Transitioning health data systems from International Classification of Diseases 10 to Classification 11 in Lebanon

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Abstract

Background: Transitioning from the International Classification of Diseases 10 (ICD-10) to 11 (ICD-11) will enhance the accuracy of health data reporting at the national level, however, certain challenges affect the outcome of such change.

Aim: To document the experience of Lebanon in transitioning its mortality data from ICD-10 to ICD-11.

Methods: We collected hospital mortality data from the Ministry of Public Health of Lebanon for 2022 and analysed them based on ICD-10 and ICD-11. We mapped and compared the reported ICD-10 and ICD-11 causes of death using the Analysing Mortality and Causes of Death 3 (ANACoD3) tool.

Results: Discrepancies between the frequencies of causes of death between ICD-10 and ICD-11 were most visible in non-communicable diseases. Although NCDs were the leading causes of death for both systems, the difference was higher in ICD-10 (64.0%) than ICD-11 (41.29%). Seventeen of the 20 leading causes of death generally and 16 of the 20 leading causes of child deaths (0–4 year-olds) were the same for ICD-10 and ICD-11, but with different rankings. The noncommunicable/communicable disease ratio for Lebanon was 3.4 with ICD-10 and 2.3 with ICD-11, and the usability index was higher for ICD-10 (38.4) than for ICD-11 (36.3).

Conclusion: Our findings show that moving from ICD-10 to ICD-11 at the central level can be useful in enhancing the quality of cause of death coding if there is enough data at the central level and if properly monitored by an experienced coder.

Keywords: ICD-10, ICD-11, health information system, health data reporting, mortality data, noncommunicable disease, communicable disease, Lebanon

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Introduction

The International Classification of Diseases, 10th Revision (ICD-10) was developed by WHO and endorsed in 1990 to help standardise disease classification globally (*1–4*). It replaced ICD-9, enhancing specificity mortality tracking via clinical coding. Implementation worldwide began in 1994, with over 120 countries adopting it for cause-of-death reporting (*5–7*). Although ICD-11 officially replaced it in 2022, many countries continue to use ICD-10 during the transition phase.

ICD serves as the cornerstone for identifying global health trends and statistics and is the international benchmark for reporting diseases and health conditions. It is the diagnostic classification standard for all clinical and research purposes, comprising the full spectrum of diseases, disorders, injuries, and related health conditions (*8*).

In May 2019, the World Health Assembly adopted a resolution to transition to the eleventh revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-11), which came into effect on 1 January 2022 (*9*). Beginning from 2022, countries committed to start using the ICD-11 nomenclature for diseases and health conditions including deaths.

ICD-11 represents a significant advancement over the ICD-10, featuring a more detailed and highly computerised framework. It enhances the accuracy and specificity of health data reporting (*10*). ICD-10 and ICD-11 are not simply different versions of the same tool, their coding structures differ significantly, indicating an evolution of medical knowledge and technology. The granularity and detail-oriented nature of information available in ICD-11 requires an upgraded health information system that is not available in all countries (*11*).

ICD-10 uses an alphanumeric coding system starting with a single letter and followed by up to 3 digits (e.g. A00.0), with a relatively fixed structure that often necessitates multiple, but separate codes to fully capture complex diagnoses. In contrast, ICD-11 features a more flexible and more detailed coding framework, allowing for greater diagnostic specificity. It uses an alphanumeric system with 4 characters in the primary code (e.g. 1A00) and can be extended to include additional details. Instead of providing a code for a disease, it details the medical history of a patient with a sentence of codes. This modular design enables a more precise and more comprehensive representation of health conditions, enhancing data collection and analysis within a highly computerised and interconnected health information system. It makes

accuracy of disease and cause of death determination critical to reach acceptable code accuracy. A systematic review in the United Kingdom noted that moving from one ICD version to the next decreased the coding accuracy at the beginning of the transition (*12*). There are few studies on the effect of the transition from ICD-10 to ICD-11 on coding accuracy (*11*).

Since the official release of ICD-11 on 1 January 2022, numerous countries have adopted it. As of May 2024, 72 countries had commenced the implementation process and 14 countries had begun to collect or report data using ICD-11 coding (*13,14*). Thirty-five countries had actively integrated ICD-11 for various applications, including documenting causes of death, primary care, cancer registration, and clinical documentation. Countries such as France, Germany, Japan, and the United States of America encountered challenges during this transition, including the complexity of mapping ICD-10 to ICD-11, system upgrades and training of health care professionals (*15*). Despite these hurdles, the transition to ICD-11 is expected to enhance the accuracy and specificity of health data globally.

Lebanon context

The Lebanese health system lacks a one-disease classification system. ICD is the most widely used system for coding diseases and health conditions in private hospitals, Current Procedural Terminology (CPT) is primarily used for documenting medical procedures and services, and the Healthcare Common Procedure Coding System (HCPCS) is used for procedures, services and equipment not covered by CPT codes.

In 2017 the Lebanese Ministry of Public Health (MOPH) established a hospital-based mortality reporting system that collects anonymous mortality data from hospitals all over Lebanon. Each death record is identified by 3 causes of death where available, all coded in ICD-10. The system requires the reporting of all 3 causes of death from which the underlying cause of death (UCOD) is extracted at the MOPH level using IRIS[1] automated system (*16*).

The ministry started studying the possibility of a national transition to the new coding system beginning with the MOPH system. However, to fully leverage the capabilities of ICD-11 and ensure seamless integration into clinical and research settings, there is a need for well-developed health information systems because of its sophisticated nature (*15,17*).

As recommended at the global level, one step to take before adopting a system-wide transition of coding systems is the mapping of causes of death at the central level. To examine the possibility of using ICD-11, before system-wide adoption at the stakeholder level, we tried to map the mortality data reported originally in ICD-10 codes at the central level into ICD-11 codes. This paper presents the experience of Lebanon in mortality data mapping between ICD-10 and ICD-11 and critiques the challenges faced in transitioning to this method, and how they may be solved.

Methods

Data for 2022 were first managed by ICD-10 and Iris to extract the UCOD, which were then uploaded into the Analysing Mortality and Causes of Death 3 (ANACoD3) tool for data analysis and tabulation into major disease categories (*18*). To map the causes of death between ICD-10 and ICD-11, we used the description instead of the code as primary identifier of the condition. We imported the descriptions of the mortality records with the 3 available causes of death into the Digital Open Rule Integrated cause of death Selection (DORIS) tool desktop version 1.0 using the instructions (*19*). DORIS transforms the provided causes of death into ICD-11 codes and selects the UCOD using built-in algorithms. It has 2 separate UCODs based on the level of detail provided, "UCOD_compute", which includes only the stem ICD-11 code when available, and the "UCOD_compute_complete", which includes post-coordination codes and subcategories. We used the "UCOD_compute" version of the DORIS extracted UCOD to compare with ICD-10. We compared the 2 ICD-11 outputs. After extracting the UCOD, we used ANACoD3 tool to analyse the data for ICD-11. Then ANACoD3 outputs for ICD-10, ICD-11_compute and ICD-11_complete were compared based on the global burden of disease categories, leading causes of death for all ages and child deaths, country profile and usability index.

Ethics approval

This study used mortality data collected by the Ministry of Public Health and the data were anonymised and contained no personally identifiable information. Since this analysis involved the use of secondary aggregated, de-identified data, no formal ethics approval was required. The use of this data aligns with global practices for monitoring health indicators and developing Sustainable Development Goal (SDG) metrics. This approach aligns with international guidelines, such as those from the WHO, which support the use of de-identified public health data for research and policy development without requiring ethics approval.

Results

Frequencies of major categories of disease

There were discrepancies in the frequencies of causes of death between ICD-10 and ICD-11-compute outputs. These discrepancies were most visible in noncommunicable diseases (NCD), namely malignant neoplasm (13.2% in ICD-10 vs 8.0% in ICD-11), cardiovascular disease (33.2% in ICD-10 vs around 14% in ICD-11) and unintentional injuries, in addition to the ill-defined causes. In both

[1] Iris is an automatic system for coding multiple causes of death and for the selection of the underlying cause of death (www.iris-institute.org)

Table 1 Discrepancies between ANACoD3 outputs for ICD-10 and ICD-11 codes, 2022

Causes of deaths by global burden of disease categories	ICD-10		ICD-11_compute		ICD-11_complete	
	Number	%	Number	%	Number	%
All causes	**21 938**	**100**	**21 938**	**100**	**21 938**	**100**
Communicable, maternal, perinatal and nutritional conditions	**4084**	**18.6**	**3982**	**18.2**	**3900**	**18.2**
a. Infectious and parasitic diseases	1200	5.5	410	1.9	400	1.8
*Diarrhoeal diseases	50	0.23	131	0.6	131	0.6
*Other infectious diseases	1084	4.9	212	1.0	204	0.9
b. Respiratory infections	2003	9.1	2726	12.4	2712	12.4
*COVID-19	1099	5.0	1885	8.6	1874	8.5
c. Maternal conditions	30	0.1	39	0.2	33	0.2
d. Nutritional deficiencies	61	0.3	27	0.1	27	12
Noncommunicable diseases	**14 039**	**64**	**9059**	**41.3**	**8523**	**38.9**
a. Malignant neoplasms	2891	13.2	1751	8.0	1751	8.0
*Pancreatic cancer	181	0.8	58	0.3	58	0.3
*Trachea, bronchus and lung cancers	732	3.3	250	1.1	250	1.1
*Breast cancer	301	1.4	100	0.5	100	0.5
b. Diabetes mellitus	414	1.9	379	1.7	90	0.4
c. Cardiovascular diseases	7278	33.2	3224	14.7	3013	13.4
*Other cardiovascular diseases	5194	23.7	1276	5.8	1268	5.8
d. Respiratory diseases	873	4.0	784	3.6	784	3.6
Injuries	**869**	**4.0**	**1044**	**4.8**	**988**	**4.5**
*Unintentional injuries	806	3.7	267	1.2	217	1.0
*Other unintentional injuries	501	2.3	137	0.6	106	0.5
*Ill-defined injuries/accidents	27	0.1	744	3.4	744	3.4
Ill-defined diseases	**2781**	**12.7**	**7347**	**33.5**	**7347**	**33.5**
Number of invalid ICD codes, by age and sex	**165**	**0.8**	**506**	**2.3**	**1180**	**5.4**
Invalid codes	**0**	**0**	**130**	**0.6**	**804**	**3.7**
No Code	**165**	**0.8**	**376**	**1.7**	**376**	**1.7**

versions, NCDs were the leading causes of death, although the difference between ICD-10 and 11 was very high (64.0% for ICD-10 and 41.3% for ICD-11). Within NCD, cardiovascular diseases were the leading causes among group 2 for both versions. Ill-defined causes exceeded the communicable diseases proportion of causes in ICD-11, with as high as 33.5% of the causes, compared to only 12.7% for ICD-10.

When comparing ICD-11 UCOD_compute and UCOD_complete outputs, 2 notable differences were observed. The invalid codes were higher in ICD-11, with the UCOD_complete version noting a 4-fold number of invalid codes, compared to UCOD_compute version, and the number of diabetes mellitus cases captured by the complete version was only a quarter of the number captured by the compute version alone.

Although the proportions of total communicable diseases were very close between ICD-10 and ICD-11, there was a difference in the frequencies of infectious and parasitic diseases, as well as in respiratory infections, namely COVID-19.

Breakdown of ill-defined causes

The proportion of ill-defined codes was higher in ICD-11 version, but the profile of chapters that the ill-defined codes belonged to differed between ICD-10 and ICD-11 (Table 2). In ICD-10, the majority of ill-defined causes were circulatory system diseases (Chapter 9), while it was for signs and symptoms in ICD-11. External causes of mortality constituted a large proportion of the ill-defined in ICD-11 (3.4% vs. 0.12% in ICD-10), while infectious and parasitic diseases were 0.3% of ill-defined codes (vs. 4.02% in ICD-10).

For all 3 outputs, around 50% of the ill-defined were cardiac arrest and unattended death and unspecified causes (Table 3). Some discrepancies were shown where there was a move from the general to the more specific, some causes were seen as ill-defined in ICD-10 but ceased

Table 2 **Discrepancies in ill-defined causes for ICD-10 and ICD-11 outputs, 2022**

	ICD-10		ICD-11_compute		ICD-11_complete	
Ill-defined causes by category of disease	**N**	**%**	**N**	**%**	**N**	**%**
All causes	**21 938**	**100**	**21 938**	**100**	**21 938**	**100**
Infectious and parasitic diseases	**881**	**4.0**	**73**	**0.3**	**73**	**0.3**
Neoplasms	172	0.8	389	1.7	389	1.7
Blood diseases	23	0.1	28	0.1	28	0.1
Endocrine, nutritional, metabolic...	40	0.2	52	0.2	52	0.2
Circulatory system diseases	**4838**	**22.1**	**904**	**4.1**	**777**	**3.5**
Respiratory system diseases	198	0.9	224	1.0	224	1.0
Digestive system diseases	39	0.2	47	0.2	46	0.2
Genitourinary system diseases	736	3.4	593	2.7	586	2.7
Perinatal conditions	2	0.0	0	0	0	0
Symptoms, signs	**2781**	**12.7**	**7347**	**33.5**	**7347**	**33.5**
External causes of morbidity and mortality	**27**	**0.1**	**744**	**3.4**	**744**	**3.4**
Total ill-defined	**9737**	**44.4**	**10400**	**47.4**	**10265**	**46.8**

to be so in ICD-11, and some causes emerged with ICD-11, e.g. lung laceration, which was not observed as ill-defined in ICD-10. Some causes were observed as ill-defined by the UCOD_compute but not by the complete output (such as essential hypertension), while acute respiratory failure was only present among the top 20 ill-defined of the UCOD_complete output.

Leading causes of death

When we examine the leading causes of death (Table 4), for both versions, COVID-19 remained the top leading cause of death, although its proportion was higher for ICD-11 (12.9% of cases) than ICD-10 (5.7%). In general, 17 of the 20 leading causes of death were the same between ICD-10 and ICD-11 although the ranks differed between the 2 versions. However, 3 causes of death that were in the top 20 by ICD-10 standards ceased to be so by ICD-11 standards: pancreatic cancer, colon and rectal cancers, and congenital heart anomalies. The 3 newly emerging causes that replaced them in the ICD-11 version among the top 20 causes of death were diarrhoeal disease, prostate cancer and birth asphyxia and birth trauma.

When we compared the 2 ICD-11 outputs, in the compute version (stem codes only), diabetes mellitus ranked the sixth leading cause of death while it was 19th in the UCOD_complete output, and road traffic accidents were eliminated from the top 20 causes of death.

In the 20 leading causes for child deaths (0–4-year-olds) (Table 5), 16 of the 20 leading causes were the same for ICD-10 and 11 although with different rankings. Four leading causes ceased to exist—fires, falls, Alzheimer's and other dementias, and chronic obstructive pulmonary disease. The 4 newly emerging causes from ICD-11 analysis were sudden infant death syndrome, trachea, bronchus and lung cancer, road traffic accidents, and hypertensive disease. When we compared the 2 ICD-11 outputs, we observed no change in the ranking except that the 20th leading cause turned out to be inflammatory heart disease instead of hypertensive disease.

Country disease profile

When examining the disease profile output created using ANACoD3, for both versions NCDs remained higher than communicable diseases (data not shown). The number of deaths due to communicable diseases was 4711 in ICD-10 output (compared to 6225 in ICD-11), while the number of NCD deaths was 16 193 in ICD-10 (compared to 14 162 in ICD-11). Compared to the world ratio of NCD/communicable diseases of 4, the ratio of NCD/communicable diseases for Lebanon was 3.4 with ICD-10 and 2.3 with ICD-11.

Usability index

The usability index is the proportion of completeness multiplied by (1 - proportion of ill-defined codes). This computed index was higher for ICD-10 (38.4) output than for ICD-11 (36.3).

Discussion

The definition of UCOD has not changed in mortality data and causes of death determination. For both versions of ICD, it is "the disease or injury that initiated the train of morbid events leading directly to death" (*8*). There are well-defined rules for the selection of the UCOD from among several codes. When the selection of UCOD is done by a trained coder, the rules for the selection can be easily applied. However, selection of UCOD becomes more difficult when we use an automated system that is not compatible with the complexity of the ICD-11 requirements, such as the Iris automated system.

Currently, when coding with ICD-11, UCOD selection is done through the DORIS tool. DORIS is a WHO software used with ICD-11 system to select the underlying cause of death (*19*). However, irrespective of the classification

Table 3 **Top 20 ill-defined codes, ICD-10, ICD-11_compute, ICD-11_complete**

	ICD-10			ICD-11_Compute			ICD-11_Complete		
Rank	code	Cause	%	code	Cause	%	code	Cause	%
1	I469	Cardiac arrest, unspecified	35.9	MC82.Z	Cardiac arrest, unspecified	36	MC82.Z	Cardiac arrest, unspecified	36.5
2	R99	Other ill-defined and unspecified causes of mortality	13.5	MH14	Other ill-defined and unspecified causes of mortality	12.9	MH14	Other ill-defined and unspecified causes of mortality	13.1
3	A419	Septicaemia, unspecified	8.8	MA15.0	Bacteraemia	6.5	MA15.0	Bacteraemia	6.5
4	I509	Heart failure, unspecified	5.9	BD1Z	Heart failure, unspecified	5.8	BD1Z	Heart failure, unspecified	5.8
5	R092	Respiratory arrest	5.5	MD33	Respiratory arrest	5.3	MD33	Respiratory arrest	5.3
6	N179	Acute renal failure, unspecified	3.7	GB60.Z	Acute kidney failure, stage unspecified	3.6	GB60.Z	Acute kidney failure, stage unspecified	3.7
7	R98	Unattended death	2.7	2D4Z	Unspecified malignant neoplasms of ill-defined or unspecified sites	3.6	2D4Z	Unspecified malignant neoplasms of ill-defined or unspecified sites	3.6
8	N189	Chronic renal failure, unspecified	2.4	NB32.31	Laceration of lung	3.2	NB32.31	Laceration of lung	3.2
9	I461	Sudden cardiac death, so described	2	MH13	Unattended death	2.5	MH13	Unattended death	2.6
10	I10	Essential (primary) hypertension	1.8	GB61.Z	Chronic kidney disease, stage unspecified	1.8	GB61.Z	Chronic kidney disease, stage unspecified	1.8
11	C809	Malignant neoplasm, unspecified	1.5	BA00.Z	Essential hypertension, unspecified	1.3	CB01	Pulmonary oedema	1
12	N19	Unspecified renal failure	1.2	CB01	Pulmonary oedema	1	MD11.5	Dyspnoea	1
13	I516	Cardiovascular disease, unspecified	1.1	MD11.5	Dyspnoea	1	MG40.Z	Shock, unspecified	0.9
14	R060	Dyspnoea	1	MG40.Z	Shock, unspecified	0.9	BD10	Congestive heart failure	0.8
15	J81	Pulmonary oedema	1	BD10	Congestive heart failure	0.8	MG40.0	Cardiogenic shock	0.8
16	I269	Pulmonary embolism without mention of acute cor pulmonale	0.9	MG40.0	Cardiogenic shock	0.8	1G41	Sepsis with septic shock	0.7
17	R579	Shock, unspecified	0.9	1G41	Sepsis with septic shock	0.7	ME1Y	Other specified symptoms or signs involving the digestive system or abdomen	0.7
18	I500	Congestive heart failure	0.9	ME1Y	Other specified symptoms or signs involving the digestive system or abdomen	0.7	BD11.Z	Left ventricular failure, unspecified	0.7
19	R198	Other specified symptoms and signs involving the digestive system and abdomen	0.8	BD11.Z	Left ventricular failure, unspecified	0.7	5C70.Z	Volume depletion, unspecified	0.5
20	R570	Cardiogenic shock	0.8	5C70.Z	Volume depletion, unspecified	0.5	CB41.0Z	Acute respiratory failure, unspecified	0.5

Change into more specific cause

Disappeared with ICD-11

Appeared with ICD-11

Appeared only in ICD-11_compute, but not in ICD-11_complete

Appeared only in ICD-11_complete

Table 4 20 leading causes of death between ICD-10 and ICD-11, all ages

Rank	ICD-10 Cause	%	ICD-11_compute Cause	%	ICD-11_complete Cause	%
1	COVID-19	5.7	COVID-19	12.9	COVID-19	12.8
2	Ischaemic heart disease	5.1	Lower respiratory infections	5.7	Lower respiratory infections	5.7
3	Lower respiratory infections	4.7	Ischaemic heart disease	5.7	Ischaemic heart disease	5.6
4	Cerebrovascular disease	4.2	Cerebrovascular disease	5.2	Nephritis and nephrosis	5
5	Nephritis and nephrosis	3.9	Nephritis and nephrosis	5.1	Cerebrovascular disease	4.9
6	Trachea, bronchus and lung cancers	3.8	Diabetes mellitus	2.6	Endocrine disorders	2.2
7	Prematurity and low birth weight	2.5	Endocrine disorders	2.2	Birth asphyxia and birth trauma	1.9
8	Diabetes mellitus	2.2	Hypertensive disease	2.1	Trachea, bronchus and lung cancers	1.7
9	Breast cancer	1.6	Birth asphyxia and birth trauma	2.1	Prematurity and low birth weight	1.6
10	Chronic obstructive pulmonary disease	1.5	Trachea, bronchus and lung cancers	1.7	Leukaemia	1.1
11	Endocrine disorders	1.4	Prematurity and low birth weight	1.6	Hypertensive disease	1.1
12	Colon and rectum cancers	1.2	Leukaemia	1.1	Chronic obstructive pulmonary disease	1.1
13	Hypertensive disease	1.1	Chronic obstructive pulmonary disease	1.1	Diarrhoeal diseases	0.9
14	Leukaemia	1	Diarrhoeal diseases	0.9	Lymphomas and multiple myeloma	0.8
15	Pancreas cancer	0.9	Lymphomas and multiple myeloma	0.8	Liver cancer	0.7
16	Road traffic accidents	0.8	Liver cancer	0.7	Cirrhosis of the liver	0.7
17	Liver cancer	0.8	Cirrhosis of the liver	0.7	Breast cancer	0.7
18	Lymphomas and multiple myeloma	0.7	Breast cancer	0.7	Prostate cancer	0.7
19	Cirrhosis of the liver	0.7	Prostate cancer	0.7	Diabetes mellitus	0.6
20	Congenital heart anomalies	0.5	Road traffic accidents	0.7	Colon and rectum cancers	0.6

used, selection of UCOD should not differ between the 2 systems, especially since both systems are from the same source and use the same set of selection rules. The change in selection of the UCOD between 2 systems questions the validity and comparability of datasets over time.

The transition from one system to another should not present many challenges if done as recommended (17). However, the structure and level of development of the health information system differ among countries. Hence, context-specific scenarios have to be used (15).

In examining the findings of this mapping exercise, it is essential to delve into its implications, limitations and effect on health policy. As reported in other countries, this mapping revealed the importance of maintaining consistency and accuracy in data recording and reporting (15). The discrepancies observed may have important implications for health policy especially when prioritising diseases and revealing the country profile. As in other medical research, where the change in methodology may explain the change in results, some of the discrepancies could be attributed to the use of 2 different automated systems for selecting the UCOD. To solve this problem, we recommend using the same tool for data analysis. However, because DORIS was only designed to work with ICD-11, it would be more appropriate to use Iris with ICD-11 when the mapping is done at the central level.

Our mapping was based on the description of the 3 provided codes and not on the codes themselves, and the selection of the UCOD was based on selection rules that are supposed to be standardised and well-defined in the foundation of the mortality and underlying cause of death selection. For that, the change in country profile is perplexing. We understand that ICD-11 requires more details, and in the absence of those details, there is

Table 5 20 leading causes of death between ICD-10 and ICD-11, children aged 0–4 years

Rank	Cause	% of total deaths*	Cause	% of total deaths*
1	Prematurity and low birth weight	28.7	Birth asphyxia and birth trauma	20.8
2	Congenital heart anomalies	5.8	Prematurity and low birth weight	16.3
3	Birth asphyxia and birth trauma	4.1	Endocrine disorders	4.8
4	Endocrine disorders	3.5	Congenital heart anomalies	3.3
5	Lower respiratory infections	2.6	Lower respiratory infections	2.5
6	Diarrhoeal diseases	1.1	Diarrhoeal diseases	1.2
7	Oesophageal atresia	0.8	COVID-19	1.2
8	COVID-19	0.6	Oesophageal atresia	1
9	Epilepsy	0.6	Cerebrovascular disease	0.8
10	Cerebrovascular disease	0.6	Epilepsy	0.6
11	Fires	0.6	Ischaemic heart disease	0.6
12	Ischaemic heart disease	0.4	Leukaemia	0.4
13	Leukaemia	0.4	Spina bifida	0.4
14	Spina bifida	0.4	Sudden infant death syndrome	0.4
15	Nephritis and nephrosis	0.3	Meningitis	0.4
16	Falls	0.3	Road traffic accidents	0.4
17	Meningitis	0.2	Nephritis and nephrosis	0.3
18	Alzheimer and other dementias	0.2	Abdominal wall defect	0.3
19	Chronic obstructive pulmonary disease	0.2	Trachea, bronchus and lung cancers	0.2
20	Abdominal wall defect	0.2	Hypertensive disease	0.2

a higher proportion of ill-defined codes, but we cannot understand the disappearance of diseases from the 20 leading causes of death, among which were 2 cancers (colorectal and pancreatic cancers), and the emergence of new leading causes of death, among which was prostate cancer. ICD-11 seems to have masked the importance of NCD to the benefit of communicable diseases, particularly diarrhoeal and infectious diseases. This is obvious by decreasing the ratio of NCD/communicable diseases from 3.4 to 2.3.

When mapping diabetes, ICD-11_complete mapping underestimated its importance, as 75% of the cases disappeared. It seems when the sub-categories and post-coordination codes were allowed, a lot of diabetes cases became invalid codes when uploaded into ANACoD3 for analysis [40% of invalid codes belonged to some kind of diabetes with complications (data not shown)]. Although mentioning the complication is a positive feature of ICD-11, since it allows more detailed patient files, it is not understood why ANACoD3 judged those codes as invalid.

For communicable diseases, diarrheal diseases were more emphasized in ICD-11 while they were incorporated under infectious diseases in ICD-10.

For early childhood mortality, it appears ICD-11 was more detailed, as birth asphyxia and birth trauma replaced prematurity and low birthweight in the leading causes of death.

Regarding the usability of the dataset, it seems ICD-10 provided better data usability judgement than ICD-11. This could be due to the requirement of more sophisticated and detailed systems for ICD-11 for the data to be considered of good quality, as already reported in other countries (*13*,*20*).

At face value, it appears that NCDs are at a disadvantage when

using ICD-11, compared to ICD-10. However, digging deeper into the DORIS tool output, and the 2 output forms of the UCOD ("UCOD_compute" or the "UCOD_computecomplete"), it seems that the decision on which version to use contributed to the discrepancies observed. ANACoD3 tool seems to have also contributed to this finding. When introduced into ANACoD3, the codes with subcategories and post-coordination codes were treated as invalid codes, and 42% of the invalid codes represented diabetes with complications codes. The fact that 75% of the diabetes deaths were due to complications and were rejected by ANACoD3 as invalid (data to be published in another article), highlights one of the advantages of the detailed nature of ICD-11, but its incompatibility with ANACoD3.

The more detailed nature of ICD-11 had a major impact on the mapping exercise, and there were many challenges in the transition from ICD-10 to ICD-11 at central level. However, the percentage of ill-defined codes did not differ significantly between the different versions, which means that the mapping exercise can still be useful when assessing the quality of coding. The limitations due to the use of an automated selection of UCOD can be mitigated by assigning experienced coders at the central level.

Regarding the presence of multiple tools—Iris with ICD-10, DORIS with ICD-11 and the ANACoD3 for data analysis—and despite the fact that the selection rules and disease descriptions were the same, we still obtained different results. We then recommend that the tools be reviewed to identify the reason for the inconsistencies observed especially since the subcategories and post-coordination codes are where the wealth of information lies and they are being rejected as invalid codes.

Conclusion

Our results support the belief that there is no better alternative to ICD-11 at the disease diagnosis stage with a full history of the patient being coded. The other alternative would be to possibly update the ANACoD3 tool to allow for the recognition of sub-coordination codes and not only stem codes. Until then, we recommend that mortality data mapping from ICD-10 to ICD-11 at central level can be a starting point only when the data gathered contains enough details, from the UCOD to the antecedents and the immediate cause of death and not just the UCOD, such as the case in the Lebanese hospital mortality system. Automated selection of the UCOD should be supervised by an experienced coder who can better understand the reasons behind the rejected codes. In our context, to benefit from the tools, we are developing a manual for step-by-step mapping, which can be used for historical data conversion until we are ready at the national level to adopt ICD-11. The manual should be a good starting point for training coders on the similarities and differences between ICD-10 and ICD-11 by providing context-specific examples.

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Transition des systèmes de données de santé de la 10e vers la 11e révision de la Classification internationale des maladies au Liban

Résumé

Contexte : Le passage de la 10e révision de la Classification internationale des maladies (CIM-10) à la 11e révision (CIM-11) permettra d'améliorer la précision de la notification des données de santé au niveau national ; toutefois, certains défis peuvent influencer les résultats de ce changement.

Objectif : Documenter l'expérience du Liban dans la transition de ses données sur la mortalité de la CIM-10 vers la CIM-11.

Méthodes : Nous avons recueilli des données sur la mortalité hospitalière auprès du ministère de la Santé publique du Liban pour l'année 2022 et les avons analysées selon la CIM-10 et la CIM-11. Nous avons cartographié et comparé les causes de décès signalées en fonction de la CIM-10 et de la CIM-11 en utilisant l'outil d'analyse des niveaux de mortalité et des causes de décès version 3 (ANACoD3).

Résultats : Les écarts entre les fréquences des causes de décès selon la CIM-10 et la CIM-11 étaient particulièrement marqués pour les maladies non transmissibles (MNT). Bien que les MNT demeurent les principales causes de décès dans les deux systèmes, leur proportion était plus élevée dans la CIM-10 (64,0 %) que dans la CIM-11 (41,29 %). Dix-sept des 20 principales causes de décès en général, ainsi que 16 des 20 principales causes chez les enfants âgés de 0 à 4 ans, étaient les mêmes dans la CIM-10 et la CIM-11, mais leur classement différait. Le ratio entre les maladies non transmissibles et les maladies transmissibles pour le Liban était de 3,4 selon la CIM-10 et de 2,3 selon la CIM-11, et l'indice d'utilisabilité était plus élevé pour la CIM-10 (38,4) que pour la CIM-11 (36,3).

Conclusion : Nos résultats montrent que le passage de la CIM-10 à la CIM-11 au niveau central peut contribuer à améliorer la qualité du codage des causes de décès, à condition que des données suffisantes soient disponibles à ce niveau et que le processus soit correctement supervisé par un codeur expérimenté.

نقل نُظم البيانات الصحية من المراجعة العاشرة للتصنيف الدولي للأمراض إلى المراجعة الحادية عشرة في لبنان

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الخلاصة

الخلفية: من شأن الانتقال من المراجعة العاشرة إلى المراجعة الحادية عشرة للتصنيف الدولي للأمراض أن يعزز دقةَ التبليغ بالبيانات الصحية على المستوى الوطني، ومع ذلك، فإن بعض التحديات تؤثر على نتيجة هذا التغيير.

الأهداف: هدفت هذه الدراسة إلى توثيق تجربة لبنان في نقل بيانات الوفيات من المراجعة العاشرة إلى المراجعة الحادية عشرة للتصنيف الدولي للأمراض.

طرق البحث: جمعنا بيانات وفيات المستشفيات من وزارة الصحة العامة في لبنان لعام 2022، وحللناها استنادًا إلى المراجعتين العاشرة والحادية عشرة للتصنيف الدولي للأمراض. وأجرينا توصيفًا ومقارنةً لأسباب الوفاة وفقًا للمراجعتين العاشرة والحادية عشرة للتصنيف الدولي للأمراض باستخدام الأداة الإلكترونية لتحليل الوفيات وأسباب الوفاة: أناكود 3.

النتائج: كانت الاختلافات في تواتر أسباب الوفاة بين المراجعتين العاشرة والحادية عشرة للتصنيف الدولي للأمراض أكثر وضوحًا فيما يتعلق بالأمراض غير السارية. ورغم أن الأمراض غير السارية كانت الأسباب الرئيسية للوفاة في كلتا المراجعتين، كان الفرق أكبر في المراجعة العاشرة للتصنيف الدولي للأمراض (64.0%) منه في المراجعة الحادية عشرة للتصنيف الدولي للأمراض (41.29%). ويتشابه 17 من أصل 20 سببًا رئيسيًّا للوفاة عمومًا و16 من أصل 20 سببًا رئيسيًّا للوفاة في صفوف الأطفال (الذين تتراوح أعمارهم بين صفر و4 سنوات) بين المراجعتين العاشرة والحادية عشرة للتصنيف الدولي للأمراض، ولكن بتصنيفات مختلفة. وبلغ معدل الأمراض غير السارية/ السارية فيما يخص لبنان 3.4 في المراجعة العاشرة للتصنيف الدولي للأمراض، و2.3 في المراجعة الحادية عشرة للتصنيف الدولي للأمراض، وكان مؤشر قابلية الاستخدام أعلى في المراجعة العاشرة للتصنيف الدولي للأمراض (38.4) منه في المراجعة الحادية عشرة للتصنيف الدولي للأمراض (36.3).

الاستنتاجات: تشير النتائج التي توصلنا إليها إلى أن الانتقال من المراجعة العاشرة إلى المراجعة الحادية عشرة للتصنيف الدولي للأمراض على المستوى المركزي يمكن أن يكون مفيدًا في تعزيز جودة ترميز سبب الوفاة إذا كانت هناك بيانات كافية على المستوى المركزي، وإذا رصدها مرمِّزون يتمتعون بالخبرة الكافية رصدًا جيدًا.

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