Topics: Recent topics in public health in Japan 2026

＜ Review ＞

Bridging statistics and clinical reality: A strategic proposal for ICD-11 implementation in Japan

TAKAHASHI Arata[1)], WATARI Mika[2)], HOSHI Keika[1)], NISHIO Akemi[1)], SATO Yasuto[1)]

[1)] Center for Health Informatics Policy, National Institute of Public Health
[2)] Department of Public Health Policy, National Institute of Public Health

Abstract

ICD-11 represents a paradigm shift from the paper-based ICD-10 classification to a fully digital, ontology-based ecosystem. With Japan targeting official implementation in 2027, this paper outlines the process leading to the adoption of ICD-11 in Japan and discusses how to leverage this transition as a foundation for future data-driven healthcare. We address the challenge of leveraging ICD-11's detailed attributes—enabled by post-coordination—while maintaining statistical continuity. By examining domestic application scenarios ranging from the medical service fee system to regional health policy, we suggest a phased implementation strategy. Our discussion highlights three priorities: (1) maintaining statistical continuity through clear aggregation rules; (2) defining a phased scope for post-coordination attributes; and (3) promoting shared infrastructures for validation and training. We conclude that establishing robust governance and educational systems is essential for translating detailed clinical data into effective policy and clinical practice.

keywords: ICD-11, post-coordination, statistical continuity, phased implementation, ICD-API

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I. Introduction: Background and strategic implications

The International Statistical Classification of Diseases and Related Health Problems (ICD), issued by the World Health Organization (WHO), serves as the global standard for health data, clinical documentation, and statistical aggregation. Japan has utilized the ICD for over a century. Currently, the ICD-10 (2013 version) serves as the foundation for public health statistics and insurance reimbursement and has been in use for approximately 30 years since the initial ICD-10 implementation in 1995. The ICD-11, which was adopted by the World Health Assembly in May 2019 and has been officially effective since January 2022, marks a fundamental shift from the static, paper-based structure of ICD-10 to a fully digital, ontology-based ecosystem. Its enhanced expressiveness, which is achieved through post-coordination, enables the granular description of clinical attributes such as laterality, severity, and external causes. Such detailed clinical data are vital for enhancing international interoperability. Japan's planned implementation in 2027 should be seen not as the end of a transition, but as a critical starting point for linking high-value data to policy, research, and local practice.

II. The paradigm shift: Major changes from ICD-10 to ICD-11

1. Restructuring and consistency

ICD-11 has expanded significantly from 22 chapters in ICD-10 to 28 chapters, enhancing systemic consistency. Regarding disease classification, it introduces new independent chapters for Diseases of the immune system (Chapter 04), Sleep-wake disorders (Chapter 07), and Conditions related to sexual health (Chapter 17) [1]. Major structural additions include Traditional Medicine (Chapter 26) [2], the Functioning Assessment (Section V) [3-5], and Extension Codes (Chapter X). These updates align with clinical ad-

Corresponding author: TAKAHASHI Arata
E-mail: takahashi.a.rt@niph.go.jp

Comparison of ICD-10 and ICD-11

ICD-10	→	ICD-11
22	**Chapters**	28
14,000	**Code**	>18,000
	Terms	>1.6 million
disease	**Target**	disease＋α
paper	**Design**	digital

Figure 1   ICD-11 increases the number of clinical expressions via expanded chapters and codes, shifting management from a paper to a digital format.

vances; notably, refined taxonomies in neuropsychiatry [6,7] and chronic pain [8] support multidimensional research (Fig 1).

2. Digital structure and post-coordination

Unlike the ICD-10 structure (codes start with a letter followed by two digits), ICD-11 codes utilize a new alphanumeric structure that is designed for digital management. In particular, it unifies the "Foundation" and statistical "Linearization"—such as Mortality and Morbidity Statistics (MMS) tailored for different use cases—via unique URIs [9].

The core innovation, post-coordination, captures detailed attributes such as laterality and severity associated with diseases. This mechanism requires codes to be divided into a Stem Code (representing the core disease or condition) and Extension Codes (representing attributes) [10], achieving a flexibility that was not possible with the single-axis

ICD-10 structure. This structure allows conditions, which were previously merged under broad residual categories, to be described with granularity (Fig 2). Crucially, aggregation rules must balance this granularity with statistical comparability [3].

III. Latest developments in Japan: Government roadmap for statistical utilization and author proposals

1. The government roadmap (2018–2027)

Discussions regarding the application of ICD-11 in statistical standards began around 2018 at the Ministry of Health, Labour and Welfare (MHLW). After approximately seven years of deliberation involving the translation and validation of terms used in Japanese statistics, in September 2024 the Social Security Council (Subcommittee on Disease, Injury, and Cause of Death Classification) of MHLW reported the proposed translations and a draft classification based on ICD-11 [11]. Following consultation with the Statistics Commission of the Ministry of Internal Affairs and Communications, the revision of the classification from the ICD-10 version was officially finalized in 2025, and Japan has established a definitive roadmap. Key milestones include official translation by 2025, promulgation in January 2026, and full statistical application by January 2027 [11].

2. Challenges and proposals for statistical continuity

Determining the specific coding granularity (i.e., defining valid post-coordination patterns) and finalizing aggregation rules are urgent priorities. Although the government roadmap specifies classification tables based on Stem Codes, the

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"Right Upper Lobe Lung Cancer (Small Cell Carcinoma), Stage 4"

Stem Code / Extension Code

ICD-10 : **C34.1**
[Structure] Starts with a letter. Represents concepts with a single code (Single-axis). Limitation: This code captures only "Lung cancer (C34)" and "Upper lobe (.1)".

ICD-11 : **2C25.1&XK9K&XA9HN5&XS9R**
[Structure] Starts with a number/letter (Alphanumeric). [Post-Coordination] A mechanism linking a "Stem Code" (core condition) and "Extension Codes" (attributes) using an ampersand "&". Benefit: This enables a description of histology, location, laterality, and severity as a single string.
Stem Code: 2C25.1 = Small cell carcinoma of bronchus or lung (Histology)
Extension Codes:
*   XK9K = Right (Laterality) ; XA9HN5 = Upper lobe of lung (Anatomy) ; XS9R = Stage 4 (Severity)*

Foundation vs Linearization (MMS)

The Foundation contains the underlying disease definitions. Even if concepts share the same statistical code (MMS), they possess unique URIs in the Foundation.
Example:
・Small cell lung carcinoma
*   MMS Code: 2C25.1*
*   Foundation URI: http://id.who.int/icd/entity/1800431439*
・Combined small cell lung carcinoma
*   MMS Code: 2C25.1 (Same code)*
*   Foundation URI: http://id.who.int/icd/entity/392248394 (Different URI)*

Figure 2   ICD-11 Coding Example

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Table 1　ICD-10 to ICD-11 bridge coding examples (Chapter level samples)

		ICD-11 Chapter																									
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	X	Total
ICD-10 Chapter	I	887							3						1												32	923
	II		814	1																							1	816
	III			129	62																	1						192
	IV	1			5	396							5		1		1					1						412
	V						427	9	7										15			1	1		7			467
	VI	19			3	2	3	8	335												1		23					394
	VII	1			1					296												1	4	3	1			307
	VIII										133												2					135
	IX	10			2				62			364		8							1		6					453
	X	10			1								269															280
	XI	9					1							482		1					4		10					507
	XII	20	3		4	1	1						7		351	2	2						8					399
	XIII	9		1	42	1			5		1		1		2	534			1		1		25					623
	XIV	10													2			475	2	1	2		13					505
	XV																		500									500
	XVI							1	1				1	1	1					384								389
	XVII		2		1				1	1		1			17	1	7			6	668							705
	XVIII	5			1	1			5					1	5							382						400
	XIX				7				2			1		1	1							2	1357	56	1		20	1448
	XX						6															11	1	1525			5	1548
	XXI	2																							703			705
	XXII	2																				22		2	4	82		112
	Total	985	819	131	126	403	439	19	422	297	134	373	276	493	381	538	485	17	502	391	680	509	1361	1583	716	82	58	12220

*The analysis of chapter movements is based on the mapping file, "10To11MapToOneCategory.xlsx" provided by the WHO.
The application of ICD-11 may result in codes being moved to different chapters. Codes that have been moved to different chapters may impact statistics, so caution is required in their interpretation.

official scopes for Extension Codes and post-coordination have not yet been explicitly defined. To address this gap, concurrent education and system synchronization are essential [12], while being informed by international field trials that are already validating ICD-11's fitness for purpose [13,14]. The utilization of detailed attributes presents a trade-off between granular data collection and the continuity of time-series statistics.

To navigate this trade-off, we propose the following three key steps to ensure accuracy and continuity beyond the official schedule:

1. **Precise Coding**: Thorough application of new rules, including post-coordination, to capture clinical reality;
2. **Bridge Coding**: Dual coding of ICD-10 and ICD-11 during the transition to identify discrepancies (Table 1); and
3. **Statistical Recalculation**: Assessment of potential fluctuations in published values (e.g., cause-of-death rankings).

To mitigate any "apparent increase or decrease" in statistical values caused by classification changes, it is essential to verify whether such fluctuations arise from coding system updates or reflect actual epidemiological trends. This requires a statistical analysis of the same dataset coded with both ICD-10 and ICD-11, specifically calculating Comparability Ratios (CR) with 95% confidence intervals (CI) [15]. Furthermore, regarding mortality statistics—a priority for Japan [11]—defining which post-coordination attributes are permissible in the coding process is critical for valid selection of underlying cause of death. Given the increased complexity of these selection rules, transitioning to automated coding systems such as Iris [16] or DORIS [17] will be inevitable. However, both a systematic comparison with

reference standards and expert review is required prior to full implementation [18].

IV. Unlocking the potential of health data utilization beyond statistics in Japan

1. Upgrading Japan's health information through ICD-11's digital iteroperability

ICD-11 enhances semantic interoperability across EHRs, registries, and health statistics via machine-readable ICD-API connections [10,19]. Currently, Japan's health statistics rely on ICD-10-based classifications, which often fail to capture the rich clinical data stored in electronic charts. Fully leveraging ICD-11's digital capabilities allows the precise meaning of clinical data to be preserved across different platforms, facilitating seamless automation. Detailed attributes derived from post-coordination have the potential to refine public statistics. For instance, this enables precise surveillance of infectious diseases and antimicrobial resistance (AMR) by encoding causative pathogens and resistance patterns [3], and is expected to improve the monitoring of patient safety events through the enhanced Quality and Safety classification [20]. Standardized terminology minimizes ambiguity in electronic health record (EHR) integration [19,21], which is essential for consistent data use [22].

2. Domestic application: Morbidity data collection and registries

In the collection of morbidity data, capturing the full clinical picture is paramount. Valid ICD-11 code clusters, which are automatically validated through the ICD-API, allow for a detailed clinical representation without relying on pre-coordinated single codes. Standardized aggregation

rules are essential to retain attributes for analysis while ensuring consistent reporting [3]. This supports the Diagnosis Procedure Combination (DPC) system—Japan's case-mix classification system, which is widely adopted by acute care hospitals [22] and for hospital risk adjustment. In addition, mapping registry definitions to ICD-11 clusters improves case extraction accuracy and linkage with other data [14,23].

3. Healthcare facility operations: AI-assisted coding and data quality

Supportive AI coding is expected to enhance consistency and efficiency. A "human-in-the-loop" workflow—spanning AI suggestion, API verification, and human judgment—is recommended [10]. Robust quality management of coding precision should include monitoring KPIs (e.g., invalid combination rates) via double-coding [13,14]. Furthermore, managing "co-versioning"—synchronizing coding models with aggregation specifications—and establishing exception escalation procedures would ensure data stability [12].

4. Regional health policy and public health centers

Japanese municipalities can leverage ICD-11's detailed attributes to refine regional health policy and resource allocation with greater accountability. Specifically, visualizing data is vital in areas such as elderly fall prevention [3,10], nursing care planning [5], and health checkups [24]. Integrating diverse data sources, including emergency transport records and claims data facilitates the prioritization of maternal, child, and elderly health support based on severity. Furthermore, combining syndromic surveillance with valid ICD-11 clusters enables the early detection of health events and cross-regional comparisons [25]. To sustain these applications, a shared infrastructure for public aggregation and quality monitoring is indispensable [13].

V. Recommendations: A phased strategy for implementation

To balance statistical continuity with the benefits of detailed clinical data, a transparent, phased strategy is recommended. International lessons suggest that success relies on robust governance, shared resources, and continuity assurance [12,17,18]. We anticipate that the application of ICD-11 to statistical standards will catalyze its adoption across broader healthcare domains. To ensure that this comprehensive transition of domestic health data is effective, we propose the following:

1. **Ensuring Statistical Continuity**: To address the challenges outlined in Section 3, aggregation specifications must be published clearly. Regarding Comparability Ratios (CRs), verification of confidence intervals is vital to validate the significance of fluctuations, thereby ensuring the scientific reliability of national statistics.

2. **Phased Implementation Scope**: Instead of mandating full granularity immediately, a step-by-step adoption is desirable. The initial phase should focus on stem codes and essential post-coordination attributes, gradually expanding to detailed optional attributes as the system matures.

3. **Infrastructure for Shared Resources**: Drawing on the Nordic model of shared validation frameworks and the Netherlands' knowledge hub approach, establishing a consortium to share validation assets and training materials would streamline adoption. Additionally, following the examples of Canada and the US, active stakeholder engagement through readiness assessments and public hearings is crucial for consensus-building [12].

VI. Conclusion

This review has outlined Japan's roadmap for implementing ICD-11 for governmental statistics in 2027, emphasizing the requirements for a seamless transition and effective data utilization. The success of this national initiative hinges on balancing the detailed scope of post-coordination with standardized aggregation rules. The upcoming year will be decisive for operational readiness. Efforts must now focus on publishing clear aggregation rules, initiating bridge coding trials, and comprehensively validating the Japanese localization and usability of core tools such as the ICD-API and the Coding Tool. Transparency in these rules and the active utilization of shared digital assets will simultaneously enhance the secondary use of domestic clinical data and international alignment. With this solid foundation in place, the 2027 implementation should be viewed as a starting point for reliably connecting detailed clinical data to policy, research, and regional practice.

Conflicts of Interest

The authors declare no conflicts of interest.

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＜総説＞

統計と臨床実態の架橋：日本における ICD-11 導入への戦略的提言

高橋新¹⁾，渡三佳²⁾，星佳芳¹⁾，西大明美¹⁾，佐藤康仁¹⁾

¹⁾ 国立保健医療科学院保健医療情報政策研究センター
²⁾ 国立保健医療科学院公衆衛生政策研究部

抄録

　ICD-11（国際疾病分類第 11 回改訂版）は，ICD-10 における紙ベースの分類から，完全デジタル化されたオントロジー基盤の情報体系への大きな転換点となる．日本では 2027 年の本格導入を目指し，現在，翻訳および技術的検証が進められている．本稿では，その導入プロセスを概説するとともに，この移行を単なる分類コードの更新ではなく，将来のデータ駆動型医療を実現するための基盤整備と捉え，いかに活用すべきかを論じる．

　ICD-11 の最大の特徴は，ステムコードとエクステンションコードを組み合わせる「ポストコーディネーション」機能にある．これにより，重症度，左右差，外因といった詳細な臨床情報の記述が可能となる一方，従来の統計との時系列的な一貫性（統計的継続性）を維持することが喫緊の課題となる．本稿では，この課題に対し，病院における DPC（診断群分類）制度への適用，レジストリとのデータ連携，さらに自治体における高齢者転倒予防や救急搬送データの可視化といった，具体的な国内適用シナリオにおける活用の可能性を検討する．

　これらの検討に基づき，本稿では円滑な移行に向けた段階的な導入の在り方を提示する．具体的には，⑴明確な集計ルールの策定と，比較可能性比（Comparability Ratios: CR）の検証による統計的継続性の担保，⑵必須とするポストコーディネーションの適用範囲の段階的な定義，⑶共有バリデーション・フレームワークや教育リソースといった共有基盤の整備，の 3 点を提言する．強固なガバナンスと「人間が介在する（Human-in-the-loop）」品質管理体制の確立は，ICD-11 がもたらす詳細な臨床データを，実効性のある政策立案や臨床実践へと還元するために不可欠となる．2027 年の導入はゴールではなく，日本の医療情報基盤を抜本的に再構築するための重要な出発点である．

キーワード：ICD-11, ポストコーディネーション，統計的継続性，段階的導入，ICD-API