The Journey of the Pill

Findings of the NCD Commodity Supply Chain Assessment in Vietnam

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Acknowledgments

The *Journey of the Pill* assessment is part of a multicountry effort by PATH, in partnership with ministries of health, to assess current strengths and barriers in supply management, along with stockouts and price markups. It is our hope that by exposing these factors, governments can work together with partners to strengthen access to noncommunicable disease (NCD) medicines and products, particularly at lower levels of care.

The assessment augments our efforts to advance comprehensive programming designed to contribute to Vietnam's aspirations by strengthening primary health care NCD services, both through creating demand via the PATH-implemented Communities for Healthy Vietnam program, digital innovations, and health messaging initiatives and improving access to NCD commodities. PATH has conducted several NCD supply chain assessments (Kenya, Ghana, Senegal) in partnership with ministries of health, resulting in road maps for action and concrete activities towards NCD supply security.

PATH has been a trusted partner of the Ministry of Health in Vietnam since the 1990s. Our partnership with the Ministry of Health on the Communities for Healthy Vietnam program served as an important precursor to this assessment.

The involvement and contributions of key stakeholders throughout the Vietnam health care system made the Vietnam *Journey of the Pill* NCD supply chain assessment in Vietnam possible. The support, engagement, and participation of all survey-collaborating institutions, including the health facilities and social health security agencies involved in this study, were invaluable and greatly appreciated.

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PATH works in over 70 countries globally to develop and scale solutions—including vaccines, drugs, devices, diagnostics, and innovative approaches to strengthening health systems worldwide. PATH began working on NCDs in 1996, focusing on women's cancers. In 2012, the program expanded to focus on the expanding global burden of diabetes and cardiovascular disease.

Abbreviations

CHS	commune health station
CDPA	centralized drug procurement agency
CVD	cardiovascular disease
DALY	disability-adjusted life year
DAV	Drug Administration of Vietnam
DHC	district health center
DTC	Drug and Therapeutic Committees
HTN	hypertension
LCDPA	local centralized drug procurement agency
LMIC	low- and middle-income countries
MOH	Ministry of Health
NCD	noncommunicable disease
NCDPC	National Centralized Drug Procurement Center
OOP	out of pocket
PHC	primary health care
SHI	social health insurance
VSS	Vietnam Social Security
WHO	World Health Organization

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Executive summary

Background

Vietnam is faced with a growing noncommunicable disease (NCD) burden. As estimated by the World Health Organization (WHO), of the 549,000 total deaths in Vietnam in 2016, NCDs accounted for 77 percent (with 17 percent premature mortality from NCDs).[1] To address this challenge, the prime minister approved the national NCD strategy for 2015–2025[2] by the Vietnam Ministry of Health (MOH), and this was reinforced by a decision from the prime minister, approving a 2022–2025 national plan for the prevention and control of NCDs and mental health disorders.[3]

The national NCD strategy (2015–2025) prioritizes improving the capacity and effectiveness of prevention, surveillance, detection, treatment, and management of NCDs, with the goal of 90 percent of health care facilities having the basic medical equipment and essential drugs to support care provision.[2] In addition, the plan for the prevention of NCDs (2022-–2025) aims to provide 100 percent of commune health care facilities and 50 percent of workplace health facilities with access to the essential equipment and drugs prescribed for prevention and treatment of NCDs.[3] The prime minister's 2022 decision strengthens this further by setting a specific target of 95 percent of commune health stations (CHSs) with the capacity to support the prevention, detection, treatment, and management of hypertension (HTN), diabetes, and other NCDs, as regulated, and at least three types of medicines for HTN treatment, two types of medicines for diabetes treatment, and essential medicines for the treatment of chronic obstructive pulmonary disease and asthma according to the regulated list available for patients in their communities.[3]

While both the national NCD strategy and the national plan for prevention and treatment of NCDs prioritize capacity-building at the commune / primary health care (PHC) level, the supply chain for NCD medicines and products has areas that need to be strengthened to achieve the ambitious targets set. The Vietnam public health supply chain that delivers essential medicines—including NCD medicines for the treatment of HTN and diabetes—to the network of public health facilities leverages the distribution network of the extensive private sector through a series of pooled procurement contracts and other procurement mechanisms implemented at the national, provincial, and health facility levels. While this system appears to be effective in supplying the higher-level health facilities with medicines to treat HTN and diabetes, access to basic medicines for the treatment of HTN and diabetes at the PHC level is weak and does not support the MOH in meeting the goals set out in their current NCD strategy and plan, particularly at the CHS level. This supply chain assessment seeks to identify barriers to, and provide recommendations to support, consistent access to high-quality NCD medicines and health products as an essential part of NCD care, with particular attention to the PHC level.

This report is timely, what with the various global initiatives underway to improve NCD care, especially given the sharp rise in the global prevalence of cardiovascular disease (CVD) and diabetes.[4] Management of CVD and diabetes is one of the WHO "best buys" and among the most cost-effective and feasible interventions to prevent and control NCDs in low- and middle-income countries (LMIC).[5] Investing in NCD care, including access to the needed medicines and products, is an excellent economic investment because, if provided early to patients, it can reduce the need for more expensive treatment, as well as late-stage diagnosis and complications from disease. The medical treatment of high blood pressure to prevent stroke is also among the WHO's "best buys."[6] Once built, these programs cost only

US$1.27 per year per person to maintain; many of these programs actually save four to six times as much in health costs as their initial implementation cost.[5]

In recognition of the importance of addressing the increasing prevalence of NCDs, and particularly CVD and diabetes, there have been several global initiatives launched. The year 2021 marked the 100th anniversary of the discovery of insulin, with 2022 being the 100th year since insulin was first successfully used to treat diabetes in humans. Coinciding with the centennial of the discovery of insulin was the launch of WHO's Global Diabetes Compact, with the vision of "reducing the risk of diabetes, and ensuring that all people who are diagnosed with diabetes have access to equitable, comprehensive, affordable and quality treatment and care."[7] WHO continues to monitor and encourage country progress against NCD targets as the next high-level meeting on NCDs in 2025 approaches, with a view toward 2030. Included in these national targets are NCD indicators reflecting progress in addressing the NCD burden, guidelines for management of NCDs such as diabetes and CVD, and drug therapy and counseling.[8] The 150th WHO Executive Board meeting (January, 2022) reinforced the importance of addressing NCDs and approved the adoption of the draft decision recommending submission of the draft policy instruments for the 75th World Health Assembly in May 2022, including the road map 2023–2030 for the global action plan for the prevention and control of NCDs.[9] For countries to achieve these targets, capacity at the PHC level to support NCD care must be strengthened, and access to NCD medicines and needed commodities is an essential component of this capacity.

The findings and recommendations from this assessment can support Vietnam in achieving the set national NCD targets and priorities, as well as the global Sustainable Development Goals and action plan targets. The learnings from this assessment are summarized in four key findings and subsequent recommendations for improving the functioning of the Vietnamese supply chain and improving NCD commodity security for people living with HTN and diabetes in Vietnam.

Findings and recommendations

Finding #1

District hospitals, health centers that offer treatment, and CHSs experience the most shortages and stockouts of essential PHC drugs for the treatment of HTN and diabetes. Efforts to increase access to basic HTN and diabetes medicines at the commune level must include an integrated approach to increasing clinical service capacity combined with strengthening the facilities' ability to manage the supply chain and ensure access to the essential NCD medicines needed to provide high-quality services.

Recommendations for the first finding are as follows:

- Strengthen the service capacity of health facilities at the PHC level to manage HTN and diabetes while also strengthening their knowledge about policies and ability to manage the supply chain for the necessary medicines and products.
- Upgrade CHSs' capacity to Level IV (they are not part of the health facility levels I-IV but provide basic care at the community level) to enable them to prescribe and dispense insulin for treatment of type 1 and type 2 diabetes.
- Implement targeted interventions to increase availability of oral hypoglycemics at CHSs.
- Support the district health centers (DHCs) in developing a coordinated road map that addresses the findings of this assessment to ensure the consistent availability of essential drugs and consumables for HTN and diabetes.

- Effectively implement the decentralization for resupply of chronic medicines for patients that have been referred from higher-level facilities to lower-level facilities for medicines resupply and routine management. This includes ensuring alignment between social health insurance (SHI) coverage and pricing of medicines at all health facilities and the implementation of the MOH's updated NCD guidelines and its prescribing and resupply policies.
- Resolve the insurance coverage issues to allow a person who has been referred for resupply to a lower-level facility to have the same level of insurance coverage as received when accessing the medicine at the prescribing level.
- Work with district health teams to prioritize PHC facility access to diabetes and HTN medicines and keep up to date on the supply chain implications (product selection/forecasting) of updated HTN and diabetes regimens.
- Conduct capacity-building, including supportive supervision for DHCs and CHSs to improve access and availability of NCD commodities, especially focused on the ability to estimate the quantities of selected medicines for the treatment of HTN and diabetes in keeping with treatment protocols and the estimated number of patients.
- Implement electronic medicine management tools at CHSs to support a standardized approach to supply chain management process and quality logistics data.
- Improve cold chain capacity and access to temperature-monitoring tools and processes to ensure high-quality cold chain for temperature-sensitive pharmaceuticals, such as insulin, at the DHCs and CHSs.

Finding #2

The primary causes of shortages and stockouts of tracer medicines at health facilities that routinely manage those products are budget constraints, supplier stockouts, and health facility debts to suppliers.

Recommendations for the second finding are as follows:

- Establish a specific budget line item for HTN and diabetes medicines and products in support of WHO and national treatment targets at each level of the health system.
- Invest in improving service capacity of CHSs to upgrade to Level IV facilities and conduct district-level demand forecasts to ensure the financing is available to support adequate commodity procurement and reinforce care-seeking behavior at the local level.

Finding #3

Delays in the medicine reimbursement cash flow from the Vietnam Social Security constrains health facility capacity in reconciling outstanding debts with their suppliers and placing timely orders for resupply.

Recommendations for the third finding are as follows:

- Establish a specific budget line item for HTN and diabetes medicines and products in support of WHO and national treatment targets at each level of the health system and based on a demand forecast.
- Develop and pilot agile payment models for drug reimbursements that reduce reimbursement processing time and shorten the lead time for payments to health facilities.

- Consider holding regular informational “Question and Answer” sessions or promoting other capacity-building efforts aimed at supporting health facilities’ needs regarding the reimbursement system.

Finding #4

The complex and time-consuming annual bidding process places a heavy burden on clinical staff.

Recommendations for the fourth finding are as follows:

- Expand standardization for product selection, particularly as it relates to medicines, and strengthing support for simplified HTN and diabetes treatment protocols implemented at the PHC level.
- Review the procurement process & regulations to maintain a competitive process and support an agile, responsive public health supply chain.

  Revisit different steps in the processes to identify possible gains in efficiency, particularly at the district and commune levels.

1. Introduction to noncommunicable diseases in Vietnam

The rising burden of noncommunicable diseases (NCDs) globally and in Vietnam specifically highlights the urgency to address barriers impacting the NCD response, including the lack of NCD medicines and products needed throughout the continuum of care.

1.1 Global burden of disease

The World Health Organization (WHO) estimates that NCDs are responsible for 41 million deaths each year, which is equivalent to 71 percent of deaths globally,[10] and that they are now the leading cause of death.[11] Without action, 388 million people globally will die of chronic diseases such as diabetes mellitus, cancer and heart diseases in the next decade.[12] Often associated with the developed world, the burden of hypertension (HTN) and CVD is increasing rapidly in LMIC, yet access to medicine remains very low, and few living with HTN and diabetes are treated and well-controlled.

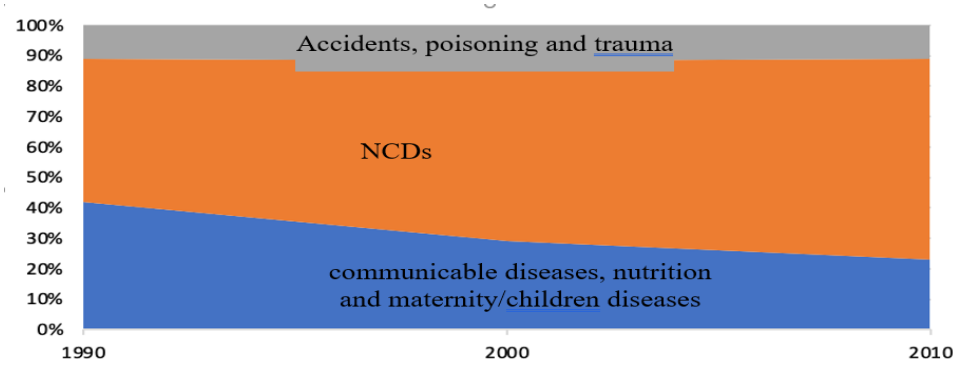
CVD (17.9 million deaths) and diabetes (1.5 million deaths) are two of the top four causes of NCD death, along with cancers (9.3 million deaths) and respiratory diseases (4.1 million deaths).[10] WHO data show that "raised blood pressure is estimated to cause 7.5 million deaths, about 12.8% of the total of all deaths. This accounts for 57 million disability adjusted life years (DALYs), or 3.7% of total DALYs."[13] Worldwide diabetes prevalence is projected to increase from 8.3 percent in 2013 to 8.8 percent by 2035, with more than 80 percent of cases in LMIC.[14]

The lack of consistent availability and affordability of NCD medicines and associated products is a key challenge to the NCD response, as it impacts treatment initiation and adherence. WHO estimates that one-third of the world's population lacks access to essential medicines and diagnostics, and in the poorest regions, this proportion increases to 50 percent.[15] Indeed, improving access to existing essential medicines and vaccines could save 10 million lives per year.[16] A global landscape report conducted by PATH found that the "availability of [essential medicine and technologies] for diabetes is insufficient to meet the needs of the people affected by this disease, based on the WHO [Global Action Plan] target of 80 percent availability of affordable [essential medicines and technologies] in public and private facilities. Even facilities offering diabetes diagnosis or treatment had limited availability of these supplies. Median availability of diabetes-specific [commodities] in these facilities ranged from a low of 20.5 percent for insulin to a high of 59.5 percent for urine protein test strips (across all countries and both sectors). … [Furthermore,] availability was typically higher in the private sector than the public sector,"[17] which would imply higher out-of-pocket (OOP) costs for patients.

1.2 Vietnam burden of disease

Vietnam faces similar challenges with the rising burden of NCDs. In 2012, NCDs accounted for 72.9 percent of all deaths and 59.7 percent of the total life years lost due to premature mortality. By 2018, 77 percent of all deaths were due to NCDs. The following graph shows the evolving overall contribution of NCDs to the burden of disease in Vietnam, measured in DALYs.[18] The largest four NCD contributors—namely, CVD, cancer, respiratory disease, and diabetes—accounted for 60.4 percent of deaths and more than 30.0 percent of the burden of disease expressed in DALYs in 2012.[19]

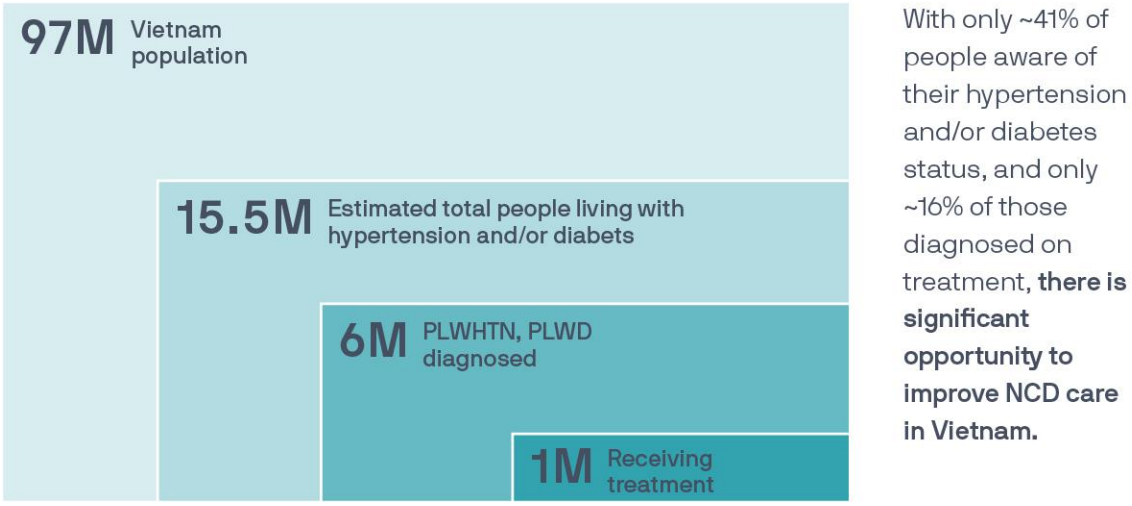
Figure 1. Burden of disease in Vietnam, expressed in disability-adjusted life years.



Abbreviation: NCD, noncommunicable disease.

Estimates by the Vietnamese Ministry of Health (MOH) indicate that 12.5 million people have HTN and another 3 million people have diabetes. However, the detection rate for HTN is roughly 43 percent, and only 14 percent of people living with HTN are in treatment. For diabetes, it is estimated that 69 percent of people are unaware of their diabetes status, with 71 percent of those diagnosed unable to access treatment.[20] Low detection rates emphasize the need for better HTN and diabetes screening programs and greater awareness among the population of the need for screening, detection, and treatment adherence. Figure 2 illustrates the relationship between the total population in Vietnam and the number of people with HTN and/or diabetes who are diagnosed and/or receiving treatment.

Figure 2. Number of people living with hypertension (PLWHTN) or diabetes (PLWD) in Vietnam.



Adapted from: **(a)** Vietnam Ministry of Health. *Health Statistics Yearbook 2017.* Hanoi: Socialist Republic of Vietnam; 2017. https://www.moh.gov.vn/documents/176127/0/NGTK+2017_2017.pdf/f3315035-8b8f-4ff9-bb95-708a31b87b8b.
(b) World Bank Population Visualization Tool, Vietnam.

To address this mounting disease burden related to HTN and diabetes, the Vietnam MOH has put in place a number of policies and technical guidelines to facilitate active engagement from the health sector to deliver detection and management services at scale. The national NCD strategy (2015–2025) seeks to contain the proportion of adults with HTN to less than 30 percent and those 30 to 69 years old with diabetes to less than 8 percent.[2]

Further, in 2017, Vietnam's MOH issued a resolution (Resolution No.20/NQ-TW) on strengthening healthcare and protection for the people, dated 25 October 2017 to make NCD-related services available in 95 percent of commune health stations (CHSs) and the equivalent in PHC facilities by 2025. An additional directive (2559/QĐ-BYT) calls for the strengthening of PHC capacity to manage HTN and diabetes by 2020. Other directives call for scaling up prevention and early detection of diabetes and HTN and for ensuring essential NCD-related medicines, equipment, and techniques are available at the PHC level. These directives essentially require a repositioning of primary health services and realignment of system-based incentives so that the PHC system becomes a trusted resource for NCD prevention, diagnosis, management, and care and demand for these services grows strong. They also pose a significant challenge to the MOH, given that only 12 percent of CHSs are currently managing HTN cases and few are able to manage people with diabetes. At present, only 19 percent of people with HTN and 6 percent of people with diabetes receive treatment at CHSs.[20] The General Department of Preventive Medicine, which is the MOH unit responsible for achieving these targets, does not currently have a road map or implementation plan in place that will enable it to meet these goals, nor is there a comprehensive policy, guidance, and training framework in place for the prevention, detection, and treatment of NCDs at CHSs (PHC facilities).

The Vietnam MOH also acknowledges that the public sector alone cannot address the significant and growing burden of NCDs in Vietnam and seeks to diversify the funding base for health care. This is reflected in recent policy shifts encouraging fee-based and private-sector models and inclusion of social enterprise in health care delivery. These actions have resulted in a recent rise in social enterprise health care models providing innovative community health care options, particularly in urban areas, and access to treatment and care, including medicines and health products closer to where people live. An example is the PATH-implemented Communities for Healthy Vietnam project that, through partnerships with Co-op Mart, a large grocery store chain, is bringing screening for HTN to the community; and partnership with PharmaCity, a private pharmacy chain, have been established to screen for HTN and promote HIV self-testing for the first time in Vietnam.[21]

The chronic nature of many NCDs requires that a continuous supply of high-quality medicines and health products be available and affordable to people affected by these conditions. The expanded role of CHSs and the private sector, including social enterprises, provides new opportunities for access to these commodities within local communities. However, globally and in Vietnam specifically, there continue to be challenges to ensuring NCD commodities are consistently available at an affordable price, especially at lower levels of care. While many essential medicines for NCDs included in the list of essential medicines are covered by SHI, some are not always available in public health care facilities. For instance, SHI does not typically cover the cost for a number of recommended drugs for treatment at the commune level, resulting in patients' often preferring to stay at the higher levels of care for treatment and management of their NCDs. Therefore, CHSs often lack the equipment and consumables sufficient for NCD patient management in accordance with national treatment protocols.[2]

To support Vietnam's NCD response and the ambitious targets laid out, PATH assessed the NCD supply chain, with a focus on diabetes and HTN medicines, titled *Journey of the Pill.* The goal of the assessment was to identify strengths and weaknesses at all levels of the NCD supply chain, assess availability and price markups, and thereby inform future actions by country stakeholders to strengthen supply security.

2. Aims and methods

PATH partnered with the MOH's General Department of Preventive Medicine and the Department of Noncommunicable Disease Control of the Vietnam National Institute of Hygiene and Epidemiology to implement the Journey of the Pill assessment between September 2020 and March 2021. The aim was to identify strengths and inefficiencies in the supply chain management systems at all levels through an end-to-end NCD supply chain assessment by mapping tracer medicines from the time of manufacture or entry into the country to the time of dispensing them to patients. This would define the "journey of medicines" to inform future actions to strengthen supply security.

2.1 Objectives

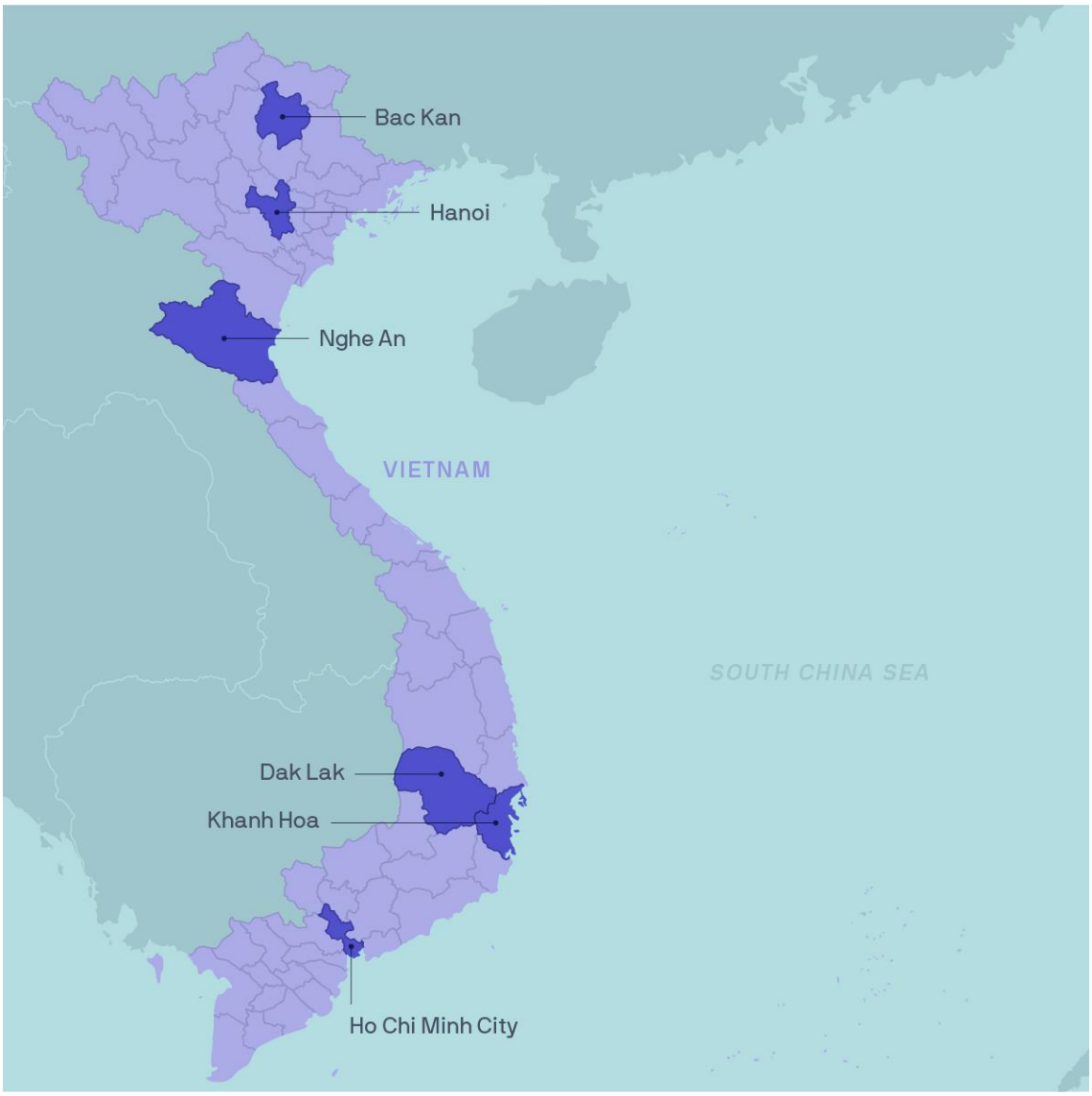
The objectives of the assessment were to:

- Describe the flow of product from entering Vietnam to being dispensed to the consumer; map the supply chain for NCD-related medicines and products (e.g., for diabetes, HTN) to identify the strengths and weaknesses in the system and inform specific systems-strengthening activities that could improve supply security.
- Define the time it takes for medicines to go through all stages of the supply chain in both the public and private sectors.
- Evaluate the availability of antihypertensive and antidiabetic drugs; assess short-term availability (i.e., day of visit).
- Document cost escalators, including price markups, as products move through the health care system, from the commune level to the national level.
- Highlight nuanced challenges in the drug and consumables supply chain; expand on challenges with selection of drug lists, bidding/procurement, driving of consumption demand, ordering/delivery, drug usage, production, and supply companies.

2.2 Approach

While this report aims to be representative of all systems and practices across the country, the survey focused on six intentionally selected provinces and cities: Hanoi and Bac Kan (northern region), Nghe An (central region), Dak Lak (central highlands region), Khanh Hoa (south central region), and Ho Chi Minh City (southern region). Hanoi (as the capital of Vietnam) and Ho Chi Minh City (as the largest city in the country) were important to include in the assessment. The four provinces selected represent the geographic span of the country from north to south. Figure 3 demonstrates the geographic spread of the provinces selected.

Figure 3. Selected provinces for assessment.



Within each province, one commune per district was selected for the assessment. Key informants at the policy level comprised representatives from the Vietnam Medical Services Administration, Drug Administration of Vietnam (DAV), Department of Health Insurance, National Centralized Drug Procurement Center (NCDPC), and Vietnam Social Security (VSS). Key informants responsible for supply chain management functions included individuals from the central, provincial, district, and commune levels of the MOH, as well as staff of pharmaceutical manufacturers, distributors, or retail pharmacies. Roles ranged from administrators of central agencies, departments of health, and hospitals to clinical and pharmacy staff working at health facilities. Table 1 summarizes the site visits.

Table 1. Site visits for quantitative assessment.

Site classification	Numbers visited
Supplier	
Provincial manufacturers	3
Provincial distributors	3
Retailers	18
User	
Central hospitals	1
Provincial general hospitals	6
District health centers	12
District general hospitals (if not under the health centers)	3
Commune health stations	12
Total	**58**

The study team surveyed key informants on functions of the NCD supply chain at each level of the health care system. Interviews and focus groups addressed the planning processes and participants involved in estimating drug needs, as well as plans to treat HTN and diabetes at health care facilities. Key informants were also surveyed about drug lists and the documents that are completed and submitted to the local drug procurement committees. Lastly, key informants integral to supply chain functions were surveyed about procedures used to carry out drug management, distribution, ordering, use, and disposal.

Interviews and checklist-based observation were used to collect quantitative information about the availability, frequency of use, time of drug stockpiling, and unit price of each selected drug. Quantitative data on tracer medicine supply and availability were primarily collected from electronic stock management systems operating at health facilities, with physical verification of stock on hand on the day of the site visit. Timelines and unit price data were collected to verify lead times and price markups along the supply chain.

Using qualitative and quantitative data from 34 public service sites, 6 suppliers, and 18 retail pharmacies, as well as 36 interviews and 34 focus groups with key informants, the supply chain processes were documented, including enablers and constraints impacting the availability of tracer medicines at health facilities at different levels of the public health system.

The study team selected six tracer medicines that:

- Were included on the 2018 Vietnam essential medicines list.
- Through a review of 2019 procurement records, were found to be procured at high volumes relative to other medicines from the same categories.
- Were approved for use in this assessment by the MOH.

Three HTN and three diabetes drugs were selected: amlodipine, enalapril, nifedipine, metformin, gliclazide, and insulin. The assessment focused on availability, lead times, and costs for these six tracer medicines in the six study provinces and cities. Table 2 provides an overview of the NCD tracer medicines assessed.

Table 2. Noncommunicable disease tracer drugs assessed.

Category	Class	Drug name	Strengths
Antihypertensive	Calcium channel blocker	Amlodipine	2.5 mg, 5 mg, 10 mg
		Nifedipine	10 mg, 20 mg retard
	ACE inhibitor	Enalapril	5 mg, 10 mg, 20 mg
Oral hypoglycemic	Biguanide	Metformin	500 mg, 850 mg
	Sulphonylurea	Gliclazide	30 mg, 80 mg
Hormonal (injectable)	Hormone	Insulin	40 IU/ml, 100 IU/ml, intermediate-acting 40 IU/ml, 100 IU/ml

Except for insulin, all tracer medicines are authorized for ***prescription and dispensing*** at all health facilities, including CHSs. Insulin is only authorized for use at Level IV health facilities and above, which excludes most commune-level health stations and clinics. Insulin is not authorized to be ***dispensed*** at health facilities below Level IV.

3. Findings

3.1 NCD service delivery in the Vietnam public health care system

3.1.1. Overview

The public health service delivery in Vietnam supports approximately 98 million inhabitants. It has a hierarchical structure comprising CHSs, district health centers (DHCs), and provincial and national referral hospitals. The CHSs are the entry point into the health system and expected to serve a population of around 5,000 to 10,000 people each. CHSs also are responsible for implementing national target programs in the community and provide examination and treatment of common complaints, pre- and postnatal care, uncomplicated deliveries, and referrals to the DHCs. The DHCs provides in-patient hospital services, and provincial hospitals provide tertiary care, while national hospitals are referral centers. Table 3 outlines Vietnam's public health system infrastructure.

Table 3. Vietnam public health system infrastructure.

Administrative structure	Facilities
Central (Ministry of Health)	Noncommunicable disease dept. 47 central hospitals
Provincial (departments of health)	63 Centers for Disease Control Pharmaceutical testing centers 430 provincial hospitals 231 private and semi-public hospitals
District (departments of health)	666 district hospitals 277 inter-commune clinics
Commune	11,100 commune health stations

In addition, Vietnam totals 231 private and semi-public hospitals.

At either public or private health centers, patients can use SHI or pay OOP. Close to 91 percent of the population participate in the SHI program.[22] The number of patients using SHI for HTN or diabetes treatment or who pay OOP is not published.

3.1.2. Financing

Per WHO, SHI in Viet Nam "was established in 1992, and is now regarded as the main method of public financing for health care. The government uses its tax revenues to subsidize vulnerable groups, such as the poor, ethnic minorities, children under 6, and the elderly above 80. The current health insurance coverage is about 87% of the population. There is a need to improve equity and efficiency in the fund's use through strategic purchasing. Out-of-pocket payment for health has decreased but remains high, and accounts for about 41% of total health expenditure (2016)."[23]

VSS allocates health facilities with a medicine and consumable budget on an annual basis. The annual budget estimate is determined based on the financial settlement of the previous year, the number of SHI card holders, and forecasted changes in the coming year. Each health facility determines how to allocate

their annual budget across different cost centers, including procurement of medicines and other health consumables.

VSS reimburses health facilities for the cost of approved medicines purchased from contracted vendors at established rates. Health facilities submit their requests for reimbursement monthly or quarterly via the encrypted online VSS portal. An automated insurance software selects samples of documentation for inspection prior to reimbursing the health facility.

Noninsured patients have to pay for all of their prescribed medicines, including those for NCDs, as an OOP expense. Patients are free to purchase the medicines at the health facility or in the private sector. According to the International Diabetes Federation's Diabetes Atlas (2021), diabetes-related health expenditure per person in Vietnam in 2021 was US$418.10.[24] According to a study by Kien et al (2016),[25] in urban Hanoi in 2013, the OOP payment for health care as a share of total household expenditure is nearly three times higher in households with at least one member with NCDs than those households without a member with NCDs.

Challenges in financing health care in Vietnam are as follows:

- Budget amounts allocated to medicines that often pose a constraint to health facilities when determining which products to select for forecasting and procurement.
- An increased demand for services resulting from clinical training, outreach, or other health service promotional investments that is not matched with increased insurance agency allocations, frequently leading to medicine shortages and increased OOP costs for insured consumers.
- Delays in delivery due to supplier stockouts or facility overdue debts (when the facilities cannot pay the awarded contractor on time), leading to a temporary shortage of medicines (in some localities, facilities can transfer drugs between facilities to address shortages, but this is not always possible).
- Difficulty in accessing mountainous and remote areas, especially for distribution of drugs between the district centers/hospitals and the CHSs.
- Costs of NCD medicines for noninsured patients which may hamper access to services and prescribed medicines due to the financial burden they entail.

3.1.3. Logistics management information systems

Most health care facilities use stock management software that facilitates expiry date tracking and priority use of short-term remaining shelf life of medicines for inpatient use.

Health care facilities operate both a patient and a drug management information system. Some commune-level facilities use paper-based records, while larger facilities and facilities at the district, provincial, and central levels use electronic systems to track their medicine dispensing and inform their supply management decisions. Data were easily accessible during the assessment. Physical stock counts conducted during the assessment found the stock balances to be accurate. The commune level operates mostly manual stock management systems. Given that suppliers deliver directly to health facilities, medicines have long-term remaining shelf life on receipt, as no short-term shelf life is accepted.

Health facilities have data on stock balances, consumption, losses/adjustments, and expiry dates. All facilities conduct periodic physical inventory, ranging in frequency from weekly to monthly. When there are inventory shortages, the cause is investigated, and the responsible officer is held accountable for the shortfall.

It is rare for health facilities to manage expired medicines, though the assessment did not look into expiries for tracer medicines. In the event there is product to be destroyed, a facility's planning department consults with the provincial department of health to organize, witness, and document the disposal process.

3.2 Vietnam NCD supply chain

3.2.1 Product selection overview

The Drug and Therapeutic Committees (DTCs) at the health facility level are responsible for demand planning and conduct an annual product selection exercise to determine the medicines that will be required and to quantify their need. Procurement then follows once financial resources have been approved through existing pooled procurement mechanisms. SHI is responsible for reviewing drug lists from a financial perspective and helping health facilities set their budgets based on SHI capacity to reimburse. For medicines procurement, SHI officials participate in DTC meetings to ensure drug lists reflect budgetary constraints.

Health facilities are provided with a list of medicines that are reimbursed by SHI as a basis for drug selection. The current list[26] (2018) includes 1,030 active ingredients from 27 drug groups, assigned to four of the health facility tiers. DTCs are responsible for determining the demand for medicines and other commodities for Level 1-3 health facilities. Medicine selection is based on established treatment guidelines.

All the NCD tracer medicines selected for this assessment are authorized for prescription at all health facilities except for insulin, which is not prescribed at CHSs.

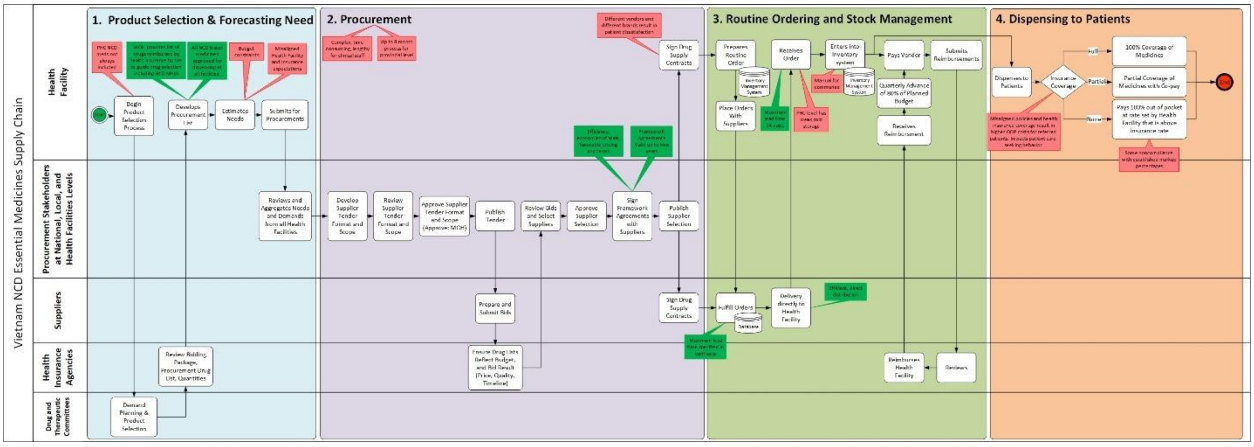
During the assessment it was observed that:

- Medicines selected for procurement by the DTCs do not always reflect patient demand, as health facilities made procurement decisions based on medicine pricing and available financial resources.
- Pharmacy staff or physicians often are unaware of the new HTN and diabetes treatment regimens issued under Decision 5904/2019/QD-BYT and do not include new medicines in their selection of essential medicines to be procured for CHSs.

Although CHSs receive the procurement list of what is available (medicines for CHSs are procured by the DHCs or district hospitals then supplied to the CHSs), CHSs do not request additional medicines other than what the district provides, given considerations of medicines covered by SHI at the commune level and budgetary constraints.

An end-to-end overview of the Vietnam supply chain process was assessed through surveys and interviews and is mapped out in Figure 3, which outlines the four functions/steps of product selection/acquisiton (and the stakeholders involved) for the NCD supply chain in Vietnam: (1) forecasting, (2) procurement, (3) routine ordering and stock management, and (4) dispensing to patients. The primary enablers (green) and bottlenecks (red) are highlighted for each part of the process. (A larger version of the map is available in Appendix B, and a larger version of each step is provided in following subsections.)

Figure 4. Vietnam supply chain for noncommunicable disease essential medicines.



3.2.2 Forecasting

In Vietnam, consumption data from the previous year are used to estimate future demand for medicines, though new or updated treatment protocols are considered. A buffer stock of between 10 and 20 percent added to the previous year's use is customary to allow for increased demand as provinces are providing capacity-building, community-based screening, health education, and communication to increase the percentage of people with HTN and diabetes seeking treatment.

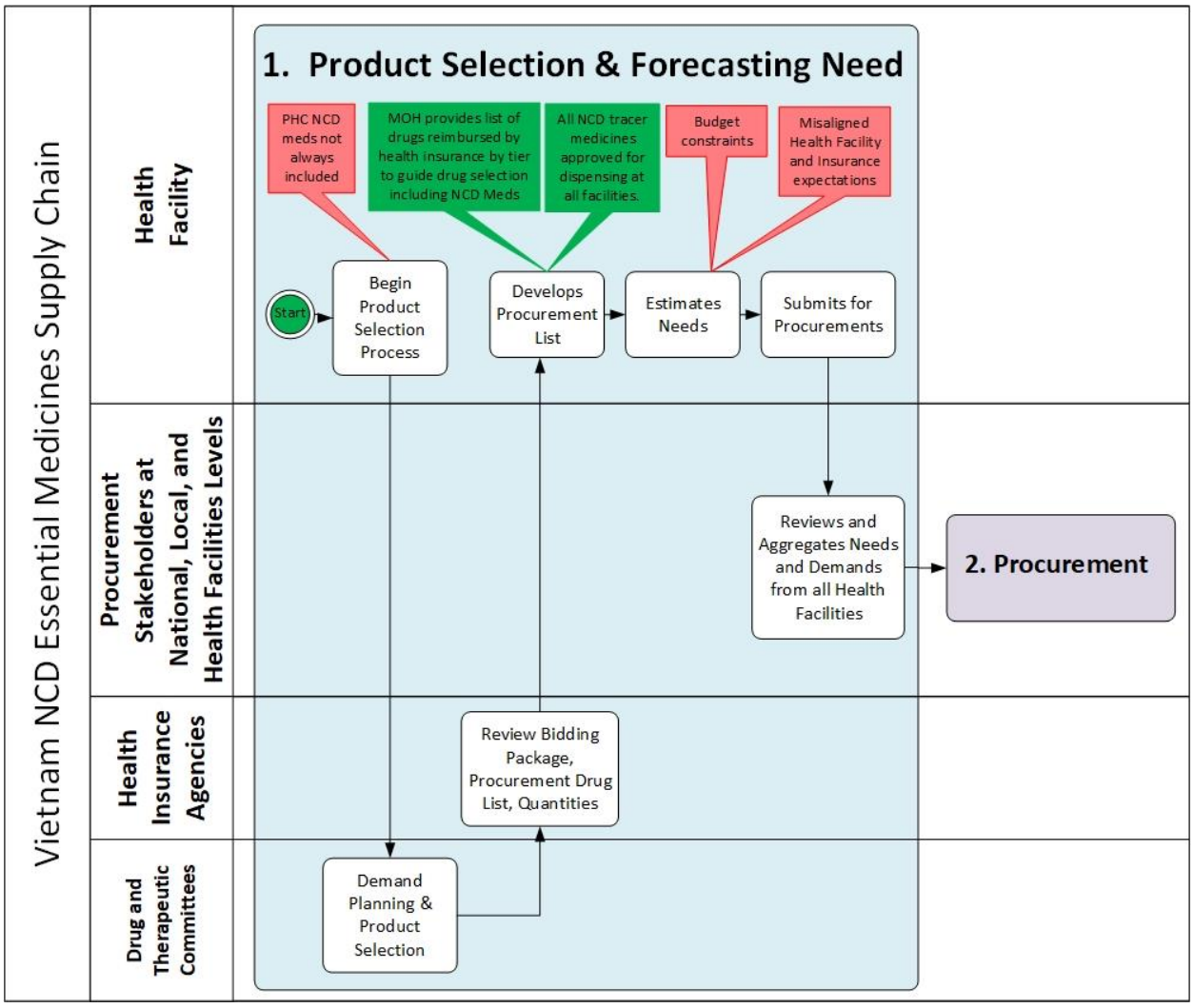
For medicines subject to pooled procurement, the DTC meets to review and approve the final forecast, which is then consolidated with forecasts from other health facilities to constitute the quantities included in various pooled procurement processes at the local and national levels.

Some of the challenges in forecasting include the following:

- Budget allocations constrain the ability of health facilities to increase their forecasted quantities over past years.
- Unaligned health facility and SHI expectations about the results of NCD service education and promotion activities on new patient enrollment and subsequent medicine forecast and financing needs contribute to medicine shortages.

Figure 5 shows the enlarged forecasting map detailing the step's processes and challenges.

Figure 5. Map of forecasting process and challenges.



Abbreviations: MOH, Ministry of Health; NCD, noncommunicable disease.

3.2.3 Procurement

3.2.3.1 Overview of procurement process

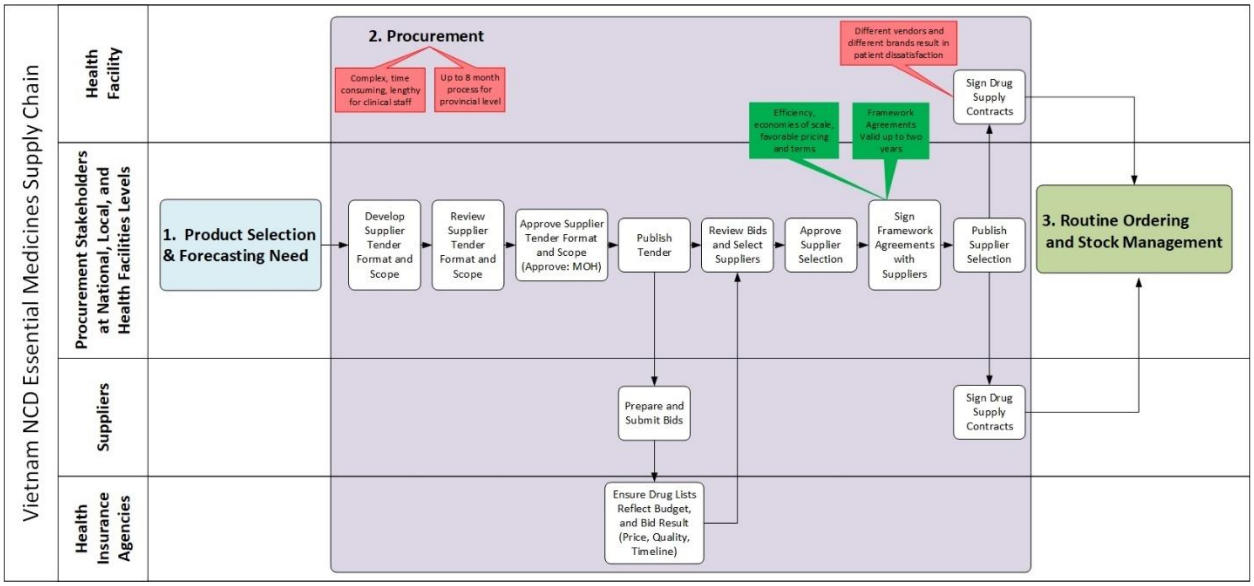
The procurement process for essential medicines, including NCD medicines, takes place at the central, provincial, and/or health facility levels. Multiple stakeholders are involved in the various procurement processes at the national and local pooled (centralized) levels and during national price negotiations. A table with the detailed procurement process, including the stakeholders involved, can be found in Appendix C.

Numerous tendering strategies are employed to select and contract vendors to supply the public sector. Examples of the different tendering methods in use are open, selective, limited tendering, competitive offering, direct procurement, and price negotiation. There are guidelines specifying financial thresholds and the situations in which the different strategies are to be employed. Open tendering is the most common procurement strategy.

Vietnam uses pooled procurement extensively for pharmaceuticals and is beginning to test its application for non-pharmaceutical commodities, such as reagents and medical consumables. The MOH's NCDPC conducts centralized procurement on a national scale for a specific medicine list. The NCDPC maintains a list of medicines for national price negotiations.

At the provincial level (referred to as the local level), the local centralized drug procurement agency leads the pooled procurement process, in collaboration with the provincial department of health. People's Committee representatives participate during the planning stage of contractor selection to approve the contractor selection plan. Health facilities organize their own procurement of medicines not included in the national and local pooled procurement or price negotiation lists that are nevertheless needed to support service provision. Figure 6 provides an enlarged map detailing the procurement process and challenges.

Figure 6. Map of procurement process and challenges.



Abbreviations: MOH, Ministry of Health; NCD, noncommunicable disease.

The maximum contract duration for local pooled procurement contracts is up to 24 months, resulting in two-year procurement cycles. Contracts also can be of shorter length. Negotiated price lists are usually valid for 12 months, requiring an annual price negotiation process. Suppliers selected from national and provincial tender processes enter into framework agreements with the various procurement agencies. Health facilities then buy into these agreements by contracting directly with the selected contractors to enable them to place routine orders, as per contractual terms and conditions.

When no bidders compete in the procurement process, the NCDPC restarts the tender process. Once the DAV publishes the winning contractors and prices, health facilities contract with the selected suppliers directly and place orders for their facilities. When there is a delay in the publication of the tender results by the DAV, health facilities must leverage other procurement mechanisms to access the medicine market and procure the medicines they need, but the terms are often less favorable than those established through the pooled procurement mechanisms managed by the DAV.

To reduce the supplier capacity risk when health facilities conduct their own procurement, requirements are broken down into different tender packages. While this resolves the risk of lack of availability of one supplier, it increases the likelihood of multiple branded pharmaceuticals that may carry different costs and

may involve brands that are unknown to the patient, which can cause confusion and require a period of adjustment.

The procurement of consumables is organized separately from the medicines and has a much more decentralized process. The sourcing of consumables depends on local decisions and is often conducted via direct procurement. Some localities, such as Hanoi, have centralized the procurement of medical consumables and supplies. In 2020, the NCDPC began piloting centralized procurement of select medical supplies to reduce cost and harmonize prices incurred by hospitals buying the same products.

This procurement approach results in the following challenges:

- The entire bidding process from list preparation to results publication is complex, time-consuming, and lengthy for suppliers, health facility staff, and procurement professionals at the provincial departments of health.
- Health facility staff involved in product selection, forecasting, and document preparation for bidding are required to balance their clinical duties with support to the procurement process, which can cause additional delays. At the provincial level the process, from approving the final list of medicines to supplier selection, can take up to eight months.
- When the DAV delays publication of the winning contractor prices, health facilities resort to collecting three competitive quotes, resulting in higher unit costs than established insurance coverage rates and diminished purchasing power. These higher costs are transferred to the consumer.
- The application of multidrug regimens in treatment to increase treatment efficiency, as well as to minimize undesired effects of drugs (especially in the treatment of HTN and diabetes), is gradually becoming popular. However, this trend is not reflected in the current procurement law. For example, a regiment requiring two drugs cannot be adopted in practice if only one of the two drugs is successfully procured.

3.2.3.2 Tracer medicine lead times

Suppliers' extensive distribution networks enable efficient delivery times based on distribution points closest to the facility. CHSs often retrieve medicines from DHCs if transport is available or the health center supplies monthly, depending on available stock levels.

For the six tracer medicines, lead times varied markedly depending on the facility level (see Table 4). For instance, at the central hospitals, suppliers are close, and therefore orders are fulfilled the same day; hence, the lead time is shown as zero. For other medicines procured in lower volumes, the lead times may show significant variations. At provincial hospitals, lead times for the tracer medicines vary significantly. While enalapril has a lead time of 3 days, insulin has a total lead time of 55.67 days. At the district hospital level, the situation is improved, with nifedipine taking 7.37 days for the ordering cycle and enalapril taking 24.27 days. Also, insulin availability has a 17-day lead time rather than the 56-day one experienced at the provincial level. At the commune level lead times are short-range, from same day for gliclazide to 2 days for metformin, as the district-level facilities supply the commune-level ones.

Table 4. Lead times for tracer medicines per health system level.

Lead time in days[a]	Amlodipine	Enalapril	Gliclazide	Insulin	Metformin	Nifedipine
Central hospital (Level I)						
Estimates approval	0.00	0.00	0.00	0.00	0.00	0.00
Order approval	0.00	0.00	0.00	0.00	0.00	0.00
Dispatch	0.00	0.00	0.00	0.00	0.00	0.00
Receipt	0.00	0.00	0.00	0.00	0.00	0.00
Provincial general hospital (Level II)						
Estimates approval	0.50	2.00	1.50	1.67	1.00	1.00
Order approval	0.50	0.00	0.50	0.33	0.33	0.00
Dispatch	51.00[b]	1.00	5.00	53.00[b]	17.00	2.00
Receipt	1.00	0.00	1.00	0.67	4.00	2.00
District hospital / health center (Level III)						
Estimates approval	1.71	0.00	0.63	0.00	4.50	0.57
Order approval	1.71	2.60	4.00	0.33	1.43	0.80
Dispatch	13.00	21.67	6.00	16.67	9.20	4.80
Receipt	0.29	0.00	1.17	0.00	1.50	1.20
Commune health station (Level IV)						
Estimates approval	0.00	0.00	0.00		2.00	0.17
Order approval	0.25	0.50	0.00		0.00	0.83
Dispatch	1.50	0.00	0.00		0.00	0.00
Receipt	0.00	0.00	0.00		0.00	0.00

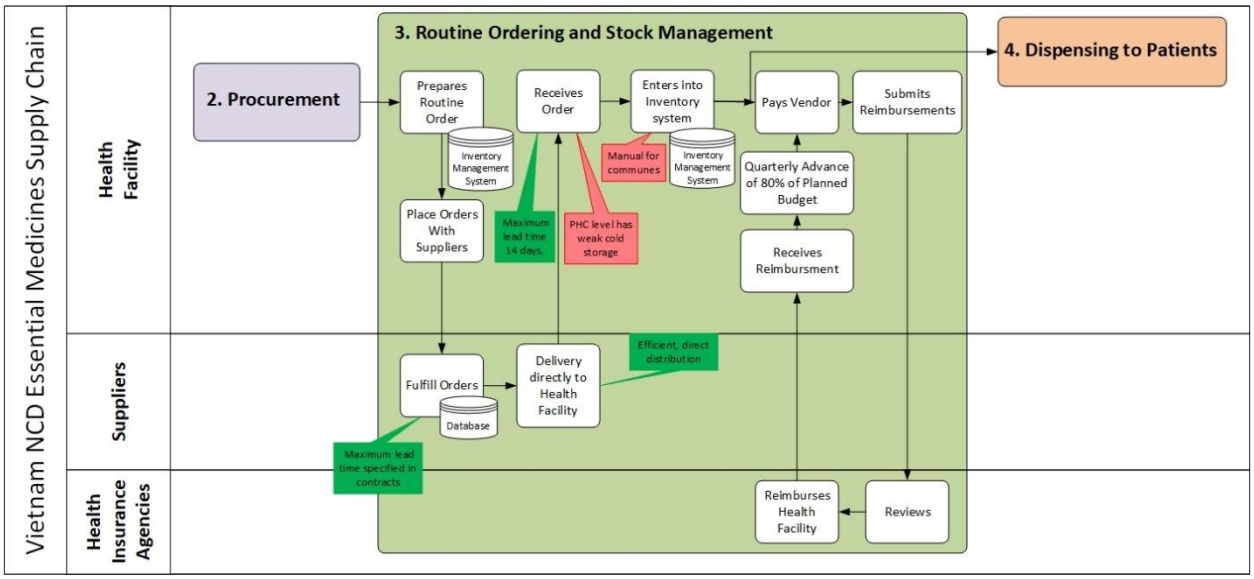
a. Zero lead times = orders that are fulled the same day.
b. Data availability from two provincial hospitals.

3.2.4 Routine resupply and stock management

3.2.4.1 Overview of resupply and stock management processes

Depending on the health system level, health facilities order on a monthly or quarterly basis. The order process entails determining order quantity, order approval, order placement with contracted suppliers, and receipt and payment of commodities. Figure 4 details the ordering and replenishment processes.

Figure 7. Routine ordering and stock management cycle.



Abbreviations: NCD, noncommunicable disease; PHC, primary health care.

3.2.4.2 Storage

Dry storage for medicines and supplies is available at facilities at all levels. Storerooms are governed by national storage regulations and maintained to standards in a dry setting at room temperature and protected from sunlight. Unlike other health systems with central and/or regional storage that acts as stock-holding points for the lower levels, in Vietnam health facilities are the only point in the public health supply chain that holds any stock. Instead of a network of government-managed medicine warehouses, Vietnam's NCD supply chain "infrastructure" is the multiple cycles of procurement, beginning with product selection, pooled forecasts, and supplier framework agreements that individual health facilities engage in to stock NCD medicines and other medicines. Suppliers deliver medicines directly to the health facilities, so supplies enter health facilities frequently and have long shelf lives.

Given that insulin requires cold chain storage between 2°C and 8°C, the team assessed cold chain facilities and found that availability and monitoring of cold chain for storage varied depending on the level of the health facility visited. Table 5 shows cold chain equipment availability and temperature monitoring and recording at the facilities visited. At central, provincial, and district hospitals, cold chain equipment is available; however, while there is sufficient cold chain equipment availability at the DHCs (88 percent), temperature management is limited, with temperature recording occurring only 55 percent of the time. In addition, at lower-level facilities, the lack of routine maintenance and repairs and other factors can create challenges for the availability and quality of pharmaceutical cold chain storage availability.

Table 5. Summary of cold chain equipment availability and temperature monitoring/recording at study facilities.

Facility	Central hospital (n=1)	Provincial hospitals (n=6)	District hospitals (n=4)	District health centers (n=11)[a]	Commune health stations (n=12)
Cold chain equipment available	1/1 *100%*	6/6 *100%*	4/4 *100%*	8/8 *100%*	8/12 *66.6%*
Temperature monitoring	1/1 *100%*	5/6 *83.3%*	4/4 *100%*	7/8 *87.5%*	6/8 *75.0%*
Temperature recording	1/1 *100%*	6/6 *100%*	4/4 *100%*	6/8 *75.0%*	6/8 *75.0%*

a. Information on the working order of cold chain equipment was not possible at 3 health centers.

The CHSs do not prescribe (or store) insulin as, according to government regulations, only Level IV facilities can prescribe it since a medical doctor is required. However, if this level were to carry insulin, it should be noted that two-thirds of CHSs were found to have operational cold chain equipment, but temperature monitoring was poor.

Challenges to storage in Vietnam are as follows:

- PHC level (CHSs) has weak cold chain storage capacity.
- Temperature management was weakest at the commune level, though provincial hospitals and DHCs have suboptimal operational practices.
- Inventory management processes at the commune level are manual and not up to date.

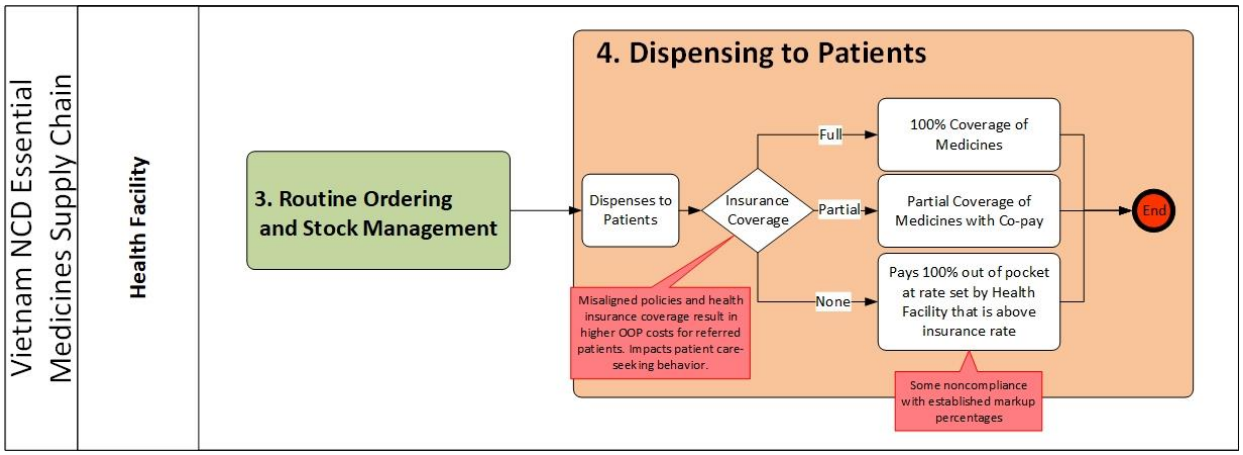
3.2.5 Medicine dispensing and cost to patients

3.2.5.1 Overview of dispensing processes

Medicine policy guidelines stipulate which NCD medicines are prescribed and dispensed at different levels of the health system. SHI stipulates how much it will reimburse a health facility for each specific medicine. In Vietnam's evolving health system, patients that are deemed "stable" are being referred for management to lower-level health facilities to reduce the work burden at higher-level facilities and to make prescription refills more convenient to patients, allowing them to pick up their medicines closer to home. However, misaligned policies complicate access for patients who are "stable" when either the health facility will not stock a particular medicine or SHI coverage has changed its reimbursement policies. Often patients do not want to be referred down in the system because of insurance constraints regarding medications or brands dispensed at lower levels of the health system.

As it is common practice for health facilities to procure multiple brands of the same medicine from different vendors because of availability issues, patients often must switch to new medications, resulting in lack of patient confidence, higher costs, and a greater risk for side effects or varied treatment response. Figure 8 provide a process map for dispensing NCD medications to patients.

Figure 8. Dispensing to patients process map.



Abbreviations: NCD, noncommunicable disease; OOP, out of pocket.

3.2.5.2 NCD medicine markups

During this assessment, purchase and selling prices were collected for 31 HTN and diabetes medicines stocked at pharmacies within health facilities. The retail margin markups ranged from 5 to 43 percent, with 82 percent of prices compliant with the regulations. There are no government-mandated price controls in the private retail pharmacy sector.

For the six tracer medicines, as shown on Table 6, markups ranged from 5 percent for insulin across all public health service levels except CHSs to 31 percent of metformin at district hospitals / DHCs.

Table 6. Tracer medicine markups, by facility type.

	Markup amount (%)				
	Central hospital	Provincial general hospitals	District hospitals / health centers	Commune health stations	Private sector (if known)
Amlodipine	11	4	15	N/A	20
Enalapril	N/A	15	16	N/A	24
Gliclazid	7	12	20	N/A	11
Insulin	5	5	5	N/A	N/A
Metformin	10	10	31	N/A	22
Nifedipine	16	10	14	N/A	24

The private-sector markups for most of the tracer medicines are higher than in the public sector. The only exception was gliclazide, which had a markup comparable to that of the provincial general hospitals.

Challenges to NCD markups and pricing in Vietnam are as follows:

- SHI does not typically cover the cost of a number of recommended drugs for treatment at the CHS level, resulting in patients' often preferring to stay at the DHC level for NCD treatment and management. Therefore, CHSs often lack the equipment and consumables sufficient for NCD patient management in accordance with national treatment protocols.

3.2.5.3 Availability of NCD tracer commodities

The assessment team reviewed NCD medicine availability at the health facilities visited. Data on NCD medicine availability were gathered through site visits to 12 CHSs, 12 district hospitals / DHCs, 6 provincial hospitals, and 1 central hospital. In cases where a health facility did not use one of the tracer medicines, it was removed from the sample size (e.g., insulin at the CHS level, given CHSs' lack of authorization or capacity to prescribe and thus their lack of insulin stock). The stockout data reported reflect actual stockouts at facilities that do manage the product. Table 7 shows the availability of tracer medicines at the time of the visits. Note that tracer medicines in the assessment are single-dose medicines; combination medicines prescribed in higher health facility levels were not considered.

Table 7. Tracer medicine availability at the time of the visits, by type of facility.

	Availability of tracer medicines (%)			
	Central hospital (n=1)	Provincial general hospitals (n=6)	District hospitals / health centers (n=12)	Commune health stations (n=12)
Amlodipine	100	83	67	82
Nifedipine	100	83	60	45
Enalapril	0	17	40	36
Metformin	100	83	33	27
Gliclazide	100	83	47	27
Insulin	100	83	40	0

Note: Nifedipine and amlodipine are both calcium channel blockers and are essentially interchangeable as a first-line treatment for hypertension.[27]

At the central hospital level, all medicines were available except for single-dose enalapril, which was out of stock as it was available in the fixed-dose combination. As the assessment moved to the other levels of the health system, medicine availability started to decline. However, all the tracer medicines were available in 83 percent of provincial hospitals except for enalapril, which was only available in 17 percent of facilities (one hospital). The supply situation at the district level was mixed. First-line medications for type 2 diabetes were significantly less available than first-line treatment for HTN, as described in the WHO package of essential noncommunicable disease interventions and local treatment guidelines, at both the district level and at CHSs. Amlodipine was available in 67 percent of the district facilities visited, whereas metformin was only available at 33 percent, gliclazide at 47 percent, and enalapril at 40 percent of the facilities. Since district-level facilities supply the commune-level ones, this shortfall impacts availability at the lower levels.

> The 2015 national NCD strategy and 2022 national plan for the prevention of NCDs set targets that prescribe much higher availability of essential medicines and equipment at the commune/PHC level, but the actual data obtained through this *Journey of the Pill* assessment show a lack of harmonization with these policies.

At the commune level, amlodipine had the highest availability, at 82 percent of facilities, but there was only 27 percent availability for metformin and gliclazide. Enalapril was available in one-third and nifedipine

in almost half of the facilities (45 percent). This paucity of first-line oral hypoglycemics is inconsistent with the goal of the MOH to strengthen PHC capacity to manage HTN and diabetes; and yet, the fact that first-line antihypertensives are commonly available at the commune level suggests that with targeted efforts, the same level of supply security could be achieved for type 2 diabetes.

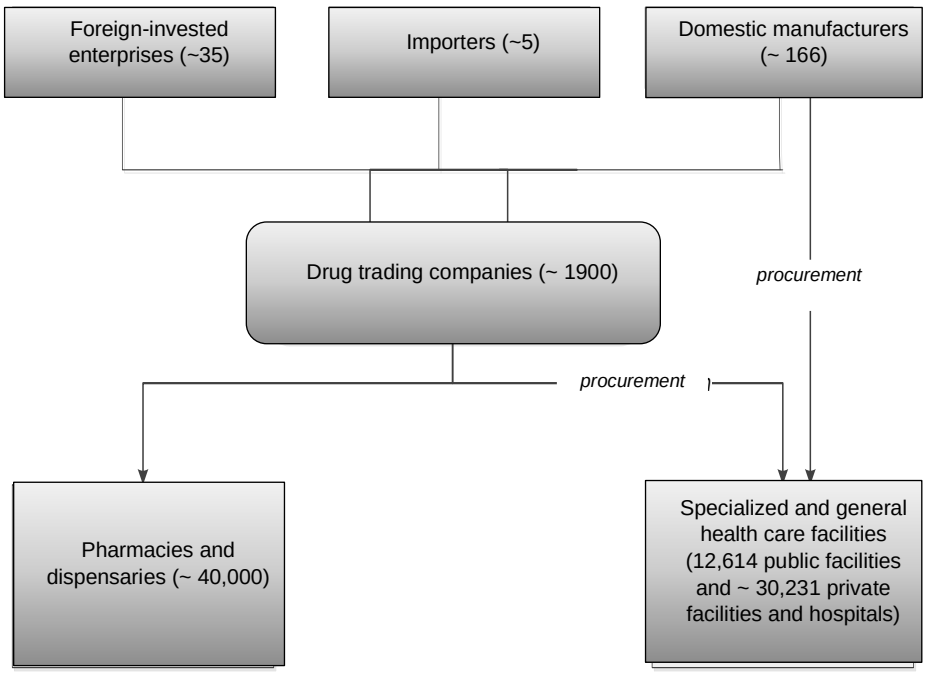
3.3 Private-sector health system

Although the government aims to increase the share of locally produced pharmaceuticals to 80 percent, an average of 55 percent of medicines in Vietnam are imported every year. One of the reasons for Vietnam's reliance on imports is that most domestic companies lack research and development capabilities and do not meet the European Union Good Manufacturing Practice or Pharmaceutical Inspection Co-operation Scheme Good Manufacturing Practice standards required to manufacture high-quality generic medicines.[28]

Seventy percent of medicines in Vietnam are sold through hospitals, while the remaining 30 percent come from pharmacies. The growing number of private hospitals and a greater concern for health among the public have led to an increasing demand for medicines.

The private-sector pharmaceutical supply chain in Vietnam is vibrant, with over 150 national medicine manufacturers (Figure 6). The private-sector health network includes manufacturers, domestic and foreign wholesale distributors, traders, and wholesalers and retailers, who in turn deliver to health care facilities, including hospitals and public and private clinics.

Figure 9. Private-sector medicine supply and distribution network.



There are approximately 361,867 private drug retailers operating in Vietnam who order directly from manufacturers, distributors, or wholesalers. However, customers that purchase from private retail pharmacies have to pay OOP, as SHI does not include private retailers for reimbursement.

Vietnam has a strong essential drug policy framework which includes medicines for NCDs and has published regulations and directives on supply chain functions. The Vietnam public-sector supply chain effectively leverages the private-sector network of manufacturers and wholesalers to deliver essential medicines directly to health facilities. Having a robust private sector allows for a much leaner and more efficient public health supply chain that does not require the network of public-sector warehouses seen in other LMIC. To leverage this private-sector network, the Vietnam supply chain relies heavily on establishing numerous contractual mechanisms at the national, provincial, and health facility level with the various suppliers. The system employs framework agreements that pool medicine needs, allowing the government to negotiate contractual terms, provide health facilities with favorable pricing, and negotiate delivery terms from a network of suppliers. However, for the small proportion of people not using SHI, medicines are an OOP expense which may hinder access to medicines.

4. Conclusions

Vietnam has established strong NCD policies with ambitious targets and the aim to address the rising burden of NCDs. A critical component toward achieving these targets is the strengthening of care at the PHC (commune) level, and this is reflected in the directives within the policies calling for the scale-up of prevention and early detection of diabetes and HTN and for ensuring essential NCD-related medicines and commodities are available at the PHC level. To support the realization of these targets, an end-to-end assessment of the overall Vietnam supply chain process was carried out using surveys and interviews around six specific tracer medicines.

In terms of lead times, during the assessment it was found that the extensive supplier distribution network provides efficient delivery times based on distribution points closest to the facility. CHSs often retrieve medicines from DHCs if transport is available, or the DHCs supply CHSs monthly, depending on available stock levels. For the six tracer medicines, lead times varied markedly depending on the facility level. For the central hospitals, suppliers are nearby, and therefore orders are fulfilled the same day, whereas for medicines procured in lower volumes, the lead times shows significant variations. At the commune level lead times are determined at the district level, as district facilities supply the CHSs.

In terms of NCD medicine markups, the retail margin markups ranged from 5 to 31 percent, with 82 percent of prices compliant with regulations. There are no government-mandated price controls in the private retail pharmacy sector. For the six tracer medicines, markups ranged from 5 percent for insulin across all health service levels except CHSs to 31 percent for metformin at district hospitals / DHCs.

The private-sector markups for most of the tracer medicines are higher than those for the public sector. The only exception was gliclazide, which had a markup comparable to that of the provincial general hospital.

For tracer medicine availability at the time of the visit, it was found that the higher the level in the health system, the more reliable the medicine availability was, and as the assessment moved down the facility levels, medicine availability started to decline. At the central hospital, all medicines were available except for enalapril, which was out of stock as it is included in the fixed-dose combination. As insulin is not prescribed at CHSs, only the other five tracer medicines were studied at that level, with a key finding that first-line medications for type 2 diabetes are significantly less available (availability declining to 27 percent for both gliclazide and metformin) than first-line treatment for HTN (amlodipine at 82 percent) at the district level and commune health stations.

5. Recommendations

The assessment team puts forth the following recommendations for strengthening Vietnam's NCD supply chain:

- Revise procurement regulation and processes to yield efficiencies and improved access by:
  - Expanding standardization for product selection, particularly as it relates to medicines, and strengthing support for simplified HTN and diabetes treatment protocols implemented at the PHC level.
  - Reviewing the procurement process & regulations to maintain a competitive process and support an agile, responsive public health supply chain.
  - Revisiting different steps in the processes to identify possible gains in efficiency, particularly at the district and commune levels.
- Implement financing changes to address budget constraints, supplier stockouts, and health facility debts to suppliers by:
  - Encouraging key financing and policy stakeholders, such as SHI and the MOH, to establish a specific line item for HTN and diabetes medicines and products in support of WHO and national treatment targets at each level of the health system, reflecting national NCD policy priorities.
  - Conducting district-level demand forecasts to ensure the financing is available to support adequate commodity procurement and reinforcing care-seeking behavior at the local level, especially given the policy commitment to expand access to HTN and diabetes services at the PHC level and anticipated service capacity improvements with the conversion of CHSs to Level IV facilities.
  - Decentralizing chronic medicines for patients that have been referred from higher-level facilities to lower-level facilities for medicines resupply and routine management, which includes ensuring alignment between SHI coverage and pricing of medicines at all health facilities and implementing the MOH's updated NCD guidelines, as well as prescribing and resupply policies.
  - Developing and piloting agile payment models for medicine reimbursements that reduce reimbursement processing time and shorten the lead time for payments to health facilities.
- Strengthen facilities' ability to manage the supply chain and ensure access to essential NCD medicines by:
  - Developing an actionable roadmap, in partnership with key stakeholders, to address assessment findings.
  - Building capacity at district & commune level to improve access to NCD commodities with particular focus on the ability to accurately forecast the needed quantities of selected medicines for the treatment of HTN and diabetes.
  - Strengthen capacity of district & commune facilities to manage HTN & diabetes & expand access points to care
  - Implementing targeted interventions to increase availability of oral hypoglycemics at CHSs.

- Working with district health teams to prioritize PHC facility access to diabetes and HTN medicines and keeping up to date on the supply chain implications (product selection/forecasting) of updated guidelines.
- Upgrading CHSs' capacity to Level IV to enable them to prescribe and dispense insulin for treatment of stable type 1 and type 2 diabetes and improving cold chain capacity to deliver insulin.

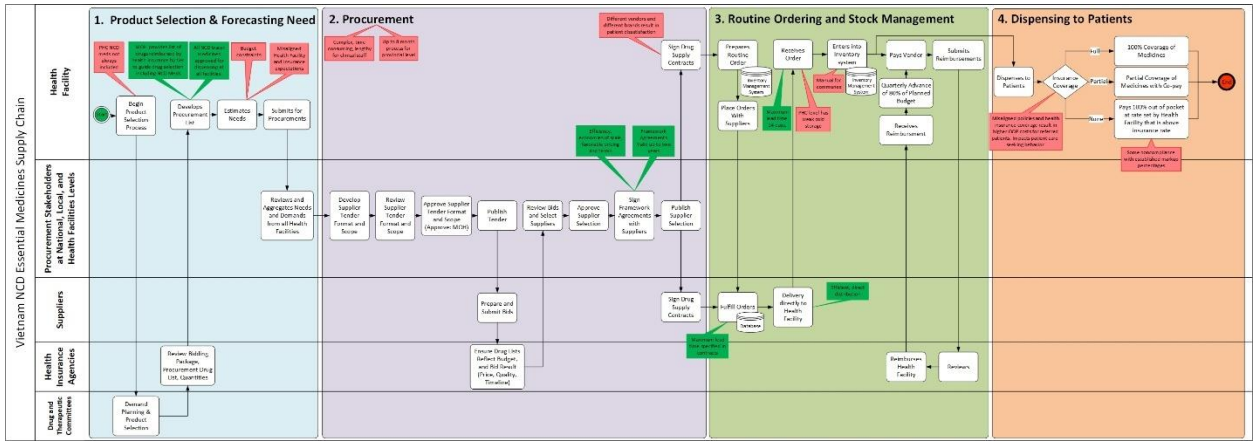
Appendix A. Sites visited

Province	Name of health facility	Type	Level
Bac Kan	Provincial General hospital Bắc Kan	Public	Provincial
Bac Kan	CHS Nguyên phúc	Public	Commune
Bac Kan	CHS Thanh Thịnh	Public	Commune
Bac Kan	DHC Chợ mới	Public	District
Bac Kan	DHC huyện Bạch Thông	Public	District
Bac Kan	pharmacy tuấn linh	private	private
Bac Kan	pharmacy tuyết chiểu	private	private
Bac Kan	pharmacy vinphar	private	private
Hanoi	District General hospital Ba Vì	Public	District
Hanoi	Thanh Nhàn Hospital	Public	Provincial
Hanoi	District General hospital thanh oai	Public	District
Hanoi	CHS Kim Bài	Public	Commune
Hanoi	DHC Ba Vì	Public	District
Hanoi	District health center Thanh oai	Public	District
Hanoi	CHS Ba Trại	Public	Commune
Dak Lak	General hospital Tây nguyên	Public	Provincial
Dak Lak	CHS cư suê	Public	Commune
Dak Lak	CHS hoà hiệp	Public	Commune
Dak Lak	DHC Cư Kuin	Public	District
Dak Lak	DHC Cư Mgar	Public	District
Dak Lak	Tân thái bình pharmacy	private	private
Dak Lak	Lợi pharmacy	private	private
Dak Lak	Hoà bình 2 pharmacy	private	private
Khanh Hoa	Provincial General hospital Khánh hòa	Public	Provincial
Khanh Hoa	DHC ninh hòa	Public	District
Khanh Hoa	DHC Diên khánh	Public	District
Khanh Hoa	CHS Ninh quang	Public	Commune
Khanh Hoa	CHS Diên Khánh	Public	Commune
Khanh Hoa	pharmacy KHÔI NGUYÊN	private	private
Khanh Hoa	pharmacy hoàng phúc	private	private
Khanh Hoa	Pharmacity	private	private
Ho Chi Minh	Hospital Nguyễn Tri Phương	Public	Provincial

Ho Chi Minh	District hospital Nhà Bè	Public	District
Ho Chi Minh	DHC Nhà Bè	Public	District
Ho Chi Minh	CHS Nhơn Đức	Public	Commune
Ho Chi Minh	Hospital District 2	Public	District
Ho Chi Minh	CHS Bình Trưng Tây	Public	Commune
Ho Chi Minh	Pharmacy Diệu Minh	private	private
Ho Chi Minh	Pharmacy Mỹ Anh	private	private
Ho Chi Minh	Pharmacy Nhị Trưng 6	private	private
Nghệ An	Provincial General hospital Nghệ An	Public	Provincial
Nghệ An	DHC Hưng Nguyên	Public	District
Nghệ An	CHS Hưng Nguyên	Public	Commune
Nghệ An	DHC Nam Đàn	Public	District
Nghệ An	CHS Nam Đàn	Public	Commune
Nghe An	Pharmacy Quỳnh Phương	private	private
Nghe An	Pharmacy Bảo An	private	private
Nghệ An	Pharmacy Hạnh Dũng	private	private
Hanoi	General geriatric hospital	Public	National
Hanoi	Pharmacy Nhất hưng	private	private
Hanoi	Pharmacy ngọc xuyến	private	private
Hanoi	Pharmacy An Tâm	private	private

Appendix B. Noncommunicable disease supply chain process map

Figure 10. Supply chain process map for noncommunicable diseases.



Appendix C. Health-sector procurement processes

Table 8 outlines the various steps, as well as the stakeholders involved, in procuring medicines and commodities in Vietnam's supply chain.

Table 8. Steps and stakeholders involved in the health-sector procurement process.

Step	Responsible agencies	Duration
Aggregate demand	Health care facilities	Before conducting the procurement or when there is an official dispatch from the CDPA, usually taking about 1 month to aggregate demands.
Review demands	DTCs of healh care facilities Agencies in charge of centralized procurement	NA
Plan the selection of contractors	Agencies in charge of procurement	NA
Review the contractor selection plan	National level: NCDPC, Dept. of Planning and Finance (MOH), National Drug Advisory Committee, Minister of Health Local level: LCDPA, departments of health, provincial People's Committees, SHI	20 days from receipt date of documents. If there are insufficient documents, it is necessary to request the health care facility to complete or return the documents to the health facility within 5 working days from the receipt date of the documents.
Approve the contractor selection plan	National level: Minister of Health Local level: Provincial People's Committees	NA
Prepare to select contractors	National level: NCDPC Local level: LCDPA, departments of health	Report on the appraisal of bidding documents: 20 days since the receipt date of all documents. Approval of bidding documents: 10 days from the receipt date of all documents and the appraisal report.
Select contractors	National level: NCDPC Local level: LCDPA	Evaluation of bidding documents: 45 days (or, for small bidding packages, 25 days). It can be extended for an additional 20 days if needed
Verify, approve, and publicize results of contractor selection	National level: NCDPC Local level: LCDPA, departments of health	Appraisal of contractor selection results: 20 days (or 10 days for small bidding packages). Approval of contractor selection result: 10 days (or 5 days for small bidding packages) from the date of the appraisal result.
Finalize and sign contracts or framework agreements	CDPA Contractors	NA
Finalize and sign drug supply contracts	CDPA Contractors Health care facilities	NA

Step	Responsible agencies	Duration
Monitor and report on supplier contract implementation	CDPA Contractors Health care facilities	NA
Oversee framework agreement implementation process	CDPA Health care facilities	NA
Make payments to and reconcile supplier contracts	CDPA Contractors Health care facilities	NA

Abbreviations: CDPA, centralized drug procurement agency; DTC, Drug and Therapeutic Committee; LCDPA, local centralized drug procurement agency; NCDPC, National Centralized Drug Procurement Center; SHI, social health insurance.

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