

Implications of health classification systems for nursing care and practice

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Health classification systems, nationally and internationally, enable the collection of quality health data to manage and improve healthcare delivery. The influence on healthcare delivery and outcomes management of many health classification systems is well understood, however, little is known about the influence of nursing classification systems such as the International Classification of Nursing Practice (ICNP) on quality data collection and nursing care. The aim of this review article is to explicate the role and implications of health classification systems for nursing care and practice.

Keywords: clinical coding, health classification, international classification of health intervention, ICHI, ICNP, ICD-10, public health, nursing skill

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Introduction

Health classification systems enable the collection of quality health data nationally and internationally to manage and improve healthcare delivery. Such classification systems provide a universally consistent way to describe health conditions and interventions, and form the bedrock for health planning, policy and research. Healthcare data collected in a consistent, predictable and reproducible manner plays an integral role in healthcare planning, disease management planning, and nurse-patient ratio management. It further informs resource and budget allocation, performance and outcomes management, reimbursement, research and statistical reporting. Many countries have implemented diagnostic and intervention classification systems, commonly referred to as clinical coding systems to support healthcare data management; see, for example, the use of hospital data in Australia.¹ Another classification system, the International Classification for Nursing Practice (ICNP) enables the use of standardised nursing terminologies in leveraging nursing records to produce evidence associated with nursing practice.² The influence on healthcare delivery and outcomes management of many health classification systems such as the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) is well understood, however, little is known about the influence of nursing classification systems such as ICNP on quality data collection and nursing care.²

Background

The process of clinical coding has its roots in 17th century England where it was first used for the purpose of collecting

disease information and translating the information into numerical codes in an attempt to understand the common causes of death.³ This rudimentary coding system evolved over many decades leading to the development of sophisticated classification systems that are utilised internationally and for the standardisation of communication of health information across countries. Examples include the ICD-10, which has become the standard international diagnostic classification system for contemporary use, globally.⁴ In South Africa, the need for the adoption and implementation of the ICD-10 has a five-fold rationale that impacts the delivery of healthcare services across the public and private healthcare sectors.⁵ The first, is the need to standardise data collection processes in the healthcare industry. Secondly, regulation 5(f) of the Medical Schemes Act 131 of 1998 requires providers of healthcare to submit diagnostic and other codes on a claim for healthcare services rendered. Thirdly, the need for an efficient reimbursement system for healthcare providers that supports legislation and enables medical schemes to improve risk management practices. Fourthly, the introduction of the Medical Schemes Act in 1999 saw the arrival of the Prescribed Minimum Benefits (PMB), a minimum set of guaranteed benefits to be honoured by medical schemes. Entitlement to the PMBs is driven by diagnosis supported by an appropriate ICD-10 code. Lastly, ICD-10 plays a critical role in the implementation, management and long-term sustainability of the National Health Insurance Fund.

South Africa adopted the ICD-10 designed by the World Health Organization (WHO) for the classification of diseases and related health problems in the late 1990s. However, implementation was only partial, commencing in a

phased approach between 2005 and 2014. Due to various constraints and challenges, the ICD-10 has not been fully implemented across the entire healthcare system.⁶ Despite constraints and challenges, ICD-10 coding in the private sector and certain facilities in the public sector reportedly supports research, revenue collection in health facilities and practices as well as clinical risk management specifically in the private healthcare sector.⁶ However, the lack of a national intervention classification system, has resulted in the use of multiple inappropriate billing and coding systems to collect intervention health data.⁷ This practice presents a challenge in the understanding of treatment interventions performed in hospitals, the resources associated in the performance of the interventions, which includes nursing practice, nursing care, and the associated risks and complications. For example, the lack of coded intervention data in a surgical setting presents a challenge in the allocation of nursing resources to support the nurse-patient ratio. It can thus be argued that quality health data collection is critical for effective healthcare delivery in a healthcare sector that is resource-constrained and overburdened with disease and poverty.⁷ To this end, this paper reviews health classification and related clinical coding systems and their implications for nursing care and practice.

Overview of health classification systems

Globally, various health classification systems exist to describe the diseases, disabilities/health status of patients and interventions performed by clinicians or nurses to treat or manage the diseases and disabilities/health status. The ICD-10 and its clinically modified versions are used in many countries across the world. For example, a clinically modified version, the International Classification of Diseases, Tenth Revision, Australian Modification (ICD-10-AM) was developed by the University of Sydney's National Centre for disease Classification in Australia.⁸ The International Classification of Functional Disability and Health (ICF) used also by physiotherapists and occupational therapists, provides a standard framework and clinical language for describing health and the states related to health.⁹ Another classification, the ICNP is utilised in some countries to record observations and interventions performed by nurses on patients.¹⁰ Most recently, still in beta 3 version, the WHO formulated the International Classification for Health Interventions (ICHI).¹¹ Together, these classification systems provide comprehensive clinical data that are integral to quality healthcare delivery.

Due to the lack of an international intervention classification system, many first world countries have developed their own national intervention classification/coding systems,⁷ e.g. the Current Procedural Terminology (CPT) coding system is utilised in the United States (US) to identify and reimburse services performed on patients by doctors and other healthcare providers.¹² Whilst coding is well established and mature in first world countries, developing countries,

especially those in Africa, including South Africa, face particular challenges in the adoption and implementation of health classification or coding systems due to resource constraints.¹³ Some countries in Africa utilise either US or Australian versions of intervention classification systems, whilst others have adopted and implemented the South African version of a billing system known as Reference Price List (RPL) for data collection and reimbursement. The RPL system is outdated and unsuitable both for data collection and accurate reimbursement. The RPL system has been renamed in several of the Southern African Development Community (SADC) countries. For example, in Namibia, the modified RPL system is known as the Namibian Association of Medical Aid Funds (NAMAF) Benchmark Tariffs.¹⁴ Hence, the ICHI was developed by the WHO for use in countries:

- lacking a national intervention system,
- wishing to migrate from a national to an international intervention classification system,
- wanting to redevelop their classification using ICHI and,
- aiming to add components of ICHI to their national classification.

The ICHI consists of 8 500 codes and is currently structured upon three axes, as follows:⁹

- Axis 1: The target – the entity upon which an action is performed;
- Axis 2: The action – the act or deed performed by an actor, upon the target; and
- Axis 3: The means – the methods and processes through which an action is performed.

The ICHI provides an all-inclusive system covering surgical, medical, mental health, primary care, allied health, assistance with functioning, rehabilitation and prevention health interventions, unlike various national intervention classification systems that cover largely surgical and medical interventions.¹⁵ The ICHI is being formulated as a collective instrument for analysing, reporting and describing health interventions for reimbursement, quality, statistical and research purposes.¹⁶ Its intention is to be all-encompassing, and to portray the complete spectrum of health interventions, in line with the biopsychosocial framework established within the ICF.¹⁷ Concurrent with the paramount importance given to public health within all global health structures, public health forms an integral part of the ICHI.¹⁶ The specific goal of the ICHI is to achieve a number of purposes, including providing a basis for redeveloping national classification instruments, and to expand content for countries where the national classification system primarily focuses on surgical and medical interventions.¹⁸ It will also provide a system for making health-related comparisons across borders; and offer a classification system in countries where one does not exist.¹⁷

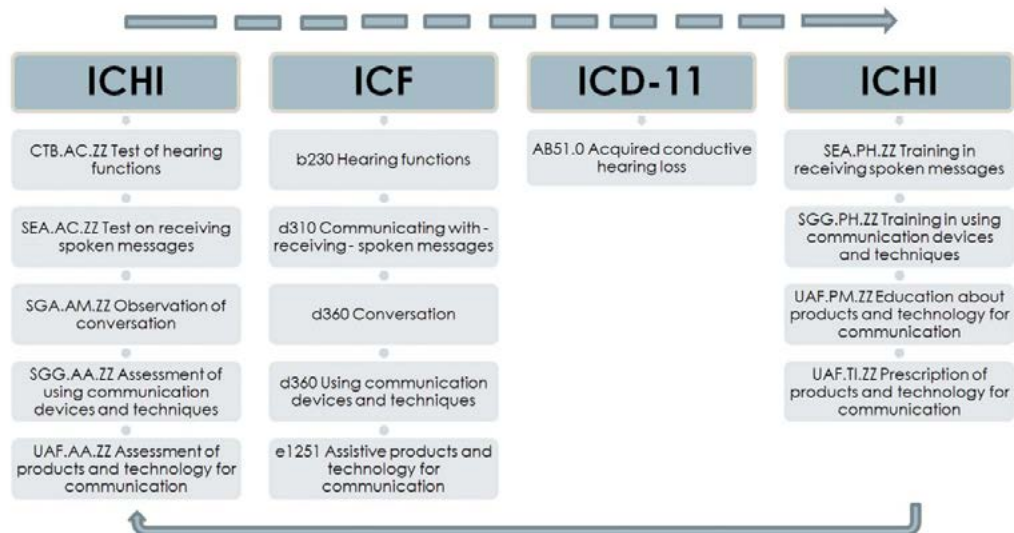


Figure 1: Collective use of the three WHO-FIC classifications
(Fortune et al. 2018)

Notably, the ICHI can provide an information framework for improving patient safety and health system performance; while supporting global health initiatives, such as the Universal Health Coverage (UHC) initiative, and other sustainable development goals.¹⁹ Based on discussions by various authors and the ICHI Beta-3 Reference Guide, it can be noted that the ICHI is well positioned as a comprehensive intervention classification system for national use. However, the use of the ICHI on data relating to public health is challenging; thus, ICHI training for nurses particularly, is crucial to fully understand and appreciate its potential.²⁰

There are numerous strengths and benefits of the ICHI that have been described in the literature, despite the ICHI still being in its infancy. Arguably, the key benefit of the ICHI is that it is integral to the three core WHO "Family" classifications – the ICHI, the ICF and the ICD, and can be used collectively.¹⁸ The example shown in Figure 1 illustrates how the ICHI can be used to record diagnostic and investigative interventions that have been performed, while supportive or therapeutic interventions are then conveyed. The ICF is also applied when defining the person's functional ability and necessity for environmental mediators while the categorisation systems of the ICD are implemented in order to record diagnoses.¹⁷ In a practical sense, therefore, the ICD, ICF and the ICHI can be used jointly to capture information on the process of setting goals, evaluating the outcomes of interventions, and reviewing goals; whereby, the tri-axial structure of the classification creates a standard model for describing and perusing all forms of health interventions.¹⁸ Indeed, this inherent tri-axial format makes it contrastingly different in nature to the classifications contained in each aspect of the ICF, as well as the formats inherent within the ICD.¹⁸

Implications of health classification systems for nursing care

Nurses working in hospital and outpatient settings are, in general, not required to be clinical coders; however, nurses should be able to correlate a patient's diagnosis to the rationale for skilled nursing care.²¹ Skilled nursing care is required in but not limited to the following situations:

- Inherent skills of a nurse: this is required for intravenous feeding, administration of medication, suctioning, tracheostomy care, wound/ulcer care, transfusions, chemotherapy and colostomy care, amongst others.
- Observation and assessment: for early detection of possible complications, side effects, clinical deterioration or progress.
- Management and evaluation of a care plan: this requires total nursing care where the skilled nurse provides nursing care to meet the goals of the treatment plan, improve patient outcomes, promote patient recovery and ensure patient safety.
- Teaching and training: this requires a skilled nurse to teach the patient, family members or other carers how to manage health and/or the patient on discharge. This function also involves teaching nursing peers and nursing students to equip them with knowledge and skill to achieve the desired nursing standard.

The role of nurses in clinical coding

Whilst bedside nurses are not directly involved in the coding process, conflicts can arise between the clinical coders and nurses if the coding does not describe the clinical information documented in the patient's file and the nursing care provided.²² To minimise confusion and conflict, clear communication channels that promote quality health data collection for effective utilisation to improve

Table I: The use of health classification systems to describe a nursing skill

Health Classification System	Clinical Code	Description
ICD-10	Z93.0	Tracheostomy status
ICHI	PTC.AA.ZZ	Tracheostomy assessment
	PTC.SN.AC	Management of tracheostomy
ICHI	PTC.PM.ZZ	Tracheostomy education
ICD-10	J95.0	Tracheostomy malfunction
ICHI	JBA.KA.AC	Replacement of tracheal device (includes replacement of tracheostomy tube)
ICD-10	Z93.0	Tracheostomy status
ICNP	10033161	Tracheostomy care

nursing care, are essential. By way of example, a nursing skill such as tracheostomy care is coded using different health classification systems as illustrated in Table I.

In the examples above, the ICD-10 code describes a tracheostomy status and the ICHI/ICNP codes describe the different nursing skills required to manage the patient. Of note, is the specificity of the ICHI whereby tracheostomy care is represented by two codes PTC. AA. ZZ and PTC.SN.AC to describe the assessment and management separately. In contrast, the ICNP code 10033161 describes tracheostomy care, which includes both interventions. The ICNP lacks codes for tracheostomy education and replacement of a tracheostomy tube, which are described in ICHI. As part of the ICHI development, the ICNP was mapped to ICHI and results revealed that 34% of the ICNP codes had an equivalent mapping to ICHI, and relevant target and action categories were available for 13% of the ICNP codes, resulting in 53% of unmapped ICNP codes.¹⁵ The ICHI contains extension codes, which are utilised in addition to describe additional information.⁹ The extension codes may possibly address some of the unmapped codes while the remainder unmapped codes may need to be addressed in the main ICHI classification. Furthermore, the extension codes may harmonise efforts between coders and nurses as clinical information will be better aligned between the two parties. The inclusion of nursing interventions in ICHI is vital for the representation of nursing in the global healthcare classification arena as nurses are the largest group of healthcare workers in most healthcare settings.²³ The ICN is contributing to the ICHI development by utilising ICNP as the resource for ICHI content development to address nursing clinical coding needs.

Notably, there is well documented evidence to support the clinical coding role of ICNP and its relationship with other intervention systems, however, negligible literature exists with regard to the effectiveness of ICNP in relation to nursing practice and nursing care.² In particular, a classification system such as ICHI when utilised in an electronic health environment can play an integral role in understanding nursing care and its role in patient management and outcomes. This is demonstrated by the Western Cape Department of Health eCCR project whereby electronic

health data collection contributes to the collection of quality health data.⁶ It can thus be recommended that ICHI has the potential to become a more appropriate intervention classification to describe nursing interventions despite the current deficiencies identified by the study conducted by Fortune (2023).¹⁸ Furthermore, it must be noted that ICHI is still in its beta version and has not yet been tried and tested as a classification system. Based on the discussions by various authors, it can be concluded that clinical coding by the use of health classification systems is integral in understanding nursing skills required to manage patients.

The advent of clinical coding created a need for coding tools (books/software) and clinical coders who are responsible for translating medical/clinical terminology documented by clinicians into clinical codes such as the ICD-10. Clinical coders are personnel who are trained in anatomy, physiology, pathophysiology, clinical coding, and the extraction and translation of clinical information from patient records. Clinical coders play an integral role in both the health provider and funder industries and are thus employed across the healthcare sector. Coder training and the availability of appropriate coding tools in developed countries contribute to quality coding whilst the shortage of coding tools and the adoption of train-the-trainer coding programmes to minimise costs or employing poorly trained coders results in poor data quality.²⁴ Internationally, coding training institutions offer coding courses and clinical coding is professionalised. In South Africa, coding training is provided informally by coding companies and tertiary institutions as a National Coding Authority is yet to be established.²⁵ Healthcare documentation and coding accuracy are interlinked, thus it is incumbent on clinicians and nurses to document complete and concise information in patient health records that coders utilise for clinical coding.²⁶ Clinical coding ultimately describes the quality of care provided by nurses at a healthcare facility as the codes not only describe the diagnosis of the patient and interventions performed but also the outcome of the treatment or interventions.

Conclusion

Consistent and reliable data collected at healthcare facilities are vital for electronic health records, access to healthcare

and the provision of quality healthcare services. According to the WHO, data collected at healthcare facilities play an integral role in clinical patient management, monitoring of services and performance. In wake of the corona virus disease (COVID-19) pandemic, these data would play a crucial role to evaluate the effect on health workforce and to collect statistics for future healthcare planning in addressing pandemics. To this end, the collection of quality health data using health classification systems can improve nursing care, lead to better patient outcomes and provide a basis for nurses to understand resource utilisation, resource allocation and management. The nurse's role in complete and accurate healthcare documentation has implications on the quality of health data collected at healthcare facilities using various health classification systems. It is thus evident that health classification systems play an integral role in nursing care and practice. As public health is integral to ICHI, nurses as health practitioners and advocates of public health can play a vital role in the implementation of ICHI.

Conflict of interest

The authors declare no conflict of interest.

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None

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