INTERNATIONAL STANDARD

ISO 21667

First edition
2010-12-01

Health informatics — Health indicators conceptual framework

Informatique de santé — Cadre conceptuel d'indicateurs de santé

Reference number
ISO 21667:2010(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 21667 was prepared by Technical Committee ISO/TC 215, *Health informatics*.

This first edition of ISO 21667 cancels and replaces ISO/TS 21667:2004, of which it constitutes a technical revision.

Introduction

Heightened interest in the measurement and monitoring of the performance of health care systems, as well as accountability and responsiveness to payors and stakeholders is now evident on an international scale. Consequently, many countries have begun the systematic definition and collection of health information for monitoring health system performance. This trend has also concomitantly driven, and is driven by, an enhanced data infrastructure that allows for more explicit and rigorous examination of the health of populations and their health care systems. More often than not, this has taken the form of the collection of specific health indicators with which to describe a variety of health and health system-related trends and factors.

The term *health indicator* refers to a single summary measure, most often expressed in quantitative terms, that represents a key dimension of health status, the health care system or related factors. A health indicator must be informative, and also must be sensitive to variations over time and across jurisdictions. Indicators are able to flag issues that require more in-depth examination to determine causes for variation, and to identify opportunities for improvement, as well as establishing the most effective use of research resources. They may also be used as a rapid means to evaluate the effects of interventions or to make comparisons as health systems evolve.

In order for them to be useful for monitoring health or health system performance, however, explicit criteria must be applied to choosing and defining health indicators. This framework is intended to inform the selection of health indicators that can be used to monitor and manage the health care system and overall performance improvements. The selection must be based on some agreement about what is to be measured, and for what purpose, and be informed by a clear conceptual framework. This implies a common framework, to be used internationally, for structuring the way health and health system performance is measured. This International Standard describes a comprehensive, high-level taxonomy of the key types of indicators that are useful for assessing population health and health services. While, in many cases, health indicators may be best constructed from readily available data, in other situations a *health indicators conceptual framework* may inform additional data collection initiatives that are required for understanding health and health system performance. It is important to note that any data collection must be carried out according to privacy and confidentiality legislation and ethical principles.

Working toward a standard health indicators framework will undoubtedly foster a common language for communication between countries and ultimately lead to greater commonalities for indicator development. This ought to lead to greater potential for generating internationally comparable health data in the long term, and so permit consistent reporting, dissemination and analysis.

This initiative can also be seen as complementary to work currently underway in other organizations, such as the Organization for Economic Cooperation and Development (OECD). The adoption of a common health indicators conceptual framework will further stimulate efforts to develop and collect common health indicators internationally. Furthermore, a harmonized effort to develop an internationally accepted health indicators conceptual framework will not only foster increasingly robust cross-national comparisons and analyses, but may also facilitate the development of comparable data that can be used as a basis for the setting of international benchmarks. The results of such endeavours may be invaluable for informing national health policy related to health expenditures, health human resources requirements or the organization of health and social systems. Ultimately, these developments may facilitate an improved global understanding about variations in health, variations in health care and the effect of other determinants of health in the context of other essential factors. Furthermore, indicator collection, benchmarking and analysis can lead to continuous quality improvement, the identification of factors requiring further analysis and, ultimately, improvements in health within countries and internationally.

NOTE See Annex A for more information regarding the OECD initiative and its relationship to this International Standard's health indicators conceptual framework.

Health informatics — Health indicators conceptual framework

1 Scope

This International Standard establishes a common health indicators conceptual framework and is intended to foster a common vocabulary and conceptual definitions for the resultant framework. The framework

a) defines the appropriate dimensions and sub-dimensions required to describe the health of the population and performance of a health care system,

b) is sufficiently broad (high-level) to accommodate a variety of health care systems, and

c) is comprehensive, encapsulating all of the factors related to health outcomes and health system performance and utilization, as well as regional and national variations.

NOTE 1 See Annex B for a more complete discussion of the underlying rationale for this framework.

NOTE 2 Many countries have already developed their own models for directing the collection and analysis of health indicators. For the purposes of national reporting, these existing frameworks are not expected to change. Rather, this framework can be viewed as a complement to currently existing frameworks. For example, if a particular health indicators framework currently focuses only on health system performance, the comprehensive approach proposed here can serve to augment and/or supplement the currently used model or models.

NOTE 3 Individual jurisdictions may elect to operationalize the conceptual framework differently. Because the conceptual dimensions represent a high-level taxonomy, this provides considerable discretion and leeway in the selection of specific indicators by individual countries. This focus on a high-level taxonomy also allows for sufficient flexibility for the inclusion of new indicators in the future, as new issues emerge and additional data become available. Because specific data elements are not defined, jurisdictions have the freedom to populate this framework with the most relevant, and available, indicators for their specific situations.

This International Standard does not identify or describe individual indicators or specific data elements for the health indicators conceptual framework; nor does it address needs analysis, demand analysis or the range of activities that need to be supported for health system management.

The definition of benchmarks and/or approaches used in the definition of benchmarks is outside the scope of this International Standard.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
health
resource for everyday life, not the objective of living, and a positive concept emphasizing social and personal resources, as well as physical capacities

[Ottawa Charter for Health Promotion, World Health Organization (WHO), 1986]

2.2
health indicator
single summary measure, most often expressed in quantitative terms, that represents a key dimension of health status, the health care system, or related factors

NOTE A health indicator must be informative, and also be sensitive to variations over time and across jurisdictions.

3 Health indicators conceptual framework

3.1 Framework

The health indicators conceptual framework shall be as outlined in Table 1. See Annex C for background information relating to the framework outlined in Table 1.

Table 1 — Health indicators conceptual framework

Dimensions	Sub-dimensions				
Health status	Well-being	Health conditions	Human function	Deaths	
Determinants of health	Health behaviours	Socio-economic factors	Social and community factors	Environmental factors	Genetic factors
Health system performance	Acceptability	Accessibility	Appropriateness	Competence	
	Continuity	Effectiveness	Efficiency	Safety	
Community and health system characteristics	Resources	Population	Health system characteristics		

3.2 Framework dimensions

3.2.1 Health status

The dimension of health status is described in Table 2. See Annex D for further information.

Table 2 — Health status dimension

Sub-dimensions	Description	Examples of indicators
Well-being	Broad measures of the physical, mental and social well-being	— Self-rated health — Self-esteem
Health conditions	Alterations or attributes of health status which may lead to distress, interference with daily activities, or contact with health services; it may be a disease (acute or chronic), disorder, injury or trauma, or reflect other health-related states such as pregnancy, ageing, stress, congenital anomaly, or genetic predisposition [50]	Prevalence of: — arthritis — diabetes — chronic pain — depression — food and waterborne diseases — injury hospitalization
Human function	Levels of human function are associated with the consequences of disease, disorder, injury and other health conditions; they include body function/structure (impairments), activities (activity limitations and participation (restrictions in participation) [50]	— Functional health — Disability days — Activity limitation — Health expectancy — Disability-free life expectancy
Deaths	A range of age-specific and condition-specific mortality rates, as well as derived indicators	— Infant mortality — Life expectancy — Potential years of life lost — Circulatory deaths — Unintentional injury deaths

3.2.2 Determinants of health

The dimension of determinants of health is described in Table 3. See Annex E for further information.

NOTE 1 In order to better understand geographic or temporal variations in health status and health system performance, a variety of determinants of health have been included in the framework.

NOTE 2 Determinants of health are those that fall outside the sphere of medical/health care, generally speaking, but that have been shown to affect health status and, in some cases, access to health care services.

Table 3 — Determinants of health dimension

Sub-dimensions	Description	Examples of indicators
Health behaviours	Aspects of personal behaviour, and risk factors and protective factors that epidemiological studies have shown to influence health status	— Smoking rate — Physical activity
Socio-economic factors	Indicators related to the socio-economic characteristics of the population that epidemiological studies have shown to be related to health	— Unemployment rate — Low-income rate — High-school graduation
Social and community factors	Measures the prevalence of social and community factors, such as social support, life stress or social capital, that epidemiological studies have shown to be related to health	— School readiness — Social support — Housing affordability — Literacy
Environmental factors	Environmental factors with the potential to influence human health	— Water quality
Genetic factors	Factors outside those normally influenced by individual behaviours or by the social, economic or physical environment; genetic factors determine predisposition to certain conditions	— Rates of genetically determined diseases (e.g. Down's syndrome)

3.2.3 Health system performance

The dimension of health system performance is described in Table 4. See Annex F for further information.

Table 4 — Health system performance dimension

Sub-dimensions	Description	Examples of indicators
Acceptability	All care/services provided meets the expectations of the client, community, providers and paying organizations, recognizing that there may be conflicting, competing interests between stakeholders, and that the needs of the clients/patients are paramount [6]	— Patient satisfaction
Accessibility	The ability of clients/patients to obtain care/service at the right place and the right time, based on respective needs [6]	— Surgical waiting times — Availability of physicians — Availability of dentists — Time to appointment
Appropriateness	Care/service provided is relevant to the clients'/patients' needs and based on established standards [6]	— Inappropriately used surgery — Appropriate use of ACE inhibitors at discharge for heart failure
Competence	An individual's knowledge and skills are appropriate to the care/service being provided [6]	— Proportion of physicians adhering to accepted clinical guidelines — Proportion of physicians attending regular continuing medical education — Medical error due to incorrect practices
Continuity	The ability to provide uninterrupted coordinated care/service across programmes, practitioners, organizations, and levels of care/service over time [6]	— Patient experiences with duplicate medical tests — Continuity of medication between providers
Effectiveness	The care/service, intervention or action achieves the desired results [6]	— Cancer survival — Recurrence of hernia after repair — Smoking cessation during pregnancy (effectiveness of maternal health care) — Chronic care management: admission rates for asthma, diabetes, epilepsy
Efficiency	Achieving the desired results with the most cost-effective use of resources [6]	— Avoidable hospitalizations — Cost-per-case mix-adjusted separation — Cost-effective prescribing
Safety	Potential risks of an intervention or the environment are avoided or minimized [6]	— Hospital-acquired infection rate — In-hospital hip fracture rate — Wrong-site surgery — Medication errors

3.2.4 Community and health system characteristics (contextual information)

The dimension of community and health system characteristics contains contextual information which may be useful for the interpretation of indicators and is described in Table 5. See Annex G for further information.