

# The Impact of Drug Financing System under Thailand Universal Health Coverage (UHC) on the Performances of Drug System

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**Abstract** The drug system has a direct impact on the country's health system. A well performing of drug system is crucial for advancing the health system. However, its performance is extremely dependent on how well resources are being deployed. A strong finance system is essential to effectively manage monetary resources in the drug system. This review and analysis of how well the current financing system supports drug system performance provides beneficial feed-back information to inform actions on how to improve the drug system. Six performance indicators for how current financing mechanisms contribute to drug system performance. The review found a continuously increasing trend of drug spending, driven by the use of highly expensive health technology. Good access to essential medicines listed in the national list which is the drug benefit package of all major public health insurance schemes. Higher efficiency was found in the close-ended payment basis scheme than the fee-for-service basis payment scheme. However, there were inequities in accessibility to higher cost drugs among major health insurance schemes. The over- and -under-utilization of drugs relating to payment methods is of concern as an issue rational drug use. The current financing system encourages intensive cost-driven competition in drug markets, which is disadvantageous for Thailand local drug industry. The continuous increasing trend of drug importation value was found. This signifies the country's dependence

on imported drugs which negatively affect to the national drug security. The review identified 4 major recommendations. Those are the need for (1) the effective financing system to facilitate access to high cost drug, (2) financing mechanisms to strengthen local manufacturers capacity on research and development, (3) payment mechanism containing drug expenditure of the Civil Servant Medical Scheme, and (4) the measures to address inequity in access to medicines among beneficiaries covered by different health insurance schemes.

**Keywords:** finance system; drug system; drug financing system; drug benefit package

### Introduction

The finance system is an important component for any operational management. The drug system is usually framed using an operation management perspective. The drug operation system is composed of four main components: selection, procurement, distribution, and use. The system performances are extremely depend on how well the resources, which are the system inputs, are being managed. Financial management in the context of domestic and international policy and legislation to be analyzed as it directly affects the performance of the drug system.

Thailand achieved universal health coverage (UHC) since 2002. A total of 99.4% of the entire

Thai population has been covered by three major public health insurance schemes. These are the Civil Servant Medical Benefit Scheme (CSMBS) for government officers and dependents, the Social Security Scheme (SSS) for private workers and the Universal Coverage Scheme (UC) which covers all Thai populations not covered by the previously mentioned employment-based health insurance schemes. The financing sources, drug benefit packages and related payment mechanisms among the schemes are summarized in Table 1.<sup>(1-3)</sup>

This review aims to depict the situation of drug system performance relating to the current drug financing system.

**Table 1 Drug benefit packages in Thailand**

	Civil Servant Medical Benefit Scheme (CSMBS)	Social Security Scheme (SSS)	Universal Coverage Scheme (UC)
Beneficiary	Government officers and dependents including their parents and children	Employees in private organizations	All Thai population who are not covered by CSMBS or SSS or any other schemes.
Number of beneficiaries (millions)	5.1	12.2	47.8
Responsible agency	Comptroller General's Department (CGD)	Social Security Office (SSO)	National Health Security Office (NHSO)
Source of fund	Government budget from taxation	Contributions from employees, employers and government	Government budget from taxation

**Table 1 Drug benefit packages in Thailand (continued)**

	Civil Servant Medical Benefit Scheme (CSMBS)	Social Security Scheme (SSS)	Universal Coverage Scheme (UC)
Drug benefit package	<ul style="list-style-type: none"> <li>- Medicines included in national list of essential medicines (NLEM)</li> <li>- Medicines beyond NLEM listed in the access program or in case the clinical necessities declared</li> </ul>	<ul style="list-style-type: none"> <li>- Medicines included in national list of essential medicines (NLEM)</li> </ul>	<ul style="list-style-type: none"> <li>- Medicines included in national list of essential medicines (NLEM)</li> </ul>
Payment method	<ul style="list-style-type: none"> <li>- Out-patient service: fee-for-service at the price the providers charge</li> <li>- In-patient service: bundled payment according to Diagnosis Related Groups system (DRGs)</li> </ul>	<ul style="list-style-type: none"> <li>- Out-patient service: capitation (per head per year)</li> <li>- In-patient service: capitation and bundled top up according to the severity of disease with close-ended budget</li> </ul>	<ul style="list-style-type: none"> <li>- Out-patient service: capitation (per head per year)</li> <li>- In-patient service: bundled payment according to Diagnosis Related Groups system (DRGs)</li> </ul>

**Analysis of drug system performance relating to the current finance system**

Analysis drug system performance relating to financial management in this review includes drug and health expenditure, access to medicines, rational drug use, efficiency, equity and sustainability.

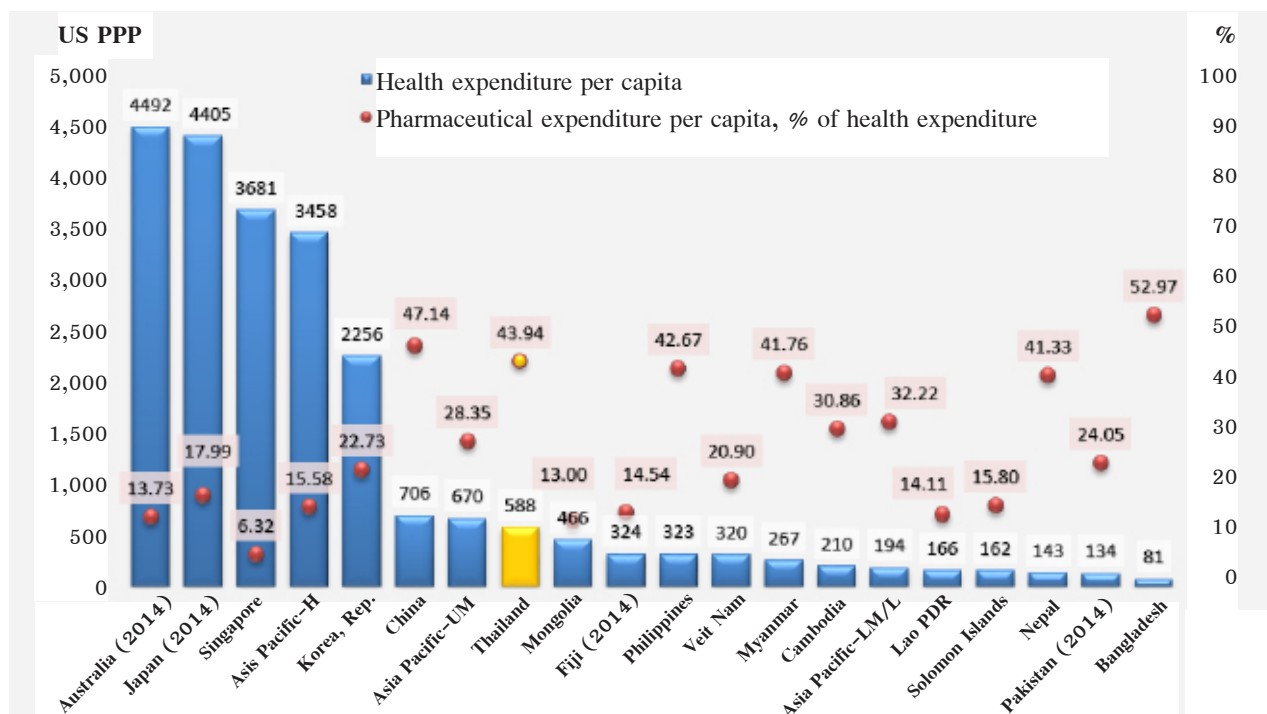
**1. Drug Expenditure**

In 2015, Thailand health expenditure per capita was 588 US PPP<sup>(4)</sup> or approximately 7,268 Thai Baht (12.4 Baht per US PPP, at 2018),<sup>(5)</sup> which is the highest comparing to CLMV countries (Cambodia, Lao, Vietnam, Myanmar). However, Thailand health expenditure was considerably low to moderate when compared with developed countries (Australia, Japan, Singapore).

For drug expenditure per capita, the Asia-Pacific countries were categorized into three groups according

to the proportion of drug expenditure in relation to health expenditure. The first group was developed countries of Australia, Japan, Singapore, South Korea; and drug expenditure per capita accounted for less than 25.0% of health expenditure. The second group was developing countries of Mongolia, Fiji, Vietnam, Lao, Solomon and Pakistan; and drug expenditure per capita accounted for less than 25.0% of health expenditure. The third group was developing countries of China, Philippines, Myanmar, Cambodia, Nepal and Bangladesh; and drug expenditure per capita accounted for more than 25.0% of health expenditure. Thailand fitted into the third group, and its drug expenditure per capita accounted for 43.9% of health expenditure. This is the highest comparing to CLMV countries (Cambodia, Lao, Vietnam, Myanmar) as shown in Figure 1. However, Thailand drug expen-

Figure 1 Health expenditure and the proportion of drug spending per capita among Asia-Pacific countries in 2015



Sources: [https://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-asia-pacific-2018/health-expenditure-per-capita-2015\\_health\\_glance\\_ap-2018-graph112-en](https://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-asia-pacific-2018/health-expenditure-per-capita-2015_health_glance_ap-2018-graph112-en)  
 Thailand data: <http://www.fda.moph.go.th/sites/drug/SitePages/Statistic.aspx>

diture might be overestimated in this reference report, because the data used drew on the annual value of drug manufacturing and importing.<sup>(6)</sup>

Trends show that Thailand’s health and drug expenditure tends to be increasing continuously. Thailand’s health expenditure accounted for 3.7% of the gross domestic product in 2015.<sup>(7)</sup> It increased from 2.3 hundred billion Baht in 2000 to 3.5 hundred billions in 2015; this is an increase of 1.2 hundred billions Baht in 15 years. The proportion of drug expenditure in relation to health expenditure also followed the same trend. Over a period of 15 years, the proportion of drug spending doubled from 21.2% of health expenditure to 43.9%, shown in Figure 2. This increasing trend due to many factors including the high price of new technology, ageing populations, disease epidemiology, changing approaches to disease

management and the impact from health insurance systems.

Thailand drug spending during 1996 to 2015, can be categorized into three periods according to different spending trend. In the first period, before the implementation of UC scheme (1996–2001), drug spending increased on average by 1.8 billion baht per year. A faster increasing trend (averaging 7.6 billion Baht per year) was found during the second period following the implementation of UC scheme and before the CSMBS (2002–2005) with its direct claim processing. In the third period (2006–2010) after the CSMBS implementation of direct claim processing, the average increase of drug spending was 17.5 billion Baht per year as shown in Figure 3. The highest annual drug spending (1.73 hundred billion Baht) was in 2010. After this, the Comptroller General’s

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Department (CGD) launched reimbursement restriction slightly decreased and changed in a range of 1.4–1.6 measures to control drug spending. Spending then hundred billion Baht, as shown in Figure 3.

Figure 2 Health and Pharmaceutical expenditure and Thailand gross domestic product during 2000–2015

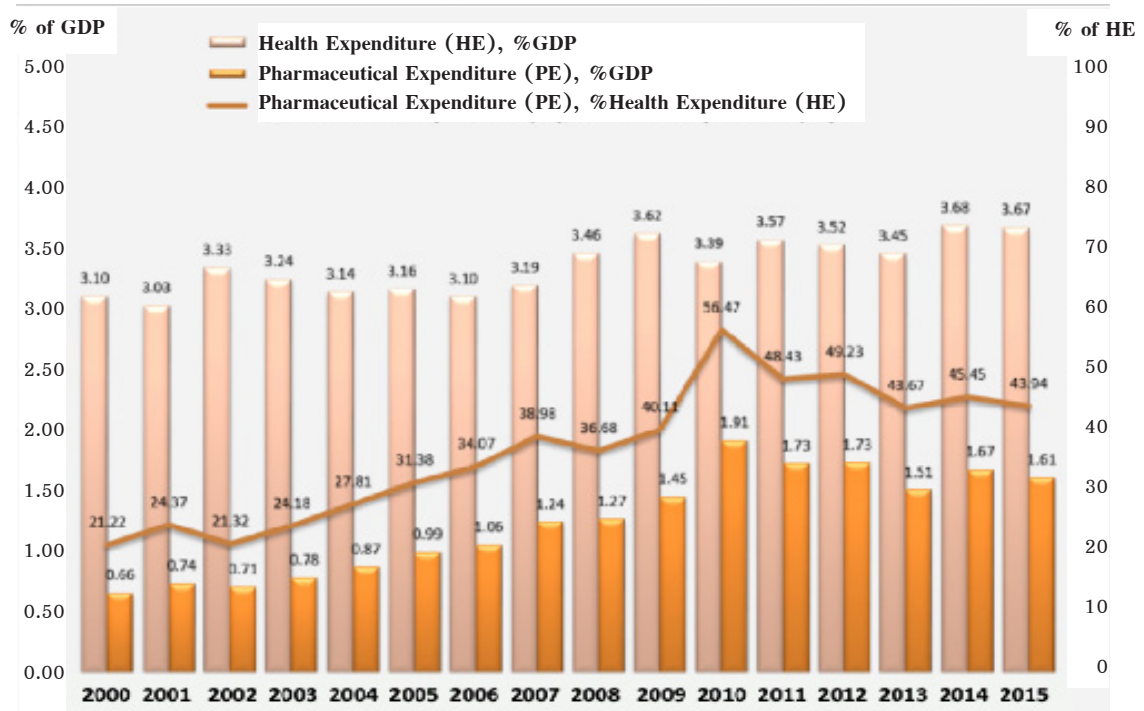
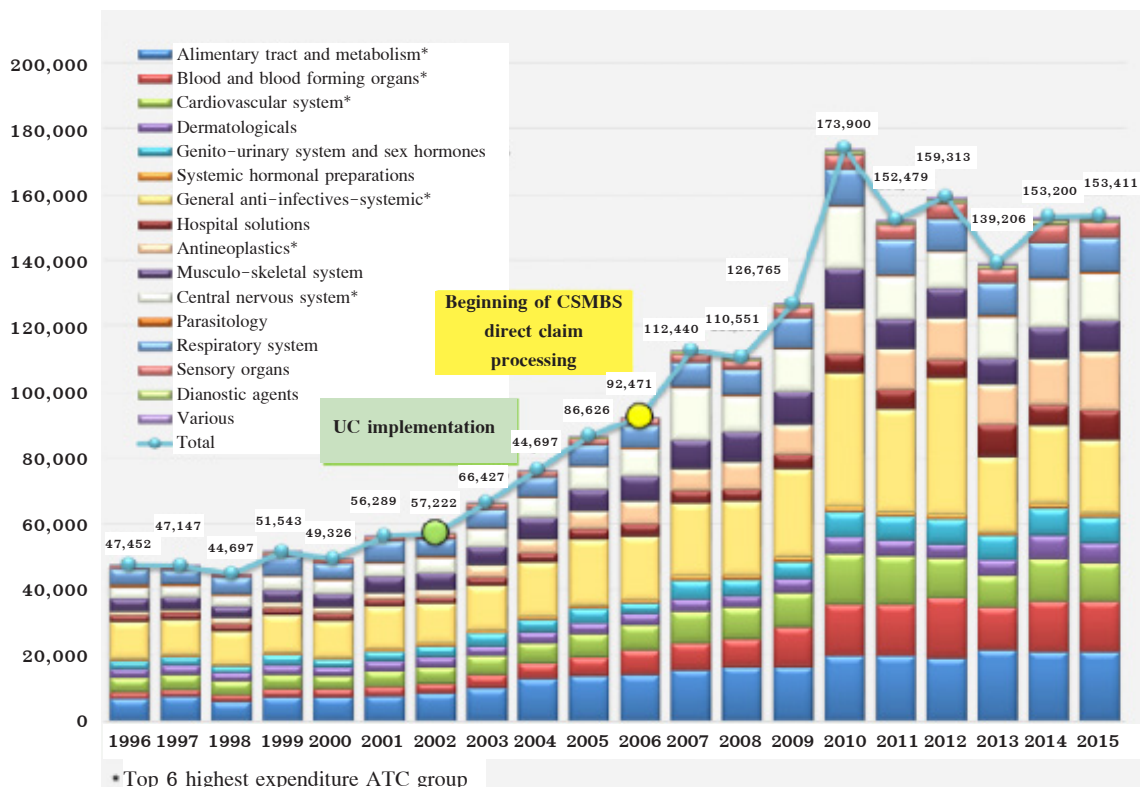


Figure 3 Thailand domestic drug expenditure classified by the Anatomical Therapeutic Chemical (ATC) Classification System during 1996–2015 (real value)



It is clearly that financing mechanisms effect drug spending. Spending increased at slower rate during the early period prior to UHC with an emphasis on out-of-pocket financing. Then, spending increased at a faster rate after the implementation of the UC scheme, due to enhanced access to drugs through health insurance finance. However, once the CSMBS's reimbursement policy was modified to direct claim processing between health care providers and the CGD. This replaced the previous policy where beneficiaries had to pay in advance and then claim reimbursement via their affiliations to CGD. The policy change caused a significant increase in drug spending because the more convenient reimbursement process encouraged the greater service utilization. However, other factors such as higher drug prices from more expensive technology; biologic drugs, bigger proportion of aging population also have played a role to increase in drug spending.<sup>(8)</sup> As shown in figure 2, the trend of increased spending was found particularly in drug use in treating central nervous system disorders, blood and blood forming organs, cancer and cardiovascular ill-health; these relate to diseases with increasing incidence

in ageing populations. There was a significant increase in the use antineoplastic drugs which tend to be more expensive as they are developed through advance technology and are in high demand.

**2. Access to medicines**

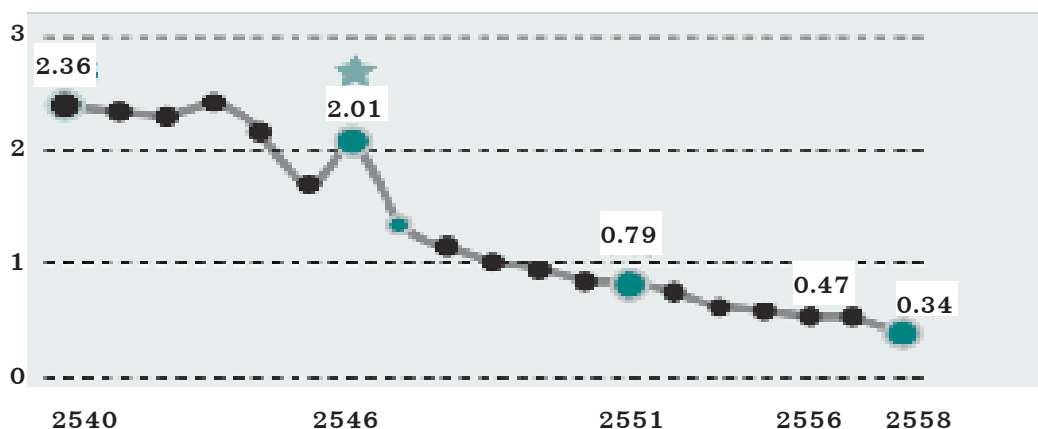
Sixteen years of UHC system in Thailand has resulted in a significant increase of access to health services for Thai people. The percentage of impoverished households due to the of health care expenditure decreased from 2.0% in 2003 to 0.3% in 2015 as shown in Figure 4

In 2010, unmet health needs were 1.4% for out-patient services and 0.4% for inpatient services. In 2015, the percentage of unmet health needs for out-patient services remained stable and in-patient services decreased to 0.1%.<sup>(10)</sup> The major causes of the unmet health needs are long waiting times for outpatient services and geographic accessibility for inpatient services.<sup>(11)</sup>

**2.1 Access to essential medicines**

The major health insurance schemes covering 99.4% of the Thai population, have enforced the

Figure 4 Percentage of impoverished households from the burden of health care expenditure<sup>(9)</sup>



national essential drug list as the drug benefit package. All beneficiaries are eligible to access listed medicines without additional payment. In general, the Thai people then has good access to national essential medicines <sup>(12)</sup>

Under the capitation payment system, there is no motivation for providers to dispense the expensive drugs to beneficiaries. The NHSO then launched the special access program which includes financial measures and central procurement to negotiate fair prices for medicines with limited accessibility such as anti-dotes, clopidogrel and very expensive medicine. Since 2008, the expensive medicines listed in the E2 category are reimbursed separately from capitation and Diagnostic-Related Groups.<sup>(13)</sup> The E2 category is one of medicine category from 5 categories (A to E) in Thai national list of essential medicine. Medicine listed in this category is very expensive, high technology, but essential for some patients with specific

condition. The uses of these medicines have significant impact to affordability of both society and individual.

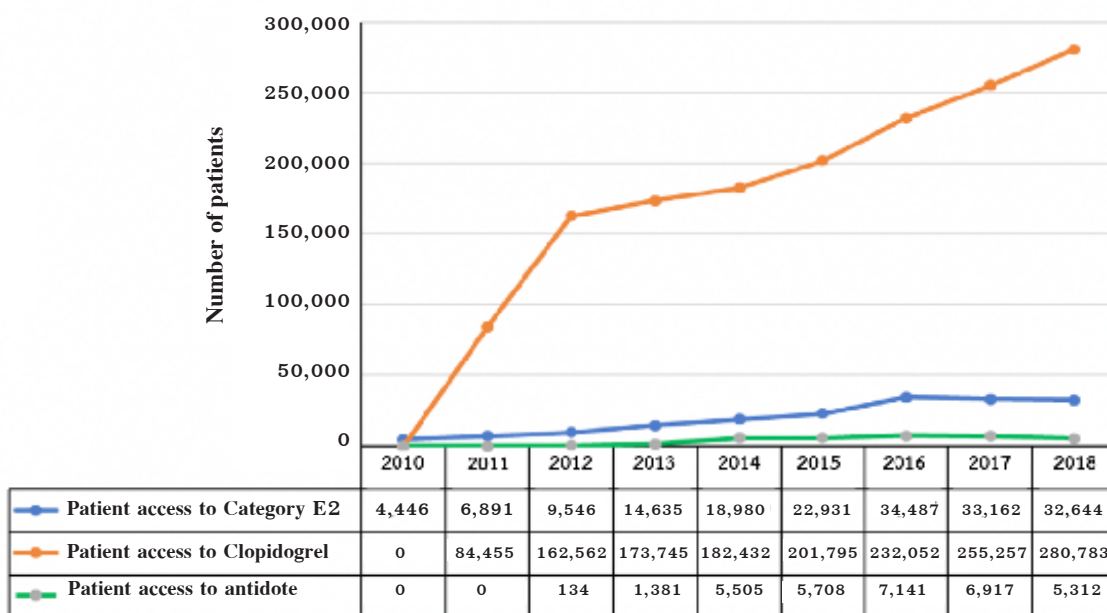
A fixed-fee schedule is used for the anti-cancer drugs prescribed according to the protocol, while other medicines in this special program are reimbursed by the products. Patients under UC scheme then have increasing access to essential medicines in the special access program as shown in Figure 5.

The SSS manages the benefit package of expensive drugs similar to the UC scheme.<sup>(12)</sup> The CSMBS reimburses essential medicines in category E2 by fee-for-service based with prior authorization.

### 2.2 Access to non-essential medicines

Access to non-essential medicines is harder for beneficiaries in UC and SSS capitation-based scheme compared with the fee-for-service CSMBS. Under UC and SSS, expensive non-essential anti-cancer drugs might be used and reimbursed but under a very limited payment scheme, while in CSMBS, the

Figure 5 Number of UCS patient who accessed essential medicines in category E2, clopidogrel and antidotes



Sources: NHSO database of category E2 medicines, clopidogrel and antidotes

non-essential medicines listed in Oncology Prior Authorization program are reimbursed on a fee-for-service basis without ceiling. The OCPA program has been launched in 2006 to reduce financial burden for CSMBS beneficiaries who need to use the high price non-essential medicines. Currently, there are 19 listed medicines for 29 diseases included in OCPA program such as Sorafenib, Osimertinib, Panitumumab. In addition, CGD has also launched other access program of non-essential medicines for other diseases: RDPA (rheumatic disease prior authorization), DDPA (dermatology disease prior authorization). The reimbursement of other non-essential medicines are considered on a case by case basis.<sup>(12)</sup>

### 3. Rational Drug Use

Mechanisms to promote rational drug use are applied in the national list of essential medicines (NLEMs). The conditions required when prescribing medicines with risks are defined; for example “Use only for the specified indications” or “Must be prescribed by the medical specialists”. These conditions are also enforced under the reimbursement conditions.<sup>(14)</sup>

In the UC scheme, reimbursement of anticancer medicines is separate from capitation value and is on fixed-fee schedule basis. The reimbursement conditions intend to promote rational use of drugs are required. The fee-for-service payment with a fixed-fee schedule is applied if the medicines are prescribed corresponding to the defined protocol. If not, the reimbursement ceiling at 2,300 Thai Baht per visit (2019 average rate: 1 USD = 31.1 Thai Baht) is additionally applied. In out-patient services, the reimbursement ceiling is 4,000 baht per visit (2019

average rate: 1 USD = 31.1 Thai Baht) applied for those medications prescribed for non-protocol cancer treatment. For in-patient services, if the medicines are not prescribed in correspondence to the treatment protocol, the additional reimbursement for the medicine costs is not eligible. The only reimbursement permitted is in accordance with the DRGs.<sup>(12)</sup>

However, when reviewing the different reimbursement systems among major health insurance schemes, and considering drug uses for a particular disease, it was found that medication used in the close-ended payment schemes are less expensive but with, limited choices of medicines, compared with the fee-for-service scheme. This might reflect the over-utilization of medicine in the fee-for-service scheme, and under-utilization in the close-ended reimbursement scheme.

### 4. Efficiency

The NHSO pays for over 90.0% of medication costs using closed-end payment methods (capitation, and DRGs with limited overall budget), and the minority are paid by fixed-fee schedule. This payment strategy promotes operational efficiency because there are no incentives for the health care providers to falsely induce the excessive health care service uses. The inclusion of the cost of medicines in capitation value automatically encourages health care providers to strictly prescribe essential medicines for the patient under UC scheme. In contrast, the fee-for-service at the price the provider charge in CSMBS was found to be high; prescriptions of non-essential medicines accounted for 41.0% of the total prescription drug expenditure and 67.0% of drug expenditure for out-patient services in CSMBS.<sup>(15)</sup>



A Health Technology Assessment (HTA) is another mechanism to enhance the efficiency and sustainability of the drug finance system. HTA has been employed to ensure that decisions to include new expensive medicines in the benefit package are based on cost-effectiveness and the country's ability to pay.

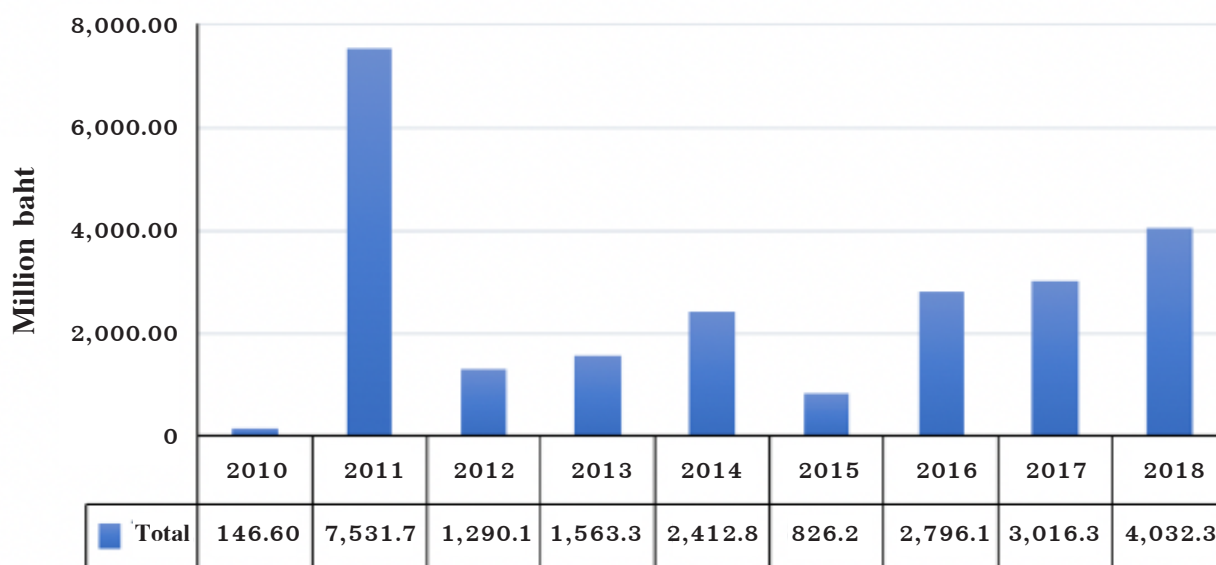
The NHSO is the healthcare services purchaser covering the majority of the Thai population. It holds negotiating power of big volume for central drug purchasing of expensive patented medicines (medications in E2 category of the essential medicines list). Between 2010–2018 the NHSO could save 90 million Baht (2018 average rate: 1 USD = 32.3 Thai Baht) through central and strategic purchasing of expensive drugs.<sup>(16)</sup> The central purchasing of E2 category of essential medicines, antiplatelet and antiretroviral drugs by the NHSO could cumulatively save 23,615.86 million Thai Baht (2018 average rate: 1 USD = 32.3 Thai Baht) of the government health budget during 2010 to 2018 as shown in Figure 6.

In order to increase the efficiency of drug utilization at the level of healthcare facilities affiliated with ministry of public health, a number of strategies have been implemented to control drug spending. For example, pooled purchasing at provincial level or regional health level, selecting only one product for each medication by generic name, replacing the patent expired drugs with the locally-made products and, regulating the number of drug items for each facility according to their size.

### 5. Equity

The availability of the comprehensive benefit package and no out-of-pocket payments at the point of service has resulted in the reduction of household health expenditure from 34.0% of total national health expenditure in 2000 (before the implementation of UC scheme) to 12.0% of total national health expenditure in 2014. Ultimately, this can prevent the households from bankruptcy caused by their health care costs.<sup>(17)</sup> This reflects the improvements of

Figure 6 The saving value from central procurement between the fiscal years 2010–2018



Source: NHSO Purchasing information of E2 category medications, antiplatelet and antiretroviral drugs

equity in access to health care services among people with different socioeconomic statuses.

However, different reimbursement methods among the major public health insurance schemes can cause inequity in access to medicine among beneficiaries, especially access to expensive medicines.<sup>(12)</sup> In relation to out-patient services, CSMBS (fee-for-service based) provides better access to medicine than the capitation based scheme (UCS, SSS). When considering drug use for a particular disease, it was found that medicine used in close-ended payment scheme were less expensive, limiting the choice of medicines compared with those medicines more widely available in fee-for-service scheme.

For in-patient services, there are no significant differences in medication access because all major health insurance schemes reimburse the medication costs by bundled payment methods, in line with the DRGs system.

### 5. Sustainability

Tax is the main source of funding for major public health insurances, and this is the most progressive and sustainable financing source because high-income earners will pay higher tax rates than low-income people.<sup>(18)</sup> Currently, 76% of Thailand's health expenditure is from government spending. Thailand's health expenditure accounts for 4% of Gross Domestic Product (GDP),<sup>(19)</sup> and this remains lower than many developed countries. However, results from one study forecast the increasing health expenditure in the future influenced by high-cost technologies more than changing population structures.<sup>(20)</sup>

Another dimension of sustainability is national drug security which relates to how finance is managed in

the health system. The UHC led to the majority of drugs being consumed through the public hospitals (75.0% of total consumption value). Due to closed ended payment (such as capitation, DRGs), hospitals have to increase their operational efficiency by minimizing their service delivery cost. Medicines were then purchased at as low as possible price. Public procurement regulations give the market privilege to the Government Pharmaceutical Organization (GPO) the private drug manufacturers by allowing the GPO to be first priority supplier for public hospitals. Moreover, the current market situation and regulation is not favoring the growth of Thai local manufacturers. Competition from low cost Indian and Chinese manufacturers, together with the requirements of Good Manufacturing Practice - Pharmaceutical Inspection Co-Operation Scheme (GMP-PIC/S), effective since 1<sup>st</sup> August 2016, (which leads to higher manufacturing costs for the private local manufacturers),<sup>(21)</sup> make it disadvantageous in the cost-driven market.

The 2017 data presents the total income of domestic pharmaceutical manufacturers at 67,919.53 million Baht (2017 average rate: 1 USD = 33.9 Thai Baht), while the income of pharmaceutical and medical product importers and distributors (mostly foreign companies) was 402,881.32 million Baht (2017 average rate: 1 USD = 33.9 Thai Baht). Another source of data from national drug consumption studies<sup>(22, 23)</sup> found a high average growth rate of drug importation value at 24.3% per year during 2000 to 2010, while local manufacturing value grew by just 9.1% per year in the same period. The proportion of drug importation value for overall consumption increase from 58.1% to 74.1% in ten years. This information signifies that Thailand drug consumption

tends to rely increasingly on importation, which might present a future challenge to the country's self-reliance in access to medicines.

### Recommendations for future improvements

There are four important recommendations for Thailand's drug financing system which will promote drug system performances:

1) An effective financing system to facilitate access to high value but expensive drugs because the treatment of diseases tend to increasingly rely on complex and expensive health technologies such as biologic drugs.

2) Financing mechanisms to strengthen local manufacturers and promote investment in research and development capacity. The growth of high capacity local manufacturers would enhance the country's self-reliance on medicine access.

3) Financing mechanism to address inequities in medicine benefit packages and accessibility among the beneficiaries who are covered by different public health insurance schemes.

4) Effective financing mechanism to contain the drug expenditures of the fee-for-service based scheme (CSMBS) such as improving the drug reimbursement method to become a fixed-fee schedule instead of fee-for-service at the price the health care providers charge.

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**บทคัดย่อ: ผลกระทบของระบบการเงินการคลังด้านยาภายใต้หลักประกันสุขภาพถ้วนหน้าของประเทศไทยต่อผลการดำเนินการของระบบยา**

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ระบบยาเป็นระบบซึ่งส่งกระทบโดยตรงต่อระบบสุขภาพ ระบบยาที่มีผลการดำเนินการที่ดีมีความจำเป็นอย่างยิ่งต่อการพัฒนาระบบสุขภาพ อย่างไรก็ตาม ผลการดำเนินการของระบบยาขึ้นอยู่กับว่าได้มีการจัดการการใช้ทรัพยากรที่เป็นปัจจัยนำเข้าของระบบได้ได้อย่างไร ระบบการเงินการคลังที่เข้มแข็งมีความจำเป็นสำหรับการจัดการทรัพยากรที่เป็นตัวเงินของระบบยา การทบทวน และวิเคราะห์ผลของระบบการเงินการคลังในปัจจุบันว่ามีส่วนส่งเสริมสนับสนุนผลการดำเนินการของระบบยาหรือไม่อย่างไร จะเป็นประโยชน์ในฐานะข้อมูลป้อนกลับ ที่จะใช้ให้มีการดำเนินการด้านการเงินการคลังเพื่อส่งเสริมผลดำเนินการของระบบยา งานทบทวนวรรณกรรมชิ้นนี้ วิเคราะห์ผลของระบบการเงินการคลังที่มีต่อผลการดำเนินการของระบบยาผ่านตัวชี้วัดผลการดำเนินการของระบบยาจำนวน 6 ตัวชี้วัด การทบทวนวรรณกรรมพบแนวโน้มการเพิ่มขึ้นของค่าใช้จ่ายด้านยาอย่างต่อเนื่องซึ่งมีสาเหตุสำคัญจากการใช้ยาเทคโนโลยีสูงราคาแพง ประชาชนสามารถเข้าถึงยาในบัญชียาหลักแห่งชาติได้ดี เนื่องจากเป็นสิทธิประโยชน์ด้านยาของระบบหลักประกันสุขภาพภาครัฐหลักๆ ทั้ง 3 ระบบ ระบบประกันสุขภาพที่มีกลไกการจ่ายค่ายาแบบปลายปิด มีประสิทธิภาพสูงกว่าในระบบที่มีการจ่ายค่ายาแบบปลายเปิด หรือจ่ายเป็นรายรายการ อย่างไรก็ตาม มีความเหลื่อมล้ำในการเข้าถึงยาโดยเฉพาะยาที่มีราคาแพงระหว่างผู้มีสิทธิ์ในระบบประกันสุขภาพภาครัฐหลักๆ การใช้ยาที่มาก หรือน้อยเกินไป เนื่องจากความแตกต่างของวิธีการจ่ายค่ายาระหว่างระบบประกันสุขภาพ สะท้อนปัญหาการใช้ยาอย่างสมเหตุสมผล ระบบการเงินการคลังปัจจุบันส่งเสริมให้เกิดการตลาดยาที่มีการแข่งขันด้วยต้นทุนที่ต่ำอย่างเข้มข้นซึ่งเป็นข้อเสียเปรียบของอุตสาหกรรมยาภายในประเทศของไทย ประกอบกับแนวโน้มที่มีมูลค่าการนำเข้ายาเพิ่มขึ้นอย่างต่อเนื่อง ซึ่งว่าประเทศไทยมีบริโภคนยาที่พึ่งพาการนำเข้าเพิ่มขึ้น ซึ่งไม่เป็นผลดีต่อความมั่นคงทางยาของประเทศในอนาคต การทบทวนวรรณกรรมชิ้นนี้ได้เสนอ 4 ข้อเสนอแนะสำคัญด้านการเงินการคลัง เพื่อพัฒนาผลการดำเนินการของระบบยา: ระบบการเงินการคลังที่ส่งเสริมให้มีการเข้าถึงยาที่มีประสิทธิภาพดี แต่ราคาแพง ระบบการเงินการคลังที่เพิ่มความเข้มแข็งให้กับอุตสาหกรรมยาภายในประเทศให้เพิ่มการลงทุนในการวิจัยพัฒนา ยาใหม่ การเพิ่มประสิทธิภาพการเงินการคลังเพื่อควบคุมค่าใช้จ่ายด้านยาของระบบสวัสดิการรักษายาบาลข้าราชการ และมาตรการเพื่อลดความเหลื่อมล้ำในการเข้าถึงยาของผู้มีสิทธิ์ระหว่างระบบประกันสุขภาพที่มีวิธีการบริหารจัดการสิทธิประโยชน์ด้านยา และวิธีการเบิกจ่ายค่ายาแตกต่างกัน

**คำสำคัญ:** ระบบการเงินการคลัง; ระบบยา; การเงินการคลังด้านยา; ชุดสิทธิประโยชน์ด้านยา