

Drug Procurement and Distribution

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Abstract Drug procurement and distribution system can be referred as a critical connecting process to effectively assure the affordability and patients' accessibility to essential and quality medicines. There are various existing economic market structures such as monopoly and oligopoly markets. A monopoly implies a single firm that produces or imports the products to the market with no close substitute, while an oligopoly market has a small number of relatively large firms that produce or import similar, but slightly different products. In both cases, there are significant barriers to entry for other enterprises. This situation has resulted in imperfect competition and currently become the challenge to develop the strategic procurement and smart logistic design in order to achieve the affordability and accessibility to essential medicines for the needed patients under the universal health care coverage. In Thailand, the emerging or new license medicines may come from the domestic pharmaceutical importers or domestic pharmaceutical manufacturers both in public and private sectors. For domestic manufacturers, most raw materials are imported due to the limited capacity in producing the active pharmaceutical ingredients in the country. After the manufacturing process, the finished products are distributed through distributors and wholesalers to various health facilities in public and private hospitals, clinics, and pharmacies. Besides this, the special management design has come up with the collaboration of the National Health Security Office and the Social Security Office in order to ensure the accessibility to some special access items such as high-cost rare diseases medicines or some orphan drugs like antidotes and antivenom. Moreover, in case of emergencies, the guidelines for managing, procuring and distributing medicines have been established consecutively in order to control the outbreaks that can be prevented by vaccines, toxic leakage, and floods. Currently, the disruptive technology has made a great impact on many businesses especially in the delivery and logistic system, resulting in an emergence of skillful companies providing the services for managing warehouses and delivery system not only for medicines but also other goods. For the government sectors, the Government Pharmaceutical Organization plays an important role in manufacturing and distributing

medicines to the public hospitals. The organization also represented as the supply security partner in Universal Health coverage in Thailand by taking the responsibility in procuring and distributing drugs in the special projects under the National Health Security Office and the Social Security Office via the Vendor Managed Inventory (VMI) system.

Keywords: drug procurement, drug distribution, drug inventory management

Introduction

Drug procurement and distribution system can be referred as a critical connecting process to effectively assure the affordability and patients' accessibility to essential and quality medicines. But in the pharmaceutical market, there are various existing economic market structures such as monopoly and oligopoly markets. This situation has created an imperfect competition in the market. If there are more pharmaceutical companies selling similar drugs, it would lead to drug price competition resulting in price reduction; however, it is still not yet at fully competitive level. The evolution of drug procurement and distribution system in Thailand has been developed for decades and currently become the challenge in the strategic procurement and smart logistic design in order to achieve the affordability and accessibility to essential medicines for the needed patients under the universal healthcare coverage.

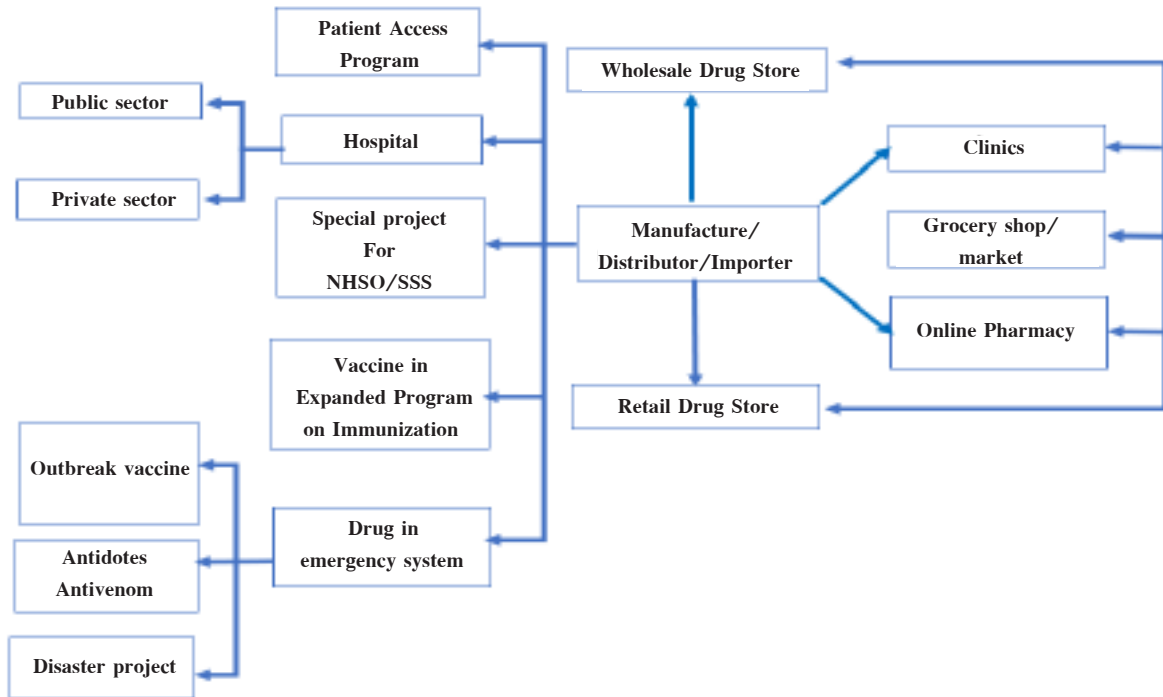
In Thailand, the emerging or new license medicines may come from the domestic pharmaceutical importers or domestic pharmaceutical manufacturers both in public and private sectors. For domestic manufacturers, most raw materials are imported given that there is limited capacity in producing the active pharmaceutical ingredients in the country. After the manufacturing process, the finished products are distributed through distributors and wholesalers to

various health facilities in public and private hospitals, clinics, and pharmacies. Besides this, the special management design has been come up with the collaboration of the National Health Security Office and the Social Security Office in order to ensure the accessibility to some special access items like high cost with rare diseases medicines or some orphan drugs like antidotes and antivenom. Moreover, in case of emergencies, the guidelines for managing, procuring and distributing medicines have been established in order to control the public health situations such as the outbreaks of vaccine preventable diseases, leakage of toxic chemicals, and floods (Figure 1).

In general, the manufacturers and/or importers will deliver medicines to health facilities by themselves. Currently, the logistic system has been drastically changed by the technology, resulting in an emergence of skillful companies managing warehouses and pharmaceutical delivery business. Many pharmaceutical importers presently prefer to dedicate the inventory and logistic system to these logistic companies which represent as the pharmaceutical distributors and being responsible for the inventory under good storage and good delivery practices. As for drug delivery, there is a tracking system which facilitates the drug companies to check delivery status themselves, similar to that of the online counterparts.

In the government sectors, the Government

Figure 1 Drug distribution channels to various health services



Pharmaceutical Organization plays an important role in procuring and distributing medicines to public hospitals, especially distributing drugs to special projects under the National Health Security Office and the Social Security Office via the Vendor Managed Inventory (VMI) system. On the other hand, the wholesalers who act as traders tend to have reducing role because the direct ordering systems from manufacturers are easy and convenient to use with better tracking systems. However, wholesalers still play a crucial role in distributing medicines to service facilities in case of short-term drug shortage. Moreover, they also distribute medicines to those clinics and pharmacies which have fewer demands.

The objectives of this article are (1) to present the process for improving drug procurement and distribution system in public hospital in Thailand, (2) to

describe values of drug sales and distribution through various channels and drug group between 2014 – 2018, and (3) to explain drug procurement and distribution system for special project under Universal Health Coverage Scheme (UCS) and Social Security Scheme (SSS) and emergency crisis. Data were collected through the following activities: (1) the review of documents related to drug procurement and distribution system from 1986 to 2019. The related documents include regulations, orders, announcements, reports and meeting documents including literature on the procurement and procurement of medicines in the country, and (2) interview with representatives from agencies related to drug procurement and distribution systems, including the Permanent Secretary Office, Ministry of Public Health of Thailand

Major Reforms in the Drug Procurement and Distribution System in Thailand

1. Formation of hospital pharmaceutical therapeutic committee

This is a good starting point to reshuffle the drug procurement system in a hospital. During 1986 to 1990, the Ministry of Public Health had improved the efficiency of medical administration by issuing regulations on the purchase of medicines and medical supplies by government agencies under the Ministry of Public Health. Since then, the board named “Pharmaceutical and Therapeutics Committee” has been established in each hospital to be the steering committee responsible for drug selection into hospital formulary, and formulating an annual procurement plan for medicines and medical supplies. The plan must be annually submitted to the Office of the Permanent Secretary, Ministry of Public Health.

2. Digital transformation for drug Inventory system in public hospitals

In 1986, the Office of the Permanent Secretary and the Faculty of Pharmaceutical Sciences, Chulalongkorn University have received funding from the World Health Organization to develop a computer program called “INV” for managing the purchasing orders and inventory transactions for medicines and medical supplies at the hospital warehouses. The nationwide training for pharmacists worked at the hospital pharmaceutical warehouses has been conducted in 1990 and the digital transformation for Drug Inventory system in public hospitals has begun. These result in the reform of the pharmaceutical procurement and warehouse administration in public hospital to become faster and easier when compared to using writing or a typewriter to issue the

purchasing orders. This program has been enhanced continuously and still worked in some hospitals until now.

3. Turning the economic crisis into an opportunity to reform the pharmaceutical administration policies.

In 1997, Thailand experienced an economic crisis, also known as “Tom Yum Kung crisis”. The government floated the baht, resulting in the baht value falling drastically; the exchange rate skyrocketed from 24 to 56–57 baht per dollar. As a result, the drug prices of the imports rose much higher than the standard medium prices which all the public hospitals have to comply with. Therefore, the government hospitals were unable to purchase drugs according to the procurement regulations issued by the Prime Minister’s Office. For this reason, in 1998 the government increased the budgets of drugs and medical supplies for certain ministries. The Ministry of Public Health also received an additional budget of 1,400 million baht; however, it turned out to be a trigger for corruptions during the procurement processes in the 34 provinces.

Consequently, the conclusion of lesson learned from this crisis bought into reforming the pharmaceutical management system under a Good Health at Low Cost master plan. This is to increase efficiency in managing medicines and medical supplies at hospital level under the Ministry of Public Health; starting from selections, procurements, distributions and usage in order to earn good quality yet inexpensive drug prices, with rational utilization.

The reform was done by establishing principles and measures to improve the efficiency of medicines and medical supply management for the pharmaceu-

tical departments under the Ministry of Public Health, in accordance with the procurement regulations issued by the Prime Minister's Office 2535 B.E. (1992) and the procurement regulations for drugs and pharmaceutical supplies (non-drugs) issued by the Ministry of Public Health B.E. 2529 (1986) and the revision 2 in B.E. 2530 (1987). Furthermore, there are additional crucial measures added in the regulations as follows:⁽¹⁾

- 1) Determining the proportion of the essential medicine list in the hospital formulary and the proportion of hospital's revenue spending for essential drug procurement.
- 2) Specifying only one brand for each generic product in the hospital formulary.
- 3) Emphasizing pooled procurement at provincial and/or department levels for high volume consumption.
- 4) Encouraging regional and provincial hospitals to manufacture pharmaceutical products to support secondary healthcare facilities.
- 5) Controlling the hospital drug stocks to no more than 3 months supplies.
- 6) Evaluating drug utilization in the hospital in order to achieve rational drug use policy.

In 1998, the Office of the Permanent Secretary under Ministry of Public Health proposed the policy of pooled procurement at the provincial level, resulting in budget saving in drug procurement over 171.47 million baht comparing to the market prices and increased to 507.28 million baht in 2001.

In order to ensure the sustainability of transparent administration of pharmaceutical supplies, the Ministry of Public Health incorporation with the National Counter Corruption Commission had established

regulations for the procurement of medicines for the Ministry of Public Health on 9 September 2003. The key principle is to increase the economy of scale for drug joint procurement to the regional level using bidding method and conducted the innovative contract called "Fix bidding price for defined items along the committed period with unlimited quantity". In 2007 the cabinet approved the principles proposed by the Ministry of Public Health on 13 March 2007 allowing the Ministry of Public Health to implement key performance measures to improve the efficiency of drug procurement for the whole country (according to the letter issued by the Secretariat of the Cabinet no. 0506/4261 - dated 22 March 2007). Consequently, the Ministry of Public Health has constantly proceeded with the drug pooled procurement at the regional level since 2008.

4. Development of Electronic Medicines and Medical Supply Procurement System

Thailand has developed many laws and regulations involving medicines and medical supplies procurement for decades in order to establish the better procurement practice represented the transparent administration, effective management and the government budget saving at the end. Until the disruptive technology has emerged, most of the businesses have move to the era of digital platform and impacted on the amendment of laws and regulations involving drug procurement. The electronic medicines and medical supplies procurement has evolved since then.

4.1 Electronic Auction (e-auction) System

In the year 2006, the Comptroller General's Department issued the regulations of the Prime Minister's Office on electronic procurement 2006 commonly known as e-auction regulations dated 31

January 2006, effective from 1 February 2006. The e-auction regulations enforce a wider range of government agencies including the government agencies, state enterprises, public organizations and other government agencies which affiliated with or under supervision of the legal management department of which their activities, projects or construction activities costs 2 million baht or more.

This regulation defines that the method of bidding process for bidders to submit price proposals only via electronic channels. However, as for the other steps, they still need to comply with the procurement regulations issued by the Prime Minister's Office B.E. 2535 (1992). Consequently, procurement process took longer when compared to the original bidding method.

When there was an amendment on the Prevention and Suppression of Corruption act B.E. 2542 (1999), the parliament passed an act of Corruption Prevention (No. 2), B.E. 2554 (2011), where in section 103/7 paragraph 1, states that government agencies have to conduct the detailed information of the procurement regarding costs, especially standard medium prices, calculations of the standard prices in an electronic system and make it available publicly for the purpose of information validation.

On 8 March 2013, the Ministry of Finance circulated the letter specifying rules, guidelines and procedures for disclosure of the government medium prices. For drug procurement, the medium prices shall be determined as follows:

1) Drugs in the National List of Essential Medicine shall use the prices as announced by the Ministry of Public Health. If there is no listed price, the prices of the most recent purchases within the last

2 fiscal years will be used. If there is no purchase within the last 2 years, a market price will be used as a reference by considering the prices from the markets including from various websites.

2) Drugs not listed in the National List of Essential Medicine use the prices of the most recent purchases within the last 2 years. If there is no purchase within the last 2 years, a market price will be used as a reference, by considering the prices from the markets including the price from various websites.

After using the e-auction for drug procurement, the minimum bidding criteria and criteria for calculating medium drug prices, these cause the procurement process taking longer than before. The re-ordering or any other purchasing methods need approvals from the Comptroller General's Department. Consequently, the procurement procedure is delayed. All these lead to major concerns such as the drug reserves may not be sufficient, unable to purchase due to drug shortage and there might be no vendor selling the drug. For example, in the case of only one bidder entering the bidding process, the process must be canceled and need to be restarted. As a result, a procurement of medicines which has only one registered pharmaceutical company offering in Thailand cannot be performed by e-auction.

4.2 Electronic Market (e-market) and Electronic Bidding (e-bidding) System

In 2015, the Committee on Procurement, Office of the Civil Service Commission (OCSC) released a notification from the Office of the Prime Minister on guidelines for procuring supplies using electronic marketing (e-market) and electronic bidding (e-bidding), dated 3 February 2015, and announced in the Government Gazette on 4 February 2015. These are:

1) Electronic market method (e-Market), including procurement of goods with uncomplicated specifications, general products that require government agencies to purchase are to be listed in the e-catalog system, which can be proposed in 2 ways as follows:

1.1) Proposing via Request for Quotation (RFQ), for which a procurement that costs over 100,000 baht but not more than 5,000,000 baht

1.2) Proposing via an electronic auction (Thai Auction), for which a procurement that costs over 5,000,000 baht

2) Electronic bidding method (e-bidding), which is a procurement for goods that cost over 100,000 baht and have complex features or specific requirements, and/or products that are not listed in the e-market system. The criteria for selecting a winning bidder can be chosen by one of the following criteria:

2.1) By price basis; these are in the cases that the specifications of bidders and quality of goods already meet the requirements. Bidders shall propose only by price.

2.2) By price performance; these are in the cases that even though the specifications of bidders and quality of goods have been specified, but they are still not met with the requirements and needs. This will also encourage bidders who offer quality goods but not the lowest prices to have a chance to win electronic bidding and comply with good government inventory management principles

4.3 Electronic Government Procurement (e-GP) System

In February 2017, the Ministry of Finance issued an act for the Government Procurement and Procure-

ment Administration 2560 B.E. (2017), enforcing all government agencies (i.e. central government sectors, provincial government sectors, local government sectors, state enterprises, public organizations, independent organizations, constitutional organizations, court administrative unit, autonomous university, authorities under the parliament or under the supervision of the parliament, independent state agencies and other agencies as specified in the ministerial regulations). The act became effective on 24 August 2017. Accordingly, seven ministerial regulations were issued by the Ministry of Finance on procurement and government supplies management to support the act.

The amendment of the new system is the attempt to harmonize and consolidate the benefit from the previous procurement acts as well as regulation to more pragmatic and effective system. Nevertheless, the different parts of e-GP obviously distinguished are:

1) To define an annual procurement plan and publish the plan in the information network of the Comptroller General Department and government agencies.

2) Ones who are responsible for the procurement consideration must not be stakeholders in the offerors or contracted parties in the procurement.

3) Companies participating in submitting proposals to government agencies must be registered with the Comptroller General's Department.

4) For the procurement via electronic methods, it must be operated in the Comptroller's Network Information System via e-GP system.

5) Fraudsters, conspirators or supporters shall be penalized with imprisonment for one to ten

years and/or fined from twenty thousand baht to two hundred thousand baht.

Working under the acts or ministerial regulations from early on until present, especially at the beginning, several departments including the departments under the Ministry of Public Health have experienced operational difficulties resulting in operation delays. These government agencies have discussed for guidelines and requested for exemptions from time to time. Additionally, the relevant committees have considered and provided answers to the queries, set new guidelines and provided exemptions in some cases where problems occurred so that the departments can conduct the procurements effectively. However, the Information Network via the Electronic Government Procurement of the Comptroller General’s Department: e-GP, still needs more development and improvement for stability and more user’s friendly.

Drug Sales and Distribution through Various Channels between 2014-2018

During 2014 – 2018, the annual drug sales distributed through hospitals, pharmacies and private clinics and other channels in Thailand has a total value ranging from 110,928.35 million baht to 125,686.35 million baht (Table 1). The most drug sales are through hospitals (68.39 -67.67%), fol-

lowed by pharmacies (26.57-27.04%) and other channels such as clinics (5.04-5.09%) respectively. During that time the drug sales across all channels tended to increase i.e. the sales through hospitals, pharmacies and others, such as clinics, the value increased by 12.11 percent, 15.31 percent, and 18.87 percent respectively (Figure 2).

Referring to the drug market survey, the highest selling values of the top 3 drugs in June 2019 are injectable antibiotics (23,183 million baht), drugs in cardiovascular diseases (19,981 million baht) and anti-cancer drugs (18,880 million baht), as shown in Figure 3.

It is noticeable that the injectable antibiotics have decreased by 13% in sales, which could be a result of the government policy on the antibiotic usage control. This is in order to prevent people from drug resistance, in collaboration with many government sectors and hospital health service units.

Drug Procurement and Distribution System for Special Projects in the Universal Health Coverage Scheme and the Social Security Scheme^(5,6)

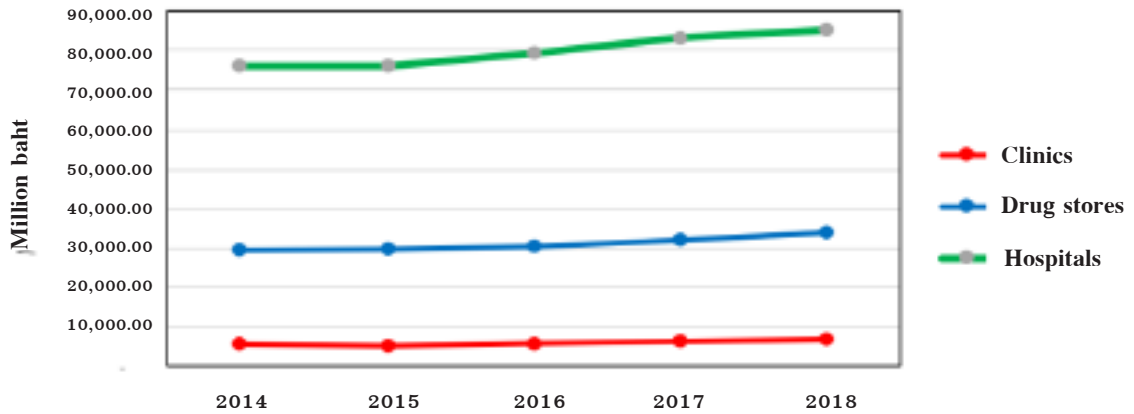
Among three main health insurance schemes in Thailand, namely the Civil Servant Medical Benefits Scheme (CSMBS), Social Security Scheme (SSS)

Table1 Drug sales through various channels between 2014-2018 (million Baht)

	2014	%	2015	%	2016	%	2017	%	2018	%
Hospitals	75,860.88	68.39	75,733.47	68.59	79,143.68	68.66	82,983.94	68.44	85,050.29	67.67
Pharmacies	29,477.66	26.57	29,712.94	26.91	30,475.92	26.44	31,993.03	26.39	33,991.50	27.04
Others	5,589.81	5.04	4,968.44	4.50	5,651.43	4.90	6,270.00	5.17	6,644.56	5.29
Total	110,928.35	100.00	110,414.85	100.00	115,271.02	100.00	121,246.97	100.00	125,686.35	100.00

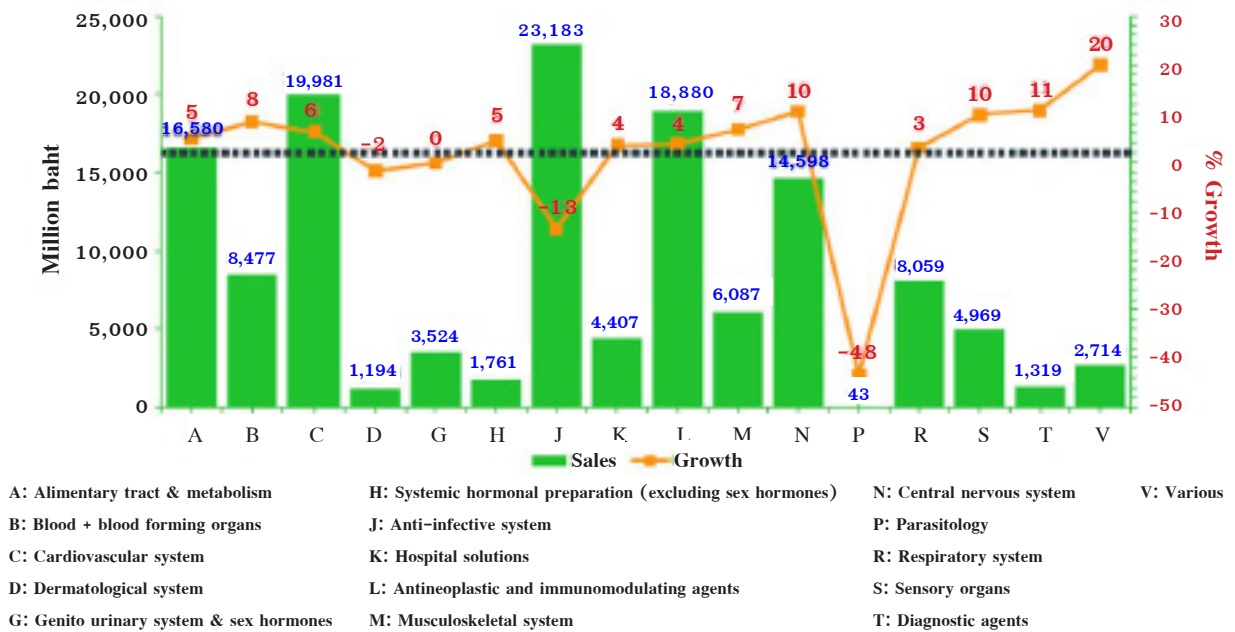
Source: IQVIA Thailand National Sales Audit. Quarterly drug market review in Thailand during 2014-2018⁽²⁾

Figure 2 Trends of drug sales through various channels during 2014- 2018



Source: Quarterly drug market review in Thailand during 2014-2018, Quintiles and IMS Health, Inc, Thailand⁽³⁾

Figure 3 Drug sales and the percentage of growth of drug sales, classified by drug groups



- A: Alimentary tract & metabolism
- B: Blood + blood forming organs
- C: Cardiovascular system
- D: Dermatological system
- G: Genito urinary system & sex hormones
- H: Systemic hormonal preparation (excluding sex hormones)
- J: Anti-infective system
- K: Hospital solutions
- L: Antineoplastic and immunomodulating agents
- M: Musculoskeletal system
- N: Central nervous system
- P: Parasitology
- R: Respiratory system
- S: Sensory organs
- T: Diagnostic agents
- V: Various

Source: IQVIA Thailand National Sales Audit. Quarterly market review 2Q19, June 2019⁽⁴⁾

and Universal Coverage Scheme (UCS), the UCS has the major proportion of population coverage since it covers the rest of the population not covered by the others. Thus, the UCS consuming the highest annual health expenditure and escalating more than 2 times in the past decade.⁽⁷⁾ However, the capitation rate per year for universal health coverage (UHC) beneficia-

ries (no more than 100 USD per capita) is low and not enough for including the innovative medicines from the emerging market. In order to avoid the influx of the new and expensive medicines without supporting evidences, the UCS and SSS will rely on the approved items from National Essential Medicines Subcommittee before including into the benefit package.

Nevertheless, the financing of UHC, operated by the National Health Security Office (NHSO) has grown up continuously and become a major challenge for sustainability. In order to ensure the accessibility to essential medicines for the beneficiaries, the NHSO and SSS have come up with the special projects for selected high cost medicines and assigned the Government Pharmaceutical Organization (GPO) to conduct the central procurement. This leads to higher purchasing power and subsequently higher negotiating power.

All the selected medicines must have quality specifications before central bargaining. These specifications are determined with reference to the pharmacopeia, experts' opinions and stakeholder's opinions. Some life-threatening medicines with frequent reports on quality problems must have pre-marketing surveillance through a third-party laboratory or an international laboratory before the procurement. To gain more quality assurance in the central purchasing, a post-marketing surveillance for monitoring suspected inferior quality products has put into the agenda, as in the case of fixed-dose combinations in tuberculosis (TB) under the collaboration with the Thai Food and Drug Administration (FDA). Moreover, all vaccines used in the National Expanded Program on Immunization (EPI) must obtain approval and get the lot released from the Department of Medical Sciences, Ministry of Public Health.

For the delivery system, all the special access items such as high cost medicines and orphan drugs will be centrally procured by the GPO and directly delivered to the health facilities by using the Vendor Managed Inventory (VMI).⁽⁸⁾ The registered hospitals for each

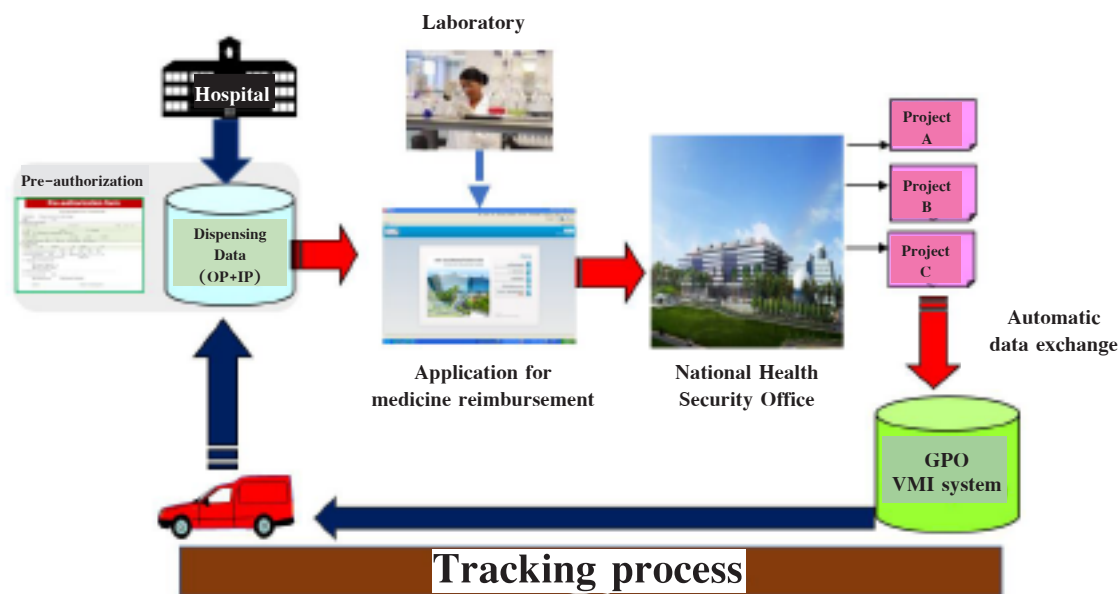
group of medicines will request the initial stock at the beginning of the provision of a new benefit package. Once there is utilization of any item in the provided list, the hospitals will input or upload the individual prescribing data with pre-authorization to the NHSO for further processing and generating the purchasing order by projects and hospitals. All purchasing orders will be automatically transferred to the GPO's vendor managing inventory program. Finally, all medicines will be shipped and replenished to the hospital warehouse within three to five days (Figure 4).

This system can ensure the accessibility to essential medicines for the patients although some items are of high cost and some are of no interest to import from pharmaceutical companies based on the low and uncertain consumption rate. For the payment design, the medicines reimbursement can compensate the closed-end payment mechanism especially capitation or DRG with global budget. The VMI can also dramatically cut the purchasing budget in pharmaceutical products by reducing the redundant distribution in warehouse at the regional and provincial levels and overstock at the hospital level.

Drug Procurement and Distribution System during Emergencies

For emergency circumstance⁽⁹⁾ such as the big flood in 2011 which covered vast areas of the country for a long period of time, the patients were unable to get access to the public health services; the preparation should be enforced so that the patients could have been evacuated from the flooded areas. Also, there should be proactive services to give patients access to essential medicines according to the patients' conditions as well as receiving continuous medication.

Figure 4 Drug procurement and distribution for the special projects in UCS and SSS



The flooding also caused many hospitals to temporarily stop the drug productions due to the flood overflowing into the factories and the cut-offs in major transportations. In addition, it created difficulties in transportation of raw materials and finished drugs, resulting in shortages of drugs in both drug manufacturer and hospital sides.

In order to relieve these types of chaos, the Ministry of Public Health has appointed a committee and a working group to help solve flood problems in terms of medicine and public health, being a center to collect the issues regarding health related to floods. This working group consists of representatives from related departments such as the Food and Drug Administration, Department of Disease Control, Department of Health, Department of Medical Services, Department for Development of Thai Traditional and Alternative Medicine, and Government Pharmaceutical Organization. The group has standardized drug support procedures and guidelines for medicines and

medical supplies on the following areas: distributions, communications to the problematic areas, and performance evaluations by appointing the Government Pharmaceutical Organization to a national reserve agency for medicines and medical supplies, known as National Stockpile.

Regional public health agencies have also managed the problems in the area, including management of patients with chronic diseases who are unable to receive services at the hospital. There is a division of geographic area into zones in order to have a large community hospital performing as a center for basic drug support to the other community hospitals in the area. However, there are still obstacles in the operation.

In case of outbreaks where vaccines and/or anti-toxic biomedicine are required; for example, the bird flu (2004), botulism from consumption of processed bamboo shoots packed in aluminum containers (bamboo shoot disease: 1998-2006), influenza pandemic (2009), diphtheria (2011-

2015), and measles (2016–2019), the Department of Disease Control under the Ministry of Public Health and the NHSO has reserved the vaccines and antiviral drugs in order for supports during epidemic occurrences in Thailand as follow:

Vaccines for public health emergencies. It is a duty of the Department of Disease Control to reserve vaccines for prevention and control the diseases which periodically spread in the country including vaccines for measles elimination and polio eradication. These reserved vaccines are diphtheria–tetanus (dT) vaccine, measles–rubella–mumps (MMR) vaccine or measles–rubella (MR) vaccine, and oral polio vaccine (OPV). When a suspect case is identified, the provincial health office or hospital must report and request for vaccination support to the Department of Disease Control.^(10–12)

For influenza vaccines to support pandemic of which the most recent outbreak occurred in 2009, Thailand by the Ministry of Public Health has implemented public–private partnership policy by negotiating with pharmaceutical company to provide influenza vaccine to Thailand under a condition that if an epidemic occurs, the pharmaceutical company will deliver the vaccine to the Government Pharmaceutical Organization. Consequently, this collaboration has bought to the establishment of a joint venture between the Government Pharmaceutical Organization and a private company for development the packaging process for the vaccine. For this arrangement, Thailand does not have to provide advance payment. If the Ministry of Public Health had not started the negotiations with the vaccine production company, the vaccination reserves would have gone through the normal procedures. This means that Thailand would

have to pre–order vaccines in advance for years and when outbreaks occur, it does not guarantee if Thailand will finally receive the vaccines in time even though the deposit for the vaccines has been paid in advance. In the meantime, the GPO has obtained technology transfer on production and preparation for establishing vaccine production facilities for seasonal influenza and pandemic influenza at the upstream level. The scale of production will range from producing initial ingredients to packaging. This has enabled the country to be self–reliant and secured in vaccine reserves. Nonetheless, the production must be generated at least 10 million doses per year in order to breakeven the production costs.

2) Anti–toxic biomedicine to support public health emergencies. It is a responsibility of the NHSO to reserve antitoxic biomedicines for treatments, for example, diphtheria antitoxin and botulinum antitoxin. When investigating for the disease outbreaks and a suspect is found, the Provincial Health Office or the responsible hospital must report to and request for vaccination support from the Department of Disease Control or the Toxicology Center at Ramathibodi Hospital, Mahidol University, a WHO Collaborating Center in Thailand.^(13,14)

Further Improvement on Drug Procurement and Distribution

The following issues are the areas need to improve drug procurement and distribution in Thailand:

- 1) The criteria for determining the items needed list for central procurement and distribution shall be done
- 2) Defining a direction to harmonize the drug

procurement and distribution system for public health insurance fund at the national level.

- 3) Monitoring the rational drug procurement and distribution in online pharmacy
- 4) Implementation research on special procurement of orphan drugs, antitoxic drugs, vaccines for pandemic control to ensure sustainability and supply security.
- 5) The study of drug management during disaster and emergency should be taken into concern

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บทคัดย่อ: การจัดหาและการกระจายยา

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ระบบการจัดหาและกระจายยาถือเป็นกระบวนการสำคัญในการเชื่อมต่อบริการเข้าถึงและประกันการเข้าถึงยาของผู้ป่วยเพื่อให้มั่นใจว่าผู้ป่วยสามารถเข้าถึงยาที่มีประสิทธิภาพและมีคุณภาพ ซึ่งการจัดหาต้องมีการพิจารณา ลักษณะของตลาดยาซึ่งมีหลายประเภท ทั้งตลาดผูกขาดที่มีผู้ขายเพียงรายเดียว หรือตลาดกึ่งผูกขาดที่มีผู้ขายน้อยราย หรือหากมีผู้ผลิตออกจำหน่ายกันมากขึ้นและส่งผลให้ยานั้นมีการแข่งขันกันในตลาดมากขึ้นจนเกิดการแข่งกันด้านราคาที่ลดลงแต่ไม่ถึงขั้นแข่งขันสมบูรณ์ ระบบการจัดหาและกระจายยาในประเทศไทยเริ่มต้นจากอุตสาหกรรมยาซึ่งมีทั้งยาที่ผลิตภายในประเทศและนำเข้าจากต่างประเทศ โดยผู้ผลิตและผู้นำเข้าในภาครัฐและเอกชน สำหรับผู้ผลิตภายในประเทศ มีการนำเข้าวัตถุดิบส่วนใหญ่จากต่างประเทศ เนื่องจากข้อจำกัดด้านการผลิตวัตถุดิบตัวยาสสำคัญในประเทศ ต่อมามีการกระจายยาสำเร็จรูปผ่านผู้แทนจำหน่าย (distributors) และผู้ค้าส่ง (wholesalers) ไปยังสถานบริการด้านสุขภาพระดับต่างๆ ทั้งโรงพยาบาลรัฐและเอกชน คลินิกและร้านยา นอกจากนี้ ยาจากผู้แทนจำหน่ายยังกระจายไปยังช่องทางอื่นๆ นอกเหนือจากระบบข้างต้น ได้แก่ โครงการพิเศษของสำนักงานหลักประกันสุขภาพแห่งชาติและสำนักงานประกันสังคม การบริหารจัดการยากำพร้า และในกรณีสถานการณ์ฉุกเฉินได้มีแนวทางในการบริหารจัดการการจัดหาและกระจายเพื่อรองรับสถานการณ์ ได้แก่ การระบาดของโรคที่ป้องกันได้ด้วยวัคซีน การเกิดการรั่วไหลของสารพิษ และการเกิดอุทกภัย ในปัจจุบันระบบการจัดการขนส่ง (logistic system) ได้พัฒนาไปอย่างมาก ทำให้เกิดบริษัทที่ทำธุรกิจด้านการบริหารคลังยาและจัดส่งยาให้กับสถานบริการขึ้นมากมาย ในภาครัฐ องค์การเภสัชกรรมมีบทบาทในการจัดหาและกระจายยาให้กับลูกค้า โดยเฉพาะการกระจายยาในโครงการพิเศษให้กับหน่วยบริการในระบบหลักประกันสุขภาพแห่งชาติและระบบประกันสังคมผ่านระบบ Vendor Managed Inventory (VMI).

คำสำคัญ: การจัดหา, การกระจายยา, การบริหารคลังยา