manageable Family of Classifications, the health system can be described using two axes or dimensions. The idea of a matrix was developed to represent the areas of health and related information and the scope of health classifications to be included in a WHO-FIC¹⁰.

A conceptual framework of the health system and factors influencing health has been used for one dimension. This is based on the Canadian Roadmap, developed in 1998 to guide health information developments in that country¹¹. The framework in turn is essentially consistent with the conceptual framework for the Australian health system that has been published by the Australian Institute of Health and Welfare (See Figure 2)¹² and the United States Health Statistics Vision for 21st Century¹³. The framework is also consistent with WHO's World Health Report 2000¹⁴ view of health which places people at the centre of health services.

Figure 2 Conceptual framework for health



¹⁰ Ashley JA, Schiøler G, Hirs WM, Madden RC 2000. The concept of the family of international health classifications. Paper presented at the WHO Centre Heads meeting in Rio de Janeiro October 2000.

¹¹ Canadian Health Information Roadmap <http://www.cihi.ca>

¹² Australian Institute of Health and Welfare 2000. Australia's health 2000: the seventh biennial health report of the Australian Institute of Health and Welfare. Canberra: AIHW.

¹³ Shaping a Health Statistics Vision for the 21st Century. Final Report. <http://www.ncvhs.hhs.gov>

¹⁴ World Health Organization 2000. The World Health Report 2000 Health Systems: Improving Performance. Geneva: WHO

The second dimension is Areas of Application. This is a multi-conceptual dimension including a combination of settings, measurement methods, target group, methods of data collection and data informants. The rows were developed to cover, in broad terms, the range of areas of applications of classifications in different health systems across a country or the world.


Each of these dimensions should give rise to mutually exclusive domains. It was recognised that the ideal is unlikely in practice, because the health system takes so many forms across Nations, regions and for specific population groups. The test of the dimensions defined is a pragmatic one: whether it helps to identify the appropriate classification(s) for use in specific circumstances.

Putting the two dimensions together produces a matrix. If this matrix is to be useful, it should produce cells that are sufficiently well defined so all eligible domains within the cell can be described using a single classification at the highest level (and associated derived and related classifications). It is not necessary that there be only one classification per cell that fulfils this requirement, although in logic, there is no need for more than one.

The indicative framework so formed is unlikely to be sufficiently detailed for many purposes. It has therefore been suggested that it could be the entry point to a knowledgebase: from each cell it would be possible to drill down to a classification for use in a more specialised area of application. This is consistent with the UN classifications system which includes reference classifications (such as ICD and ICF), derived classifications and related classifications. In these terms, the family of health classifications, and the relationships between them, can be as complex as the modern human family, with genetic relationships augmented by blended ones.

The Health and Health Related Classifications Matrix

A matrix for the WHO Family has been developed (See p11). In the matrix:

- Each cell should contain a single classification at highest level. When drilling down there is a need to ensure there is not more than one equivalent classification. Two equivalent classifications in one cell may be a sign of further work required;
- specialist adaptations (mainly derived or related classifications) may be included in the matrix by drilling down through the appropriate cell; and
- a few cells, marked  are “not applicable”.

An accompanying document describes the principles and process for admitting classifications to the WHO-FIC. These documents can be used by organisations seeking to include a classification in the Family. The principles may assist those developing new classifications, and the WHO-FIC Network will use them when considering endorsement of classifications.

In summary this paper describes the conceptual framework for the WHO Family of International Classifications and a statement of classifications endorsed as members of the Family in June 2004. Families change and new members may be adopted and older members retired. As these changes occur the major challenge will be to maintain and enhance the harmony between Family members.

Schematic representation of the World Health Organization Family of International Classifications

Area of Application	Factors influence health and well being ¹		Health and well being		Interventions / Services	Resources
	Environmental	Personal	Health Condition / disease/ problem	Functioning and disability	Prevention ³ Assessment/ diagnostic Therapeutic Maintenance ⁴	Research, Evaluation Monitoring, Other information, Financial, Material, Human
<u>Mortality</u> (cause of death)	ICD-10	The United Nations maintains classifications of a range of variables relevant to this, including Industry and Occupation. These standard classifications, or classifications which are compatible with them, are to be used in health data collection.	ICD-10			The United Nations maintains classifications of a range of variables relevant to these, including Industry and Occupation. These standard classifications, or classifications which are compatible with them, are to be used in health data collection.
<u>Self report</u> eg. Population health survey and reason for encounter	ICF			ICF		
<u>Population and Environmental health</u>	ICF		ICD-10	ICF	<u>ISO9999</u>	
<u>Primary Care</u> ⁵ - General practice - Emergency - Other	ICF - - <u>ICECI</u>	- <u>ICPC-2</u> - -	ICF - -	- <u>ICPC-2</u> - -		
<u>Acute hospital admissions</u>	ICD-10 (Ch XX)	Some personal factors have not been defined and classified e.g. genetic profile or coping styles.	ICD-10	ICF	<i>ICHI</i> <u>ATC/DDD</u> <u>ISO9999</u>	
Specialised care ² (residential or non-residential)	ICF		<i>ICD-0-3</i> <i>ICD-DA</i> <i>ICD-NA</i> <i>ICD Mental health</i>	ICF	<u>ATC/DDD</u> <u>ISO9999</u>	

Bold - reference classifications, **Bold italics** - reference classification under development, Underline - related classification, *Italics* - derived classification

- 1 Factors influencing health and well being are defined here as including risk factors, determinants and external causes, but not health services and interventions.
- 2 Specialised care includes care in consultant rooms, palliative care, rehabilitation, services for older people, disability services and other forms of non-acute care.
- 3 The term prevention is used for interventions that occur before a specific health event occurs. Prevention aims to reduce the occurrence of new cases, decrease risk and/ or increase protective factors that can be documented, delay onset of illness, reduce length of time that early symptoms continue, and halt/delay a progression of severity.
- 4 Maintenance interventions are supportive, educational, and/or pharmacological in nature, and are provided on a long-term basis to individuals with continuing impairment. Maintenance interventions involve the provision of support and after-care services to the patient.
- 5 Primary care is defined here as the care provided at the first point of contact with health services and relates to the function, not the person delivering the care.