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Using health care service administrative data to improve national vital statistics: Thailand experiences [1]

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[1] The text is presented without formal editing.

Introduction

1. Thai civil registration system has evolved since its establishment a century ago. During the past three decades, the system has evolved from manual paper based registration system to electronic centralized and online system. Currently, all provincial registration offices and almost all of the district registration offices are online with the central civil registration system. Thai vital statistics has been much improved since 1996 when the civil registration system of Ministry of Interior (MOI) has provided electronic death and birth data directly to the vital statistics management proc**e**ss of the Ministry of Public Health (MO**P**H). Due to the country un**i**vers**a**l health care coverage, which has been implemented when the national health insurance act was promulgated in 2001, the insurance reimbursement administrative data of the majority of in-hospital patients which contain standard coded diseases data and status at discharge are now available. The data are being used to enhance the quality of country vital statistics.

2. This paper aims to describe Thailand experience in using administrative data from health insurance reimbursement system to increase the accuracy of cause of death (COD) information. The first section describes Thailand civil registration system of MOI's and the vital statistics of MOPH. The next section provides brief insight about Thai national insurance administrative data. The final section explains how Thailand uses individual health care service administrative data to complement the country's vital statistics.

I. The civil registration and the vital statistics (1)

The civil registration system

3. Civil registration has long been established in Thailand. The first registration law was enacted in 1909. The legislation specified the preparation and maintenance of population registration and the creation of birth and death registration. Later on, in 1917, the registration of births and deaths was enforced throughout the kingdom. With the advent of democracy in 1936, the Civil Registration in Municipal Area Act of 1936 was issued, which facilitated the creation of a network of local registry office, acting registrars, laid down clear guidelines for the registration of birth, death, fetal death (for the first time), household and population registration**o**n, and directed the entry of births and death**s** in**t**o the population register. A comprehensive civil registration act was passed in 1956, which was made applicable to the entire country and supersede earlier laws. Among others, the Act required the population register to be prepared householdwise, starting with the head of the household. Greater facilities were offered for the reporting of vital events and an increased number of registration offices were created, spreading over the entire country.

4. During 1970-1972, significant improvements were introduced in the civil registration system, with a view to achieving a high level of accuracy and completeness in registration. All the forms and registers were reviewed and revised. The birth and death registers were replaced by the birth and death certificates, and household register forms were substituted by new improved forms. In 1972, the Civil Registration Act of 1956 was revised by an Announcement No. 234 of the Revolution Council (established after the military coup d'état). It provided for the appointment of the hierarchy of registration authorities from central government to district level. It was also laid down clear procedures **f**or vital registration, and specified types of informants, place and time for registration, forms, functions, responsibility of registrars, and other requirement for registration. The Ministry of Interior issued the Regulation of Central

Civil Registration Division of 1973, on the basis of which the provisions of the 1972 Act were implemented.

5. Thailand has passed long experience in civil registration and maintains a continuous and sustainable system, operating by central administration. The national authority for civil registration is the Civil Registration Division under the Department of Local Administration, Ministry of Interior. This central registration authority office located in Bangkok, the capital city of the country, has duty on directing, coordinating, and supervising the registration function throughout the country. The Director of the Department of Local Administration is the Registrar-General. The Head of the Civil Registration Division serves as the Deputy Registrar-General. The primary registration units, located in the municipalities and in the districts, are responsible for recording the vital events in accordance with the regulations and instructions issued by the Civil Registration Division.

6. By law, any birth must be registered within 15 days while death and still birth must be within 24 hours. The head of the household or the baby's mother is responsible for reporting the birth or still birth to the local registrar. In the case of death, the head of the household or the person who finds the body must report the event. According to the situation, a vital event may be reported to local registrar at the municipal office or to the "Tambon" registrar at the sub-district level, or to the assistant Tambon registrar at the village level. Significant improvement in the registration of births and deaths and in the population register has been made after the Ministry of Interior established in 1982 "the Population Identification Number Project". This project paved the way to create a computerized population database. To this end, a Computer Centre for Civil Registration was established in the Civil Registration Division, becoming to the Bureau of Registration Administration later. The population identification number has become the entry key to the population files ever since. The Bureau of Registration Administration operates and maintains the data base for the entire population of the country, and issues identity cards and household booklets passport like. The population identification number comprises of 13 digits, sometimes called "13 digits" number. The electronic files of the population kept at the computer center are arranged according to the population identification number. The record for every person in the file contains all information taken from population register, birth and death certificates sent from the registration offices throughout the country are transferred to and kept at the Computer Centre for Civil Registration. The personal identification number is given to each individual at birth, or whenever the individual enters into the population register for the first time. The personal identification number is assigned by the District Registrar at the time of registration of birth. Previously Thai citizens got their identification (ID) cards at the age of 15. Since the early of this year (2011), they can get their ID cards starting at the age of seven years. The card has to be renewed every 6 years. Population identification number is needed when people transact with government and many non government agencies, for example in getting free healthcare services, enrolling young children to free education, or asking for bank account.

The vital statistics system (2)

7. While the Ministry of Interior (MOI) is being in charge of the civil registration system, the Ministry of Public Health (MOPH) is responsible in compilation, statistical processing, and publication of vital statistics from this source. The compilation of vital statistics was initiated in 1920 but a Vital Statistics Division was established in MOPH in 1942. After the restructure of the MOPH in 1993, vital statistics function has been done at the Health Information Center, Bureau of the Health Policy and Strategy, the Office of the Permanent secretary of the MOPH.

8. The birth/death registration has been routinely used as the main source of birth and mortality statistics since the establishment of the civil registration system. The vital statistics system has been evolving along with the civil registration from paper-based data collection to electronic-based system. Before 1996, MOPH officers had compiled birth/death statistics from paper forms providing by MOI's local and central registration offices. (Figure 1) The process created the discrepancy of birth/death counts between report from provincial health offices sending to MOPH's health information center and the MOI's Bureau of Registration Administration. In addition, the MOPH could not produce a timely national vital statistics reports. It was two to three years delay, because of the labor intensive work for MOPH officers to transcribe data from copies of MOI's birth/death certificates to the vital statistics system.

9. In the year 1996, to improve the vital statistics, the MOPH has signed an agreement with the Department of Local Administration, MOI, regarding utilization of vital registration data from the central registration database of the administration, expecting to reduce redundancy of birth and death data. Every individual birth and death record from the vital registration is transferred electronically to the MOPH on a monthly basis. At the MOPH, the records are coded, using International Classification of Disease version 10 coding system (ICD-10).The coded data are analyzed and reported for health planning and policy making at both ministry and provincial level (Figure 2). With this close collaboration between MOI and MOPH, the information regarding number and health status of population at national and provincial level are timely available to be used by any agencies who need them.

Figure 1 Vital statistics before 1996

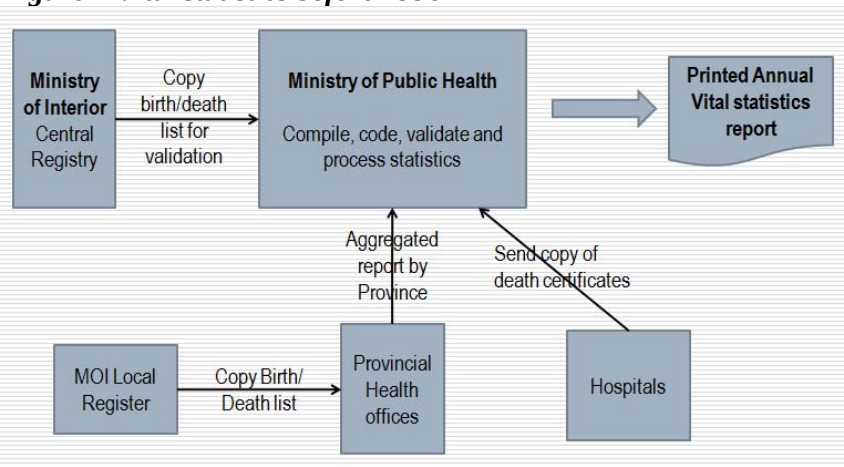
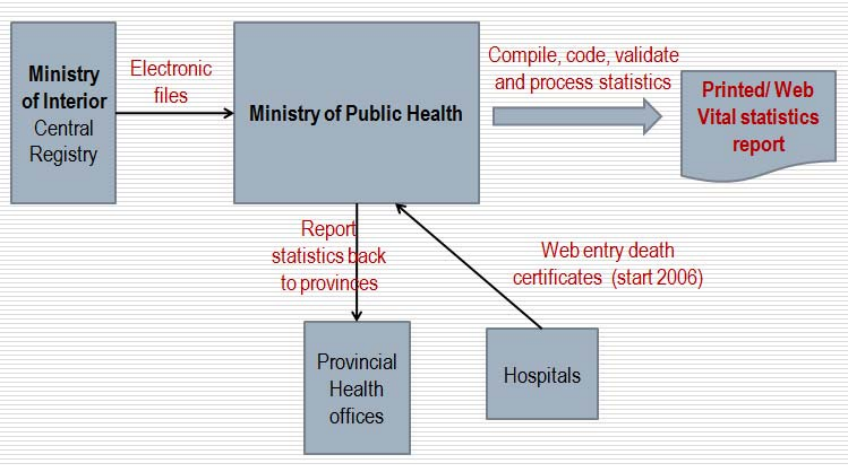


Figure 2 Vital statistics after 1996 – present



10. Although, the records of birth and death are accurately collected with this collaborative system, Thailand is still challenged with the quality of cause of death (COD) information. The online system has been nation-widely established and provides a timely birth and mortality databases transferring from the MOI to the MOPH. The completeness is reasonably high except the early infant death (age less than one year old). Unfortunately, the major gap of this system is the remaining high proportion of ill-defined and misclassified causes of death. The accuracy of the cause of death is compromised because 60-70% of the deaths occurred outside hospitals and be classified as natural cause of death by head of the village and civil registration officers who have not any medical background. Moreover, the coding COD competency among physicians and health professionals still needs improvement. MOPH has been working on these challenges in many ways. The manual of medical certificate of cause of death based on ICD-10, tool for educating health professionals, has been distributed to hospitals and health centers nationwide to explain how to report causes of death. Tool that help health professionals diagnose cause of death such as verbal autopsy is being implemented in many provinces. Health services administrative data (in-hospital morbidity data) are being used to validate the COD information and complement the calculation of maternal mortality rate (MMR).

II. The health care service administrative data (3)

11. Since 2001, Thailand has implemented universal health care coverage program. Every Thai citizen is insured by one of the three main public health care insurance schemes, the Civil Servant Medical Benefit Scheme (CSMBS), the Social Security Scheme (SSS), and the Universal Health-care Coverage Scheme (UCS). The CSMBS covers approximately 5.6 million civil servants and their dependants (approximately 9% of the country's total population). The SSS covers approximately 8.8 million private employees in the non-agricultural sector (approximately 14% of the population). The UCS covers all who are not covered by the first two schemes, or approximately 77 percent of the population. The three schemes use the Diagnosis-Related Groups (DRGs), a casemix financing tool, as their payment mechanism for healthcare service of inpatients. Hospitals send individual inpatient admission summary in a standards format, called standard data sets for health insurance, to the insurance schemes for reimbursement. The standard data set for health insurance contains essential information for DRG calculation, such as patients' demographic data, information about diagnosis (principal and secondary diagnosis) and procedures in ICD codes, length of hospital stay information, patient discharge status (e.g. recovery, death, transfer etc.) and patients' unique citizen ID number. In Thailand, around 80% percents of hospitals are public ones. Therefore, the majority of individual inpatient DRG data are collected at the three schemes' reimbursement system. There is around five million patients admitted with around seven million hospital admissions per year.

III. Using administrative data to improve vital statistics

12. The country's civil registration system is effective. When compares with total population from national census in the year 2000, the civil registration system captured 95 percents of the total population. Although counting the number of birth and death in country is effective, the quality of information regarding the cause of death (COD) is quite low. There is high proportion of ill-defined and misclassified cause of death. There are many reasons of the low quality COD. One of them is the limitation of physicians and health professional's skill on specifying COD from chain of illness. This challenge is now mitigated by in-services training about specifying COD to physicians and health professionals and also the incorporation of the knowledge into pre-service training curriculum.

13. Other reason of low quality COD is that 60-70% of the deaths occurred outside hospitals. COD information in death certificate is provided by relative of deceased to village registrar who has no health or medical background. As the result, large number of COD information in civil registration system is ill-defined and questionable. Thailand is using individual health care services data in the DRG system to validate and improve COD information. This can be done because of the unique citizen ID system and the availability of inpatient data in standards form from almost all hospitals.

14. Due to the citizen unique ID is available in both death registration system and the insurance reimbursement databases; we are able to map information from DRG system, which provides morbidity information of the patients who later die after discharge from hospitals, with the death registry. Using the morbidity information (discharge diagnosis) from administrative data, we can validate and collect cause of death of the deceased.

15. The maternal mortality ratio (MMR) implies the risk of death a woman faces once she has become pregnant. It is one of the important nation's health indicators. Calculation of the MMR needs number of maternal deaths as the numerator and total number of live births as the denominator and it must be done every year. Many countries in the world, including Thailand, are facing unreliable MMR. In Thailand there are many MMR reporting figures that are not consistent depend on the sources of data. One of the methods used for making the reliable estimate for Thailand MMR is the reproductive age mortality studies (RAMOS), which is considered a costly and time-consuming method. For this reason, it is unlikely for any country to conduct RAMOS effectively every year. Taking advantage of having citizen unique ID and the available of inpatient DRG data, we are able to map data from life birth and death of women in reproductive age in civil registration with admissions of reproductive age women. By mapping these two data source, it enables Thailand to estimate more accurate MMR as compare to RAMOS.(4)

Reference

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