

Health Management Information Systems for Universal Health Coverage

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Importance of Health Management Information Systems (HMIS)

Information is the only block among the six health systems building blocks that comprehensively describes the other five blocks of health service delivery, workforce, financing, medicine and technology and governance (WHO 2007). Health management information systems (HMIS) help policy makers develop evidence-based policies and health care providers to achieve the overall health system goal of equity, efficiency and quality. Among stakeholders, few have doubts on the importance of HMIS, but many have enormous doubts on how to create an efficient HMIS architecture.

The scope of this policy brief is to highlight the important issues that need to be addressed when developing a roadmap for achieving universal health coverage (UHC) and the health-related sustainable development goals (SDGs) through strengthening primary health care (PHC) systems.



The context and historical development of HMIS in Thailand

When Thailand was formulating a UHC policy, policy makers relied on macro-level health finance data captured by the national health account (NHA) methodology that had been endorsed by the World Health Organization (WHO). The government was able to utilize cost data in the NHA to determine the need for outpatient and inpatient services at different levels of care. Once the UHC policy was declared, the significance of HMIS to manage all five building blocks of health systems for evaluating systems efficiency, equity and quality became evident.

Identification of beneficiaries is one of the key information needs for rolling-out an insurance scheme. The central computerized civil registration (CR) and the unique citizen identification (CID) number system established in the 1950s were used to identify beneficiaries covered by the Universal Coverage Scheme (UCS). In Thailand, the UCS insures the population not covered by the Civil Servant Medical Benefit Scheme (CSMBS) and the Social Security Scheme (SSS). The National Health Security Office (NHSO), which manages the UCS, took an active role to update and maintain the list of beneficiaries by working with the Ministry of Interior, which is responsible for registering and generating CID for all births, and deaths, and negotiating with the Bureau of Budget

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for the capitation budget allocated to contracted providers. When integrating the CR and the unique CID systems, the World Bank (2018) recommends that the CID is issued at the time of birth registration, a practice that was applied in Thailand. This will not only uniquely identify a citizen but also facilitate the completeness of a CR system because the health insurance benefit of a baby will be automatically covered when the baby is registered and issued a CID (Pannarunothai and Kijjanayotin 2018).

Creating a standard dataset was critical in making the system of inpatient payments to hospitals based on diagnosis-related group (DRG) under a fixed global budget feasible. Hospitals were required to use the standard dataset to submit data on discharge summary for processing claims and payments. The standard dataset delineates data fields (data elements) and data coding (code sets) that are used for claim submissions. The first version of the standard dataset used for DRG claims contained 12 standard normalized files with 47 data elements, covering inpatient discharges and outpatient visits (see Figure 1). Since then, NHSO has used the World Health Organization's International Classification of Disease (ICD), a code set used for diagnosis that had been used in Thailand since 1994. This format of data submission to the national level has become the most practical and was recently extended to 43 standard files covering health activities in the community and home visit services (Health Data Center 2018).

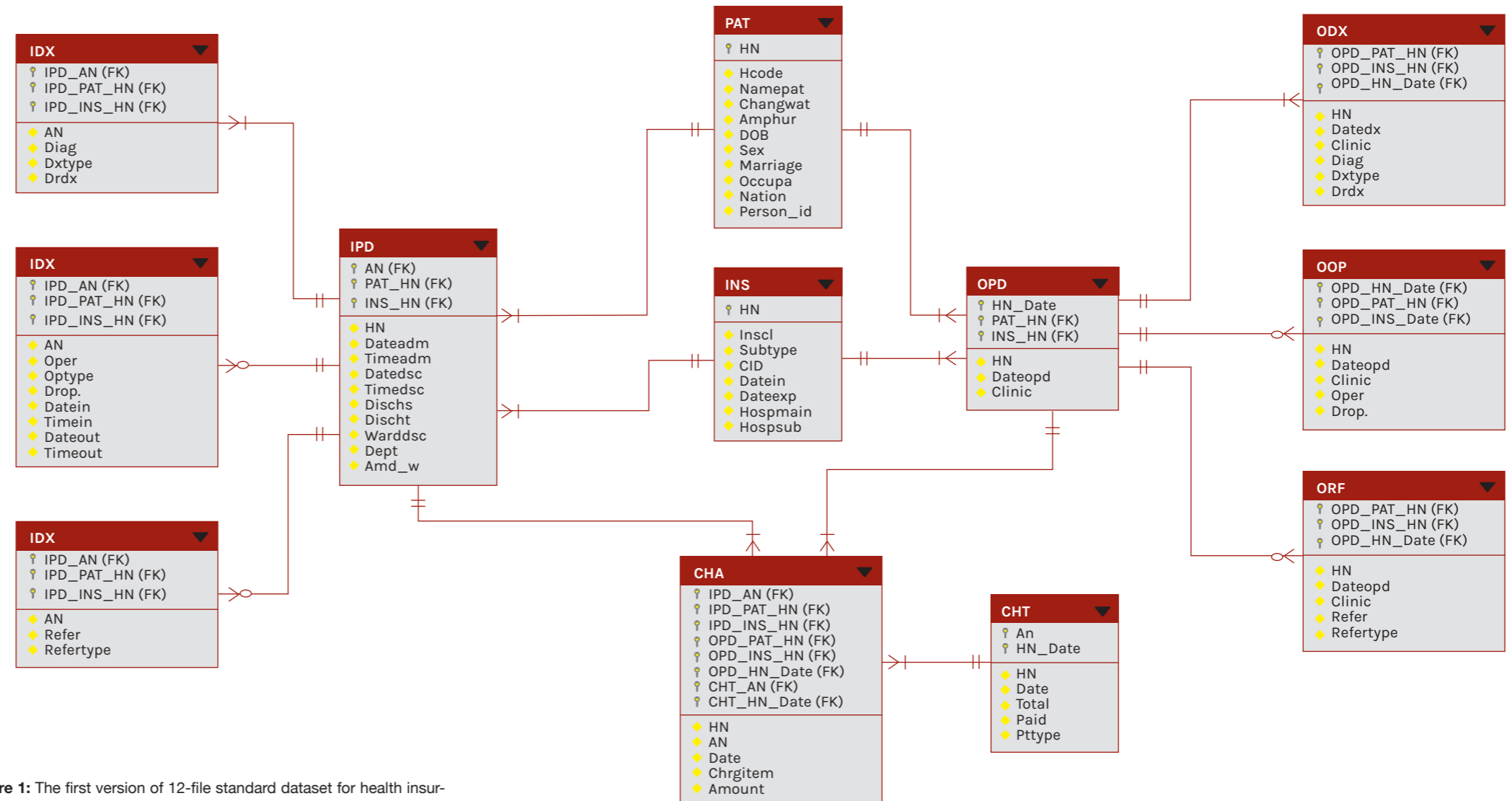


Figure 1: The first version of 12-file standard dataset for health insurance claim in Thailand (PAT = Patient demographic file, INS = Insurance scheme file, OPD = Out Patient Department file, ODX= Outpatient diagnosis file, OOP= Outpatient procedure file, ORF = Outpatient referral file, IPD = Inpatient department file, IDX = Inpatient diagnosis file, IOP= Inpatient procedure file, IRF = Inpatient referral file, CHA = Charge item file, CHT = Total Charge file)

The standard dataset approach enabled interoperability of inpatient reimbursement information systems (Kijjanayotin 2011). Hospitals are free to use an in-house or commercial vendor hospital information software that is appropriate for their work processes but are required to export data specified in the standard dataset for processing DRG claims. The Health Systems Research Institute (HSRI) has funded research activities since 1993 and has led to the development of a comprehensive information system for processing DRG claims using a locally developed software tool to handle complex inpatient clinical and treatment data into around a thousand DRGs. The software, called Thai DRG Grouper, is calibrated with cost weights (or relative weight, RW) to calculate payments to the hospital. Subsequent versions of the Thai DRG Grouper received funding from the NHSO and the software was used for managing the DRG claims processing for the UCS across all hospital providers.

Setting up this system for payments allowed for transparency in data processing at an affordable cost to the country as a propriety software was not needed.

HMIS requirements for managing capitation payment were, on the other hand, minimal. In order to use the data to evaluate the quality of the PHC system, detailed health profiles of individuals on the registration list, available to main contractors, became essential. The evaluations assessed the effectiveness of the PHC system in preventing non-communicable diseases (NCDs) and its complications, the rate of unnecessary hospitalization of ambulatory care sensitive conditions (ACSCs) such as asthma, diabetes, and hypertension by primary care providers (PCP). These analyses were made possible by linking the outpatient and inpatient data in the 12-file standard dataset and allowed NHSO to monitor and improve the quality (including equity and efficiency) of the PHC system. Moreover,

the standard dataset approach with the recent 43 standard data files could also be useful in monitoring the success of school health programs (one of the PHC activities) where there are several opportunities for improving the analysis on health service activities at the school or student levels (Kittiratchakool et al 2018).

The Health Information System Standard and Processing Administration (HISPA), currently under the HSRI, has made extensive investments in standardizing data requirements. This was required as different types of payment methods, such as, high cost medicine, investigation, high cost care medical devices, etc, that go beyond capitation and DRG were implemented. The Thai Medicines Terminology (TMT) was developed not only for claim reimbursement but also for monitoring drug purchasing by hospitals in Thailand. The TMT can also potentially be used to track accessibility to high cost drugs, auditing for fraud detection and understanding patient's adherence to drug treatment.

The three government insurance schemes, UCS, CSMBS and SSS are managed by three different HMIS offices. The majority of the UCS data is managed by the NHSO while the CSMBS and SSS claims are managed by HISPA at the Comptroller General Department and the Social Security Office, respectively. The concept of setting up an independent and impartial National Clearing House has been proposed to manage claims data for all three public insurance systems in one office with a single preferred set of data standards. This office will be set up as an autonomous body having national coverage of good quality data for public use.

We live in the era of 'Big Data' and the private sector has demonstrated the many possibilities of utilizing transaction data for commercial use. HISPA's vision is to empower every Thai citizen through health literacy and managing personal health outcomes by accessing his or her own personal health records from reliable claim data. This presents the next frontier for leveraging the capabilities of HMIS to improve healthcare.

Key lessons for India and other countries ("do's and don'ts")

The Government of India (GoI) announced the National Health Protection Scheme (NHPS) under the "Ayushman Bharat" program in early 2018, however, data requirements for realizing this goal can be challenging. The lessons from Thailand's experiences with HMIS for UHC can be listed as do's and don'ts although their application depends on country reality and context.

✓ Do's

- Strengthen the quality and coverage of the civil registration and vital statistics (CRVS) system with the unique citizen identification (CID) system and use the integrated system as the skeleton of the national HMIS to ensure citizens' entitlement.
- Design an HMIS that utilizes (or extracts) data from the operational healthcare information systems at the point of service with most accurate data. If the transaction data are linked to payment method, the response for data collection and adherence to quality reporting are high, data audit (pre- and post audit) should be set up to ensure better data quality.
- Invest in developing interoperability of data and national health data standards that can be used by all health information applications and services.
- Review data standards used internationally and adopting the most practical/applicable data standards for compiling data for the national HMIS is essential.
- Maintain healthcare resource use data that can be used to benchmark workforce productivity and quality of service at the health facility level to project future resource needs.
- Maximize the use of transaction data with the national survey data to comprehensively describe the health systems situation of the country and develop evidence-based health and healthy public policies.
- Promote the use of HMIS by researchers and health policy practitioners for policy development and policy evaluation within a research ethics framework.

✗ Don'ts

- Develop information systems that do not comply with national health data standards.
- Delay the merging of fragmented data systems at least at the national level.
- Collect data at point of care if it is not used.
- Duplicate data collection efforts (create once, use many).

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About the author



Supasit Pannarunothai obtained his MD from Mahidol University and PhD from the London School of Hygiene and Tropical Medicine. Since retiring as professor and dean from the Faculty of Medicine at Naresuan University, he has chaired the Centre for Health Equity Monitoring Foundation and continued to support his areas of expertise in health equity, health financing and casemix research.

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