OUTCOMES AND ADMINISTRATIVE MANAGEMENT OF NCDS BY DISTRICT HEALTH SYSTEM IN THE PANOM DISTRICT, SURATHANI PROVINCE

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ABSTRACT

This qualitative research aims to study the outcomes and management of chronic non-communicable diseases (e.g., diabetes, hypertension) of Phanom District, Surat Thani Province, Thailand. The data were collected using documents review (2012-14), in-depth interviews and groups interviews with managers and relevant staff at the provincial, district and sub-district levels and also the clients. The preliminary findings were presented to stakeholders at a workshop to solicit input and validation. The formulation of policy and measures to address the challenge of non-communicable disease (NCD) is primarily a function of national agencies such as the Ministry of Public Health (MOPH), the National Health Security Office (NHSO) and the Thai Health Promotion Foundation (THPF). The MOPH and NHSO develop the strategies and project plans. The NHSO focuses on implementation systems, evaluation and financial support in accordance with quality standards of management. The THPF supports disease prevention activities at the sub-regional and provincial levels, stratified by departmental specialties and sectional roles and responsibilities. The disease control sector manages projects on treatment, health education and behavior change interventions to reduce NCD. The health promotion sector manages the DPAC clinic activity. These two sectors operate somewhat independently of each other. At the sub-provincial level, the district health system consists of the Phanom Community Hospital, the District Health Office (DHO) and Tambon health promotion hospitals (THPH) in the districts. The district health system works corporately with partners, such as local administration organization, other ministry offices, communities, and civil society groups. The wide range of activities to address the NCD challenge has been organized by the district health system under the PHANOM Project strategy. Oversight is provided by the NCD CUP Board which also issues guidelines for action plan evaluation and surveillance. Case management of the NCD Clinic already meets quality standards; thus, the focus of the district is on NCD prevention and control, with challenge indicators, targets and intensified implementation.

KEY WORDS: OUTCOME / MANAGEMENT / NON-COMMUNICABLE DISEASE / DISTRICT HEALTH SYSTEM

171 pages

ผลลัพธ์และการบริหารจัดการโรคไม่ติดต่อเรื้อรังโดยระบบสุขภาพอำเภอพนม จังหวัดสุราษฎร์ธานี

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บทคัดย่อ

การวิจัยเชิงคุณภาพ นี้มีวัตถุประสงค์เพื่อศึกษาผลลัพธ์ และการบริหารจัดการโรคไม่ติดต่อ (เบาหวาน/ความดันโลหิตสูง) ของอำเภอพนม จังหวัดสุราษฎร์ธานี เก็บรวบรวมข้อมูลแบบผสมผสานโดยรวบรวมข้อมูลจากเอกสาร และรายงานที่เกี่ยวข้องในรอบ 3 ปีที่ผ่านมา (2555 - 2557) สัมภาษณ์เจาะลึกสัมภาษณ์กลุ่มกับผู้บริหาร ผู้ปฏิบัติงานที่เกี่ยวข้อง ทั้งในระดับจังหวัด อำเภอ และเขตตำบล รวมทั้งผู้มารับบริการ และจัดประชุมเชิงปฏิบัติการกับหน่วยงาน องค์กรและบุคคลที่มีส่วนได้ส่วนเสีย เพื่อรับฟังเสียงสะท้อนเกี่ยวกับข้อมูลทั้งหมด รวมทั้งตรวจสอบข้อมูลกับผู้ที่มีส่วนเกี่ยวข้องเพื่อความถูกต้องและเที่ยงตรง

ผลการศึกษาพบว่า นโยบายและมาตรการต่าง ๆในการดำเนินงานโรคไม่ติดต่อเรื้อรังของอำเภอพนมมาจากหน่วยงานระดับประเทศได้แก่กระทรวงสาธารณสุข (สธ.) สำนักงานหลักประกันสุขภาพแห่งชาติ (สปสช.) และ สำนักงานกองทุนสนับสนุนการสร้างเสริมสุขภาพ (สสส.) เป็นส่วนใหญ่ โดย สธ. และ สปสช.เป็นหน่วยงานหลักที่มีระบบการจัดทำยุทธศาสตร์แผนงานโครงการที่มีความชัดเจน สปสช. มีการจัดระบบการดำเนินการ การประเมินผลและการสนับสนุนงบประมาณตามเกณฑ์คุณภาพมาตรฐานการบริการที่ชัดเจน สสส. สนับสนุนการดำเนินกิจกรรมด้านส่งเสริมป้องกันโรคในระดับเขตและจังหวัดแยกเป็นแผนงานโครงการตามภารกิจของแต่ละกรม และแยกภารกิจไปตามโครงสร้างบทบาทหน้าที่รับชอบของแต่ละฝ่ายโดยฝ่ายควบคุมโรครับผิดชอบโครงการด้านการดูแลรักษา งานสุขศึกษารับผิดชอบงานด้านโครงการหมู่บ้านปรับเปลี่ยนพฤติกรรมลดโรคไม่ติดต่อเรื้อรัง และงานส่งแสริมสุขภาพรับผิดชอบโครงการคลินิกไร้พุง(DIET&PHYSICAL ACTIVITY CLINIC:DPAC)ซึ่งขาดการผสมผสานในการดำเนินกิจกรรมในทางปฏิบัติให้มีความต่อเนื่องและสอดคล้องกันอย่างชัดเจนเชื่อมโยงกับหน่วยบริการระดับอำเภอ โดยเครือข่ายบริหารงานสาธารณสุขระดับอำเภอประกอบด้วยโรงพยาบาลพนม สำนักงานสาธารณสุขอำเภอพนม โรงพยาบาลส่งเสริมสุขภาพตำบล ภาคีเครือข่ายและภาคประชาสังคม ในอำเภอพนม เป็นหน่วยงานหลักในการดำเนินการแปลงนโยบายลงสู่การปฏิบัติต่อประชาชนกลุ่มเป้าหมายในชุมชน ผ่านกลไกระบบสุขภาพอำเภอ ด้วยยุทธศาสตร์ PHANOM Project มี คณะกรรมการโรคเรื้อรังระดับอำเภอและกำหนดแผนงานและกิจกรรมในภาพรวม แต่การดำเนินมาตรการกิจกรรมด้านการเฝ้าระวังส่งเสริมสุขภาพและควบคุมโรคเรื้อรังแต่ยังขาดความครอบคลุม เข้มข้นและต่อเนื่องรวมถึงขาดการติดตามประเมินผลที่ชัดเจน ส่วนการดำเนินกิจกรรมด้านการดูแลรักษาผู้ป่วยโรคเรื้อรังมีการดำเนินการ NCD Clinic คุณภาพ ที่ผ่านเกณฑ์การประเมินมาตรฐานในระดับดี ดังนั้นการพัฒนาระบบสุขภาพอำเภอควรมีการมุ่งเน้นที่งานด้านป้องกันควบคุมโรคมากขึ้นรวมทั้งพัฒนาตัวชี้วัดร่วมกันเพื่อทำให้การทำงานด้านนี้ในพื้นที่มีเป้าหมายที่ชัดเจน ความเข้มข้น และต่อเนื่องมากขึ้น

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CHAPTER I
INTRODUCTION

1.1 Rationale and justification of the study

An effective program of disease control and prevention as well as advanced technology in health care services allows people to live longer. This results in an increased life expectancy in which chronic degenerative disease becomes the major determinant of health status. Moreover, the changes in living situations and life styles combined with unhealthy behaviors account for the growing number of chronic diseases. Chronic illnesses, especially diabetes and hypertension, have become a global health problem which is threatening people's lives and well-being. Uncontrolled glycemic or blood pressure levels in people living with diabetes or hypertension place them at risk for numerous acute and chronic problems in multiple vital organs. Consequently, the complications they face lead to disability and premature death. Diabetes and hypertension impact entire families, communities, and nations, and they cost millions of dollars in lost productivity and care.

Presently, the prevalence of diabetes and hypertension worldwide is continuously and rapidly growing. Based on the International Diabetes Federation (IDF) report, in 2011 the prevalence of diabetes globally was 8.3 percent, equal to 366 million cases. It is expected that in 2030, the number of people who have diabetes worldwide would be around 552 million. More importantly, in 2011 the prevalence of people who have impaired glucose tolerance (IGT) was 6.4 percent of the world population, or approximately 280 million people. It is expected that the number of those who have IGT will go up to 398 million in the year of 2030. [1]

On the other hand, the World Health Organization (WHO) reported that the prevalence of hypertension (HTN) in 2000 accounted for 26.4 percent of the global population, or around 792 million people. It is projected that in the year 2025 the prevalence will have increased to more than 60 percent of the population, or approximately 1,560 million. [2]

According to the Thai National Health Examination Survey (TNHES), in Thailand from 2008 to 2009 the prevalence of all types of diabetes was 6.9 % in adults aged ≥ 15 years and significantly higher in women than men (7.7 %, and 6.0 %, respectively. Increases in prevalence of diabetes were associated with age. The highest prevalence, 16.7%, was found among those aged between 60 and 69 years old. On the other hand, the prevalence of hypertension in adults aged ≥ 15 years was 21.4 %. [3] Narrowed down to the area of interest, the Phanom district in Surat Thani province in southern Thailand, according to the Phanom hospital report, in 2013 the prevalence of diabetes was 3.48 %, equal to 977 people. On the other hand, hypertension was found in 6.32 % (1841 people) of adults aged ≥ 15 years. [5]

According to the TNHES and WHO reports, non-communicable diseases (NCDs) have become not only a global health problem, but a problem for Thailand in terms of the incidence of death and the burden of disease. Globally, NCDs cause the most deaths and are responsible for more deaths than all other causes combined. NCDs caused 36 million premature deaths, or around 63% of all deaths, worldwide in 2008. [6] In Thailand, based on the TNHES report in 2009, 314,340 deaths, or approximately 73 % of all premature mortality among Thais, were caused by NCDs and the numbers of deaths in relation to NCDs is increasing. It has been the major cause of death in Thais in all age groups, in both genders, and is significantly different between genders. Respectively, 68.2 and 79.2 percent of deaths in the male and female Thai populations are caused by NCDs. [7] Even though there are many diseases labeled as chronic illnesses; the four major critical NCDs are cardiovascular disease, cancer, diabetes mellitus (DM), and chronic lung disease (CLD). [8] It has been estimated that NCDs caused death will increase from 36 million in 2008 to 44 million worldwide in 2020. [9]

Other than the number of deaths, NCDs also increase the burden of disease and rate of disability. Burden of disease is measured by using the disability-adjusted-life-years (DALYs). DALYs is a time-based measure that combines years of life lost due to death, premature death, and years of life lost due to time lived in states of less than full health. NCDs accounted for 54 percent of global DALYs in 2007 and 73.4 percent of Thai DALYs in 2008. Importantly, the four major critical NCDs, as previously mentioned, lead to 36.6 percent of Thai DALYs. [10]

Moreover, living with NCDs can affect the person and their family economically as they result in increases in health care costs and loss of productivity. It is estimated that between 2011 and 2030, the global cost of NCDs will be approximately 46.7 trillion U.S dollars (1401 trillion Baht).[11] With this global cost, it can be stated that the burden of NCDs costs the people of lower to middle-income countries, for example Thailand around, $ 50 U.S. or 1500 Baht per person per year. Furthermore, in terms of loss, one-fourth of global NCDS deaths were before 60 years of age, which shows an enormous societal loss of productivity in general. One must be aware that this loss of productivity does not include the losses due to persons with NCDs and their caregivers either being absent from work or not being able to work efficiently. [12] For Thailand, the estimated economical loss due to the four major NCDs was 198,512 million Baht in 2009 or around 2.2 percent of the country's gross domestic product (GDP), or roughly equal to 3,128 Baht per a person. The greatest cause of loss of productivity is due to premature deaths and the loss of working efficiency due to absence from work among the affected persons and their caregivers. Categorized into individual diseases, in 2009 the disease in Thailand with the greatest economic impact was cardiovascular disease, which cost the economy as much as 78.976 billion Baht. The other three major NCDs, cancer, DM, and CLD, had impacts of around 78.255, 24.489, and 16.793 billion Baht respectively.[13]

In the Phanom district of Surat Thani province in southern Thailand, the mortality rate of DM and its complications is 34.6 per 100,000 population, while that of hypertension and its complications is a little bit lower, but still high (21.64 per 100,000 population). It has been reported that the yearly costs of NCD medications and laboratory tests account for about 34.2 and 67.56 percent (respectively) of the total cost, approximately 3.5 million Baht per year.[14] This researcher believes that NCDs, especially DM and hypertension, are the most concerning health problems that lead to disability and premature death, and the associated loss of productivity. This loss of productivity would have an enormous impact on the living situations, economics, and the quality of life of Phanom's population. The effects are not only felt by the persons with NCDs, but also their families. The Phanom district is located in the Western most part of Surat Thani province and has a population of 38,061 Its government includes a district government, 2 municipalities, and 4 sub-district administrative organizations.

Its health care services and facilities are managed by the district public health administrative board (DPHAB), as in the other districts across Thailand. Health care services in the Phanom district are provided by the combination of a 30-bed community (Phanom) hospital, 9 Tambon (sub-district) health promotion hospitals (THPHs), and a primary care unit.

The researcher, who is also the chairman of the executive board of the Phanom DPHAB, found that even thought the Phanom district has strategic and action plans for management of NCDs and their risk factors which have been implemented collaboratively by the different government offices and networks, the district's capacity to address and respond to NCDs still needs to be improved. That might be due to the partnership's work procedures, a lack of shared target goals, and the lack of a surveillance, monitoring, and evaluation system, as well as the lack of the unity and coordination of practical application by the different stakeholders at the district level. The health policy implementation for improved health status also needs to be strengthened. It has been known that management of NCDs and their risk factors need to be addressed collaboratively by every sector and partnerships. However, the control and prevention of NCDs are still limited in both the public health and government sectors. Some of the partners have yet to participate fully and show their full potential in addressing and responding to NCDs. Consequently, the researcher is interested in examining the administrative management of NCDs and their outcomes in an effort to find ways to improve NCD surveillance, monitoring, and evaluation systems.

1.2 Research questions

What is administrative management of NCDs and what are its outcomes in the Panom district health system?

1.3 Research Objectives

1.3.1 General objectives

To study the outcomes of administrative management and health care delivery in NCD management under the district health system (DHS) in the Phanom district of Surat Thani province, Thailand.

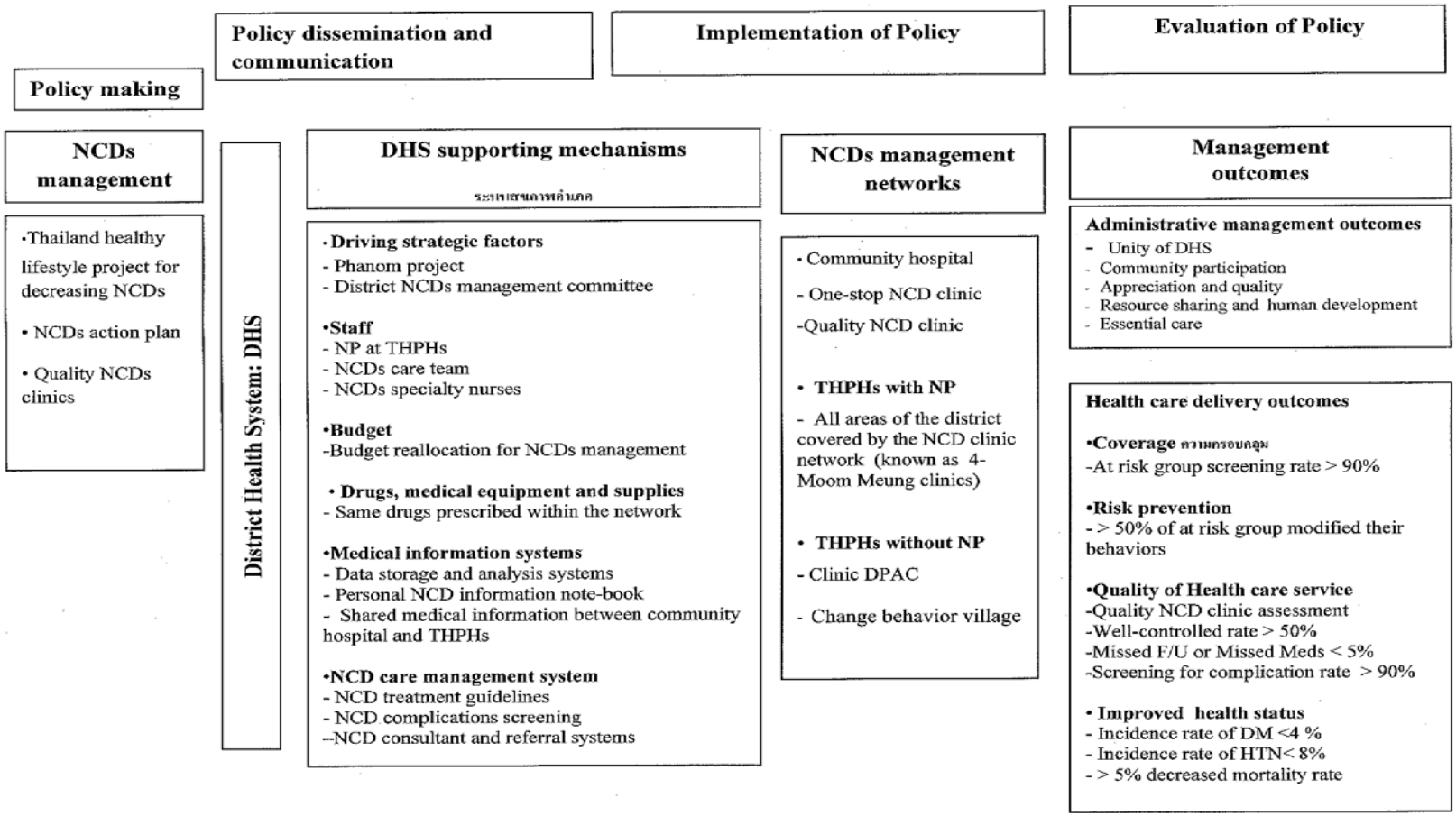
1.3.2 Specific objectives

1.3.2.1 To investigate the policy development in NCDs management in the district health system, and the outcomes of administrative management and health care delivery in the Phanom district of Surat Than province.

1.3.2.2 To compare the theoretical concepts and practical application of those concepts in the district health system in the Phanom district of Surat Than province.

1.3.2.3. To formulate national healthcare policy-recommendations to improve the district health systems in Thailand**.**

1.4 Conceptual framework



1.5 Operational definitions

1.5.1 Dependent variable:

"Outcomes" refers to the outcomes of administrative management and health care delivery. The outcomes of administrative management include five elements known by their acronym: "UCARE". They are Unity of the district health team, Community participation, Appreciation and quality, Resource sharing and human development and Essential care. On the other hand, the outcomes of health care delivery will be measured by four aspects, including the coverage of health care, risk prevention, quality of health care delivery, and improved health status.

1.5.2 Independent variables

District Health System (DHS) refers to collaborative heath care management system at the district level where government and non-government sectors work together to achieve their health service goals. The characteristics of the DHS are complex, interconnected, collaborative, and share target goals using integrated resources specific to its geographic area.

Non-communicable disease (NCD) refers to diabetes mellitus and hypertension.

Health care facilities refer to the Phamom community hospital, Tambon health promotion hospitals (THPHs) whether they have certified nurse practitioners or not.

1.6 Limitations of the study

The major limitation of the study is that the study will focus on the administrative management of the Phanom district of Surat Thani province and its specific administrative management factors might be different from other areas.

CHAPTER II
LITERATURE REVIEW

The study will be conducted to examine the outcomes of administrative management and health care delivery in NCD management under the district health system (DHS) in the Phanom district of Surat Thani province, Thailand.

To conduct this research, policies for and reports on the following have been reviewed.

(1) Definitions of the terms “health” and “health system”

(2) Health Service Management Systems

(3) District Health System and Community Health System

(4) Philosophy, concepts and strategies of Thailand Healthy Lifestyles

(5) Thailand’s policies and work procedures

(6) Methods of development of health service systems concerning non-communicable diseases

Definitions of the terms “health” and “health system”

The World Health Organization (WHO) defines the term “health” as a state of complete mental, physical, economic, spiritual, and social well-being, and not merely the absence of diseases or deformities. In order to have good health, a systematic relationship between factors (an individual, one’s mentality, family, community, economy, culture, politics, education, environment, health systems as well as related national and international organizations) is required. When all the factors combined, accurate and well-balanced health systems arise.

The World Health Organization also provided definitions of the term "health system" as follows.

1. Professional services in four areas: health promotion, health protection, disease prevention and medical treatment, as well as health rehabilitation
2. Thai traditional medical operation, and Thai traditional and modern medications, either with or without prescriptions
3. Care for patients and those with deformities at home
4. Parts of health systems such as medical activities, and Thai traditional and local public health activities for health promotion and disease prevention, as well as improvements on environmental safety

Health systems consist of organizational management and related sections concerning work procedures, aiming for effective health promotion, and treatment. The goals of health systems are for individuals to have good health and to serve their needs by using budgets and healthcare resources effectively.

To reach the goals, the structure of a healthcare system is designed to cover five healthcare areas.

1. Primary Healthcare
2. Secondary Healthcare
3. Tertiary Healthcare
4. Emergency Medical Care
5. Alternative Medical Care

Health systems as defined by their roles, responsibilities, and elements

Considering their roles, responsibilities and elements, health systems include other definitions. In terms of roles and responsibilities, health systems aim at building individuals' states of complete mental and physical well-beings through health-promoting processes, disease prevention, medical treatment, physical rehabilitation, and health-strengthening procedures, as well as public health readiness for communicable and non-communicable diseases and natural disasters.

Apart from responding to people's needs for good health, effective health systems should value people's dignity and hold onto good morals and ethics by

proving health care and privileges to those from all walks of life equally and appropriately.

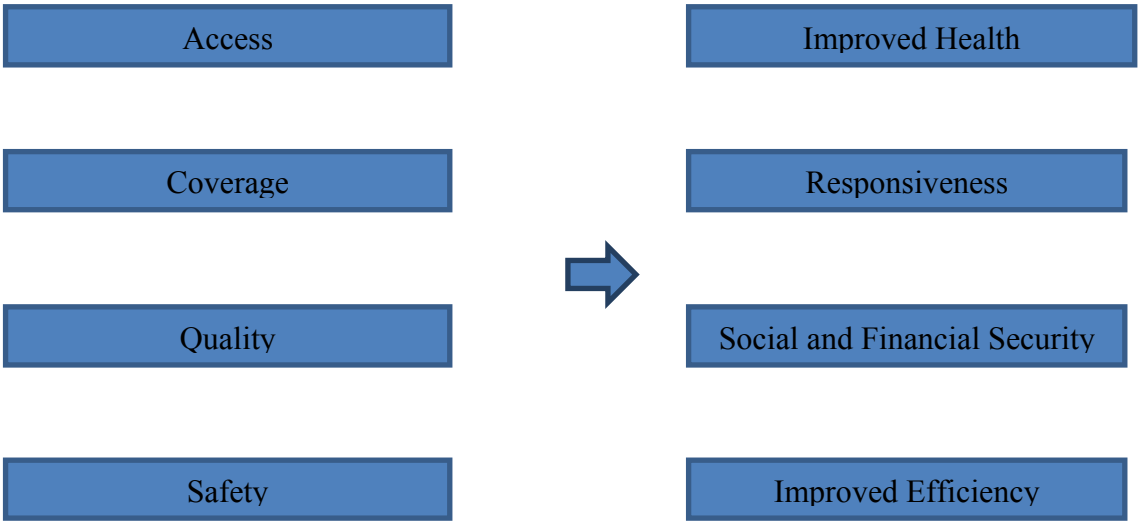


Diagram 2.1 Health Systems Expectations Framework
Source: World Health Organization 2007

According to the stated expectations, it is evident that people are placed at the center of importance and are surrounded by activities concerning health promotion, rehabilitation, and sustainability. Altogether, these activities form health systems, which consist of the following subsystems:

1. Health Service Systems include health protection and rehabilitation. A good service must provide all medical and public health benefits, focus on building well-structured primary health care units, and build on effective supporting system to support the higher systems.

2. Health Workforce System refers to having enough staff who are knowledgeable and have the right skills for their responsibilities so that services will be provided to people equally and widely.

3. Medical Products System refers to medical supplies, vaccines, diagnostic devices, and medical technology that are of high standards, in good quality, safe, safely transported and provide clear instructions.

4. Financing System refers to the health assurance system that helps to reduce the expenses of the government sector and individuals through fund-raising and effective budget allocation and management.

5. Information Technology Systems involve preparing and sharing data related to medical problems, with a tendency toward medical and public health needs, and ways to meet the required indicators for fair and quality service management.

6. Governance System involves governing health institutions so that they perform their responsibilities in a fair and transparent manner. A good governance system must allow inspections to take place and follow policies and strategies that are aimed at solving current public health problems and predicting future problems.

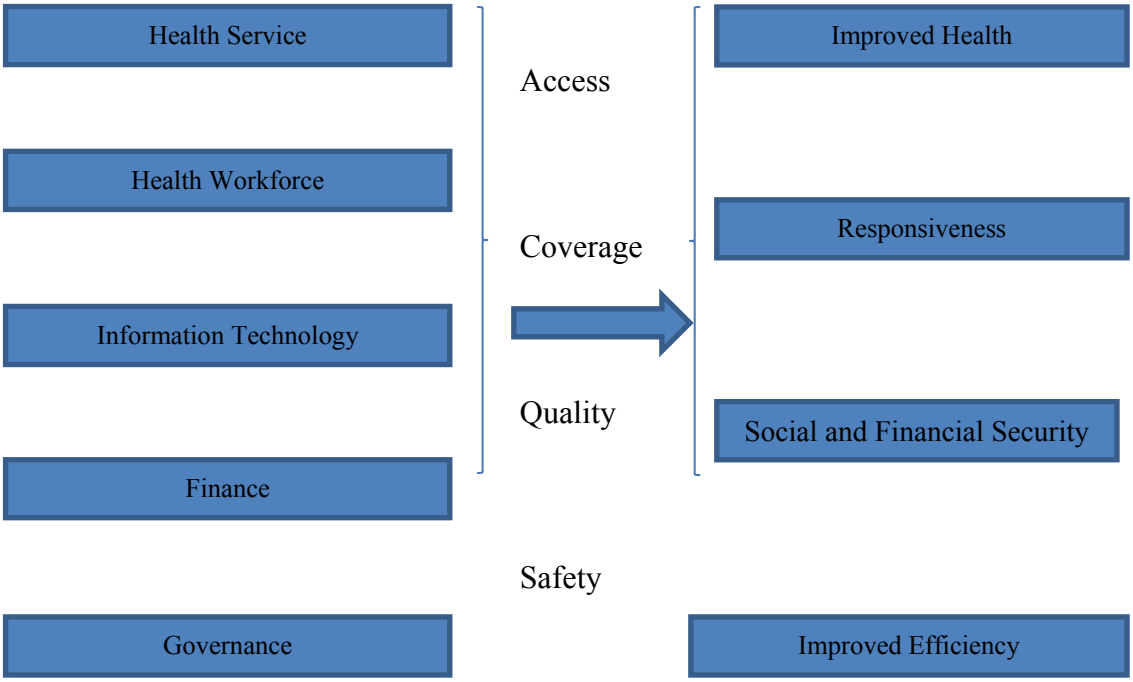


Diagram 2.2 Components of Health Systems Framework of WHO
Source: World Health Organization 2007

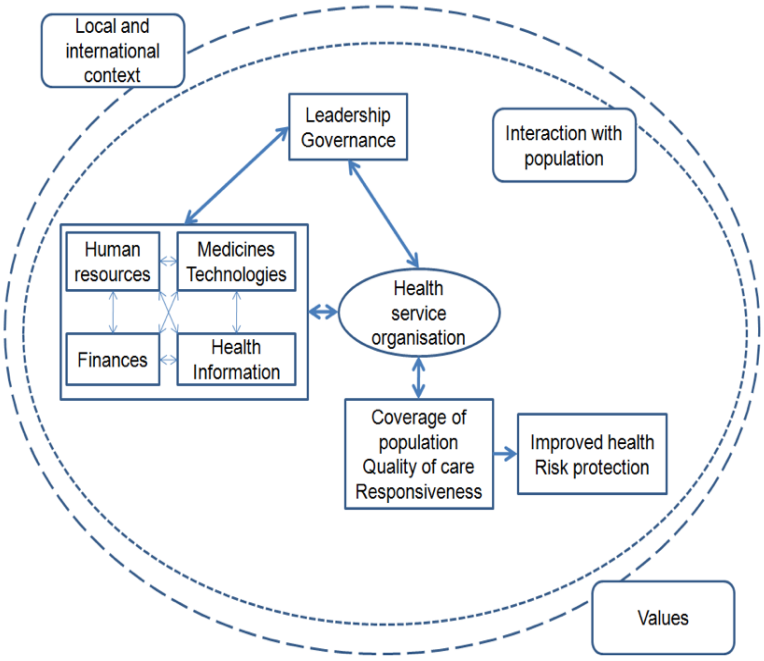
Every activity, or "element", does not conduct its function alone, rather, they are all connected, and together they form a large system with smaller sub-systems that are dependent on each other. For instance, in Health Systems, there is the Internal Service System; in the Service System there is Service Institute System: and in the Service Institute System, the Laboratory System exists.

As stated previously, all systems are undeniably interconnected, with people at the center as mobilizers. Therefore, whether the systems can be moved forward depends on people, including individuals, associations, organizations, service providers, medical institute executives, and policy planners. In other words, the Health Systems are run by people who are in the systems, hoping to bring to them physical and mental well-being.

Diagram 2.3 People as Mobilizers of Health Systems

Note: The framework was adapted from WHO's Framework for action, "Everybody's business: Strengthening health systems to improve health outcomes", Geneva, WHO, 2007

Health Service Management System



Framework for health service system management (adapted from WHO and Van Olmen J)

Diagram 2.4 Health Systems Expectations Framework
Source: WHO 2007

With modern developments in medicine, many diseases can actually be prevented and cured. However, people are still suffering from diseases and having health problems due to problems and failures in public health management. The World Health Organization described the framework of health systems as having six building blocks, which were explained as follows:

1. Health Service includes providing quality, safe, standard, and fair health services with the most effective use of resources.

2. Health Workforce includes sufficient available staff who possess required knowledge and skills and are able to provide services that meet people's needs for good health.

3. Health Information System includes the preparation of health information technology systems that are accurate, reliable, and up-to-date. They should also be able to provide information that is useful for summarizing and analyzing problems, tendencies, and outcomes so that the goals of the health service systems can be reached.

4. Medical Products, Vaccines and Technology refers to medicines, medical supplies, vaccines, diagnostic devices, and medical technology that are of high quality, efficient, standardized, safe, and worth spending money on.

5. Health Finances refers to organizing health funds that provide essential primary services, prevent financial risks, and reduce the government's and the individuals' expenses. Their work also includes ensuring the equity and effectiveness of budget management and allocation.

6. Leadership and Governance is concerned with launching policies and designing the systems that direct and monitor health organizations so that they perform their duties with transparency and without prejudice and so that they are able to be evaluated.

As one can see, all of the elements are interconnected and support one another in order to provide services that serve the people's needs for good health and meet the necessities of health standards. Health system management should also be adjustable to suit each context as in the systems differ in relation to their geography, society, economy, health problems, and political and health policies. This is essential for providing services that are accessible, cover all ranges of healthcare services and healthcare needs, and are high quality and safe. To conclude, all six of the foundational blocks of health systems lead to promoting people's good health, and preventing financial risks, as well as providing continual effective services with equity and fairness while taking human values into consideration.

Community Health System

The Statue on National Health, B.E. 2552 (2009) emphasizes the importance of community health systems as a key to success for future health system development. Strengthening the community health system not only involves the potential development of community service units, which include health stations and

community hospitals, but also involves building on the power of the people and organizations in communities. Thus, the primary health care guidelines and the primary service system ensure people quality of, access to, and coverage for public health services, both before and after an emergency. According to the findings, it is evident that primary services, part of the Universal Health Coverage Scheme, have increased access to health services for poor people.

In Thailand, there are a lot of organizations that are involved in the community health development system. For example, the National Health Security Office (NHSO) is responsible for strengthening primary service units by using financing mechanisms and promoting the establishments of sub-district health funds in communities. The Thai Health Promotion Foundation coordinates with organizations in communities in order to empower key leaders in the communities. The National Commission Health Office (NCHO) builds up community empowermentby developing the area-based health charter and the community model schemes through area-based health assembly mechanisms. The Health System Research Institute (HSRI) partners with NCHO in developing research plans to support community health system development. Additionally, the Ministry of Public Health launches policies concerning the nationwide upgrading of health stations to sub-districts (as known as Tambon) health promoting hospitals (THPHs), working closely with other health organizations in order to reach the ultimate goal of building up the strength of communities in terms of healthcare.

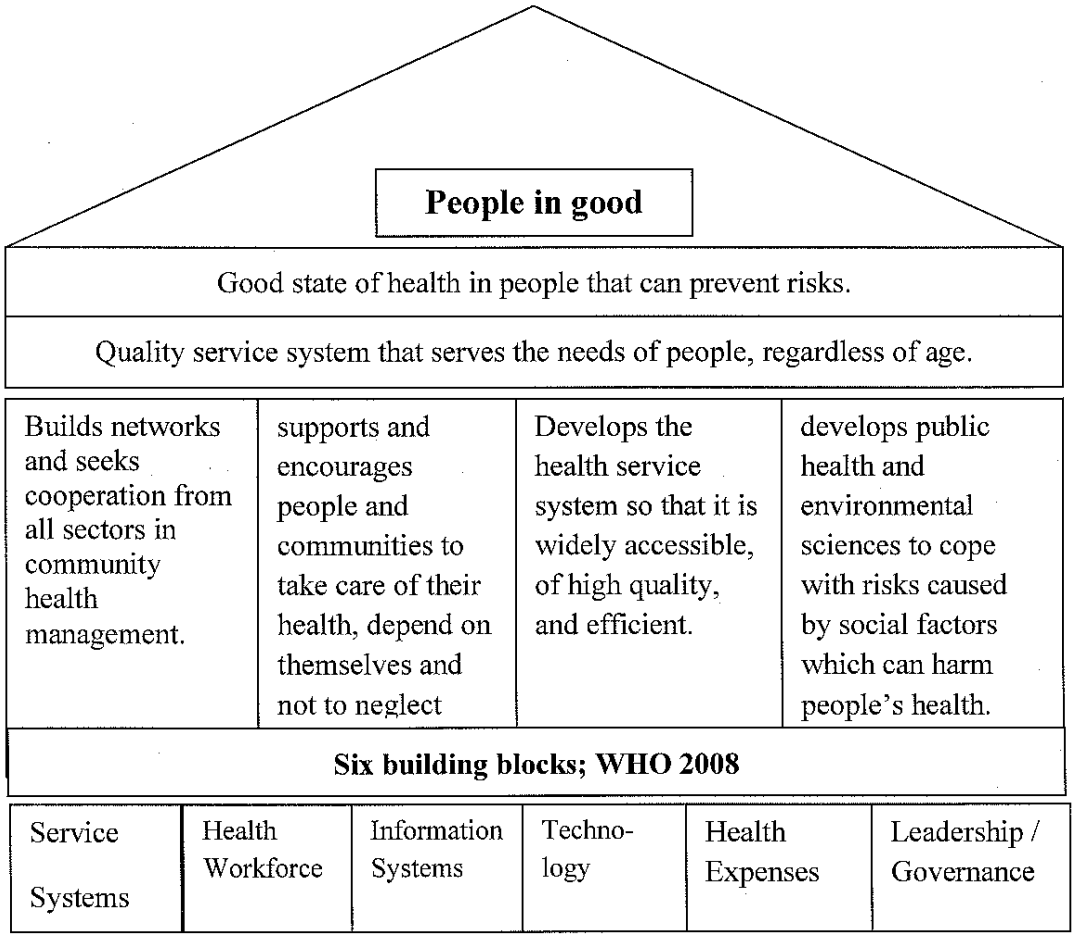
Goals and Outcomes

The goals of the community health system are to strengthen the community health system that already exists and to effectively build the communities well-being, aiming to cover no less than 50 percent of sub-district areas by the end of B.E.2558 (2015).

District Health System

District Health System refers to the health system at the district level, with the cooperation of all sectors and with the integration of local resources. The system also includes appreciation and knowledge management processes, and it encourages people and communities to be highly self-dependent and not to neglect the well-being of others in the community.

Framework



District Health Systems' Operation Methods

1. Unity District Health Team involves cooperation of all sectors and builds up working relationships that will lead to people's well-being. This method also determines who will be responsible for mobilizing the system, clearly designates responsibilities, and employs good governance.

2. Community Participation involves participation from all sectors at the district level in every step in the development process (participation as information receivers, in sharing ideas, in working, and in evaluating). Having the same goals, they aim at increasing the level of their self-dependency so that their health condition improves and they can help each other in terms of health development.

3. Appreciation and Quality refers to the appreciation and quality of primary services. The appreciation, in this case, is gained by both service receivers and providers and can be generated through numerous ways, such as the quality development of primary service networks, close attention to patients, the development of content-based services and the quality and quantity of services. Appreciation arises through these avenues and gives inner strength and happiness to the service providers that allow them to carry on their work contentedly, while, at the same time, ensuring that the service receivers and people of the community are satisfied with the services received.

4. Resource Sharing and Human Development focuses on resource mobilization based on effective resource management. This method encourages the sharing of resources, which includes workforce, money, tools, knowledge, technology, and databases, for health-related affairs, while human development's main focus is on development, which includes analyzing situations and problems as well as responding to the needs of both individuals and government offices. To reach to the goal of this method, different types of development projects, such as knowledge sharing, training, study visits, and mentoring systems, are initiated.

5. Essential Care aims at using effective health problem management that is suitable for people in different areas, social contexts, and cultures. This method also involves the health promotion, disease prevention, and rehabilitation of people's health by following the primary health service framework.

U-CARE's Development Criteria for District Health Systems- Primary care award (DHS-PCA) and Score Levels

Scores	Criteria
1	**Methods:** Having clear methods for development and / or starting of operations (The plans consist of three elements: what the objectives and operational plans are, what the target indicators are, and how performance evaluations are done.)
2	**Increasing Area of Operations:** Having plans for increasing the area of operation, if all areas in the district are not covered
3	**Operations System:** Having operation and / or evaluation systems for improving important work procedures and / or coverage of operations (System means that an operation is repeatable and consists of clear steps.) (Operations consist of three elements: whether and how all steps are covered according to plans, whether and how assigned people are responsible for their duties, and whether and how they are active.
4	**Learning:** Evaluating, revising and improving the systems based on facts as well as learning that leads to development (Learning consists of three elements: whether and how outcomes are relevant to objectives, whether and how knowledge sharing is accomplished and whether and how lessons learned are used for improvement.
5	**Integration:** Having integrations of new development in organizations' main operation systems, improved situations of development, and completing goals and missions of organizations (Integration consists of three elements: the relations of goals, plans, measurement, and adjustment, the relation of other relevant processes, and the relation of primary service networks' goals

UCARE	Having clear methods for methods and / or starting of operations		Having increased areas of operation		Having systematic operations and / or covering all areas		Learning		Integration		Key words and Definition of operation
Unity Team	Having operational methods and cooperation and proceeding with work according to the assigned responsibilities		Working as a team on certain issues and / or being joined by other associates		Doing cross functional in teams, among creating and policy planning teams and being joined by certain associates		Fully integrating as team networks, both vertically and horizontally, and being joined by other associates		Communities and other associates' working together as a team with health networks on every important health issue		Health Team refers to all teams: at the same levels (community district hospital and com. hospital teams, THPH and THPH teams), different levels (com. hospital and THPH teams), vertical teams and horizontal teams and / or cross functional teams (other associates)
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	

UCARE	Having clear methods for methods and / or starting of operations	Having increased areas of operation	Having systematic operations and / or covering all areas	Learning	Integration	Key words and Definition of operation
Customer Focus	Providing channels of communication for people to receive information and understanding the people's and service receivers' needs by using an interactive approach.	Providing channels of communication for people and different types of service receivers, especially those who have serious problems, to receive information	Providing channels of communi-cation for people and each group of service receivers, which covers the vast majority of people, to find solutions based on the and improving working systems based on feedback.	Learning and developing information-receiving and need-surveying channels in order to improve efficiency	Integrating the people's and service receivers' needs into the working systems, thus building trust, close connections, and participation with the primary service networks.	Health Needs refers to healthcare problems or issues that the people and service receivers have for which solutions should be provided In this case, "needs" includes both felt and unfelt needs.
	0.5 1.0	1.5 2.0	2.5 3.0	3.5 4.0	4.5 5.0	

UCARE	Having clear methods for methods and / or starting of operations		Having increased areas of operation		Having systematic operations and / or covering all areas		Learning		Integration		Key words and Definition of operation
Community Participation	Having methods for getting communities and network associates involved in health operations.		Getting communities and network associates involved in different types of health operations and in expanding the area of operation.		Systematically having communities and network associates participate in the decision-making process and the health operations system and also working closely with primary service networks in expanding services in most areas.		Having communities and network associates work together in deciding on, planning, and performing health operations, as well as in revising and improving the participation processes.		Having communities and network sectors work closely together in every operation process, including the evaluation, thus making them the owners of primary service network's operations.		Levels of Participation : receiving information, deciding, acting, and evaluating together.
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	

UCARE	Having clear methods for methods and / or starting of operations		Having increased areas of operation		Having systematic operations and / or covering all areas		Learning		Integration		Key words and Definition of operation
Appreciation	Having clear methods of operation, or for starting developments, and bringing satisfaction to people.		Increasing areas of operation by following plans or methods for development and bringing more satisfaction to the staff in every office and at every level.		Operating according to established plans or methods for developing and building satisfaction and engagement among staff that systematically coincides with healthcare management system's essential responsibilities.		Health networks learned about and revised development processes and built engagement among staff, based on each context.		Networking culture is emphasized in order to promote happiness, pride, appreciation, and engagement in the primary service networks' staff.		Engagement refers to a situation where the staff performs their duties and responsibilities actively and dedicatedly to reach the organizations' goals.
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	

UCARE	Having clear methods for methods and / or starting of operations		Having increased areas of operation		Having systematic operations and / or covering all areas		Learning		Integration		Key words and Definition of operation
Resources Sharing and Human Development	Having methods or starting plans on how to use resources and perform human development together for community health development promotion.		Collabora-ting on certain issues, or designing systems for, resource usage and human development.		Systematically collaborating on resource usage and human development according to the contexts and necessities of each area, in order to reach the goals of the health networks.		Revising and improving resource manageme nt and human developme nt plans so that they become more appropriate and effective.		Collabora-ting on resource management that is based on the goal of having borderless health networks and efficient community resource usage and which will result in community sustain-ability.		Resources include people, money, items, knowledge, and information ; these are considered as work input.
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	

UCARE	Having clear methods for methods and / or starting of operations		Having increased areas of operation		Having systematic operations and / or covering all areas		Learning		Integration		Key words and Definition of operation
Essential Care	Having methods for maintaining , or starting to build, basic health care systems essential for each group and according to their community contexts.		Building health care systems based on contexts and needs of the service receivers, people and commu-nities.		Building health care systems based on contexts and needs of service receivers and the majority of people.		Continually learning about, revising, and developing the healthcare system in order to bring about suitable healthcare.		Integrating healthcare systems and collaborating with people, commu-nities, and related associates, thus resulting in the well-being of people		Essential Care refers to health services essential for people, according to the commu-nities' contexts and the potentials of the primary service networks
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	

Thailand Healthy Lifestyles

The Office of the National Economics and Social Development Board, the Ministry of Public Health, and the Institution of Nutrition at Mahidol University value the importance of building participations from all network associates and encouraging society to prevent and solve problems that are caused by consumption of low nutrition foods, lack of exercise, and stress which result in excessive consumption, smoking, and drinking, that cause people to suffer from being overweight and obesity, as well as from chronic non-communicable diseases. Having these concerns, these three organizations collaborated to launch the Thailand Healthy Lifestyle Strategic Plan,

B.E. 2554-2563. The cabinet in power at that time approved the principles of the plan and its strategy mobilization mechanisms. The plan is expected to be guideline for operation and integration to bring about improvements in equity in healthcare services and health while facilitating, decreases in disease and disability in fatality rates, and medical expenses. With all these benefits, people, families, communities, and the country will be able to enjoy sufficient living and healthcare systems and be able to live altogether harmoniously.

Important Contents of the Thailand Healthy Lifestyle Strategic Plan

1. Situation and scope of problems

According to analyses, the risk factors that can cause harm to people's health are related to consumption behaviors. A lot of people eat and drink things that are too salty, sweet, and oily while not eating adequate amounts of fruits and vegetables, not exercising, not controlling their emotions and stresses well, smoking and drinking excessively, and becoming overweight or obese. All these factors, undoubtedly, affect people's health and the country and are the causes of five of the important diseases: diabetes, high blood pressure, heart disease, stroke, and cancer.

2. Key Concepts of the Thailand Healthy Lifestyle Development Plan

The key concepts of the Thailand Healthy Lifestyle Development Plan are concerned with living with sufficiency, as this is believed to bring well-being to people and is also based on the concepts of sufficiency health and the philosophy of a sufficiency economy. The principles of Thailand's Healthy Lifestyle Development Plan also includes an integration of all healthcare systems and participation of the people in the society, as well as connecting of all elements that are linked to disease-related factors and people's lifestyles.

3. Visions mission, ultimate goal, and main objectives for Thailand Healthy Lifestyle development

Vision: People have potential in dealing with the risks and environmental issues that cause diseases and affect their ways of living. In order to mitigate the effects of these potential risk factors, collaboration from all sectors is necessary and balanced and sustainable integrations sought, thus resulting in happiness as stated in the philosophy of sufficiency economy.

Mission: The mission is to encourage communities and society to reduce risk factors and promote favorable factors and to participate actively in pushing policies into practice. The missions also involves researching, preventing, controlling and handling problems, as well as developing all of the sectors involved systematically and effectively by taking a holistic approach.

Ultimate Goal: People, communities, society and the country become immune and possess the tools and resources to prevent potential health hazards and the 5 main non-communicable diseases.

Main objective for development Thailand Healthy Lifestyle program: The Reducing five non-communicable diseases due to changes in life-style (diabetes, high blood pressure, heart disease, stroke, and cancer) in five areas (diseases, complications, deformity, death, and medical expenses), hoping to bring in the three sufficiency lifestyles (appropriate food consumption, adequate exercise and emotional management) employing 18 indicators in the three phases (short-term, intermediate-term, and long-term) to determine development.

There are three phases involved in the pathway to improve Thailand Healthy Lifestyle:

1. Short-term: integrating ideas, building trust, and participating in mobilization of network associates
2. Intermediate-term: working proactively to lay the foundation of the structures and systems
3. Long-term: strengthening of the structures and systems for preventing, and finding sustainable solutions to, problems

4. Strategies, Strategic goals, tactics, and plans for Thailand Healthy Lifestyle development

There are 5 strategies (14 strategic goals, 3 collaborative tactics, 11 strategy-based tactics, and 29 plans) used for development Thailand Healthy Lifestyle: 1) public policies that bring happiness (4 goals, 3 tactics and 11 plans); 2) social mobilization and public communication (2 goals, 2 tactics and 4 plans); 3) community potential development (1 goal, 2 tactics and 3 plans); 4) surveillance system development and disease management (3 goals, 3 tactics and 7 plans) ; 5) strengthening strategy supporting systems 4 goals, 1 tactic and 4 plans).

5. Methods and mechanisms for implementing the Thailand healthy lifestyle strategy

A framework was set up to push the strategy into practice using the national mechanisms for policy implementation. These mechanisms consist of the senior board committee and the management board committee of the Thailand lifestyle strategy board, both of which aim to reach the visions and goals set forth in developing the Thailand Healthy Lifestyle strategy.

Although the Thailand healthy lifestyle strategy has been used in every sector over the past several years, diseases, deaths, deformities, and medical expenses, as well as their economic and health losses, are still the leading health-related problems seen in Thailand. As a result, mobilization still needs to be strengthened and continued.

Thailand's Healthy Lifestyle Strategy used as part of the Eleventh National Economic and Social Development Plan (B.E.2555-2559) and is the long term strategic plan for providing direction to Thailand's lifestyle development. The plan's important contents are as follows.

1. Situations related to health problems and chronic non-communicable diseases due to changes in lifestyles.

According to reviews and analyses of situations, it is apparent that changes in economic and social contexts and in ways of living have affected people's consumption behaviors, thus giving rise to risk factors and disease. As a result, limitations which have been found in the plan over the past years have been

reconsidered in order to seek better preventions and solutions for all of the related health problems.

1.1 New economic, social, and environmental contexts that affect lifestyles and health.

Unbalanced developments in economy and society have been seen all over the world, including Thailand. This is because the development of materialistic values has been more focused on while, at the same time, capitalism is playing a crucial role in the world's economy. Trading and services are owned and controlled by market mechanisms that mainly seek profits. Although economic growth has been seen, it is always fluctuating as it is affected by external factors. The focus on materialism and capitalism is also making the eastern world become more westernized, transforming the agricultural society into an industrial one, and are making the local society an urban one. As a result, Thai people's lifestyles and consumption behaviors have changed greatly as they have adopted materialistic and consumeristic values by imitating western culture while ignoring their own. For example, they are addicted to luxury, overuse technology, live a hurried and competitive life, take advantage of other people, lack morality, and do not take good care of their health, which eventually affects the their health and the society.

1.2 Consumption styles and lifestyles that harm health Changes in consumption styles and lifestyles are the main risk factors that causes harm to our health. This harm includes increases in the five chronic non-communicable diseases mentioned previously. Thus, if the risk behaviors are not gotten rid of, the problems will definitely intensify in the future.

With regard to consumption behaviors, Thai people are now eating innutritious and disproportionate amounts of food and are not concerned about the effects that this can have on their health. While they are eating more foods such as fast food, instant foods, grilled foods that contain excessive levels of protein, fat, and sodium, and foods with too many sweeteners that are produced by multinational corporations and agriculture, and are no longer interested in eating vegetables and fruits or exercising. In addition to the inappropriate consumption behaviors, other factors that affect the Thai people's lifestyles include poorly-designed city planning, ineffective public transportation, and the overuse of personal vehicles,

which causes delays in commuting, dangers to pedestrians and cyclists, and pollution, which will eventually harm their health. Stress is also another factor affecting health because some people turn to smoking and drinking when stressed. Finally, with all the risk factors caused by the changing lifestyles and environment, today Thai people are suffering more from hypernutrition, obesity, communicable diseases, and chronic non-communicable diseases that are actually preventable, than from malnutrition, which used to be the main cause of health problems in the past.

1.2.1 Inappropriate consumption

1.2.1.1 Inadequate consumption of vegetables and fruits

- WHO has estimated that the inadequate consumption of vegetables and fruits have caused 2.5 million people in developing countries to die and is the main the cause of heart disease, stroke, and cancer.

- In B.E. 2546 one-third of Thai children aged 1-5 ate vegetables and fruits every day and males and females aged 15-29 ate 285 and 320 grams, of vegetables and fruits, respectively, per person per day. However, that amount that was lower than the WHO standard of 400-600 grams per person per day (or 5-7.5 standard measuring cups). In B.E.2551-2552 Thai children aged 2-14 ate approximately 0.7 and 1.3 standard portions of vegetables and fruits per day while only 6.3 percent of all Thai children ate more than 5 standard portions of vegetables and fruits per day.

- Thais over 15 years of age ate fewer vegetables and fruits, approximately 3 standard portions on average. In terms of recommended consumption frequency, many of them ate adequate amounts of vegetables and fruits (totaling $\geq$ 5 standard portions per day), however, this has fallen from 21.7 percent in B.E.2546-2547 to 17.7 percent (equal to 9 million people) in B.E.2551-2552.

- The vegetables and fruits exported between B.E.2546-2549 contained 4.0-8.2 percent of pesticide residues, a rate that exceeded the standard. The amounts of pesticide residue was especially high in B.E. 2553 when 16.7 percent of pesticide residues that were found in imported

vegetables and fruits were not listed by the Food and Drug Administration as acceptable for use.

1.2.1.2 Excessive consumption of salty and sweet foods

- During the past two decades Thai people have eaten more sugar, three times more, than in the past. The sugar consumption rate in B.E.2550 was at 36.4 kilograms per person per year, exceeding the standard rate of 15-20 kilograms per person per year as recommended by the WHO.

- In B.E. 2546 nearly two-thirds of Thai children aged under 5 ate 30.4 grams (or approximately 8 teaspoons) of sugar per day, while one-fourth of them ate more than 40 grams (or 10 teaspoons) of sugar per day, exceeding the WHO standard of 24 grams (or 6 teaspoons) per person, per day.

- Two-thirds of Thai people aged over 6 drank soda and other sweet soft drinks by. 25.3 percent of them drink it every day.

In B.E. 2552 one-half of young people aged 13-22 living in Bangkok liked easting fast food (INSERT CITATION HERE) In B.E. 2551 elementary school students ate increasing unhealthy snacks, up to 38.1 percent. Unsurprisingly, this corresponds to the start of the high-budget advertising of soft drinks and unhealthy snacks, totaling 4,506 million Baht per year, launched in B.E. 2551 that triggered the excessive consumption of junk foods among children. The advertising was believed to cover one-third of the overall spending on food advertisements. It was also estimated that children and teenagers spent 9,800 Baht per person, per year on snacks, totaling 170,000 million Baht a year.

- In B.E. 2550-2551 elementary and university students spent up to 6-7 hours per day on electronic media, namely 3 hours watching television, 2 hours on the Internet, and another 1.50 hours on telephone (INSERT CITATION HERE), or in other words, they spent half of their life when awake on the media.

- In B.E.2550 Thai people received approximately 10,879 +/- 2,604 milligrams of Sodium Chloride per person, per day (or between 8,275-13,483 milligrams of Sodium per person per day) (INSERT CITATION HERE) while the standard consumption of it should not be over 2,400 milligrams per person, per day (INSERT CITATION HERE). The top five high-Sodium seasonings used in Thai households are fish sauce, soy sauce, salt, shrimp paste, and oyster sauce.

- In B.E. 2552 a lot of people living in the Bangkok metropolitan region ate out at food stalls and street hawkers; at more than 60 percent of these places unclean food containers were used, adulterated things were found in food, and spoiled food were sold (INSERT CITATION HERE).

1.2.1.3 Smoking and drinking liquor or alcoholic drinks

In term of tobacco use, it is estimated that there are 1.1 billion people who smoke in the world. In B.E. 2551-2552 23.7 percent (or 12 million) of people aged over 15 in Thailand's population smoked and 19.9 percent (or 10 million) of them were frequent smokers. However, this was lower than in B.E.2546-2547 when the smoking frequency stood at 25.3 percent. Surprisingly, younger people tended to start smoking at a younger age, approximately 18.6 years of age and 78 percent of people became secondhand smokers. This smoking situation corresponds with the income from the tobacco excise tax between B.E.2542-2550 were increased more than one tim, to be 41,528 million Baht, and all medical treatment costs including tobacco-related medical care rose almost one time, to be 53,674 million Baht(INSERT CITATION HERE)..

With regard to alcohol consumption, it is estimated that there are 2 billion people who drink in the world. In B.E.2551-2552 Thailand had a alcohol drinking prevalence of 45.30 percent (or 23 million people). Of that total, 7.3 percent (or 3.7 million people) of those who drank were considered moderate drinkers, whereas 17.6 percent (or 8.9 million) of them were heavy drinkers. This was lower than in B.E.2546-2547, when the drinking prevalence of both groups stood at 9.2 and 44.6 percent, respectively. Despite the

decreases, it was surprising to discover that more people started drinking at the approximate age of 21.5 due to easier accessibility to alcohol. In B.E.2547 there were 585,700 licensed alcoholic shops or, that is to say, one shop for every 110 Thai people, and it only took about 7.5 minutes for people find alcoholic drinks and buy them. In B.E.2552 within a radius of 500 meters from the universities in Bangkok there was a density of approximately 57 alcoholic shops per square kilometer (INSERT CITATION HERE) .

- During the past two decades (B.E.2524-2550) Thailand's households have consumed foods and substances that are harmful to their health (alcoholic drinks and cigarettes). Although the spending value stayed stable in B.E.2552, later it doubled to 63.915 billion Baht, or in other words, it had an average increase rate of 5.7 percent in actual value. In contrast, households spent less money on health (and medical treatment), only 60861 billion Baht, or 2 times the average increase value of 5.8 percent in actual rate. The economic costs and losses caused by alcohol totaled 150.677 billion Baht in B.E.2549 (or 1.92 percent of the GDP), or 2,398 Baht per capita.

1.2.2 Inadequate exercise

- WHO stated that, without adequate exercise, people have an increased risk of having Cardio-vascular disease, colon cancer, diabetes, and cerebro-vascular disease . People in Thailand do not get enough exercise, thus Thailand ranks ninth among the countries that have and excessive burden of disease and it causes the loss of 1.3 percent of DALY.

- Thai people aged 15-74 exercised moderately to heavily, spending more than 30 minutes at least 3 times per week exercising. The exercise level increased from 30.9 percent in B.E.2548 to 37.5 percent (or 16.3 million people) in B.E.2550.

-Out of the 16.7 percent of Thai people over 11 years of age who became ill in the past one month in B.E. 2550, 68.5 percent of them were those who did not exercise. Out of the 6.1 percent of Thai people who were hospitalized in the past 12 months in B.E. 2550, 74.1 percent of them were those who did not exercise (INSERT CITATION HERE).

1.2.3 Mental health problems (emotions)

- In B.E. 2551 one-fifth of Thai people over 15 years of age had a lower mental health level than the majority of Thai people , and women were found to have lower mental health levels than men.

- In B.E. 2552 teenagers aged 13-22 who lived in Bangkok engaged in a lot of behaviors that ruined their health, like staying up late at night and not getting enough rest, while one-fourth of them had stress.

1.2.4 Overweightness and obesity

- In B.E. 2548 the WHO reported that among the world's populations there were 1.6 billion people aged over 15 years who were overweight and 400 million who were obese, and that there were 20 million children aged below 5 that were overweight. It is estimated that in B.E.2558 there will be 2.3 billion overweight adults, 700 million obese people, and people could have 5 centimeters bigger waistlines; all of them having 3-5 times higher risk of getting diabetes than ordinary people.

- In B.E.2551-2552 34.7 percent (or 17.6 million) of Thai people aged over 15 were overweight or obese (BMI $\geq$ 25 kilograms / square meter). Additionally, 32.1 percent (or 16.2 million) became potbellied (with the waistlines of $\geq$ 90 centimeters in men and $\geq$ 80 centimeters in women). The rate of people who used diet pills was 5.5 times higher than in the past or equal to 1.1 percent These are significant increases when compared to the respective rates in B.E.2546-2547 of 28.6, 26.0 and 0.2 percent. Additionally, diet pills were used more by women than men and it was also found that the older aged the fewer diet pills people took.

- The money spent on dietary supplement advertisements in different media was 2.3 times higher than in the past 7 years; that is, 2,112 million Baht was spent in B.E.2552, 115 million Baht alone of which was for diet food advertisements.

- In B.E. 2550 Thai people spent between 900-2,600 Baht per month on weight loss services. If they received weight

loss services at hospitals or weight loss centers, they spent approximately 2,555 Baht per month. However, if they bought diet goods or pills to take at home, they spent an average of 1,200 Baht per month.

- In B.E.2551-2252 10.7 million (or 21.1 percent) of Thai people aged over 15 suffered from metabolic syndrome and 9.8 million (or 19.4 percent) of them had high Chloresterol (≥ 240 milligrams per deciliter). Moreover, more women suffered from these health conditions than men and, the older they got, the more health conditions were found. However, the percentage of those who were diagnosed and well controlled was double-increased to be 27.3 and 14.8 percent of men and women, respectively.

1.3 The critical situation with lifestyle-change-related non-communicable diseases

1.3.1 Diabetes

- According to the report of the International Diabetes Foundation (IDF) in B.E. 2550, 246 million people suffered from diabetes and 3.8 million people around the world died from it every year. It was also estimated that every 10 seconds two new people would be diagnosed with diabetes or, that is to say, 7 million people every year. In B.E.2553 it was estimated that 285 million people aged between 20 and 79 all over the world have diabetes and the number would possibly reach 438 million by B.E.2573. Surprisingly, four of five of these people are from Asia, specifically, Southeast Asia, and the number of which is rising from 58.7 to 101 million or 58.7 percent.

- In B.E.2551-2552 3.5 million Thai people (or 6.9 percent) aged over 15 had diabetes, with a greater number of female patients than males. While the prevalence of diabetes (DM) among Thai is not changed, the number of known DM cases is 1.5 times higher than in the past, that is, 68.8 percent of Thai people suffered from diabetes, or. However, the number of controlled cases is increased twice as well, or 28.5 percent, than in the past (in B.E.2546-2547 they were 6.9, 43.4 and 12.2 percent respectively).

- According to health screenings done in 2552, 1.4 million Thais (or 6.8 percent), aged over 35 were found to have diabetes

and 1.7 million were at risk of developing it. Unfortunately, 100,000 of those who already had it also had eye and kidney complications.

- People who have diabetes are at 2-4 times the risk of getting Coronary Artery Disease and cerebrovascular disease or stroke than other people, and more than half of them had nervous system disorders. In B.E.2552 11.1 people per 100,000 population (or 19 people per day) died of diabetes and in B.E. 2551 9,702 people per 100,000 population received medical treatments at OPD clinics and spent an average of 1,172 Baht per person on medical treatment. Moreover, there were around 845 hospitalized -patients per 100,000 population (or 1,463 people per day) spent an average of 10,217 Baht per person on medical treatment, altogether totaling 3,984 million Baht per year. It is estimated that if the number of diabetes patients reaches 3 million, the approximate amount of money spent for medical treatment would be 47, 596 million Baht per year.

1.3.2 High blood pressure

WHO and the World Hypertension Leagues (WHL) estimated that the number of people who had high blood pressure throughout the world could reach 1 billion, meaning that one-fourth of the world's populations would have high blood pressure.

In B.E.2551-2552 10.8 million (or 21.4 percent) of Thai people over 15 years of age had hypertension (HTN). Although the disease prevalence is decreased, it was found that HTN among in men and women were similar, the number of known HTN people was nearly double, or equal to 49.7 percent, compared to the previous years. The number of controlled HTN, however, was two times better, or equal to 20.9 percent (in B.E. 2546-2547 22, 28.6 and 8.6 percent respectively).

According to health screenings done in B.E. 2552, 2.2 million (or 10.2 percent) of Thai people aged over 35 were found to have high blood pressure, 2.4 million are determined as a at risk group, , and 0.09 million of those who already had HTN also had heart, brain, kidney, and/or eye complications.

Usually, those who have high blood pressure also have Cholesterol levels of 6-7 times greater than other people, and, as a

result, are more than 2-5 times more likely to die of stroke and heart disease. In B.E.2552 3.6 people per 100,000 population (or 6 people per day) died due to high blood pressure; 14,628 high blood pressure out-patients spent an averagely of 831 Baht per person on medical treatments; and 1,149 in-patients per 100,000 population (or 1,989 people per day) spent approximately 4,586 Baht per person. The medical treatment expenses totaled 2.465 billion Baht per year. It is estimated that the expenses on high blood pressure treatments of 10 million HTN patients would approximately be as high as 79,263 million Baht per year

1.3.3 Heart diseases

According to WHO's report on heart disease, 792 people died of heart diseases per day, worldwide. In Thailand, in B.E. 2552, 29 Thai people per 100,000 population (or 50 people per day) died of heart diseases. In B.E. 2551 there were 2,565 out-patients per 100,000 population which spent an average of 1,109 Baht on medical treatment while 684 in-patients per 100,000 population (or 1,185 people per day) spent approximately 28,633 Baht on them, which, altogether, totaled 6,906 million Baht per year. It is estimated that if the number of those who have heart disease reaches 4 million, approximately 154,876 million Baht would be spent on the medical treatments yearly.

In B.E. 2551-2552, 24.3 million (or 8.4 percent) of Thai people aged over 15 had more than three risk factors for heart disease and vascular disease while in B.E.2546-2547 it was 7.6 percent. Specifically to those aged between 15 and 74, in B.E.2548-2550 the prevalence of ischemic heart disease was increased to be 0.7 million people (or 1.5 percent). The expenses for medical treatments for out-patients averaged 1,410 Baht per person and 40,892 Baht per person for in-patients, which totaled 2,748 million Baht per year.

1.3.4 Stroke

The WHO estimated that, worldwide, every year there are around 15 million people who suffer a stroke WHO also estimates that 5 million people become disabled, and 5 million people die of it, with two-thirds of them living in developing countries. By B.E. 2563 the fatality rate is estimated to double worldwide. In Thailand alone the number of new patients who

suffer a stroke is estimated to be at least 150,000 per year. In B.E.2552 21 Thai people per 100,000 population died of stroke (or 37 people per day),.

In B.E. 2548-2550, increasingly, 0.5 million (or 1.1 percent) of Thais aged between 15 and 74 were found to have had a stroke. In B.E.2551 there were 980 out-patients per 100,000 population that spent an average of 1,629 Baht per person on medical treatment and 257 in-patients per 100,000 population (or 446 people per day) who spent approximately 29,571 Baht per person, which totaled 2.973 billion Baht per year altogether. It is estimated that if the number of those who suffer a stroke reaches 0.5 million, 20.632 billion Baht per year will be spent on medical treatment.

1.3.5 Cancer

- According to WHO's report on cancer, worldwide there are approximately 18 million people who have cancer, 9 million new cancer patients each year, and one person dies of it every six seconds. In B.E.2563 the number of those who die of cancer will possibly reach 11 million, with 7 million of them living in developing countries. In B.E.2552 it was reported that in Thailand 88 people per 100,000 population (or 154 people per day) died of cancer.

- In B.E.2551 Thailand had more patients who suffered from cancer compared to previous years. There were 1,023 out-patients per 100,000 population who spent an average of 2,486 Baht per day on medical treatment while 505 in-patients per 100,000 population (or 874 people per day) who spent approximately 29,940 Baht on them, totaling 8,897 million Baht per year. It is estimated that 120,000 new cancer patients will be diagnosed in Thailand, or in other words, an increase of 50 percent over the past 10 years. The most common types of cancer found have included liver cancer, cervical cancer, breast cancer, colon cancer, and colorectal cancer. It is estimated that if 750,000 people suffer from cancers, the expense of cancer treatment will rise to approximately be 32.991 billion Baht per year.

1.4 Situations, problems, and prevention of the non-communicable diseases Although during the past few years, there have been some successes in handling the problem related to and the prevention of non-communicable diseases in relation to changes in lifestyle, failures and limitations in conducting operations can still be seen. Thus, seeking solutions to the problems related to these diseases, and, co-operation from all sectors are still needed, as well as following important issues concerning these diseases should be taken into consideration.

1.4.1 The lack of understandings about the severity of the diseases Surprisingly, many people who are at risk of getting these diseases, as well as those who have already have, them still lack understanding and knowledge about the diseases, do not pay attention to the severity of the diseases, and are not interested in changing the things in their lifestyles that can cause harm to their health. Apart from the lack of understanding, communication limitations, including ineffective media and communication channels, are another problem that intensifies the situation. That is, the communication networking in all sectors, at every level, are still ineffective. Thus they are unable to support each other's operations and to reach specific target groups. Some approaches media used for promoting awareness are not suitable for Thai society and the sectors involved in handling the diseases cannot make people in the society aware of the severity of the diseases and persuade them to adapt their attitudes toward good health as part of the Thai culture and way of living. Therefore, these sectors become unreliable and cause confusion in the Thai society.

1.4.2 The lack of unity in national and local level policies National public policies that are concerned with economic, trade, agricultural, industrial, technological, and environmental issues do not support one another and do not enable people to change their values, cultures, of environment so that they have better lifestyles and health. In addition, public health policies that are meant for certain target groups and areas still have limitations in that they do not cover wider groups of people. The policies, in fact, need clear directions, plans, and practices in order to decrease risk factors that lead to diseases. There is still a lot to be done with regard to measures as well. For example, measures providing more effective primary protection for the environment and people, as well as ones concerning the distribution of information and knowledge, need to be launched in every dimension of our society.

Other measures are important as well and there should be more use of measures relates to law, taxes, finances, and society. All of these measures should ensure people's accesses to good quality and inexpensive foods good physical environments, and technology that enables them to do physical activities and exercise. The measures should also encourage people to avoid smoking and drinking, manage their emotions and stresses, and to control their weight. To conclude, all of these measures and policies to be launched should mainly be to support individuals, families, and communities in our society and country, while the measures for disease control and management should be supplementary and support them.

1.4.3 Ineffective surveillance systems and screenings of at risk and vulnerable groups)

Due to the lack of effective cooperation, integration, operation system management, surveillance, use of national networks, skillful staff, and screening devices, screenings for diseases have been ineffective. The screenings can only identify those who have the diseases and are unable to identify groups that are at risk. As a result, few preventative interventions or other operations have been done for them, whereas other people have only been advised to be repeatedly screened without being given any advice on disease prevention.

1.4.4 The incapability of health systems The health systems which are responsible for the non-communicable diseases mostly conduct operations in health institutions and hospitals, in other words, in a defensive manner. There has also been a lack of operational integration and access which continue to limit the availability of health services to specific groups, although the health services are greatly needed to prevent complications, disabilities, and premature death among them. There have not been enough offensive operations done to target groups at the community level either, resulting in the system not being able to manage risk behaviors. Other problems found in health system operations include the inconsistency of complication monitoring systems, limitations in promoting participation and self-dependence at the individual and family levels, as well as in building strong communities that are able to reduce health risks and handle or eliminate diseases.

1.4.5 Ineffective knowledge management

As the body of knowledge concerning health has only been provided to certain areas and the distribution has not been well organized, there is a need to develop a system for collecting, synthesizing, researching, and applying the different bodies of knowledge. With the improvement of knowledge management we will be able to launch better public health policies, strategies for development, plans, projects, operation system management and administration, resource management, and data system development, as well as health service systems concerning health promotion, disease surveillance, disease prevention and control, rehabilitation, and aftercare. It is also expected that, with better knowledge management, overlapping healthcare operations will be handled better and there will be more integration of the bodies of knowledge that will be done in a manner the is better suited to the Thai culture, both in the short and the long term.

2. Philosophies, concepts, and strategies of Thailand Healthy Lifestyles

Due to changes in the economy, society, and environment, Thai people's lifestyles have changed considerably, and they have encountered more risk factors, which include innutritious food and drink consumption behaviors, smoking, drinking, inadequate exercise, and lack of emotional and stress control. All of these factors are the apparent causes of five non-communicable diseases, namely diabetes, high blood pressure, heart diseases, stroke, and cancer. In addition to these risk factors, other factors such as health, economy, society, and the country affect the Thai people's lifestyles. Without systematically solving the problems from their point of origin, situations related to these health problems will definitely intensify. As a result, the cooperation and participation of all sectors is essential for the concrete and sustainable development of health systems and services according to the philosophies, concepts, and strategies of development. The development must also be based on state policies the National Economic and Social Development Plan, the Tenth National Health Development Plan, and the Eleventh National Economic and Social Development Plan that place people at the center of development, as well as the Philosophy of a

Sufficiency Economy that is suitable for basic factors, contexts, and the geo-social factors of the Thai society.

2.1 Philosophies and key concepts for development Thailand Healthy Lifestyles

The philosophies and key concepts for the development of the Thai people's lifestyles are conceived with the purpose of eliminating risk factors that cause diseases and building upon the factors that enable Thai people to change unsuitable health behaviors, as well as promoting immunity and good health in the society. In order to achieve these goals, operations must be conducted using the philosophies and concepts of development and the integration of all healthcare systems in the society with due consideration given to the Thai context and lifestyles, as stated in the Philosophy of Sufficiency Economy.

2.1.1 The integration of the society's healthcare systems Thailand's Healthy Lifestyle Strategic Plan, which is part of the National Health Development Plan and the National Economic and Social Development Plan, was developed in order to bring the Thai people good physical, mental, intellectual, and spiritual health, all of which are considered part of basic human rights. The plan is also concerned with factors that determine individuals' health, surroundings, and health service systems within the contexts of the economy, society, natural resources, and environmental funds. In order for the plan to be successful the integration of ideas and operations of all sectors is needed so that the society in which we live will have harmony, happiness, equality, and sufficient health systems and that is immune to the detrimental effects of changes. (See the diagram.)

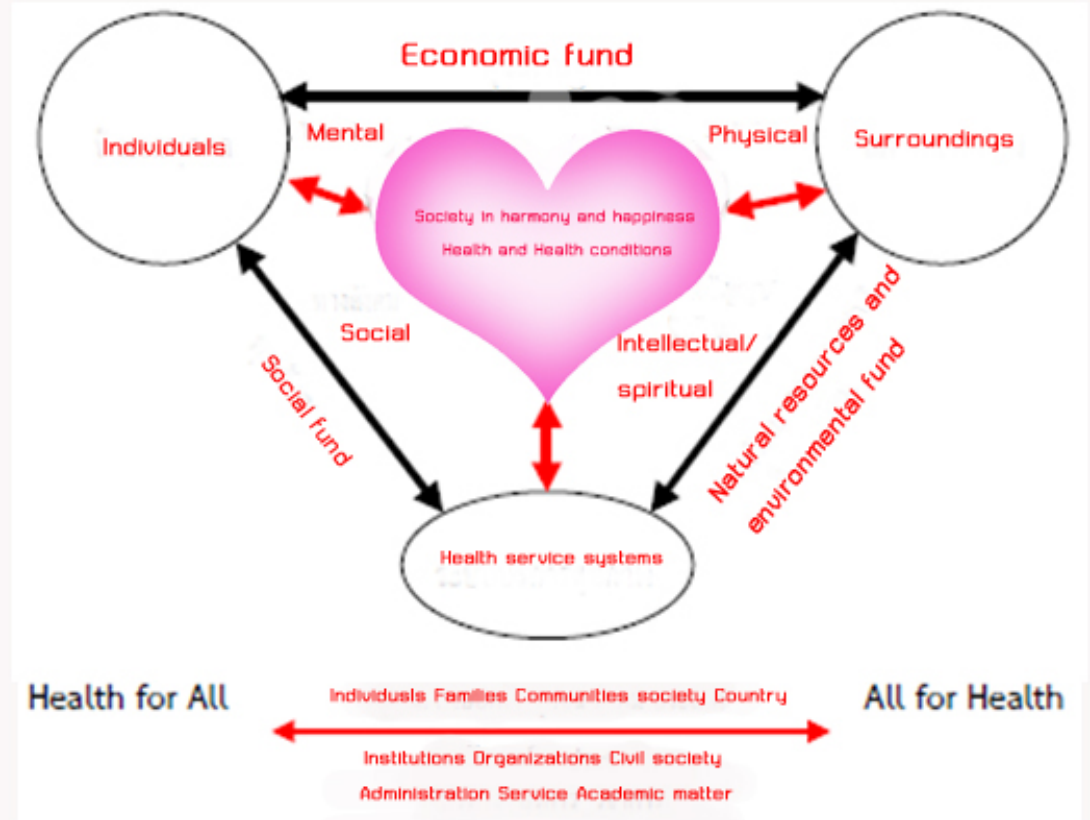


Diagram 2.5: Integration of the society's health systems

2. Lifestyles and their surrounding contexts that reduce health risks, disease, and harm to health

The Development of Thailand's Healthy Lifestyle Strategic Plan focuses on important risk factors related to food and drink consumption, smoking, drinking, exercise, and emotional control since all of them lead to becoming overweight, obese, and contracting the five non-communicable diseases previously discussed. The plan is conducted through the use of economic, social, and technological structures as well as national and international supply and demand mechanisms. (See Diagram 2.2)

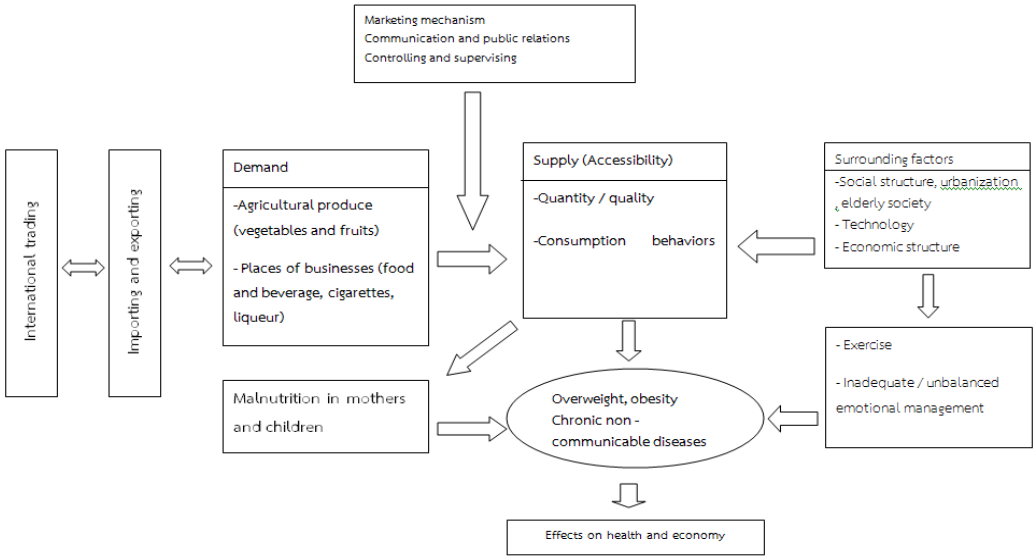


Diagram 2.6 B Lifestyles and surrounding factors that can reduce risks, disease, and harm to health

3. Framework of Thailand's Healthy Lifestyle Plan according to the Philosophy of a Sufficiency Economy

H.M. King Bhumibol Adulyadej's Philosophy of a Sufficiency Economy was initiated to as a guideline for a better living, administration, and development at all levels in Thailand, including individuals, families, communities, society, and the country as a whole. The philosophy, based on the middle path approach and sufficiency, aims at building a happy, harmonious, and peaceful society and sufficient healthcare systems so that the Thai society will develop and live healthy lifestyles.

The philosophy consists of three important components: sufficiency, reason, and immunity and is conducted with morality and by using knowledge and academic principles, hoping to lead the Thai people to suitable, sufficient, and sustainable ways of living. AS part of applying the philosophy, Thai people are expected to have suitable food and drink consumption, adequate exercise, suitable emotional control, well-balanced weights, and the numbers of those who have diseases, complications, and disabilities, those who die of preventable diseases and medical expenses related disease care will decrease. (See Diagram 2.3)

2. Visions, Missions, Ultimate Goals, and Main Goals for Development Thailand's Healthy Lifestyle

1. Visions

Thai people will be able to handle the risk factors and surroundings contexts that can lead to contracting non-communicable diseases. This, however, can only be successfully done through the cooperation and integration of all sectors and by following the Philosophy of the Sufficiency Economy.

2. Missions

Communities in Thai society are aware of other risk factors and prepared to work to reduce them. They should also actively be involved in putting policies into practice, screening for the diseases, disease surveillance, and disease prevention, as well as handling problems related to the diseases. To successfully do all these, all sectors are expected to perform health related operations by using breadth of bodies of knowledge effectively.

3. Ultimate goals

People, communities, society, and the nation will become immune to, or able to prevent, the harmful behaviors that lead to non-communicable diseases.

4. Main goals for development

It is expected that problems concerning the five non-communicable diseases will decrease in five areas: 1) incidences the diseases; 2) complications related to the diseases; 3) disabilities caused by the diseases; 4) deaths caused by the diseases; and 5) expenses related to sufficient living. Regarding sufficient ways of living, it is also expected that Thai people will be able to 1) have suitable food and drink consumption, 2) adequate exercise, and 3) suitable emotional management. In order to achieve the goals, 18 development indicators are used in three phases over a period of 10 years (B.E.2554-2563).

Short-Term Phase (1-3 years)	Medium-Term Phase (5 years)	Long-Term Phase (10 years)
1) The number of policies on food, exercise, ways of living, and surroundings beneficial for health that cover wider groups of people that are launched by strategic leaders at the central, district and provincial levels "increases". 2) The target groups who are satisfied with health policies know about and are aware of risk conditions and health promotion, are immune to the factors leading to them and can adjust behaviors leading to the diseases. The number of these groups is expected to "increase". 3) The number of local communities families, social networks, and organizations at all levels that are able to reduce the numbers of those who have the diseases and to	7) The number of children aged under 15 who have obesity "decreases". 8) The number of people aged over 15 who have obesity "decreases". 9) The number of people aged over 15 who are potbellied "decreases". 10) The number of people aged over 15 who exercise and do adequate physical activities "increases". 11) The number of people aged over 15 who have high cholesterol "decreases". 12) The number of people aged over 15 who have a metabolic syndrome "decreases". 13) The number of people aged over 15 who are able to manage their stress well "increases". 14) The number of people who have complications caused by non-communicable diseases "decreases".	15) The life expectancy of Thai people who do not have non-communicable diseases "increases". 16) The number of people who die of non-communicable diseases "decreases". 17) The prevalence of non-communication diseases "does not increase". 18) The expense of medical treatments related to non-communicable diseases "decreases".

Short-Term Phase (1-3 years)	Medium-Term Phase (5 years)	Long-Term Phase (10 years)
reduce disease burdens "increases". 4) The number of private and state health institutions at all levels are directed by effective leaders and operation teams in such areas as disease surveillance, disease prevention and control, health promotion, and non-communicable disease service systems "increases". 5) The number of people who eat vegetables and fruits "increases". 6) The number of people who eat too sweet, too salty, and chemically contaminated food, smoke, and drink alcohol "decreases".		

2. Strategies for development consist of 5 strategies, 14 strategic goals, 3 collaborative tactics and 11 strategic-based tactics (See Diagram 2.4 and Table 2.1)

Strategy 1: Healthy Public Policy
Strategy 2: Social Mobilization & Public Communication
Strategy 3: Community Building
Strategy 4: Surveillance & Care System
Strategy 5: Capacity Building

3. Paths for Implementing Thailand's Healthy Lifestyle Plan

According to the framework of Thailand's Healthy Lifestyles plan, active participation of all sectors and networking associates is required in order for the expected outcomes to be realized, and through strategic management and mechanisms the following goals could be achieved.

1. Building political intention and mechanisms by getting all sectors at every level involved in policy planning and health operation promotion.

2. Building awareness, values, ideology, love and pride, while, at the same time, maintaining sophisticated customs, traditions, cultures, and local wisdom at all levels, including, individuals, families, institutions, organizations, communities, the society and the country as a whole.

3. Preventing and eliminating problems by building the people's and communities' capacity so that they can be self-dependent according to the Philosophy of Sufficiency Economy: creating sufficient ways of living that lead to good health; bettering the quality of living of the Thai people; strengthening the society; building a society of kindness where people support each other; and stabilizing the country's economy.

4. Seeking cooperation and participation of both private and state network associates, civil society, and the people through integration of all plans at all levels and putting the plans into practice by working as partners and allies on the development strategies for every process and issue in order to create unity and sustainability.

5. Building organizations / mechanisms for mobilization at all levels, including national, provincial, district, sub-district, and community by acting as a leader in integration of operations, ideas, policies, plans, budgets, resources, and actions and setting indicators for development, monitoring, and evaluation for all of the sectors to achieve the shared goals.

6. Getting all government offices, local organizations, and state enterprises consistently involved in setting up and maintaining effective administrative, promotional, and support systems so that the expected outcomes are achieved according to the set policies and strategies.

Policies, measures, and related performance in Thailand

There have been preventions and controls for non-communicable diseases in Thailand's healthcare systems and continuous attempts to highlight the situation of non-communicable diseases beyond the scope of health policies, as evident in the Statues of the National Health System of B.E.2522's section about prevention and control of diseases and factors that cause harm to health, the Tenth and Eleventh National Economic and Social Development Plans, Thailand Healthy Lifestyle Plan B.E. 2554-2563, and the Health System Development Plan B.E.2556-2560, as well as all the movements, including the strategic development for risk factor management, approved by the National Health Assembly. Numerous strategies have been included in the strategic development plan for risk factor management to prevent and control disease. For example, there have been the Overweight and Obesity Management Strategy (National Health Assembly 2 Resolution), the National Alcohol Strategy (National Health Assembly 2 Resolution 5), and the National Tobacco Control Strategy B.E 2555-2557 (National Health Assembly 3 Resolution 6), as well as the Food Management Strategic Framework B.E. 2555-2559 issued by the Thai National Food Commission. Moreover, during the past years there have also been a lot of involvement of different government sector offices, such as offices under control of the Ministry of Public Health, the National Health Security Office (NHSO), the Thai Health Promotion Foundation (THPF), the Non-Communicable Disease Network (NCD Network) and the public sector, like the Sweet Enough Network the Stop Drinking Network the Raipoong (no potbelly) Network and the Low Salt Network .

Although Thailand has used a lot of strategies and operations in attempts to mange non-communicable diseases and risk factors through numerous offices and networks, it is surprising to find that a lot of operations have not been targeted in a unified direction and have lacked shared goals, performance follow-ups, team unity at the national level, and power to put policies into practice. It is widely known that to cope with non-communicable diseases and their main risk factors, a lot of sectors are required to work actively and closely with each other. However, most prevention and control efforts for non-communication diseases have been restricted to only the healthcare and government sectors while, at the same time, there has been a lack of clear operational guidelines, participation, and capability from many sectors at the national level, including public, private , and local sectors. As a result, the mechanisms and processes at national and local levels required to improve the capabilities of those involved in non-communicable disease management have failed and need to be better organized.

Based on the current situation in the healthcare and health service systems, a lot of projects have been undertaken, as seen in the following summary.

1) Primary Health Care

The Primary Health Care System's goals are to screen for and prevent diseases and reduce risk behaviors among groups at who are risk for people living in communities where the sub-district health promoting hospitals and primary service units are located. The primary health care system initiates knowledge-based activities in order to give people understanding and awareness that will lead to actions that reduce risk factors such as smoking, inadequate exercise, stress, and unsuitable food consumption. Today, healthcare and health service system operations are mainly performed under the control of the Ministry of Public Health, including 80-90 percent of disease screenings of groups at risk; however, after the screening process there have not been continued efforts toward behavior adjustment, health promotion, and disease prevention by the ministry. Moreover, although a lot of projects have been implemented, they have not been linked and have not targeted specific groups of people. Although many offices have launched numerous projects, continuous and intense efforts have been lacking, resulting in unsuccessful failure to adjust people's behaviors.

2) Secondary Health Care

The Secondary Health Care system includes services provided at hospitals and aims at providing continuing care and treatment to patients and adjusting patients' behaviors in order to prevent complications, as well as providing self-management support. However, because of current situations, hospitals are overcrowded in spite of the fact that many patients can receive medical services at health service units closer to their homes. Lack of continuity of treatment for patients, emphasis on prescribing medications rather than on providing care to patients, lack of knowledge about adjustments that are suitable for each individual, and an inadequacy of self-management support among people are also weaknesses that were discovered at the secondary care level.

3) Tertiary Health Care

The Tertiary Health Care system aims at providing treatment for critical illnesses and caring for patients who suffer from complications in order to reduce their risks and disabilities. Today, there have been a lot of diagnoses of eye and kidney diseases and disabilities; however, the focus is on prescribing medications. Blood testing and screenings for complications have not been able to cover wider groups of people and, at the same time, the entire system for providing care has encountered problems. Another weakness discovered at this level of service includes the failure to build capabilities for patients to engage in self-care.

According to the current situation in the health service systems, as previously stated, opportunities arise for us to strengthen the processes of non-communicable disease and risk factor management in all areas. Action should be taken to construct and pass policies concerning health service management systems efforts to control chronic diseases that will result in more public health services and activities in health service units and in communities. Furthermore, to successfully conduct these actions, there should be participation and cooperation from all sectors considered as part of the district health systems.

It is suggested that the following steps be undertaken to successfully achieve these goals:

Strategic development and non-communicable disease prevention and control plans should be developed in accordance with the strategies, operations, and operational indicators, as well as non-communicable disease prevention and control plans, at provincial and district levels, in other words, with participation from all sectors. There should be more elements implemented to strengthen the disease reporting and surveillance systems, data source systems, and health office systems, and deadlines for determining the success of health development efforts should also be set. As stated previously, all sectors should be involved in developing the health service systems, beginning with launching policies, setting districts' and communities' goals, and putting the policies into practice to monitoring health operations. With the existences of adequate healthcare resources, mechanisms, processes, policies, strategies, tools, and additional health investments, as well as staff, it is expected that the development of health service systems will progress.

Health Service System Development Plans for Non-Communicable Diseases

1. Diabetes and Hypertension

Objectives

1. People receive services concerning disease screenings, diagnoses, and care according to the standards and have easy access to services close to their homes.
2. Resources are shared and used effectively.
3. The capability of service providers is developed to suit the actual problems of each health area.

Operational goals

To reduce risk factors, the numbers of those who have the diseases and disabilities caused by the diseases, expenses, and to provide quality and easily-accessed services to people.

Benefits for people

- More screenings for the diseases and disease surveillance.

- Diabetes patients will not have more complications (eyes, kidneys, feet, and stroke).

- High blood pressure patients will not have more complications (kidneys and stroke).

Operational procedures and activities and indicators

There are four activities involved in the operational procedures.

1. Screenings of diabetes will be conducted in the primary healthcare setting for those aged over 15 and who have never been diagnosed the diseases. According to the results of the screenings, people will be categorized into three groups: normal, high-risk, and at risk (or possibly new patient) groups. As for the high-risk group, advice on behavior adjustment will be given to them and monitoring of their behavior adjustments will done every 6 months while the at risk, or new patient, group will be sent for further diagnosis at network hospitals and given medical treatment according to their medical requirements.

2. Diabetes and high blood pressure patients will be given continuing treatments and advice on behavior adjustment, self-management, and co-risk factor control. Such advice will include quitting smoking and drinking, controlling weight, exercising adequately, and avoiding sweet, oily and salty foods.

3. High blood pressure and kidney disease screening patients will receive screening services for complications (eyes, kidneys, and feet) once a year while those who suffer from critical conditions will be sent to specialized doctors for suitable treatment.

4. Assessing whether people are at for risk developing heart disease and stroke will be done while they are receiving oral health diagnostic services which are provided once a year , based on the capabilities of service.

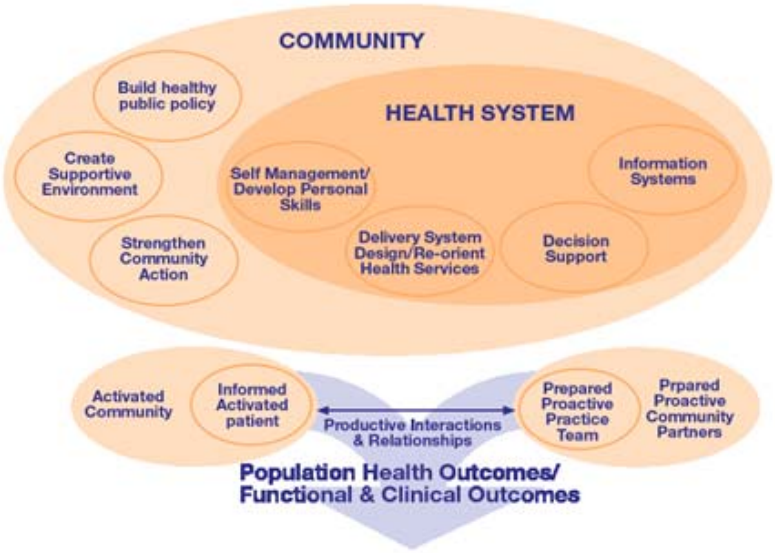


Diagram 2.7 : Integrated Chronic Care Model

To provide good care to chronic non-communicable disease patients, there should an integration of management and care, as well as a team of medical experts that includes medical staff with different specialties. The staff should be well-trained in health planning and caring for patients in terms of physical and mental health, as well as in social aspects. Other actions that should be taken include providing information and education concerning the diseases to patients and their families and sharing it among doctors and those involved in providing medical treatment so that better medical alternatives can be selected.

By linking administration, management, and clinical operations, good non-communicable disease networks should be able to create processes, preventions, controls, and managements for chronic diseases beneficial to various groups, including those who receive a diagnosis, high-risk groups, and existing patients. To illustrate, the networks should try to reduce risk factors among the groups, cure the disease, control the severity of the disease, and strengthen the capability for self-management among the groups, as well sending them for further medical treatment from one or more teams of medical staff in the service networks.

In order to provide good health services to people, the following components are required.

1) Community Resources and Policies

Health service units should collaborate with communities and local administration organizations to build awareness and provide resources for health development and the care of chronic disease patients.

2) Heath Care Organization

Executives should set policies and encourage health organizations at all levels to recognize the importance of developing the service systems for chronic disease patients. For example, payments to the staff should also include on the care and treatment given to chronic disease patients

3) Self-Management Support

Health service systems should provide support to patients and families and ensure them medical treatments, devices, tools, and methods for self-management of their conditions. They should also analyze problems the patients encounter with self-management and consistently emphasize its importance to them.

4) Delivery System Design

There should be adjustments in the service delivery systems that include all health service units and the preparation of medical staff responsible for providing care to patients in long-term and acute care systems.

5) Decision Support

Decision Support should be conducted based upon empirical medical practices that are crafted to provide care and treatment to chronic disease patients at every level of the heath service units. Moreover, as soon as the health service systems can be prepared to provide them, there should also be systems for providing healthcare advice over the phone.

6) Clinical Information System

The Clinical Information System should send in information and share it among the various parts of the health service systems for the benefit of chronic disease patients.

Operational Standards

Operation standards of the healthcare service units at each level are presented as follows.

1. Primary Healthcare (P1, P2)

- Preventing, screening for, and researching diseases, sending those who have diseases for further diagnoses, and providing medical treatments according to the codes of practice issued by the province or the Chronic Disease Commission ().

- Providing knowledge to diabetes patients who suffer complications so that they can adjust their behaviors.

- Organizing chronic disease service systems that can admit patients and transfer between network providers and that work closely with Secondary Health Care units.

- Providing information and education about self-management to chronic disease patients and their families.

- Visiting chronic disease patients at their homes and encouraging them to receive continuing treatment.

- Encouraging chronic disease patients to do blood pressure checks by themselves or have blood pressure checks by village health volunteers, in cases of those with high blood pressure.

- Setting up health groups / clubs in communities and continuously promoting health-related activities.

- Providing support to health groups / clubs that organize knowledge-sharing activities related to self-management for chronic disease patients.

2. Secondary Healthcare (F1, F2, F3)

- Providing information and education about diabetes patients with complications can adjust their behaviors.

- Providing care for diabetes and high blood pressure patients.

- Screening for people who have complications (eyes, kidneys, feet, heart and stroke) and providing treatment for those with the complications.

- Acting as an advisor to related healthcare service networks.

3. Secondary Healthcare (M2)

- Admitting and transferring diabetes and high blood pressure patients who have complications, as well as providing care to them.

- Screening, researching, and diagnosing diseases and complications, as well as providing advanced medical treatments.

- Providing information and education about self-management to complicated and advanced diabetic patients and their families

- Organizing chronic case conferences for the exchange of information on disease management among health care providers.

- Visiting patients who have complications at their homes and encouraging them to receive continuing treatment.

- Supporting the creation of chronic disease groups / clubs and getting the patients and their families involved in sharing knowledge about self-management

- Appointing DM/HTN case managers who are responsible for caring for chronic disease patients.

- Organizing NCD clinics.

- Acting as an advisor to health service units from the F3 level to P1 level

4. Tertiary Health Care (S, M1)

- Admitting, transferring and providing care for DM/HTN patients who have complications, as also done by the secondary health care, but with the capability to provide more advanced treatments for more complicated cases

- Improving the quality of services for chronic disease patients and visiting the patients at their homes, as well as providing participation in service networks from all sectors.

- Acting as an advisor to, as well as assisting in and supporting the creation of, chronic disease groups/clubs in hospitals that at lower levels.

5. Tertiary Health Care (A)

- Providing care to patients that suffer from eye, kidney, or foot complications, coronary artery disease, or stroke, or who suffer from complicated conditions

- Admitting, transferring, and caring for patients as well as acting as the center of the network.

- Supporting the use of a systematic approach in network administration and management, with the assistance of system management teams at the district and provincial levels

The responsibilities of the system management teams at the district and provincial levels include managing, coordinating, and putting policies, plans, and projects into practice, with a focus on the people as a whole. Their operation procedures are stated as follows.

1) Using existing data and facts to determine directions and goals, as well as to design chronic disease prevention and control plans.

2) Designing chronic disease prevention and control plans that require integration of network associates.

3) Using resources effectively to support operations as a whole.

4) Following, supervising, and evaluating operations as well as applying evaluation results to improve the operation of service networks for the benefits of diabetes and high blood pressure patients who have complex complications.

Indicators

Indicators	Goals (percent)	Services at regional level	Services at provincial level	Services at hospital level	Sub-district health promoting hospitals
Indicators concerning the outcomes of the disease prevention processes	≥90	/	/	/	/
1. Percent of people aged over 15 who receive screenings for diabetes and high blood pressure	>50	/	/	/	/
2. Groups at risk (pre-DM, per-HT) who are given information/education	>70	/	/	/	/
about behavior modifications for 3 Aaws 2 Saws, in Thai language,	>60	/	/	/	- /+
project meant to modification project on increase in healthy food	>60	/	/	/	/
consumption, living in good air ventilation environment, emotional management, decrease in alcohol drinking and tobacco smoking.	100	/	/	/	/
3. Patients (DM, HT) who are given information/education about behavior adjustments					

Indicators	Goals (percent)	Services at regional level	Services at provincial level	Services at hospital level	Sub-district health promoting hospitals
for 3 Aaws 2 Saws 4. Diabetes patients who are given screenings for complications (eyes, kidneys, and feet). 5. High blood pressure patients who are given screenings for complications (kidneys). 6. Diabetes and high blood pressure patients who are given continuous care and transferred for further medical treatments.					
Indicators concerning the outcomes of the disease prevention process 1. Percent of new diabetes patients 2. Percent of new high blood pressure patients	<4 <8	/ /	/ /	/ /	/ /
Indicators concerning the medical treatment process 1. Percent of diabetes patients who are able to control their sugar level	<50 <40	/ /	/ /	/ /	--

Indicators	Goals (percent)	Services at regional level	Services at provincial level	Services at hospital level	Sub-district health promoting hospitals
2. Percent of high blood pressure patients whose BP can be controlled					
Indicators concerning service system development 1. NCD clinic services at health service units at the F1/M/A levels	>70	/	/	/	

Standards of staff availability

Staff	**Levels of healthcare service**								
	A	**S**	**M1**	**M2**	**F1**	**F2**	**F3**	**P1**	**P2**
Nephrologists	/	/							
Ophthalmologists	/	/							
Cardiologists	/	/							
Endocrinologists	/	/							
Physicians	/	/	/	/	/				
System management team*									
DM/HT case manager/coordinator	/	/	/	/	/				

Staff	Levels of healthcare service								
	A	**S**	**M1**	**M2**	**F1**	**F2**	**F3**	**P1**	**P2**
Certified advanced diabetes foot and wound care and lifestyle modification Nurses	/	/	/	/	/				
Certified internal medicine Nurses	/	/	/	/	/				
Nurse practitioners	/	/	/	/	/	/	/	/	/
Registered Nurses	/	/	/	/	/	/	/	/	/
DM educators	/	/	/	/	/	/	/		
Health coaches	/	/	/	/	/	/	/		
Dieticians	/	/	/	/	+/-				
Family health specialists								/	/

*Considered as staff at the provincial level; there is at least one team in each province./ = made the staff available

Quality NCD Clinics

Quality NCD Clinics refers to ability of the clinics, centers, and clinic networks of health service units that are responsible for preventing and controlling chronic diseases among those who receive new diagnoses, high-risk groups, and existing patients to provide appropriate, high quality, care. Quality NCD Clinics also attempt to reduce risk factors, control the severity of the disease, and strengthen the patients' capability for self-management, as well as transferring the patients to the appropriate internal teams or external teams and service networks for further medical treatments and care.

Goals of Quality NCD Clinic

1. Patients will be able to control their disease conditions in relation to target values and reduce vascular complications.

2. Those who receive health services will be able to prevent risk factors and control behavioral, physiological, and biochemical risks, as well as social and environmental determinants.

3. The rate of unexpected admissions due to chronic diseases will be reduced.

4. The fatality rate for people who die before the age of 70 because of chronic diseases will be reduced.

Background of Quality NCD Clinics

Due to the paradigm shift, a lot of changes implemented in health service systems have been conducted to solve problems have existed in the past. These problems have included health care services that were mainly provided at hospitals, ineffective coordination between network associates, and medical treatments that were provided only by doctors, as well as ineffective heath care and treatment management. Therefore, today, new changes have been initiated in order to prevent and control diseases and to highlight the importance of good health to people instead of solely focusing on treating diseases and illnesses. To illustrate this point, in the past, medical treatment was the only means of curing diseases, but today more patients are provided with advice about self-management. Also, the roles of service providers have changed considerably as they have become supporters or mentors and sought cooperation from communities and network associates in order to provide resources and bring care to chronic disease patients, according to Wagner's Chronic Care Model.

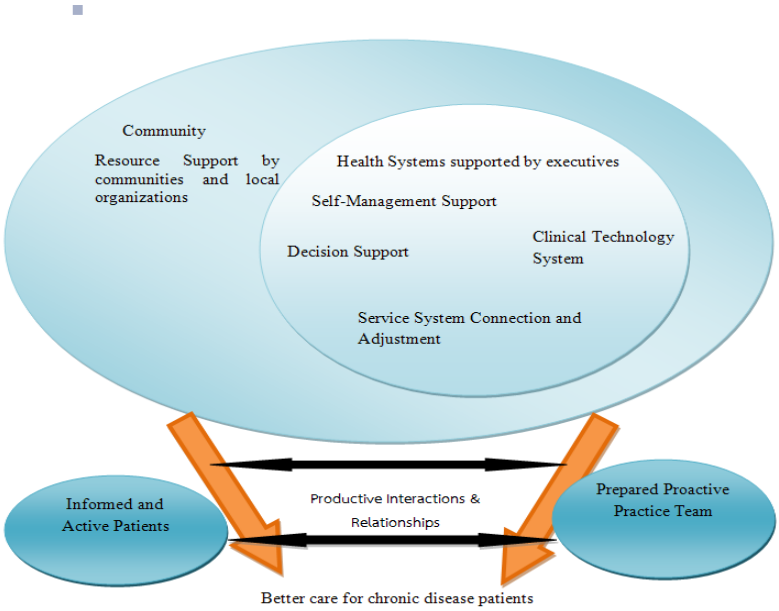


Diagram: 2.8 Wagner's Chronic Care Model

Source: Bureau of Non-Communicable Disease, Ministry of Public Health B.E.2557

By using the model, top level policies are clearly designed to support network associates, provide budgets, develop the potential of the staff, and distribute staff appropriately.

The model, which allows involvement and participation from all sectors, including patients, families, public health service systems, communities, and local leaders, will bring about the following: cooperation on the use of shared resources; additional services for patients; interdisciplinary medical and public health disease management systems and clinical operations; guidelines on self-management for patients and families, continuous health care development (screening for and the preventing or curing of acute and sub-acute diseases); continuous health promotions targeted toward patients, caretakers and families; and self-management networks for chronic disease patients.

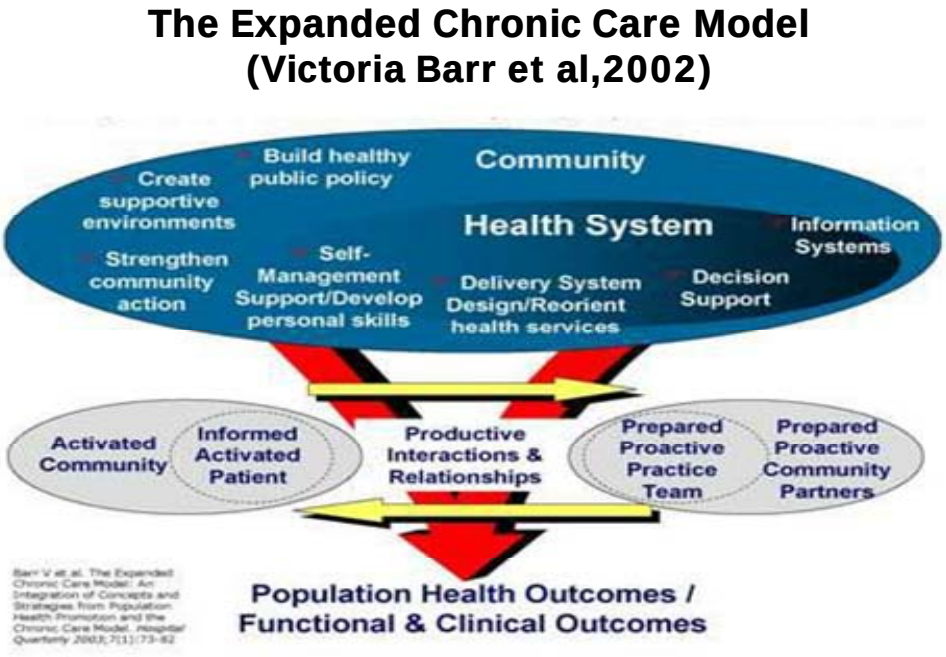


Diagram 2.9 : The expanded chronic care model by Victoria Barr et al in 2002

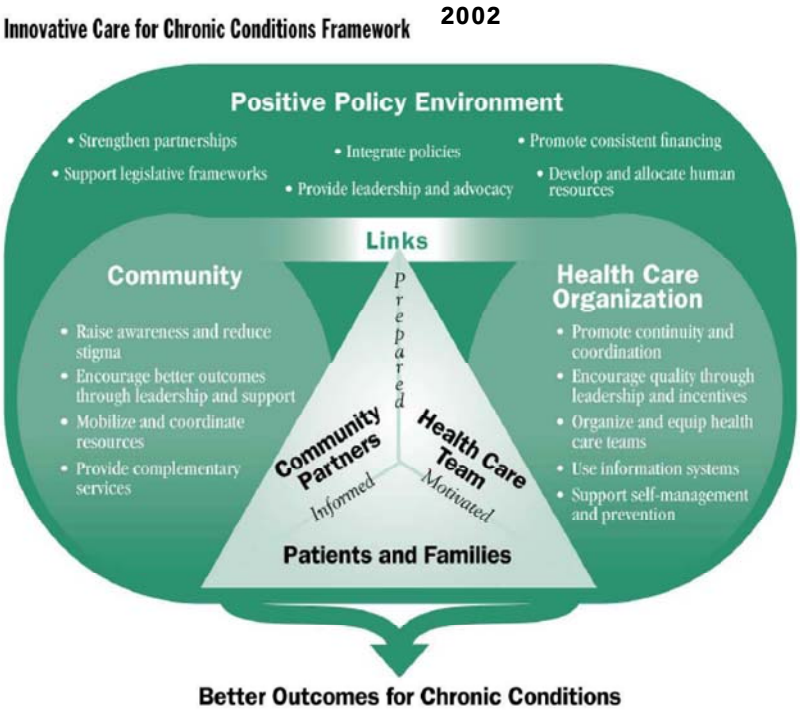


Diagram 2.10 : Innovative care for Chronic condition Framework

Source: Bureau of Non-Communicable Disease, Ministry of Public Health B.E.2557

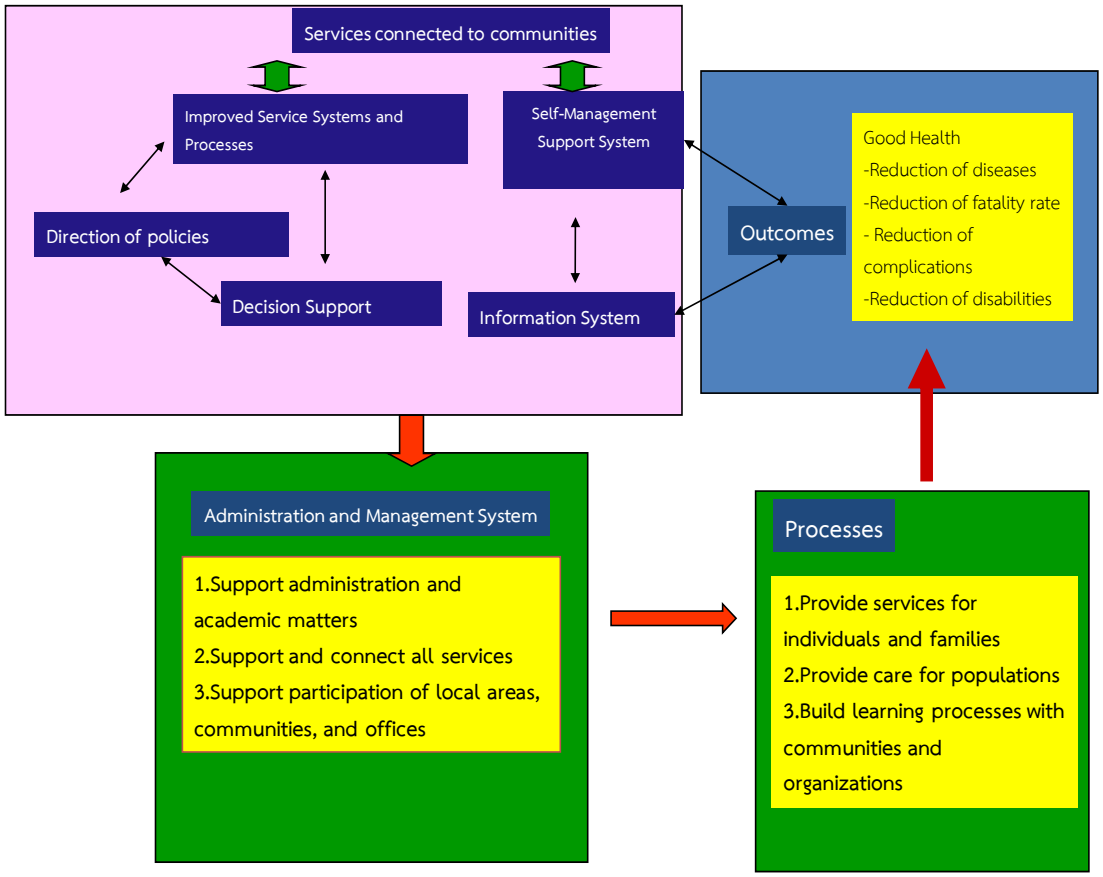


Diagram 2.11 : Framework for NCD Clinic Operations

Source: Bureau of Non-Communicable Disease, Ministry of Public Health B.E.2557

Quality NCD Clinic's key components:

1. Direction and policies
2. Adjusted service systems and administration
3. Services provided for communities
4. Self-management system
5. Decision support system
6. Information system

Direction and policies

1. specify direction and objectives, outcomes and affects, deriving from services concerning the four chronic diseases, as well as operating effective disease prevention and management programs
2. contain plans and continuous participation of all involved sectors
3. inform participating sectors at all levels of direction and policies
4. review performances and operation direction

Adjusted service systems and management

1. diagnose and register patients
2. evaluate disease phases, risks, and determinants for service receivers
3. provide services for disease prevention and control and treatments suitable for each phase of disease for those having the diseases and high-risk groups, with the support of interdisciplinary teams and the NCD Case manager/coordinator, in order to bring good states of mental, physical and social health
4. organize chronic disease-curing networks and connect them to communities
5. organize admitting and transferring systems that are easily assessed and provide continual care for service receivers

According to the surveys and evaluations of the situations in different areas of responsibility, target populations can be categorized into four groups: people who do not have the disease, groups at risk for developing the disease, patients with the disease who do not have complications, and patients with the disease who have complications.

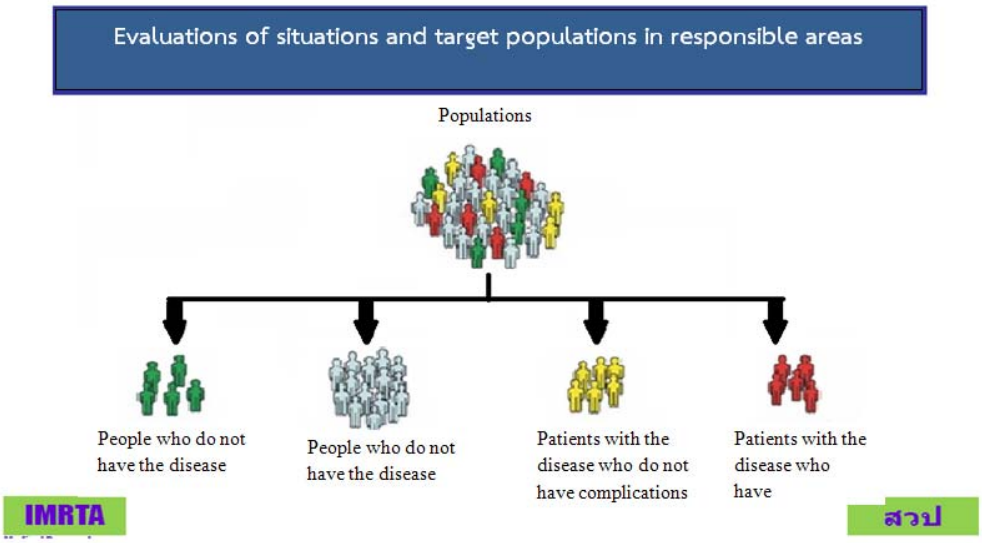


Diagram 2.12: Evaluations of situations and target populations

Based on the surveys' findings, a lot of operations have been conducted for the respective populations. For example, there have been evaluations of co-risk factors and transferring of patients to clinics; people have been given advice about self-management and how to reduce risk factors, and people have been provided information about warning signs or symptoms that need further medical treatment at hospitals. Such diseases as Ischemic heart disease, stroke, and paralysis have been well handled according to the service operation goals and quality standards issued by provinces and the Chronic Disease Commission.. Other operations concerning patients also include disease prevention follow-ups and treatment, both with and without medications, to reduce risk factors, as well as eliminating the diseases or complications; giving advice to patients about complication surveillance, prevention, and deceleration; encouraging patients to receive continuing treatment; caring for and transferring patients according to medical standards; visiting patients at their homes; and providing rehabilitation to patients who have complications or disabilities by an interdisciplinary team.

According to the WHO, effective health operations will result in efficiency and benefits, while, at the same time, prevention of complications will be successfully conducted.

Table 2.1: Efficacy of operations on diabetes patients by Bureau of Non-Communicable Disease

Table 1. Individual interventions in diabetes with evidence of efficacy (24)

Interventions with evidence of efficacy	Benefit
Lifestyle interventions for preventing type 2 diabetes in people at high risk	Reduction of 35–58% in incidence
Metformin for preventing type 2 diabetes for people at high risk	Reduction of 25–31% in incidence
Glycaemic control in people with HbA1c greater than 9%	Reduction of 30% in microvascular disease per 1 percent drop in HbA1c
Blood pressure control in people whose pressure is higher than 130/80mmHg	Reduction of 35% in macrovascular and microvascular disease per 10 mmHg drop in blood pressure
Annual eye examinations	Reduction of 60 to 70% in serious vision loss
Foot care in people with high risk of ulcers	Reduction of 50 to 60% in serious foot disease
Angiotensin converting enzyme inhibitor use in all people with diabetes	Reduction of 42% in nephropathy; 22% drop in cardiovascular disease

(Chapter 5 – Improving health care: individual intervention: WHO)

Source: WHO

Quality NCD Clinic's services for communities include the following activities:

1. Informing and providing additional information to communities so that high-risk factors are reduced in the communities.

2. Providing support for environmental adjustments in order to prevent diseases among at risk groups and people who already have the diseases, as well as

providing support for self-management among those who have the diseases or have a high risk of developing the diseases.

3. Providing continuous support for health-promoting activities, founding health groups or clubs, and providing support for disease prevention and control in communities.

4. Providing support and care and monitoring the blood sugar levels and blood pressure level and main risk factors of those who are at high risk or who have the diseases with the assistance of village health volunteers or basic service providers in workplaces.

5. Providing support for knowledge-sharing and self-management activities of groups or clubs for people who have chronic diseases in the community.

Self-Management Support

1. Organizes, plans, and monitors decision support and self-management systems consistently: organizes warning systems: and visits patients at their homes, as well as providing support for knowledge-sharing among patients who have the diseases and high-risk groups.

2. , Exchanges information with returns inquiries from, and provides advice on medicine usage, behavior adjustments, risk behavior prevention and reduction, on continuous use of certain medicines, and on self-management in daily life to service receivers or family members.

3. Strengthens the capabilities for self-management, emotional control, and handling the social effects caused by chronic diseases.

Support for disease condition monitoring skills, changing in stage of disease risk factors, and risk behaviors, as well as guidelines concerning outcome management due to changes in the support system

1. Having clear results/goals set for services, operation procedures, and service improvement plans as set out by provinces/the Chronic Disease Commission.

2. Coordinating with specialists/effective health units to provide advice to clinic/networking health units.

3. Organizing chronic disease conferences / KM to exchange knowledge on how to handle the diseases.

Information System

1. Organizes record systems of individual service receivers and groups, and organizes updates of the service information systems that include disease preventions and controls.

2. Organizes information and data systems that allow the exchanging of information within networks and between the data centers for each province.

3. Analyzes the existing data for the prevention, control, and management of the diseases, as well as designs types of health services for individuals, groups, and populations in their areas of responsibility where more diseases related services are needed.

Criteria for performance excellence include the following:

- Heart disease and stroke risk assessments (CVD Risk).
- Risk factor and risk behavior reduction.
- Smoking screening.
- Major depressive disorder screening, stress assessment and alcoholism assessment
- DM/HT patients' abilities for blood sugar and blood pressure level control in relation to set goals.
- Complication screening.
- Quality of care services and transfer of services for patients who have complications or an inability to control the severity of their diseases that could lead to critical complications such as kidney disease.
- Reduction in chronic complications.
- Transferring of DM/HT patients who have complications.
- Reduction in the fatality rate of chronic diseases.

Table 2.2 Criteria for evaluation of Quality NCD Clinic's health operation procedures

Criteria for main procedures (Self-evaluation of Hospital)

Main procedures	Criteria	Yes	No
1. have direction and policies	1.1 specify visions and procedural goals (and results and effects of services concerning the four chronic diseases, as well as systematic and effective prevention and management programs		
	1.2 plan and collaborate with involved sectors continuously to strengthen service systems for chronic disease prevention and management		
	1.3 inform participating sectors at all levels of direction and policies		
2. have service system and procedure adjustments	2.1 diagnose new patients and high-risk groups who are transferred from other networks		
	2.2 evaluate the disease phase, risks, and determinants of service receivers		
	2.3 provide disease prevention and control services, based on the stage of a disease (See activities table **)		
	2.4 appoint DM/HT case managers or coordinators responsible for service administration and management, with a focus on quality of the outcomes, place groups of patients and high-risk groups at the center of the service systems, appoint an interdisciplinary team responsible for effectively caring for patients in terms of physical, mental, and social health		
	2.5 have chronic disease networks and link them to communities		
	2.6 organize admitting and transferring systems that are easily accessed and that provide continuing treatment		

Table 2.2 Criteria for evaluation of Quality NCD Clinic's health operation procedures **Criteria for main procedures (Self-evaluation of Hospital)** (cont.)

Main procedures	Criteria	Yes	No
3. provide services that are linked to communities	3.1 provide advice and strengthen the communities' skills in reducing risk factors		
	3.2 support surrounding adjustments in communities in order to prevent the diseases among those at risk and other people, as well as provide support for self-management in the communities		
	3.3 organize health-promoting activities continuously and/or organize health groups/clubs in communities		
	3.4 encourage at risk groups and patients to do sugar level and blood pressure checks by themselves and monitor them, with the participation of village health volunteers		
	3.5 provide support for knowledge-sharing and self-management activities among groups/clubs for chronic disease patients in communities		
4. have a self-management system	4.1 organize continuing care systems, including warning systems and visiting patients at their homes		
	4.2 provide feedback to service receivers/family members in order to strengthen disease prevention behaviors and reduce risk behaviors in daily life		
	4.3 provide advice on usage of medications and strengthen patients' capabilities in self-management and emotional control when facing chronic disease situations		
	4.4 provide support to chronic disease groups/clubs and encourage patients and their families to get involved in sharing knowledge about self-management		

Table 2.2 Criteria for evaluation of Quality NCD Clinic's health operation procedures **Criteria for main procedures (Self-evaluation of Hospital)** (cont.)

Main procedures	Criteria	Yes	No
5. have decision support system	5.1 set outcome goals/service goals and develop practice guidelines to promote quality in service based on the national guidelines by provinces and the Chronic Disease Commission to be used for decision support		
	5.2 organize coordinating systems where advice can be shared between specialists/effective service units and clinical service providers/service networks		
	5.3 Organize chronic case conferences/KM for sharing knowledge about self-management and disease management		
6. Information system	6.1 organizes record systems of individual service receivers and groups and organize up-dates for service information systems that include disease prevention and control		
	6.2 organizes information and data systems that allow the exchanging of information within networks and between the data centers for each province		
	6.3 analyzes the existing data for the prevention, control, and management of the diseases, as well as designs types of health services for individuals, groups, and populations in their areas of responsibility		

Table 2.3 The activities in relation to disease prevention and control services, based on the stage of a disease

Activities	New patients and high-risk groups	Patients who do not have complications	Patients who have complications
1. evaluate co-factors for transferring patients to clinics and for self-adjustment and management in order to reduce risks and the severity of the diseases			
2. inform patients about warning signs and symptoms that require medical treatments at hospitals, as well as about heart disease and stroke			
3. provide care for patients and prevent and control the diseases to meet the outcome goals / and service goals according to practice guidelines to promote quality in service developed by by the provinces and the Chronic Disease Commission			
4. monitor disease prevention and management performance, including patients who use and do not use medications, in order to reduce risks, the diseases, and co-morbidity			
5. provide advice on self-management for patients and encourage them to receive continuous treatment			
6. screen for and monitor complications to prevent or decelerate advancement of complications			
7. provide care for patients / transfer them for standard treatments when they have complications			
8. Identify cases for home visits by the interdisciplinary team			
9. organize activities for patients who have complications or disabilities			

CHAPTER III
METHODOLOGY

This qualitative research will be undertaken to study the outcomes of administrative management and health care delivery in non-communicable chronic disease (NCD) management and is limited only to diabetes and hypertension cases within the district health system (DHS) in the Phanom district of Surat Thani province, Thailand. Mixed-methods will be used to collect data due to the nature of this study. A combination of both new and existing quantitative and qualitative data is needed. This chapter will describe the research methods used, including the target population, sampling methods, data collection, and data analysis.

Methods

This is a retrospective research study comparing the expectations of past events with what actually happened using various forms and sources of data including qualitative and quantitative data from new and existing sources including document studies, in-depth interviews, and focus groups.

Populations and samples

Due to the objective of the research, there will be different populations and samples depending on the unit of analysis for each form of data.

For the document study, existing data from written documents recorded during the past three years, between 2012 and 2014 will be reviewed. Documents will include, but are not limited to, meeting reports, policy documents, strategic plans, and action plans.

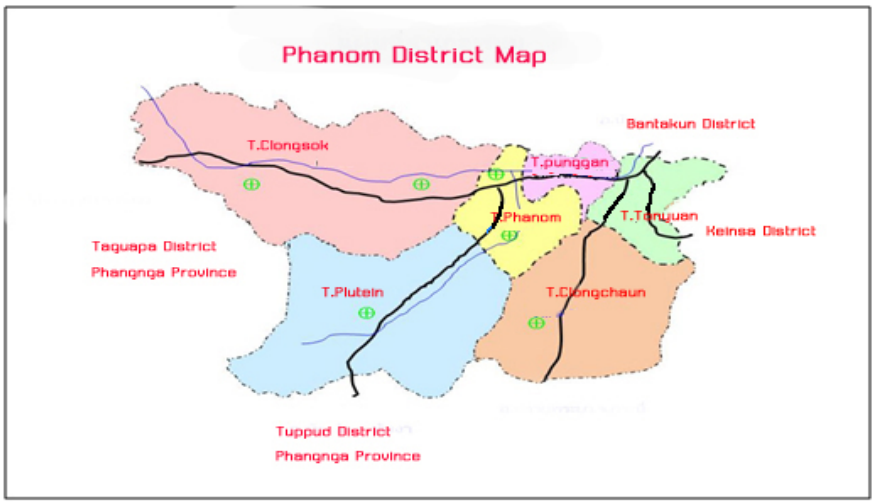
For qualitative portion of the study, in-depth interviews and focus groups will be undertaken to obtain data from provincial, district, and sub-district administrators, the administrative board of DHS, provincial health supervisors, district

health boards, community hospital health teams, primary care center teams, the clients in community, and other stake holders.

Samples: At the provincial level, the samples will include the head of the provincial public health office and the associate head of the provincial health office for preventive medicine, while at the district level it will be the director of district community hospital and the head of the district health office. At the sub-district level, the sample will be comprised of the directors of the sub-district (or Tambon) health promoting hospitals (THPH) and five patients as the hospital's customers. A total of 10-15 key informants will be interviewed.

Other than that, the researcher is going to review existing data gathered from the primary care centers regarding health care delivered to the groups with diabetes and hypertension (DM/HTN). The 6 aspects of the outcomes of health care delivery in terms of treatments and related care will be analyzed: coverage of at risk group screening, health behavior modifications among at-risk groups, work performance evaluation based on the NCDs clinical practice standards, the number of well-controlled cases, prevalence rates, and mortality rates. Moreover, the study will review the policy timeline to analyze NCDs (DM/HTN) management policy within the time period of interest and its contextual situations. Along with these, the researcher will analyze the relevant circumstances and policy developments , as well as the important events affecting NCD policy, criteria , and support using stakeholder analysis in order to identify the person who would help facilitate NCD policy to achieve expected outcomes as well as whether the expected outcomes are met. To examine changes that have previously occurred, trends related to changes that might happen in the future, and the effects of those changes on policy implementation, the researcher will analyze both internal and external situations including, but not limited to, policy implementation in the current healthcare service in order to better understand the strengths, weakness, opportunities, and threats (SWOT) that might have effects on policy implementation. The information obtained will help pave the way for designing appropriate strategies and actions for better administrative management for NCD medical care.

Study site



This research is specific to the Phanom district in Surat Thani province, Thailand. The Phanom district is located in the far West of Surat Thani province, 84 kilometer far from the downtown Surat Thani province. It is approximately 1,160 Km^2 in area, full of forests and mountains, including Phuket Mountain, the Ta Pii River, and many creeks. It is a hot and humid environment with rain most of the year. Most of the population works in the agricultural sector, including rubber tree plantations, palm plantations, and fruit orchards. Phanom district has a population of 38,061**(**19,296 males and 18,765 females) with a population density of 32.38 persons per Km^2. Its local governmental administration is divided into 6 sub-districts, 2 municipalities, 4 local sub-district administrations, 56 villages, and 13,307 households.

More specifically, the study will focus on the 30 bed Phanom community hospital, which is the district level the health care service provider. The Phanom hospital is located in the Pung-Karn sub-district in the far Eastern part of the district where many people would have to travel around 30 to 35 kilometers from their homes to receive health care services at the hospital. In terms of health care services that are available in that area other than the Phanom hospital, there is 1 primary care unit in the community run by the Phanom hospital and 10 sub-district health promotion hospitals (SHPH). Of the 10 SHPHs, only 7 have nurse practitioners working there, while the other 3 do not. However all 10 THPHs work collaboratively under the district health system.

Duration of study

The study will take around year and a half, from January 2014 to June 2015, to complete. The data collection will take three months, from February to April, 2015.

Data collection procedure

Due to the fact that the researcher is the primary administrator of the NCD management program in the Phanom district of Sura Thani province, the study site, the research knows and gets along with all of the informants. The interviews will be undertaken based upon the availability and time constraints of the researcher and informants, and appointments will be made based on the agreement of both parties.

The researcher will follow interview guides where the policy, policy dissemination and implementation into practice, financial and academic support systems, and the expected outcomes compared to the working criteria. Before the interview, the researcher will inform the informants about the study's objectives, expected benefits, confidentiality, and privacy protection measures for the informants. The results of the study will be presented as a picture of the whole DHS system, not on an individual district level. The interviews will be undertaken based upon the informants' consent.

Data analysis

After data is collected from all sources, it will be reviewed to look for discrepancies between the expected outcomes of past event and what actually occurred. The study data will be obtained from various sources. Content analysis will be performed to examine the qualitative data derived from interviews. According to the objectives of this study, stakeholder and SWOT analysis also will be done. On the other hand, the quantitative data of the outcomes of administrative management will be examined using descriptive statistics including frequency, percentage, central tendencies, and standard deviations.

CHAPTER IV
RESEARCH FINDINGS

In this chapter the findings are presented in the following order:

1. The situation of chronic non-communicable diseases in Pha Nom District and SuratThani Province as well as in Thailand between B.E. 2555 and 2557 (significant outcomes)

2. Chronic non-communicable disease operations in Pha Nom District, SuratThani Province between B.E.2555-2557

- Promotion and Prevention
- Care and Treatment
- Administration and Management

3. The development of policies and measures concerning chronic non-communicable disease operations as well as the application of the existing policies to practices; the transformation of policies at the regional level; the announcement of strategies at the regional level; the transformation of policies at the provincial level; the announcement of strategies by the NCD Board at the provincial level; and policy and strategy supervision

4. The structure of chronic non-communicable disease operations between B.E.2555-2557

5. Measures of chronic non-communicable disease operations in Pha Nom District, SuratThani Province

- Health Promotion
- Service and Treatment
- Personnel and Budget Management

The situation of chronic non-communicable diseases in Pha Nom District and SuratThani Province, as well as in Thailandbetween B.E. 2555-2557

1) General information of Pha Nom District

The word “Pha Nom” is originally from the Khmer language and means “forests” or, as some locals pronounce it ,“Pak Nom”. Certain evidence suggests that the district was probably named after a breast-shaped mountain (the word “breast” in the Thai language is pronounced as “nom”) or a hand gesture performed to show respect to people (the hand gesture is called “phanom” in the Thai language). “Pha Nom”, which was previously called “Cha Un”, is situated on the right bank of the Cha Un canal and has been a district since B.E.2433. Back then it was under the jurisdiction of Nakhon Si Thammarat City and LuangPrapPrathusarat was its first district chief. The reason behind the establishment of the district was that there were hundreds of criminals in the area, which caused the government at that time to establish a new district to handle the crimes. Later, in B.E.2441,when the government reformed the country’s administrative system, the Cha Un District was controlled by Chumphon Procient. In B.E. 2453 the Cha Un District was made a minor district and its name was changed to “Pak Pha Nom”instead, while having KhunPha Nom Thanarak as its first chief. As time passed, the word “Pak” was dropped and the district has been called “Pha Nom” ever since, and was later re-promoted to a district again on November 14, B.E.2514. Pha Nom District covers 1,160 square kilometers, or 720,000 Thai rai, and there are two important national parksin it, KhaoSok and KhlongPha Nom.

Pha Nom District is in the southwestern part of SuratThani Province and it is 82 kilometers away from the province’s center. Considering its administrative location, the Pha Nom District is located among the following districts:

To its north is Ban Ta Khun District.

To its east are KiriratNicom District, Kiansa District and Phra Sang District.

To its southare Phra Sang District, Plai Phraya District (Krabi Province), Thappud District, and Phang-Nga District (Phang-NgaProvince).

To the west it is bordered by Ka Pong District, Ta Kua Pa District, and Kura Buri District (PhangNga Province).

Geography

Pha Nom District is home to two national parks: KhaoSok and KhlongPha Nom.The district is mostly covered by mountains, with the western mountains alone comprising 60 per cent of its total area. While the area is quite mountainous, rolling plains can be seen. The district is also home to two important canals, KhlongSok and KhlongPha Nom, whichflow down to the PhumDuang and Ta Pi rivers.

Weather

Pha Nom District's early mornings are always cool and foggy, similar to the northern part of Thailand. However, from 10 a.m. onwards the weather returns to the normal heat of the south again.With weather like this,Pha Nom District has been called "KhaoSiapMok". Generally, one can say that two there are seasons in the district, the summer and the rainy seasons.The humid summer time is from January to April while during the 8eight month rainy season there is usually heavy rain and fog.

Administrative System

Pha Nom District consists of 6 sub-districts, 56 villages and 13,307 families. With regard to the local administrative system, it has 2 municipalities, which are Khlong Cha Un Municipality and Pha Nom Municipality (which includes some areas of Pha Nom Subdistrict and all of PhangKan), and 4 sub-district administrative organizations, which are Pha Nom, Ton Yuan, KhlongSok, and PluThuean.

Table 4.1 shows the number of villages and families in each sub-district of Pha Nom District

Names of Sub-districts	Number of Villages	Number of Families	Population
Pha Nom	13	2,227	6,691
Ton Yuan	12	4,033	9,876
KhlongSok	8	2,171	6,840
PluThuean	5	845	2,655
PhangKan	5	914	2,658
Khlong Cha Un	13	3,117	9,341
Total	**56**	**13,307**	38,061

Source: Civil Registration as of July 1, B.E.2557

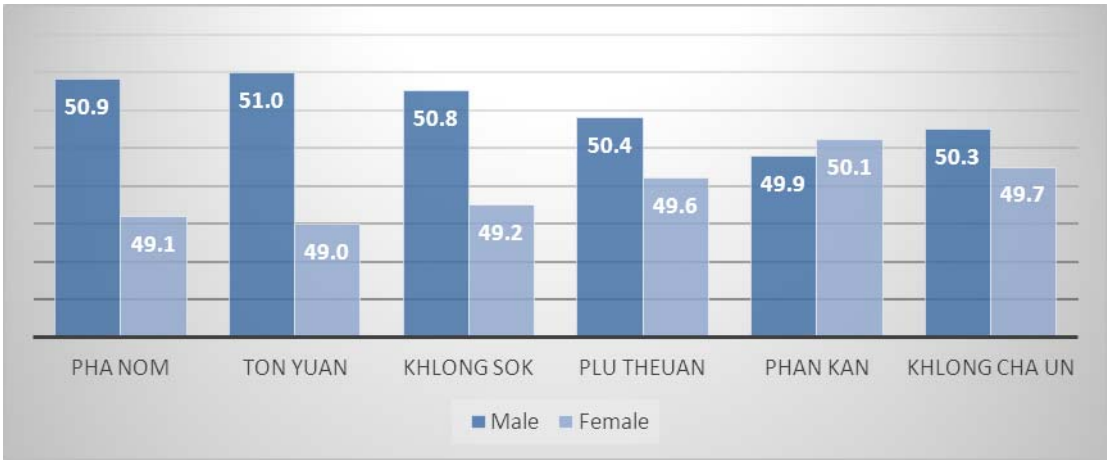
Population

There are 38,061 people living in the Pha Nom District, which includes 19,296 males and 18,765 females. The male population is higher than the female in every sub-district except the PhangKan sub-district. The average population density is 32.38 people per square kilometer.

Table 4.2 shows the number of population in mid B.E. 2557 in each sub-district of the Pha Nom District

Names of Sub-districts	Male	Female	Population
Pha Nom	3,406	3,285	6,691
Ton Yuan	5,037	4,839	9,876
KhlongSok	3,472	3,368	6,840
PluThuean	1,338	1,317	2,655
PhangKan	1,326	1,332	2,658
Khlong Cha Un	4,694	4,647	9,341

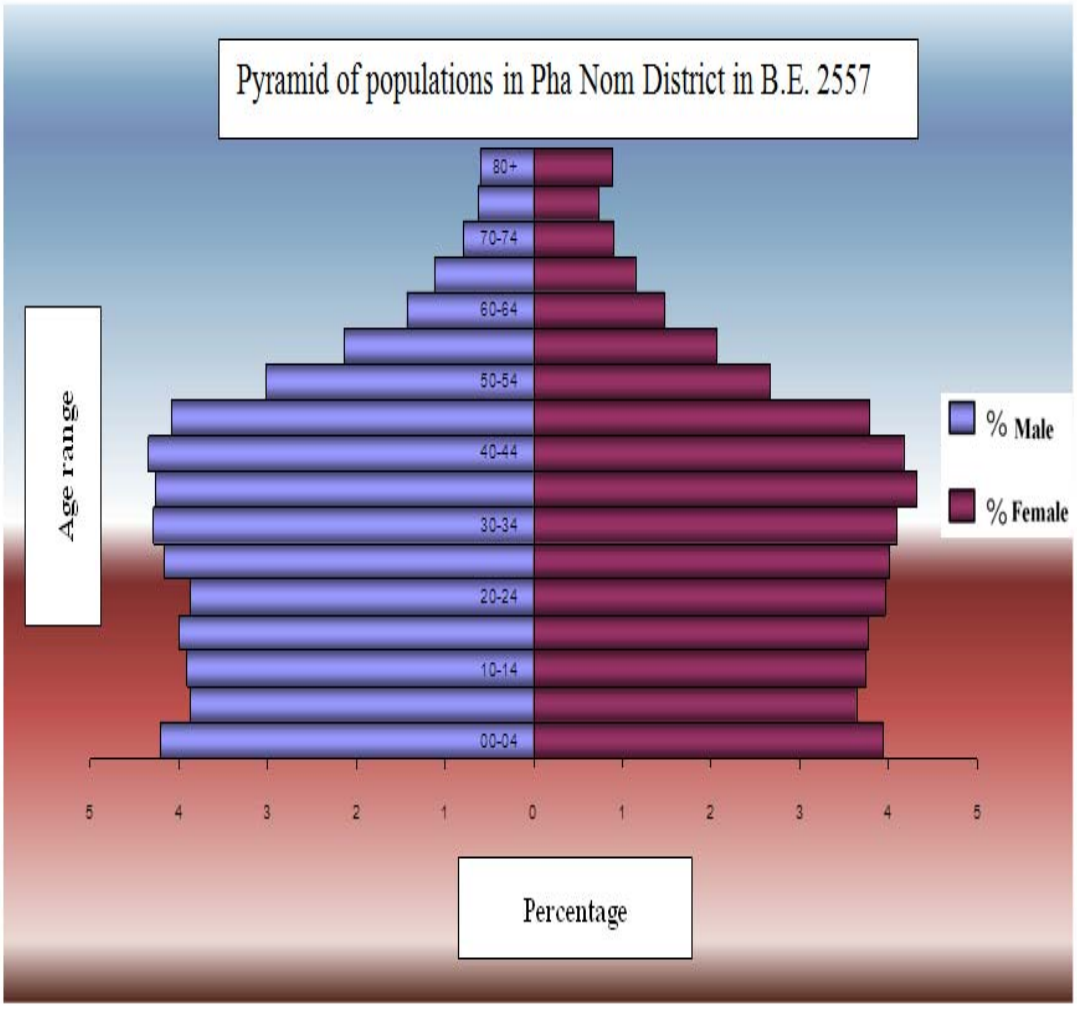
Source: Civil Registration as of July 1, B.E.2557



Graph 4.1 displaysthe percentages of population in mid B.E. 2557 in each sub-district of the Pha Nom District

Source: Civil Registration as of July 1, B.E.2557

According to the pyramid, the largest group of people living in the Pha Nom District is between 40 and 44 years of age, while those aged between 35 and 39 are the second largest group. This data is relevant to the population data of SuratThani Province and of the country in that most of the population of the district are working people. However, the number of elderly in the district is likely to increase and, thus, more health management plans for them need to be implemented, especially ones regarding chronic diseases which are frequently seen in the elderly population.



Graph 4.2 displays a pyramid of the population categorized according to gender in Pha Nom District

Source: Civil Registration as of July 1, B.E.2557

The pyramid reveals that during the past 4 years the population in Pha Nom District has consistently been increasing, with the elderly age group accounting for 10 percent of the total population. While the district has reached a complete aging society state, the number of the population under 35 and of the working population are likely to decrease.

Table 4.3 shows the numbers and percentages of the working age and elderly populations in Pha Nom District over four years

Age Group	B.E. 2554		B.E. 2555		B.E. 2556		B.E. 2557	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Under 35	20,606	56.32	20,462	55.21	20,864	55.55	21,086	55.39
35-39	12,702	34.71	13,066	35.26	13,146	35.00	13,281	34.88
Over 60 or 60	3,281	8.97	3,531	9.53	3,550	9.05	3,704	9.73
Total	36,589	100.00	37,059	100.00	37,560	100.00	38,071	100.00

Source: Civil Registration as of July 1, between B.E.2554-2557

Public Health Resources

Pha Nom District has one 30-bed hospital, 9 sub-district health promoting hospitals and one Vector-Borne Disease Control unit (Region 11.3.3).

Although the number of health staff meets the population and GIS health standards, there is still a lack of doctors, dentists, pharmacists, and registered nurses when considering full-time equivalent requirements and that the staff turnover rate is high.

Table 4.4 shows the data for the health service network staff in Pha Nom District

No.	Types of Staff	Community Hospital	District Health Offices	Sub-district Health Promoting Hospitals	Total	Number of Staff Per Population
1	Doctor	4	-	-	4	1:9,515
2	Dentist	2	-	-	2	1:19,030
3	Pharmacist	4	-	-	4	1:9,515
4	Registered nurse	37	-	6	43	1:885
5	Community public health officer	1	1	16	18	1:2,238
6	Community dental public health officer	2	-	2	4	1:9,515
7	Pharmaceutical officer	3	-	-	3	1:12,687
8	Scientific staff	1	-	-	1	1:38,061
9	Public health officer	3	7	9	19	1:3,171
10	General administration officer	1	-	-	1	-
11	Finance and accounting officer	3	1	-	4	-
12	General service officer	4	-	-	4	-
13	Medical record librarian	1	-	-	1	-
14	Permanent staff	7	-	-	7	-
15	Casual worker	44	-	2	46	-
16	Thai traditional medical doctor	1	-	3	4	1:9,515
17	Physiotherapist	2	-	-	2	1:19,030
18	Medical technician	2	-	-	2	1:19,030
Total		**122**	**9**	**38**	**169**	-

Note: The population in mid B.E. 2557 was 38,061. Only the number of medical staff in public health services (the community hospital and the sub-district health promoting hospitals) are taken into consideration in this table.

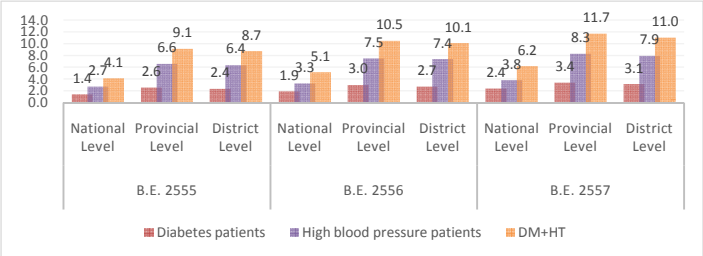
Table 4.5 contains the data for the medical staff of the Pha Nom Hospital in Pha Nom District

No.	Type of Staff	Exiting Number of Staff	Number of Staff Per Population	Expected Number of Staff According to Work Load (FTE)
1.	Doctor	4	1 : 9,515.25	9
2.	Dentist	2	1 : 19,030.5	4
3.	Dental public health officer	2	1 : 19,030.5	2
4.	Pharmacist	4	1 : 9,515.25	5
5.	Pharmaceutical officer	3	1 : 12,687	4
6.	Registered nurse	37	1 : 1,028.67	41
7.	Medical technologist	1	1 : 38,061	2
8.	Scientific officer	1	1 : 38,061	1
9.	Community public health officer	1	1 : 38,061	3
10.	Public health officer	3	1 : 12,687	3
11.	Physiotherapist	2	1 : 19,030.5	4
12.	Thai traditional medical doctor	2	1 : 19,030.5	2
13.	Thai traditional massage officer	2	1 : 19,030.5	
14.	Emergency medical technician	2	1 : 19,030.5	
15.	Medical record librarian	1	1 : 38,061	2
16.	Supporting staff	56		

Source: Pha Nom Hospital

2) Work performance related to chronic non-communicable diseases at the provincial and national levels

From B.E.2555 to B.E. 2557, the number of patients having chronic non-communicable diseases has dramatically increased at all levels: national, provincial and district, including in the Pha Nom District. Additionally, it was found that there are more patients with high blood pressure than with diabetes.



Graph 4.3 displays the numbers of chronic non-communicable disease patients at national and provincial levels, as well as in the Pha Nom District during the past three years.

Note: The population who have chronic non-communicable diseases was used to compare with the population in mid B.E.2555-2557 at the national, provincial, and district levels.

Work performance concerning diabetes patients

In terms of care and treatment, in B.E. 2555, the public health networks in Pha Nom District had a dissatisfying number of screenings of patients aged over 15. That is to say, their performance was 90 percent lower than expected. In the following years, however, their performance exceeded the goal and was better than that of the rest of the province and country in general. In other words, they managed to prevent and reduce the risks of getting diabetes among the risk group and had more than 50 percent of the at risk group change parts of their lifestyles that could lead to them getting the disease. It is expected that their performance is likely to be more satisfactory each year, better than that of the province.Unfortunately, performance data

related to diabetes patient care and treatment at the national level has not been reported.

Regarding the quality of services, the chronic disease clinic of the Pha Nom Hospital has been operated and evaluated according to the chronic disease standards since B.E. 2556 and passed the evaluation with very good ratings. At the provincial level, 10 out of the 20 hospitals in SuratThani Province, or 50 percent of them, have been rated as having a very good quality of services. The number of diabetes patients whose diabetes has been controlled at Hb. A1 C < 7% is, however, below the standard, only accounting for 50 percent of them. As expected, less than 5 percent of patients missed doctors' appointments and received inadequate dosage of medication and the number of those who miss doctors' appointments is likely to decrease. The work performance for this indicator at the provincial and national levels have not been reported, however. The work performance for screenings for kidney, eye, and foot complications among diabetes patients was satisfying, 60 percent higher than expectations; this work performance is likely to see more progress and be more successful than the same work performance at the provincial and national levels.

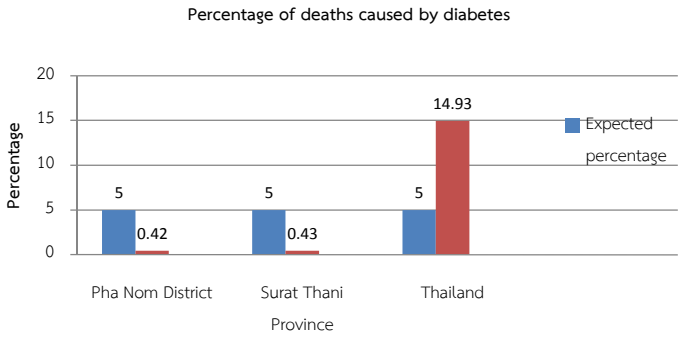
With regard to better well-being, less than 5 percent of screenings found new diabetes patients, as was previously estimated, and the number of new patients was close to that of the provincial and national levels. Also, the work performance goals for complications among diabetes patients was achieved according to plan, or with less than 5 percent of being patients found to have developed complications. Although the overall numbers are expected to rise, they are still low when compared with those of the rest of the province and country.

Table 4.6 shows the work performance for diabetes services done according to the related indicators in Pha Nom District, in SuraThani Province, and in Thailand

Indicators	**Expectation**	**Work Performances**		
		Pha Nom	**SuratThani**	**Country**
1. Percentage of screenings of diabetes patients within the risk group	>90%	91.5%	84.9 %	51.7 %
2. Percentage of the risk group receiving advice on how to change behaviors	> 50%	82.2 %	66.2 %	-
3. Evaluation results of the chronic disease clinic	> 80 %	100 %	80.0 %	-
4. Percentage of diabetes patients controlled at HbA1c < 7% level	> 50%	32.5%	51.5 %	20.3 %
5. Percentage of patients who received inadequate medication / who missed doctors' appointments	< 5%	1.5%	-	-
6. Percentage of diabetes patients who received screenings for complications in eyes, kidneys and feet	> 60%	73.3 %	63.5 %	63.1 %
7. Percentage of new diabetes patients	< 5%	0.3%	0.2 %	1.1 %
8. Percentage of diabetes patients who have complications	< 5%	1.5 %	9.3 %	11.2 %
9. Percentage of deaths caused by diabetes	< 5%	0.4 %	0.4 %	14.9 %

Source: Public Health Office of SuratThaini Province, Office of Non-Communicable Diseases, Department of Disease Control, Ministry of Public Health

The deaths caused by diabetes were at 5 percent as expected; overall, the percentage was close to that of the province and country.



Graph 4.4 displays the percentage of deaths caused by diabetes at the district (Pha Nom District), provincial (SuratThani Province) and national levels.

Work performance related to high blood pressure patients

In B.E. 2556 the work performance related to the screening of the target group (people aged over 15) was not successfully achieved, as it was90 percent lower than planned. In the following years, however, the work performance improved, with higher percentages than the expectations, and it was better than that of the province and the country. With regard to prevention and reduction of high blood pressure risks, a lot of activities were done in B.E. 2555 to change behaviors in the risk group. Although the work performance for that year did not meet the expected percentage, it saw definite progress in the next years and met the expected percentage of more than 50 and is likely to increase each year. The performance in this area was even better than at the province, however, at the national level, unfortunately, there has been no report on this information.

As for the quality of services, it was found that the high blood pressure rate is satisfactorily controlled, although in B.E. 2555 the work performance for this aspect was more than 60 percent below expectations. However, the work performance later improved, exceeding the expected percentage, and was better when compared with that of the province and the country. Regarding the evaluation of the risk of getting coronary disease and stroke (CVD risk), overall, the work performance in this area was more than 80 percent below expectations, although in B.E.2556 the work performance improved and exceeded expectations. The work performance, nevertheless, was better than that of the province, and unfortunately was no report on it at national level. The work performance for screenings kidney and heart complications among high blood pressure patients in B.E. 2555 was below expectations, but in later years it exceeded expectations, with more than 60 percent success, and was better than that of the province and country.

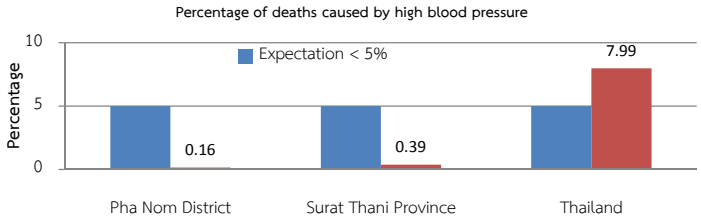
Regarding the work performance for better well-being, the rate for new cases of high blood pressure was less than 8 percent and the rate was lower than those of the province and country. In addition, complications were found in less than 5 percent of high blood pressure patients, thus meeting expectations. Although there is a tendency for the rate to increase in the district, it is considerably lower when compared with that of the province and country.

Table 4.7 shows work performance for high blood pressure services according to the indicators in Pha Nom District, SuratThani Province, and Thailand.

Indicators	**Expectation**	**Work Performances**		
		Pha Nom	**SuratThani**	**Thailand**
1. Percentage of screening coverage for high blood pressure within the risk group	80%	91.1%	84.9 %	53.6 %
2. Percentage of the risk group receiving advice on how to change behaviors	> 50%	84.2 %	69.3%	-
3. Evaluation results of the chronic disease clinic	> 80 %	100 %	80.0 %	-
4. Percentage of high blood pressure patients who could control their high blood pressure	> 60%	63.6%	55.2 %	20.5 %
5. Percentage of patients who received inadequate medication / who missed doctors' appointments	< 5%	5.8%	-	-
6.Percentage of high blood pressure patients who received evaluations for risks related to coronary disease and stroke complications	>80%	63.4%	49.5 %	-
7. Percentage of high blood pressure patients who received screenings for complications	>60%	86.3%	51.38 %	51.3 %
8. Percentage of new high blood pressure patients	< 8 %	0.5%	7.9 %	9.4 %
9. Percentage of high blood pressure patients who had coronary disease, kidney, and stroke complications	< 5%	0.4%	6.9 %	9.1 %
10. Percentage of deaths caused by high blood pressure	< 5%	0.2 %	0.4 %	7.9 %

Source: Public Health Office of SuratThani Province, Office of Non-Communicable Disease Control, Department of Disease Control, Ministry of Public Health

The deaths caused by high blood pressure accounted for an estimated 5 percent of deaths and, overall, the rate was low when compared to those of the province and the country.



Graph 4.5 displays the percentage of deaths caused by high blood pressure at the district, provincial, and national levels.

Work performance related to chronic non-communicable disease operations in Pha Nom District, SuratThani Province between B.E.2555-2557

In this section, work performance related to chronic non-communicable disease work operations in Pha Nom District, SuratThani Province between B.E.2555-2557 is presented as follows.

2.1 Work performance according to indicators at the district level

2.2 Evaluation results of the Quality Chronic Disease Clinic in Pha Nom District

2.3 Evaluation results of the District Health System in Pha Nom District according to UCARE standards

2.4 Work performance between B.E. 2555 and 2557 at the district level

1) Work performances according to indicators at district level

2.1.1 Work performance for health promotion and the health surveillance system

Reducing behaviors to prevent chronic non-communicable diseases in villages

Since B.E. 2555, 54 of the 56 villages in Pha Nom District, which accounts for 96.43 percent, have passed the evaluation and managed to reduce behaviors that could lead to getting NCD.

Out of the nine sub-district health promoting hospitals and the Pha Nom Hospital in Pha Nom District, 8 of them, or 80 percent, completed the five required activities, thus successfully completing the surveillance, prevention , and control of the chronic non-communicable diseases goals.

Table 4.8 shows work performance related to the villagers' modification of risk behaviors that could lead to getting chronic non-communicable diseases from B.E.2555 to B.E.2557.

Primary Care Units (PCU / Subdistrict Health Promoting Hospitals	**Number of Villages**	**Work Performances**	**Percentage**	**Work Procedure Criteria**				
				Screening (1)	**Environment (2)**	**Reducing risk factors (3)**	**Change behaviors (4)**	**Law (5)**
Pha Nom Hospital	5	5	100	✓	✓	✓	×	×
Pha Nom	7	7	100	✓	✓	✓	✓	✓
Bang San	6	6	100	✓	✓	✓	✓	✓
PluThuean	5	5	100	✓	✓	✓	✓	✓
KhlongSok	3	3	100	✓	✓	✓	✓	✓
Song Phi Nong	5	5	100	✓	✓	✓	✓	✓
Ton Yuan	9	8	88.9	✓	✓	✓	✓	✓
Khao Na Nai	3	3	88.9	✓	✓	✓	✓	✓
Khlong Cha Un	9	8	100	✓	✓	✓	✓	✓
KhuanPhon	3	3	100	✓	✓	✓	✓	✓
Total	56	54	96.4	✓	✓	✓	✓	✓

Note: The work performances for the surveillance, prevention and control of the chronic non-communicable diseases by the district's primary care units were presented as follows.

1. More than 90 percent of work was done on the screenings for diabetes and high blood pressure among people aged over 15 in the target villages.

2. Policies and projects on the environment were launched for the community and by health promoting organizations.

3. A lot of activities (3A 2S + Fatness / Obesity) were undertaken to reduce risk factors among people in the community.

4. A lot of activities were done to change the behavior of high-risk groups.

5. Policies, projects, and legal and social measures were launched by the community itself and health organizations to reduce smoking and drinking habits among people in the community.

Diet and Physical Activity Clinic: DPAC)

Although the diet and physical activity clinics, which are in nine sub-district health promoting hospitals and in the Pha Nom Hospital, have been operated since the end of B.E. 2555, consistent follow-ups on their work performances have not been conducted, and thus no concrete report has been found about them.

General information on diabetes and high blood patients in B.E. 2557

According to the information given by the district public health networks,1,516 patients, accounting for 64.0 percent,received services at the chronic disease clinic at the Pha Nom Hospital. Most patients (1,587) were female, accounting for 67.0 percent of all patients. The average age of the patients was 58.9 and most of the patients started getting the diseases between the ages of 35 and 60. Most patients were agriculturists and, according to the district’s education record, they finished their highest education at the primary level.

Table 4.9 shows the general information for high blood pressure patients who received services at each service unit in B.E. 2557.

General Information of Patients		Hospitals		PCU of Pha Nom Hospital		Khao Na Nai		Khlong Cha Un		Bang San		Song Phi Nong	
		n	%	n	%	n	%	n	%	n	%	n	%
Gender	Male	266	34.1	9	33.3	19	22.6	51	27.8	16	29.1	20	36.84
	Female	516	65.9	19	66.7	67	77.4	132	72.2	39	70.9	35	63.16
Age	36-45	92	11.7	5	16.66	6	6.78	31	16.67	12	21.1	7	13.16
	46-55	198	25.3	6	21.05	17	20.3	86	46.82	10	18.4	13	23.68
	56-65	220	28.1	5	18.42	13	15.25	41	22.22	16	28.9	19	34.2
	>65	273	34.9	12	43.85	50	57.62	26	14.29	17	31.6	14	26.32
Age at onset of disease	<35	19	2.4	1	5.2	5	6.15	5	2.7	3	5.3	1	2.63
	35-60	373	47.8	9	30.44	45	52.52	90	49.32	25	44.7	28	50
	>60	390	49.8	18	64.36	36	41.43	88	47.97	28	50	26	47.37
Occupation	Employee	11	1.5	1	5.2	1	1.69	9	4.76	0	0	0	0
	Agriculturist	726	92.8	22	79.2	74	86.44	146	79.98	46.3	84.21	51	92.11
	Housewife	21	2.7	3	10.4	7	8.47	31	16.67	5.79	10.53	3	5.26
	Government Officer	18	2.31	1	5.2	1	1.69	1	0.79	0	0	1	2.63
	Others	6	0.73	0	0	1	1.69	1	0.79	3	5.26	0	0
Level of Education	No education	39	4.98	1	5.2	3	3.38	4	2.39	1	2.63	3	5.26
	Primary	154	19.72	7	24.11	19	22.03	73	39.68	10	18.42	13	23.68
	Lower Secondary	19	2.46	1	5.2	7	8.47	4	2.38	3	5.26	1	2.63
	Higher Secondary	10	1.26	0	0	1	1.69	4	2.38	3	5.26	0	0
	Diploma	63	8.1	3	10.4	4	5.08	12	6.35	4	7.89	3	5.26
	Undergraduate	5	0.66	3	10.4	0		0	0	0	0	0	0
	Graduate	4	0.3	-	-	-	-	-	-	-	-	-	-
	No record	489	62.55	13	44.69	51	59.32	86	46.8	30	55.26	35	63.17

Note: Some information stayed the same for patients who had both diabetes and high blood pressure.

Table 4.9 shows the general information for high blood pressure patients who received services at each service unit in B.E. 2557. (cont.)

General Information of Patients		Hospitals		PCU of Pha Nom Hospital		Khao Na Nai		Khlong Cha Un		Bang San		Song Phi Nong	
		n	%	n	%	n	%	n	%	n	%	n	%
Gender	Male	621	32.04	73	38.63	71	32.68	149	37.22	56	38.89	41	33
	Female	1317	67.96	115	61.37	145	67.32	250	62.78	88	61.11	82	67
Age	36-45	237	12.25	35	18.72	16	7.33	77	19.40	20	13.89	10	8.06
	46-55	511	26.36	59	31.26	107	49.54	115	28.86	38	26.39	26	20.97
	56-65	570	29.42	38	20.01	57	26.6	97	24.38	42	29.17	56	45.16
	>65	620	31.97	56	30.01	36	16.5	109	27.36	44	30.56	32	25.81
Age at onset of disease	<35	53	2.76	6	2.98	16	7.34	12	2.99	8	5.56	2	1.61
	35-60	826	42.62	64	34.26	117	54.12	171	42.79	64	44.44	67	54.84
	>60	1059	54.62	118	62.76	83	38.53	216	54.23	72	50	54	43.55
Occupation	Employee	47	2.45	6	3.25	4	1.83	9	2.98	0	0	0	0
	Agriculturist	1799	92.81	168	89.4	180	83.48	274	91.54	132	91.67	117	95.1
	Housewife	56	2.9	9	4.85	28	12.84	12	3.98	9	6.94	3	3.2
	Government Officer	25	1.31	2	1.25	2	0.92	3	0.99	0	0	1	1.6
	Others	10	0.53	2	1.25	2	0.92	1	0.5	2	1.39	0	0
Level of Education	No education	77	3.98	4	2.1	2	0.92	4	1.49	0	0	1	1.61
	Primary	353	18.23	57	30.5	26	11.93	70	23.38	13	9.17	25	20.9
	Lower Secondary	51	2.65	2	1.05	10	4.59	4	1.49	4	2.78	1	1.61
	Higher Secondary	25	1.28	0	0	2	0.92	4	1.49	4	2.78	0	0
	Diploma	140	7.21	18	9.47	6	2.75	7	2.49	6	4.17	3	3.23
	Undergraduate	11	0.56	4	2.1	0	0	0	0	0	0	0	0
	Graduate	3	0.15	0	0	0	0	0	0	0	0	0	0
	No record	1278	65.94	103	54.7	170	78.89	208	69.65	87	61.11	89	72.58

Source: Report on chronic diseases by Pha Nom Hospital

Work performance related to indicators for chronic disease services in Pha Nom District, SuratThani Province between B.E. 2555 and B.E.2557

Table 4.10 Work performance for diabetes services in Pha Nom District, SuratThani Province between B.E. 2555 and B.E. 2557

Indicators	Expectation	Fiscal Year		
		B.E. 2555	B.E. 2556	B.E. 2557
1. Percentage of screenings of diabetes among the risk group	>90%	85.6%	95.0%	91.5%
2. The risk group's receiving advice on how to change behaviors	> 50%	54.5 %	79.1 %	82.2 %
3. Evaluation results of the chronic disease clinic	Passed at satisfying level	-	-	Passed at satisfying level
4. Percentage of diabetes patients controlled at HbA1c < 7% level	> 50%	52.3%	46.9%	32.5%
5. Percentage of diabetes patients who received inadequate medication / who missed doctors' appointments	< 5%	2.4%	1.4%	1.5%
6. Percentage of diabetes patients who received screenings of eye, kidney and feet complications	> 60%	62.0%	68.0%	73.3%
7. Percentage of new patients of diabetes	< 5%	2.3%	0.2%	0.3%
8. Percentage of diabetes patients who had complications	< 5%	1.5 %	1.7 %	2.5 %
9. Percentage of deaths caused by diabetes	< 5%	0.6%	0.4%	0.4%

Percentage of complications among diabetes patients

Types of Complications / Fiscal Year (B.E.)	2555	2556	2557
No complications	70.1	58.6	64.1
Eye complications	4.1	13.9	7.9
Kidney complications	2.1	1.6	0.2
Nerve complications	0.6	0.4	1.0
Blood vessel complications	0.2	0.2	0.4
Foot complications	1.4	0.8	2.6
Other complications (high blood fats)	20.9	24.5	23.7

Source: Chronic Disease Clinic of Pha Nom Hospital

Table 4.11 shows work performance for high blood pressure services in Pha Nom District, SuratThani Province between B.E. 2555 and 2557

Indicators	Expectation	Fiscal Year (B.E.)		
		2555	2556	2557
1. Percentage of screening coverage for high blood pressure withinthe risk group	80%	93.68%	85.56%	91.12%
2. Percentage of the risk group receiving advice on how to change behaviors	> 50%	40.54 %	72.22 %	88.24 %
3. Evaluation results of the Quality Chronic Disease Clinic		-	-	
4. Percentage of high blood pressure patients who could control their high blood pressure	> 60%	59.02 %	63.08 %	63.57 %
5. Percentage of patients who received inadequate medication / who missed doctors' appointments	< 5%	NA	NA	NA
6. Percentage of high blood pressure patients who received evaluations for risks related to coronary disease and stroke complications	>80%	57%	83%	63.40%
7. Percentage of high blood pressure patients who received screenings for complications	> 60%	57 %	83 %	86.26 %
8. Percentage of new patients of high blood pressure	< 5%	0.53 %	0.68 %	0.47 %
9. Percentage of high blood pressure patients who had coronary disease, kidney, and stroke complications	< 5%	0.33 %	1.02 %	2.17 %
10. Percentage of deaths caused by high blood pressure	< 5%	0.21 %	0.15 %	0.16 %

Percentage of complications among high blood pressure patients

Types of Complications / Fiscal Year (B.E.)	2555	2556	2557
No complications	60.51	64.32	81.73
Coronary disease complications	0.54	0.24	0.10
Stroke complications	1.35	0.60	1.98
Kidney complications	1.52	2.84	2.51
Other complications (high blood fats)	36.08	32.00	13.68

Source: Chronic Disease Clinic of Pha Nom Hospital

Table 4.12 shows work performance according to the standards of quality care and treatment for high blood pressure patients

High Blood Pressure Indicators	**Expectation**	**B.E. 2555**	**B.E. 2556**	**B.E. 2557**
1. Percentage of high blood pressure patients who had blood pressure levels of <140/90 mmHg	>60%	59.0%	63.1	63.6
2. Percentage of high blood pressure patients who received annual check-ups	>60	57.0	83.0	77.7
3. Percentage of high blood pressure patients who received annual diagnostic labs	>60	57.0	83.0	77.7
4. Percentage of high blood pressure patients who had coronary disease and blood vessel complications	> 5%	0.5	0.2	0.1
5. Percentage of high blood pressure patients who had stroke complications	< 5%	1.4	0.6	1.9
6. Percentage of high blood pressure patients who had kidney abnormalities	< 5%	1.5	2.8	2.5
7. Percentage of high blood pressure patients who smoked and received advice on how to stop smoking	>50%	100%	100%	100%

Table 4.13 shows the percentage of patients who missed doctors' appointments.

Fiscal Year (B.E.)	Percentage of patients who missed doctors' appointments	Reasons of missing doctors' appointments	Solutions
2550	6.9	- Inconvenient transportation - Long wait time for public/local transportation	- Extra services were provided apart from ones by the Out Patient Department from 7 a.m. onwards.
2551	13.2		Extra services were provided apart from ones by the Out Patient Department. (However, patients received medicines at the OPD).
2552	6.9		Mobile services were provided by the Chronic Disease Clinic at the Sub-district Health Promoting Hospital in Ban Khao Na Nai.
2553	5.3		Mobile services were provided by the Chronic Disease Clinic at the Subdistrict Health Promoting Hospital in Khlong Cha Un.
2554	6.9		Mobile services were provided by the Chronic Disease Clinic at the Subdistrict Health Promoting Hospital in Bang San.
2555	5.6		Mobile services were provided by the Chronic Disease Clinic at the Sub-district Health Promoting Hospital in Song Phi Nong.
2556	5.2		One-Stop Services and pharmacists were provided at the Chronic Disease Clinic. (The clinic was separate from the OPD).
2557	5.6		Mobile services were provided by the Chronic Disease Clinic at the Subdistrict Health Promoting Hospital in Ton Yuan.

2) Evaluation results of the Quality Chronic Disease Clinic in Pha Nom District

Table 4.14 shows performance of chronic non-communicable disease operations in Pha Nom District, SuratThani between B.E. 2555- B.E. 2557

Indicators	Expectation	Fiscal Year (B.E.)			Work Performances	Tendency
		2555	2556	2557		
1. Percentage of screening coverage for high blood pressure within the risk group	80%	93.68%	85.56%	91.12%	Completed	
2. Percentage of new patients diagnosed with high blood pressure	< 5%	0.53%	0.68%	0.47%	Completed	
3. Percentage of high blood pressure patients who received screenings for complications	>60%	57%	83%	56.26%	Completed only in B.E.2556	
4. Percentage of high blood pressure patients who could control their high blood pressure	>60%	59.02%	63.08%	63.57%	Completed	
5. Percentage of high blood pressure patients who had kidney complications	< 5%	1.52%	2.84%	2.51%	Completed only in B.E. 2555 – B.E. 2556	

Table 4.14 shows performance of chronic non-communicable disease operations in Pha Nom District, SuratThani between B.E. 2555- B.E. 2557 (cont.)

Indicators	Expectation	Fiscal Year (B.E.)			Work Performances	Tendency
		2555	2556	2557		
6. Percentage of high blood pressure patients who had coronary disease complications	> 50%	0.54%	0.24%	0.10%	Completed	
7. Percentage of high blood pressure patients who had stroke complications	< 5%	1.35%	0.60%	1.98%	Completed	
8. Percentage of high blood pressure patients who received evaluations for risks of coronary disease and stroke complications	>80%	57%	83%	63.40%	Completed only in B.E.2556	
9. Percentage of high blood pressure patients who were visited in their homes (HHC)	70%	46%	66%	22.25%	Below the expectation	

 The percentage is likely to increase.

 The percentage does not change or is unstable.

 The percentage is likely to drop.

Table 4.15 shows the operation of the chronic non-communicable diseases in Pha Nom District, SuratThani between B.E. 2555 – 2557.

No.	Administrative and Service Management System	Intensity
1	The Committee on Diabetes and High Blood Pressure Control and Treatment that supervised work procedures at all levels from primary prevention to treatment	+++
2	Available list of people in charge of the chronic non-communicable disease administrative and management system	+++
3	Strategies / Plans / Projects for diabetes and high blood pressure prevention and control that were integrated with those of the offices involved	++
4	Overall picture of diabetes and high blood pressure management at the district level	+++
5	Overall picture of diabetes and high blood pressure system and database at the district level	++
6	Overall picture of eye diagnosis system (Fundus Camera) and laboratory diagnosis at the district level	+++
7	Plans for staff and potential development related to diabetes and high blood pressure control, prevention, and treatment in the district	++
8	Knowledge management and exchange within the district	++
Permanent Service Units		
1	Available list of people in charge of diabetes and high blood pressure management	+++
2	Self-evaluation based on the self-treatment form and the implementation of development plans	++
3	Electronic records of diabetes and high blood pressure patients	++
4	Diabetes and high blood pressure patient care and treatment based on medical practices	++
5	Transferring of no less than 50 percent of patients to the primary service units for further treatment	++
6	Potential development for medical staff and networks to provide an extension of chronic disease management	++
7	Support for health clubs and connection with the community	++
Primary Service Units		
1	Finding new patients, transferring them, and registering them at the permanent service units	+++
2	Providing services for diabetes and high blood pressure patients who were transferred back for continued treatment	+++
3	Providing support for diabetes and high blood pressure clubs and building connections with the community	++
Sub-district Health Funds / Municipalities		
1	No less than 50 percent of people aged over 35 who had received positive screenings for risk factors and diseases transferred to the permanent service units for confirmation of diseases	+++
2	Support for diabetes and high blood pressure clubs	++

Note:

+++ having high work intensity

++ having medium work intensity

+ having low work intensity

Evaluation analyses of the NCD clinics of Pha Nom Hospital, SuratThani Provincein B.E. 2557

According to the evaluations, the evaluation team concluded that the NCD clinic received work performance ratings for elements 1-6 at the"K" level, which accounted for 100 percent. The hospital also received a passing score of 104 on the 24 evaluation criteria and was rated at very good level in terms of work performance. Thus the hospital had high quality work performance and the evaluation analyses are included in the following table.

Table 4.16 shows evaluation analyses of the NCD clinics in B.E. 2557 of Pha Nom Hospital

No.	Element	Work Performances	Evaluation Level
1	Direction and Policies	- Direction / policies / goals of service providing and service providing results were reviewed to keep up with current situations. - SWOT analysis was done to create work plans for the NCD clinics. - The structure of NCD networks was designed, with participation of the community, and resources were provided for work procedures. - Information centers were established at the district level.	K
2	Information Technology	- The Hos xp system was used to record data for the hospital and JHIS system for the service networks. The dada obtained could be retrieved at any time and was stored in the hospital database. The stored data included records of services as well as individual service receivers and groups of service receivers. - Health information centers were set up at the district level. - The data from each unit of the hospital was sent to the central database and could be sent to hospital administrators and staff when requested. - Although the data was linked to the 43-file system of the province, the connection and transferring of data between the hospital and service networks encountered certain problems due to different data systems usage.	K

Table 4.16 shows evaluation analyses of the NCD clinics in B.E. 2557 of Pha Nom Hospital (cont.)

No.	Element	Work Performances	Evaluation Level
3	System and Service Procedure Adjustment	Patients' personal health records were returned to patients and the service networks. The records contained details about patients' health conditions (diagnoses), screenings for complications, lab results, and regular medications received, as well as changes in medications as noted by doctors.	K
4	Self-Management Support System	- Patients' personal health records were returned to diabetes and high blood pressure patients. The records contained details about self-management plans and activities such as physical practices that were done by the elderly patient group. Information on patients was noted in the record and exchange of the information between doctors and the patients was possible as the record contained details about screenings for complications and blood test results, as well as lists of medications. - Patients were also given useful information by the multidisciplinary team before being diagnosed.	K
5	Decision-Making Support System (on disease treatment and management	- The CPG data and reports on medical practice meetings were available. - One clinical officer was sent for training on chronic non-communicable disease management. - An official appointment of the NCD Board was made and the board's roles were clearly explained. - A Consultation system was provided for the sub-district health promoting hospitals by doctors through on-line consulting. - Once a year chronic case conferences were organized for certain cases so that related problems could be solved and chronic disease management be improved.	K

Table 4.16 shows evaluation analyses of the NCD clinics in B.E. 2557 of Pha Nom Hospital (cont.)

No.	Element	Work Performances	Evaluation Level
6	Linking Services to the Community	- The hospital conducted the following activities: activity plans, evaluations of the plans, activities for reducing risks and diseases, toxic-free vegetable campaigns for villages, 5-color vegetable campaigns, 3 Es (essential food, exercise, emotion campaign) as well as 2 Qs (quit smoking and quit drinking) campaigns. - No reports about group meetings were presented by the community hospitals. - Physical activities such as hula hooping were done. - Social contracts on reducing risks and diseases were signed. - Vegetable farming campaigns were performed as part of the villages' social contracts. - Risk communication channels were available. - 7 table tennis balls of different colors were used to identify each patient who held different types of doctor visit forms.	K

Element 1 Direction and Policies: Pha Nom Hospital had visions, goals and evaluations for service providing results. Its operation plans served the visions and goals of the NCD clinics and were announced to its hospital staff and networks to be understood and followed.

Element 2 Information Technology: Records of patients and populations were organized for public health operations. Information from each office was stored in the hospital's central database and available for all administrators and staff to use for problem analysis.

Element 3 System and Service Procedure Adjustment: Individual and group records of patients were prepared and diagnoses were done together with risk evaluations. Service plans and activities were in line with each disease symptom. In addition, the hospital organized management coordinating teams and provided care for service receivers while its staff roles were clearly identified. The hospital's chronic disease care networks were also available and had a close connection with independent offices that did not belong to the Ministry of Public Health. The patient transfer

protocols between the hospital's clinics and external offices were effective and systematic.

Element 4 Self-Management Support System: Self-management plans and activities were conducted by the hospital's staff allowing them to provide information to each service receiver. By using hospital tools, they managed to confirm clinical results as well as evaluate situations and risks in their groups or teams. Moreover, they were able to plan activities to strengthen their self-management potentials.

Element 5 Decision-Making Support System (for disease treatment and management): The hospital trained the service providers and informed them about clinical practice guidelines for the operation of NCD clinics. In addition to this, it organized a working body to integrate ideas with other internal offices and multidisciplinary teams in the hospital. Occasionally, chronic case conferences (KM) were organized for exchanging knowledge and lessons learned.

Element 6 Linking Services to the Community: Exchanging information between the hospital and community was done for community health plan development. Environment adjustment plans and health activities were consistently organized by local administrative organizations and the community was well supported by the hospital. Public health volunteers participated in making plans for risk groups, high-risk groups, and patients in their responsible areas.Additionally,the hospital staff was able to design self-management plans and knowledge exchanging activities.

3) District Health System (DHS) of Pha Nom District

The District Health System of Pha Nom District passed Level 3 of the UCARE standard. Regarding unity district health team, concrete projects on chronic disease patient care, such as PHANOM Project, were successfully implemented by the district's board. As for community participation, the community and health networks participated in managing health plans and solving health problems found in the district. Together with the district health networks, they also worked closely on planning health policies which were aimed at solving the health problems of people in the district. With regard to appreciation, the staff and health teams were proud of their jobs and received enormous compliments from the evaluators from Disease Control

Center 1 of Nakhon Si Thammarat Province. Consequentially, Because of the successful work performance, their work procedures were used as guidelines at the provincial level and within Health Region 11.

Concerning resource sharing and human development, the district organized fair budget allocation and medicine and medical product distribution systems. A lot of effort was also put into the improvement of service units belonging to the networks. Staff was allocated to the sub-district health promoting hospitals and multidisciplinary teams and were shared among them in each health zone. In addition, the district also conducted surveys concerning the staff's demands for knowledge and skill developments in order to provide better services at the sub-district health promoting hospitals. In terms of essential care, the staff of the sub-district health promoting hospitals was well trained to provide services to patients who had general diseases and chronic diseases. A direct medical advice system and an emergency medical system were also available in the district.

Table 4.17 Evaluation results: District Health System B.E. 2557 according to the UCARE standard

No.	Points of Evaluation	Yes	No
1	Unity of District Health Team (Participation at district level)		
	Stage 1 Official appointments of the District Health Networks Administrative and Management Board were available and their roles were clearly identified.	x	
	Stage 2 Meetings of the board members were held frequently and meeting minutes were available.	x	
	Stage 3 The board used available information for strategy planning and operation.	x	
	Stage 4 The board was able to launch practical projects (examples of the PHANOM projects).	x	
	Stage 5 The board evaluated their work performance and the evaluation results were used for planning and development.		x

Table 4.17 Evaluation results: District Health System B.E. 2557 according to the UCARE standard (cont.)

No.	Points of Evaluation	Yes	No
2	Appreciation (Work appreciation that yielded benefits for service receivers and providers)		
	Stage 1 The staff or team involved performed their duties as assigned.	x	
	Stage 2 The staff or team used existing information for problem analysis and solving.	x	
	Stage 3 The staff or team was satisfied with their responsibilities and work performance.	x	
	Stage 4 People or service receivers appreciated the staff's dedication to work and complimented them on their work performance.	x	
	Stage 5 The staff or team was proud of themselves and their jobs.		x
3	Resource Sharing and Human Development (Resource sharing and staff development)		
	Stage 1 The staff was given training for self-development according to individual needs or sent for training required by the province or the Ministry of Public Health.	x	
	Stage 2 Staff development plans focused on developing bodies of knowledge and skills were launched.	x	
	Stage 3 Staff development plans were integrated with daily work procedures.	x	
	Stage 4 Staff development plans were integrated with daily work procedures, resulting in new innovations.		x
	Stage 5 Staff development plans were integrated with daily work procedures and later brought about spiritual development in individual staff spiritually connected to the key concepts of providing health services.		X

Table 4.17 Evaluation results: District Health System B.E. 2557 according to the UCARE standard (cont.)

No.	Points of Evaluation	Yes	No
4	Essential Care (Providing services according to contexts)		
	Stage 1 Information on the health status and health problems of people in the district was collected.	x	
	Stage 2 The health problems were analyzed according to each context so that specific health care was provided for people in need.	x	
	Stage 3 Health promotion plans were made available and health problems were solved according to each context.	x	
	Stage 4 Supervision and evaluation of health improvement plans and health problem solutions were conducted.		x
	Stage 5 Other health issues were identified		x
5	Community Participation (Participations by the health networks and community)		
	Stage 1 The community and health networks participated in health activities.	x	
	Stage 2 The community and health networks participated in health activities while the local administrative organizations provided financial support for the activities.	x	
	Stage 3 The community and health networks worked together closely on the planning of health management systems and their work performance was evident.	x	
	Stage 4 The community and health networks were responsible for their work performance.		x
	Stage 5 The community and health networks launched public policies for health management and self-reliance, as well as health problem management. They also improved work procedures systematically and effectively.		x

Table 4.17 Evaluation results: District Health System B.E. 2557 according to the UCARE standard (cont.)

No.	Points of Evaluation	Yes	No
6	Names of projects launched in the district in B.E. 2557 (ODOP) "The Chronic Non-Communicable Disease Management in Pha Nom District by Using PHANOM Project Strategies"		

The development of policies and measures concerning chronic non-communicable disease operations and the structure of chronic non-communicable disease operations between B.E. 2555 and B.E. 2557

Many countries have paid attention to chronic non-communicable disease management as we can see that the global strategy for the prevention and control of non-communicable diseases was launched at international level in B.E. 2553(2010), followed by the global action plan for NCD prevention and control 2013-2020. At the international level, policy setting and identifying important chronic non-communicable diseases were made a priority, cooperation among international organizations was sought, and chronic non-communicable disease policies and management programs were promoted. At the national level, activities targeting reducing risks and creating a suitable and sustainable environment were conducted for chronic non-communicable disease care and treatment. In addition, the health improvement system was strengthened, the service system was made available to wider areas, and research on more topics was conducted on chronic non-communicable disease operation development.

In Thailand, chronic non-communicable diseases have become a major problem, which caused the government to launch a 4-year health development policy in B.E.2554, which is aimed at reducing the number of chronic non-communicable disease patients, deaths, and effects caused by the diseases. Today, policies and

strategies concerning the chronic non-communicable diseases are included in the 11th National Health Development Plan under the National Economic and Social Development Plan 2012-2016.Its goals and visions are well crafted and state that Thai people should have a complete state of well-being, sufficient health system access and availability for people from all walks of life, and that chronic non-communicable diseases (diabetes, high blood pressure, heart diseases, stroke and cancer) should be eliminated from Thai society.

The Administrative Policy of the Ministry of Public Health B.E. 2556expects that in the next century Thai people will be healthier, which will result in Thailand's economic growth both directly and indirectly. Its mission is concerned with health system improvement, health promotion, disease treatment, and health rehabilitation. Additionally, for the visions to be achieved, the policy promotes coordination and integration of work among internal offices and between government offices, as well as with the private sector. The policy also places priority on health care among different age groups, such as children, women, and the elderly, as well as groups of diseases, like diabetes and high blood pressure.

The Thailand Lifestyle and Healthy Strategic Plan 2011-2012 aims at building immunity for Thai people and the society and improving prevention of five health hazards, including diabetes, high blood pressure, heart diseases, stroke, and cancer. The plan also encourages Thai people to adopt three ways of smart living: sufficient consumption, sufficient exercise and sufficient emotional management.

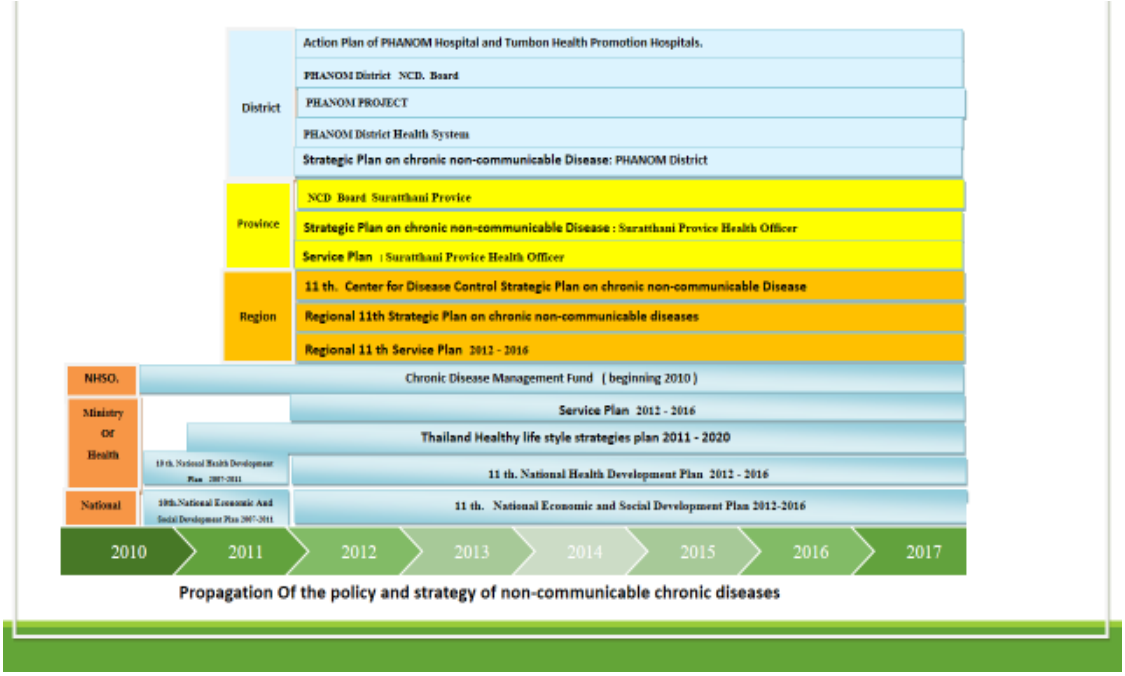
The Service Plan 2012-2016 focuses on developing service systems at all levels, primary, secondary, and tertiary, and high-potential centers, as well as connecting all heath networks. In addition, the plan also places its focus on eliminating ten groups of medical concerns, which includes three chronic non-communicable diseases: diabetes, high blood pressure and chronic obstructive pulmonary disease, and heart diseases and stroke, as well as eye and kidney diseases.

The Eight Flagship Project was launched in B.E. 2556 by the Ministry of Public Health. According to the project, eight plans interconnected plans are to be conducted for different age groups of people. The plans have been adopted and used in four departments:the Disease Control Department, the Health Department, the Mental Health Department, and the Medical Services Department, hoping to bring about the integration of

health development and health problem management. Out of the eight plans, Plan 6 specifically discusses chronic non-communicable disease prevention and control.

A Multi-Sector Network for Non-Communicable Diseases Control,the NCD Network,was organized by the Ministry of Public Health, the World Health Organization, Thai Health Promotion Foundation, and the National Health Security Office. Its goals include building immunity for the Thai people, society,and country, as well as strengthening their potential for preventing major non-communicable diseases. Moreover, the network is focused on strengthening policies and measures concerning five communicable diseases: coronary heart disease, high blood pressure, diabetes, cancer, and chronic obstructive pulmonary disease. The network also allows for the monitoring and evaluating of the use of policies, includes measures for disease control and prevention, and attempts to reduce the risk factors for non-communicable diseases such as smoking, drinking, malnutrition, and inadequate exercise.

In B.E. 2553, the National Health Security Office established the Chronic Disease Management Fund to address increased overhead costs and allocated it to the district level public health networks.



Graph 4.6 displays the policies and measures related to chronic non-communicable disease operations.

1) The PHANOM Project

During the five years before this project was created (between B.E. 2551-B.E. 2555) the number of diabetes and high blood pressure patients increased. According to an analysis based on the NCD Systems' Management, weaknesses in chronic non-communicable disease operations were found in the administration and management process and with patient records. As a result, the "PHANOM" project was launched to improve the chronic non-communicable disease management in Pha Nom District. It is also considered the center of understanding and learning for the government and private sectors, as well as people in the district.

Objectives

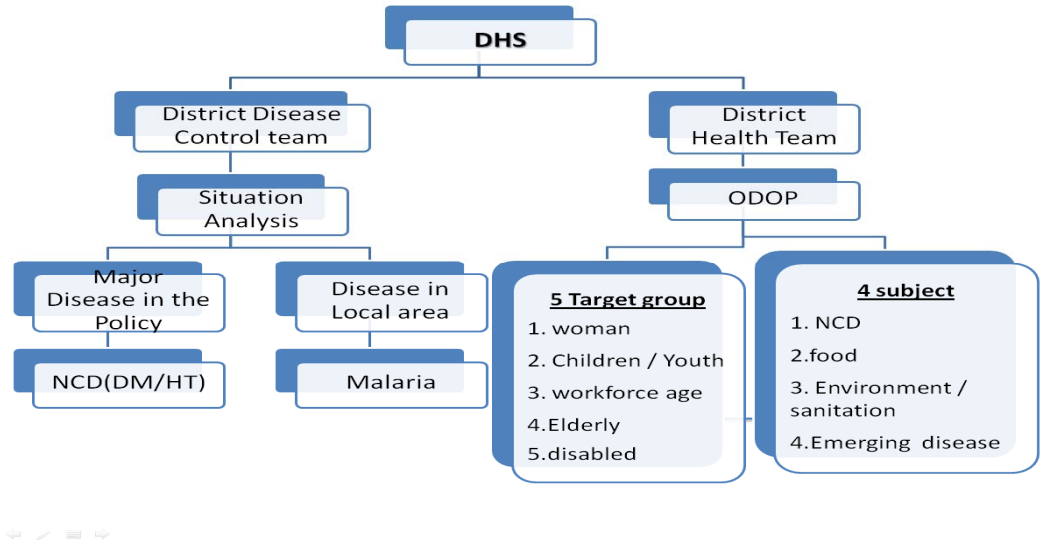
To organize the chronic non-communicable disease management system of the health service networks of the Pha Nom District.

Target Area and Group

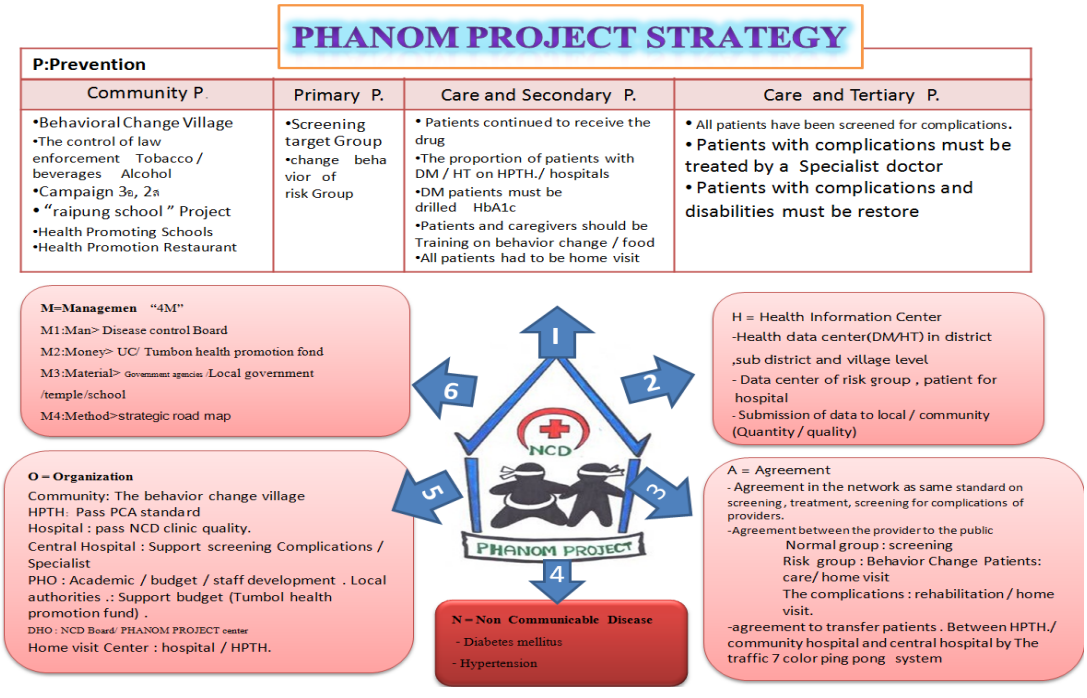
The Pha Nom District is the project's target area and the people living in the district are its target group.

Development Procedures

The development procedures included establishing chronic non-communicable disease information centers at the village, sub-district, and district levels and establishing an agreement among the public health offices, the local organizations, and the community, as well as building networks for the government, private, and community sectors.



Graph 4.7 displays health issues at the district level (One District One Project – ODOP).



Graph 4.8 displays the PHANOM Project's strategies.

P: Prevention			
Community P. - Villages' changing risk behaviors - Enforcing the laws that control tobacco consumption / alcohol consumption for the district to pass the standard - 3As 2S campaigns - Health promoting schools / health promoting restaurants in schools - Health promoting restaurants	Primary P. - Screenings of normal groups - Changing the behavior of risk groups -	Care and Secondary P. - Patients' consistently receiving medication - Percentage of treatment for DM / HT patients at the sub-district health promoting hospitals and the hospital - DM patients' receiving HbA1c test - Patients and patient care takers' being trained on behaviors and food - Patients being visited at their homes -	Care and Tertiary P. - Patients' receiving screenings for complications - Patients with complications receiving treatment from specialists. - Patients with complications and disabilities receiving health rehabilitation. -

M = Management 4M

M1: Man > Effective Board of Disease Control at District Level

M2: Money > UC/ Community Health Fund

M3: Material > Government Sector/Community/Temples/Schools

M4: Method > Strategic Road Map

O = Organization

Community: Being able to change risk behaviors

Sub-district Health Promoting Hospitals: Passing the PCA standard

Hospital: Passing the NCD standard

Regional Hospitals: Providing support for screenings for complications and for specialists

Provincial Public Health Office: Academic affairs/budget/staff development

Local Administrative Organizations: Funding budget (Sub-district Health Fund)

District Public Health Office: NCD Board/PHANOM Project

Home Visit Centers: Hospital/Sub-district Health Promoting Hospitals

H = Health Information Center

- Health Information Centers at the village, sub-district and district levels (DM/HT)

- Information Centers on risk groups and patients for service providers at clinics

- Information sharing with the community (quantitative and qualitative)

A = Agreement

- Agreement on protocols concerning disease screening, treatment, and complication screening among service providers

- Agreement between service units and the community sector

Normal Group: Disease Screening

Risk Group: Changing behaviors

Patient Group: Giving treatment/home visits

Complication Group: Giving health rehabilitation/home visits

- Agreement on patient transfers between the sub-district health promoting hospitals, the community hospital, and regional hospitals by using the 7-colored-table-tennis-balls system

N = Non Communicable Disease

- Diabetes

- High blood pressure

The PHANOM Project's strategies are concerned with Prevention (P), Health Information Centers (H), Agreement (A), Non-Communicable Disease (N), Organization (O), and Management (M), and each strategy's details are as follows.

P = Prevention

1. Community Prevention

- The campaigns launched for changing behaviors of villagers were successful, with two villages passing the standard every year. The campaigns covered every village supervised by the sub-district health promoting hospitals.
- The enforcement of laws on tobacco and alcohol consumptions was effective, with the focus being on shops that sold cigarettes and alcoholic drinks.

- 3As 2S campaigns were launched in every service unit so that the people at risk of diabetes and high blood pressure would change their behaviors and reduce risks (minimum of 50 percent success rate expected).
- Schools were encouraged to launch “Raipoong” campaigns.
- The project helped the health promoting schools to pass the standard and ensured that all restaurants in the schools met food sanitation requirements.
- The project encouraged restaurants to include healthy foods in their menus.

2. Primary Prevention

- 90 percent of people aged over 35 were screened for diabetes and high blood pressure.
- Interventions were initiated for changing the behaviors of people at risk for diabetes and high blood pressure after the screening process.

3. Care and Secondary Prevention

- All patients consistently received medication.
- The ratio of diabetes and high blood pressure patients who received treatments at the community hospital and sub-district health promoting hospitals was 40 to 60.
- Patients who had diabetes received an HbA1c test at least once a year.
- Patients and their care takers were trained on behaviors and food.
- All patients received home visits by the multidisciplinary team.

4. Care and Tertiary Prevention

- All patients received screenings for complications.
- Patients who had complications received treatment from specialists.
- The patients who had complications and disabilities received health rehabilitation.

H = Health Information Center

- An agreement on protocols was achieved among the networks. The protocols included providing the same standards of initial screening, treatment, and screening for complications by service providers.

- An agreement was made between the public health networks and the people.
- An agreement on patient transfers was made among the sub-district health promoting hospitals, the community hospital and regional hospitals.
- The use the 7-colored table tennis balls system was understood by the villagers and agreed to.

N = Non Communicable Disease: Diabetes and High Blood Pressure

O = Organization

- Community: being able to change risk behaviors / Establishing information centers on Chronic Non-Communicable Diseases in the villages
- Sub-district Health Promoting Hospitals: passing the PCA standard / Establishing information centers on Chronic Non-Communicable Diseases at the sub-district level
- Hospital: passing the NCD standard/NCD Board/Home Visit Centers
- Regional Hospitals: providing support for screenings for complications and specialists
- Provincial Public Health Office: academic affairs/budget/staff development
- Local Administrative Organizations: budget funding
- District Public Health Office: establishing information centers on Chronic Non-Communicable Diseases at the district level
- Home Visit Centers at the village, sub-district, and district levels

M = Management (4M)

M1: Man was concerned with the District Health Development Board, with its subcommittees as the Non-Communicable Disease Board (NCD Board) at sub-district and district levels and the Health and Behavior Board.

M2: Money included funding from such offices as the UC. fund, Sub-district Health Fund, and the National Health Security Office.

M3: Material was concerned with providing materials on health operations to government offices, to the district, and to the local administrative organizations, temples, schools, and the community.

M4: Method focused on the use of the 3-year strategy road map and operation plans.

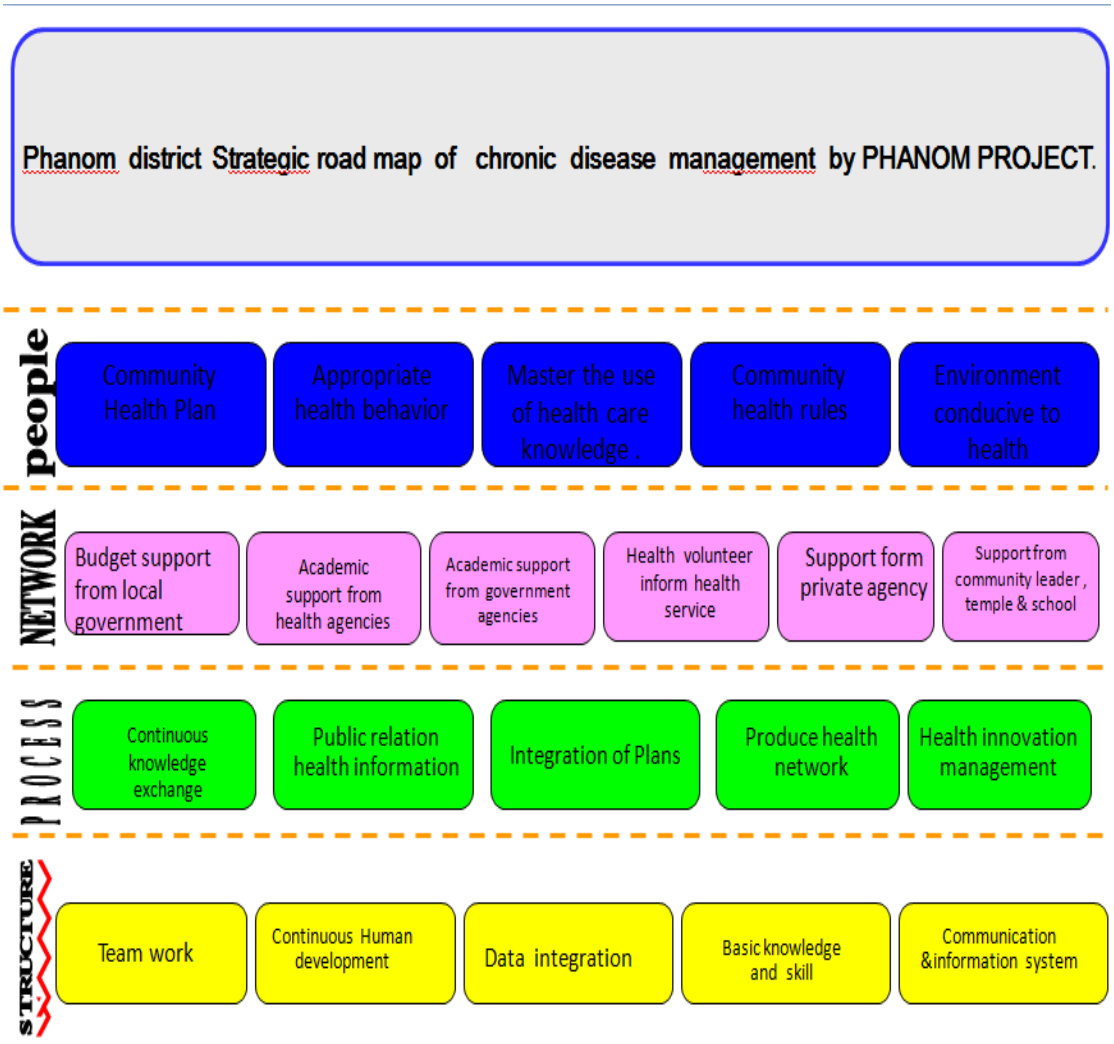


Chart 4.1 displays the PHANOM Project's Road Map

Table 4.18 displays the PHANOM Project's operational plans.

Projects/Activities	Duration (Fiscal Year: B.E.)			Budget Resources	Responsible offices
	2556	2557	2558		
1. Villages' change of health behaviors	Operation done on 38 model villages and 38 additional villages	Operation done on 12 new model villages	Operation done on 8 new model villages	Provincial Public Health Office/UC/Sub-district Health Fund	Village Boards on changing behaviors at district and sub-district levels
2. 3As 2S campaigns	April-October	April-October	April-October	UC/Sub-district Health Fund	Hospital/Sub-district Health Promoting Hospitals
3. Enforcement of laws on tobacco and alcohol consumption control as required by the standard	July	July	July	UC	District Public Health Office
4. "Raipoong" model schools	-	One Sub-district Health Promoting Hospital/hospital per school	-	Sub-district Health Fund	Schools
5. Health promoting schools / health promoting restaurants in schools	July-September	July-September	July-September	UC	District Public Health Office/schools
6. Health promoting restaurants	March-October	March-October	March-October	UC	District Public Health Office/local administrative organizations
7. Screenings for diabetes and high blood pressure among the normal group	October-March	October-March	October-March	Sub-district Health Fund	Hospital/Sub-district Health Promoting Hospitals/clubs/village volunteers

Table 4.18 displays the PHANOM Project's operational plans. (cont.)

Projects/Activities	Duration (Fiscal Year: B.E.)			Budget Resources	Responsible offices
	2556	2557	2558		
8. Changing behaviors of risk groups	July	July	July	UC	District Public Health Office
9. Training patients and care takers on self-care	-	May	-	UC	District Public Health Office
10. Screenings for complications	April	April	April	Provincial Public Health Office/	Community hospitals/regional hospitals
11. Establishment of information centers at district and sub-district levels	May (centers at district level) June (centers at sub-district level)	-	-	UC/Sub-district Health Fund	District Public Health Office/hospitals/Sub-district Health Promoting Hospitals
12. Home visit centers	September	-	-	UC	Hospitals/ Sub-district Health Promoting Hospitals
13. Work operation according to the PCA standard	Stage 2	Stage 3	Stages 4-5	UC	QRT/Sub-district Health Promoting Hospitals
14. NCD quality clinics	August	-	-	-	Hospitals
15. Establishment of chronic non-communicable Disease clinics (DM/HT) in 4 zones	October-September	-	-	Sub-district Health Fund	Hospitals/ Sub-district Health Promoting Hospitals (Bang Suan, Khlong Cha Un, Khao Na Nai, Song Phi Nong)

The strategies of the PHANOM Project, or the Chronic Non-Communicable Disease Management of Pha Nom District, included the following:

1. Appointments of boards and their working bodies by the district health systems

2. Meetings of the steering board members chaired by the district's chief officer and including officers responsible for different sections

3. Designing a strategic road map for chronic non-communicable disease management by using the PHANOM Project

4. Operating plans according to each year's requirements

5. Collections of operational results and summaries of work performances and problems to find solutions in each quarter of the fiscal year

6. Evaluations of the project performance and reports of annual performance (September of B.E.2556, September of B.E. 2557 and September of B.E. 2558)

Project Results

After the District Health Networks of Pha Nom District performed their work according to the Chronic Non-Communicable Disease Management System, the following results became evident.

Changes in Staff and Organizations

More coordination among organizations and networks, including the community, sub-district headmen, village headmen, and local administrative organizations, as well as government agencies, was seen after the use of the PHANOM Project's strategies. That more coordination arose was due to a better understanding of public health affairs among the local leaders and more awareness about health care among people in the community.

Lessons and Factors of Success

To achieve the goal of "good health", public health units not only performed their duties with dedication in health promotion, disease prevention, heath care,and health rehabilitation, but also in cooperation with the government and community sectors. This was a key element of the success of the PHANOM Project.

The Villages' Change in Behavior

All the nine sub-district health promoting hospitals and the Pha Nom Hospital launched projects to encourage villagers to exercise regularly in their lifestyles, at least 3 times a week or at least 30 minutes each day. The projects also

encouraged them to eat at least a half kilogram of vegetables and fruits each day and to eat less fat and salty foods.Health volunteers, community leaders, and local administrative organizations all cooperated well with these activities.

Disease screenings among the over 15 years of age target groups were also conducted apart in addition to the other activities.

Diet Physical Activity Clinic: DPAC)

All the nine sub-district health promoting hospitals and the Pha Nom Hospital set up clinics to provide services for individuals focused on changing their physical activities and controlling food consumption. The clinics have been operated since B.E. 2555 and have conducted a lot of activities, which included verbal screenings, determining body weight and height, waist measurements, checking blood pressures, and blood sugar testing by fingerstick testing. The activities were done as a part of individuals' annual check-ups, especially among high-risk groups who had excessive body mass indexes and expanding waistlines, Pre-DM groups, Pre-HT groups, diabetes groups, and high blood pressure groups. At the clinics, these groups of people received advice individually on the importance and necessity of consumption behavior evaluation, physical activity, and how to set health goals, as well as consumption control activities.Follow-ups on their behaviors were done every one or two months and their body mass indexes and waistlines were re-evaluated.

Chronic Non-Communicable Disease Operational Structure

In order to operate the chronic non-communicable diseases in Pha Nom District, the Ministry of Public Health and the National Health Security Office worked together in designing strategies and plans. The National Health Security Office itself organized operational systems and the evaluation of the plans, as well as budgetary allocation based on the service standards. However, while the Thai Health Promotion Foundation's activities were available, they did not provide systematic and evident support for on the operation of district level units. With regard to the chronic non-communicable disease operations of the Ministry of Public Health, different departments were assigned specific responsibilities relevant to each strategy. For example, the Department of Health Promotion and the Department of Health were

both responsible for organizing health promoting and chronic non-communicable disease control activities and launching projects for the villagers to modify their behaviors to reduce the diseases,as well as operating the DPAC clinics. The Department of Disease Control and the Department of Medical Services played a crucial role in strategy and project operations regarding health care for chronic non-communicable disease patients.Their projects included NCD Quality Clinics and screenings for diseases among risk groups, as well as Stroke and STEMI fast track systems. Each department mentioned had specific, accurate plans that were sent to the healthcare network units at the regional, provincial, and district levels. However, although the plans were clearly designed according to each department's responsibilities, sufficient budgets were not allocated to the health units. As for the Provincial Public Health Office, their responsibilities were divided based on each unit's operational structures. In other words, the Disease Control Unit was responsible for treatment and care projects, the Health Education Unit for the Villages' Change of Behavior project, and the Health Promoting Unit for the DPAC Clinic projects, respectively. Although their responsibilities were accurately detailed, the activities conducted by the above mentioned units still lacked continuity and interconnections among them at the district level. Concerning the public health networks at district level, the offices involved consisted of the Pha Nom Hospital, the District Public Health Office, the sub-district health promoting hospitals, health associates, and the social sector. Their shared goal was to place the existing health policies into practice among the target groups in the community through the district health system and by using the PHANO Project, together with the help of the NCD CUP Board, who designed the health plans for the Pha Nom District. With regard to responsibilities of the Public Health Office of Pha Nom District and the Family and Community Clinical Practice Units, medical staff was assigned to handle the activities, projects, and indicators related to disease surveillance and disease prevention, as well as screenings for chronic non-communicable diseases among risk groups. The Pha Nom Hospital provided treatment for chronic non-communicable disease patients under the supervision of the NCD Nurse Case Manager, (who was the main coordinator for the NCD Quality Clinic), transferred patient to the NCD clinics at the sub-district health promoting hospitals conducted screenings of people at risk for NCD or NCD related

complications,and referred them for further treatment by specialists at SuratThani Hospital as needed. However, despite effective performances, Pha Nom Hospital did not do continuous follow-ups on each patient's health care and treatment. In summary, all of the health projects, activities, and indicators of the chronic non-communicable disease policies, and others, launched by the Ministry of Public Health were passed down to the primary service units, or sub-district health promoting hospitals, in the community. However, with the low number of medical staff, 3-4 in each hospital, different organizational structures, and different chains of command, the hospitals still lacked an understanding of the key concepts of the district health networks, coordination, and effective integration of work.

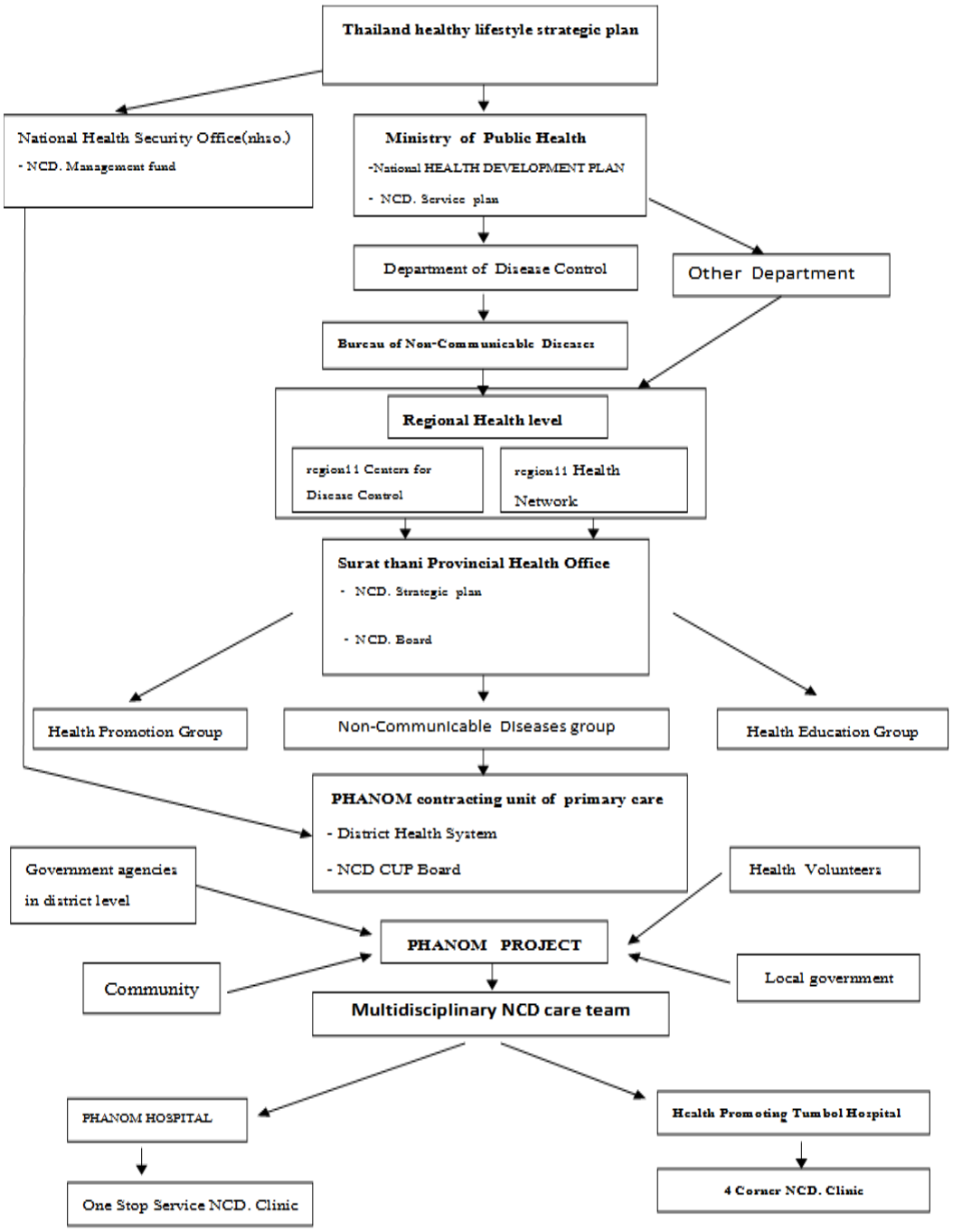


Chart 4.2 displays the operational structure of the chronic non-communicable diseases system of Pha Nom District's Public Health Networks

The Transformation of Policies into Practice

The Ministry of Public Health launched wide-ranging policies and strategies on chronic non-communicable diseases in relation to the Charter Framework on National Health Systems: National Health Act, B.E. 2550 and the 5-year National Health Development Plan. Its main strategies included the Thailand Lifestyle Healthy Strategic Plan: 2011-2020 and the Service Plan: 2012-2016, which were launched through the involved departments. Among the projects there were the Villages' Change of Health Behaviors project by the Health Education Unit, Health Service Department, the "Raipoong" Model Organizations project and DPAC clinics by the Department of Health, and the Fast Track project focused on coronary heart disease and stroke patients by the Department of Medical Services. Other departments, such as the Department of Disease Control of the Non-Communicable Disease Control Office, the Chronic Non-Communicable Disease Prevention and Control Group, the NCD and Risk Behavior Surveillance System Development Group, and the NCD clinics implemented projects to evaluate CVD risks among NCD patients.

In addition, the National Health Security Office, which is considered the main organization of the health network systems, also allocated budgets for the operations of the service units based on quality of service standards.

The other departments within the Ministry of Public Health informed the health networks at the regional level and Disease Control Center 11 of Nahorn Sri Thammarat Province about their operational plans through their strategic plans and indicators, as well as held meetings to clarify project details for the responsible offices. Also, within the health networks at the regional level, transferring the responsibilities for the policies to the sections overseeing those areas of responsibility was done at the Provincial Public Health Office and,afterward, follow-ups on policy implementation were performed and evaluated every six months.

Regarding the operation of Disease Control Office 11 in Nakhon Si Thammarat Province, the details of the plans and projects were related to the staff responsible for them at the Provincial Public Health Office through meetings and inspections, as well as evaluations.

As soon as the Provincial Public Health Office in SuratThani Province was informed about the plans, projects, and indicators by the Health Networks in Region 11 and the Disease Control Center in Nakhon Si Thammarat Province, the Office passed down the strategic plans to the staff responsible for performing them to carry them out. That is, the Disease Control Unit was responsible for projects for disease screenings among risk groups, risk evaluations for coronary heart disease, and the NCD quality clinics, the Health Promotion Office designed plans for "Raipoong" model organizations and DPAC clinics, and the Education Health Unit conducted projects for the Villages' Change of Behaviors. Overall, these units worked closely on the planning of projects and indicators at the provincial level and transformed them into action through the Provincial Public Health Office's strategic plans. Meetings, inspections, and evaluations about operations were also done at SuratThani Hospital, the community hospitals, and District Pubic Health Office, as well as the sub-district health promoting hospitals. Further operations also included the appointment of an NCD Board at the provincial level, consisting of specialists, the directors of the community hospitals, and a multidisciplinary team whose responsibilities were concerned with policy and operational planning, as well as providing support to chronic non-communicable disease operations at the provincial level.

With regard to Pha Nom District's Public Health Networks, further analysis was done on the district's current chronic non-communicable disease situation as soon as they were informed about the projects and their indicators by the Provincial Public Health Office.The networks also worked closely with their associates, including the government sector, local administrative organizations, community leaders, and public health volunteers in designing strategic plans and projects on chronic non-communicable diseases, which resulted in the rise of the PHANOM Project. To implement the project, policies and plans were designed and the NCD CUP Board was appointed, which was comprised of doctors, pharmacists, and nurse practitioners from the sub-district health promoting hospitals, medical scientists, public health officers,the sub-district health promoting hospitals' directors, physiotherapists, computer technical officers, and NCD nurse care managers who coordinated the operations, procedures, and guidelines for disease screening and treatment, as well as the support systems for all of the service networks' operations.

The multidisciplinary team mentioned above also included the medical staff that provided treatments for chronic non-communicable disease patients; set care and treatment standard guidelines; co-organized the consultancy and patient transfer systems with SuratThani Hospital; sent medical staff for important training; provided the NCD Clinic One Stop Service Center at Pha Nom Hospital, the NCD clinics at the sub-district health promoting hospitals, and the DPAC clinics at the sub-district health promoting hospitals, as well as at the primary service unit; supervised operations;and summarized and analyzed work performance of the involved offices and reported them to the NCD CUP Board and inspectors from the Provincial Public Health Office and Disease Control Office 11.

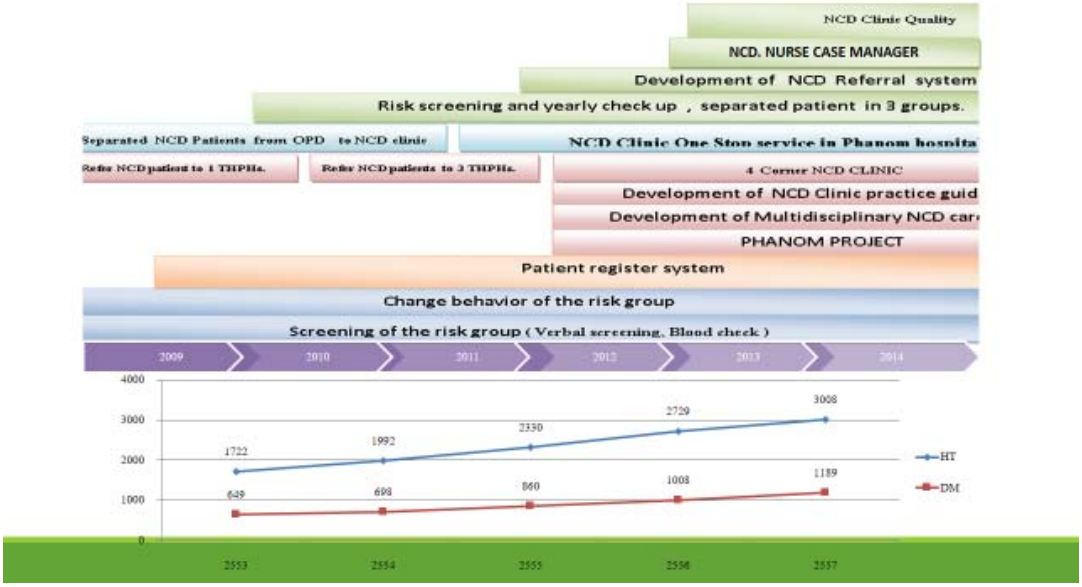
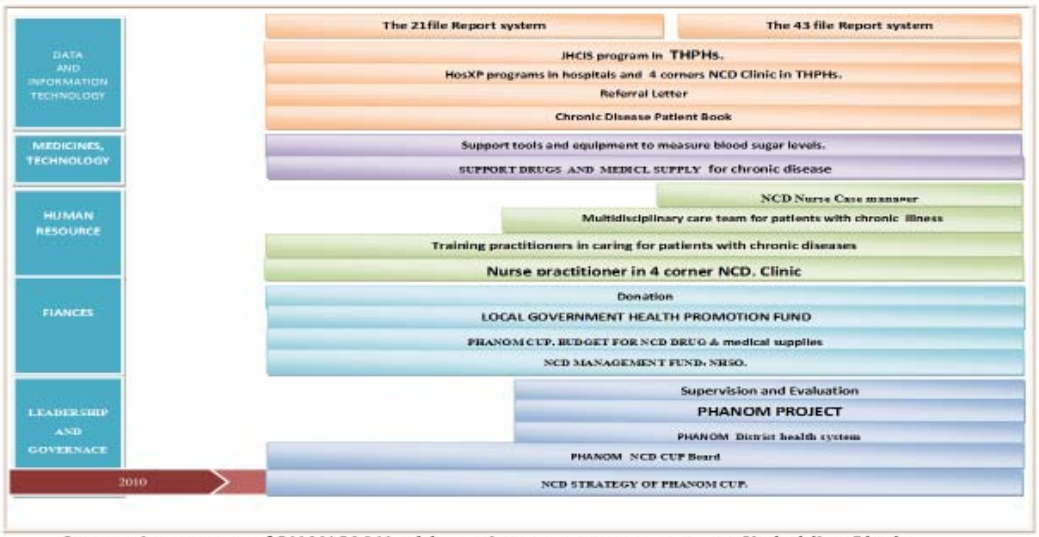


Chart 4.3 displays the development of policies and measures launched in Pha Nom District.

Chronic Non-Communicable Disease Operations in Pha Nom District, SuratThani Province

1) Health service system management, or the six building blocks (leadership, governance, finance, medicines, medical supplies and information technology)



Supporting system of PHANOM Health service system management: Six balding Blocks

Direction

The chronic non-communicable disease operations in Pha Nom District, SuratThani Province were directed by Pha Nom District's public health networks through the use of the District Health System and the PHANOM Project (B.E. 2555-2557). With regard to the PHANOM Project, the NCD CUP Board was the main group responsible for designing operational policies and putting them into practice, as well as providing treatment for chronic non-communicable disease patients. To do all of this work the NCD CUP Board consisted of staff from various fields: government agencies chaired by chief officers, local development officers, district agricultural officers, district public health officers, local administrative organization leaders, community leaders, public health volunteers from villages, senior citizens, and hospitals' multidisciplinary teams, as well as public health officers. In addition, the PHANOM Project's policies were communicated to all units of the Pha Nom Hospital and sub-district health promoting hospitals through meetings organized by the NCD

CUP Board and the Public Health Networks of Pha Nom District. Follow-ups on the effective use of policies and evaluations of work performance were also done by both offices.

Medicines, Medical Supplies and Technology

The same types of medicines and medical supplies were used no matter which hospital they received services or treatments. The procurement of medicines and medical supplies was done by the Surat thani Province,Pha Nom District Hospital, and sub-district health promoting hospitals. Using this system, there was a medicine storage system in place at every hospital so that NCD patients could still receive the same medication as they did at SuratThani Hospital, although they had been transferred to another hospital for further treatment,because the hospital could still purchase the same medicines from SuratThani Hospital.

With regard to medical supplies, the same type and brand of blood sugar testing devices were used by all of the public health networks and their quality was tested by a team of medical technologists from the province. In addition to testing the medical supplies, the team of medical technologists was also responsible for inspecting all of the patients' labs at Pha Nom Hospital and the sub-district health promoting hospitals, diagnosing diseases according to the laboratory's accreditation,as well as reporting the results.

Finance

In B.E. 2553 the National Health Security Office approved the establishment of the Chronic Non-Communicable Disease Management Fund and increased allowances for overhead costs, following the service standards of Pha Nom District Public Health Networks, which afterwards managed the budget received as follows.

1. The medication cost for chronic non-communicable diseases was deducted from the

Out-patient budget before the rest of the budget was allocated to service units; the amount of the deduction was an estimation of the total cost of medicines spent during the past year. This process was done in order to reduce the medication

cost to the sub-district health promoting hospitals and to motivate them to accept the patients that were transferred to them.

2. The central budget for the procurement of blood sugar testing devices was prepared by the Health Promotion Fund. A mass purchase of the devices that were used for the disease screening of risk groups was done after their quality had been tested and their prices been compared with others within the province; by doing a mass purchase, a large amount of money was saved while, at the same time, standard quality devices could be used with patients.

3. Counterpart funds were allocated by local administrative organizations and put in the Sub-district Health Promotion Fund in order to promote health care and control diseases.The funds were sent to the sub-district health promoting hospitals in order for them to launch projects for disease screenings of risk groups and to organize activities on health care for people in the community, as well as to launch campaigns to reduce risks and diseases.

4. Donations from service receivers and individuals were well managed and also used to Provide breakfasts for service receivers of the NCD clinics.

Table 4.19 shows the data on medicine and medical supply costs, as well as disease diagnosis costs, at the NCD laboratories between B.E. 2555 and B.E. 2557.

Cost	**B.E. 2555**	**B.E. 2556**	**B.E. 2557**
Medicines and medical supplies	1,619,794.50	1,954,730.52	2,022,365.73
Disease diagnoses at laboratories	713,158.30	750,299.60	972,040
Total	2,332,952.28	2,705,030.12	2,99,405.73

Staff Development

1. A multidisciplinary team was set up that consisted of the following medical staff:

- Family Physicians
- General Physicians
- NCD Nurse Case Managers
- Nurse Practitioners

- Community Psychiatric Nurses
- Pharmacists
- Pharmacy Technicians
- Physiotherapists
- Dentists
- Thai Traditional Medical Doctors
- Computer Technical Officers
- Data Recording Officer
- Public Health Officers

Their responsibilities covered the following activities:

- Screenings for diseases among risk groups, disease diagnosis, and screenings for complication risks among patients at the hospitals, as well as providing mobile medical services at the sub-district health promoting hospitals

- Setting treatment guidelines and organizing consultation and patient transfer systems

- Providing One-Stop services at Pha Nom Hospital and mobile services at the sub-district health promoting hospitals with the assistance of family practitioners

2. Staff Knowledge and Potential Development

- Nurses were sent for training to be nurse managers or coordinators for NCD patient affairs.

- Training was provided for the nurses who performed care and treatment for patients at the sub-district health promoting hospitals.

Information Technology System

Records of medications, treatment, complication screenings, and health care advice of in-patients were well kept in their personal health books and the recorded data was useful, especially when patients were transferred for further treatment at other service units. To access the data, the HOS XP program was used with patients who received medical treatments at both Pha Nom Hospital and the sub-district health promoting hospitals and, interestingly, the data could be sent through the 43-file report system to the Provincial Public Health Office and the National

Health Security Office. However, in case of patient transfers, information about the patients was noted in the referral form and sent to the target hospitals.

Table 4.20 shows the data link system for diabetes and high blood pressure treatment for patients.

Offices	**Data Link System**
Health units of hospitals	- OPD Card - Patients' personal health books - Hosxp system
Sub-district health promoting hospitals and Pha Nom Hospital	- Patients' personal health books - Hosxp system - Refer form
Pha Nom Hospital and SuratThani Hospital	- Patients' personal health books - Refer form
Pha Nom Hospital, Sub-district health promoting hospitals and the Provincial Public Health Office	- JHCIS system - 21-file and 43-file systems
Pha Nom Hospital and the National Health Security Office	21-file and 43-file systems
Pha Nom Hospital and the Ministry of Public Health	21-file and 43-file systems

Service Delivery

Disease screenings of at risk groups

All sub-district health promoting hospitals, the Pha Nom Hospital and the public health volunteers of each village conducted screenings for diseases among people aged over 15 by using the verbal risk screening method. If the screening results were positive, finger-prick tests and high pressure tests would be done among the following three groups:

Normal group: This group of people was given advice on health promotion and treatment.

Risk group: This group was given advice and referred into the behavior changing process in order to reduce their risk factors, follow-ups on their behaviors were also done afterwards.

Patient group: Individuals with a blood pressure over 140/90 mmHg or a random blood sugar level of over 250 mg%, would be sent to the sub-district health promoting hospitals for confirmation of the tests and to receive another blood pressure or blood sugar test.They were required to refrain from food and drink for 8 hours prior to the tests. If abnormal blood pressure (>140/90 mmHg) or of blood sugar (>110 mg%) levels were found again, they would be sent to hospitals for further diagnoses by doctors. In cases where a patient's screening showed a critical level result, they would be transferred to Pha Nom Hospital immediately.

NCD Clinics at Pha Nom Hospital

In B.E. 2553 Pha Nom Hospital separated the groups of diabetes and high blood pressure patients from the other out-patient groups because the out-patient section was overcrowded, thus making them wait for a long time to receive diagnoses and treatment, however, were still required to receive medicines at the Pharmacy Department.Due to the limited number of staff,medical services for diabetes patients were on provided on Tuesdays, while services for high blood pressure patients were provided every Wednesday and Thursday.

In B.E. 2555 more physiotherapists, mental health nurses, Thai traditional medical doctors, and pharmacists were recruited.This resulted in the forming of a multidisciplinary team at Pha Nom Hospital responsible for providing care and treatment for chronic non-communicable disease patients at the One-Stop Service Center. In other words, the Medical Records Department of the hospital sent patients' data to the NCD clinics so that the patients could receive blood pressure and blood sugar checks by medical technologists, risk screenings by nurse practitioners, diagnosis by physiotherapists, and diagnosis, treatment, and medication prescriptions by doctors on a case by case basis, and have their medications dispensed by pharmacists.

Patient Treatment Process at the NCD Clinics

If the abnormal blood pressure and blood sugar levels were found in patients who received services at the sub-district health promoting hospitals, or at other units of the Pha Nom Hospital, they would be sent to the NCD clinics for further diagnosis of complications and for confirmations of disease severity level and end organ danger. There, NCD case managers would enlist them for risk evaluations of coronary heart disease and stroke, together with physiotherapists who conducted foot diagnoses. Other medical staff involved in the process included dentists, mental health nurses screened for depression in patients, and doctors who evaluated complications based on the patients' annual health records. Concerning complication evaluations, a team of ophthalmologists also conducted exams for eye complications annually through the use of macular degeneration pictures,while the patients were divided into three groups.In addition, at the clinics permanently assigned doctors determined the increase, reduction, or change in mediations for patients who had complications.They also consulted specialists about patient symptoms and transferred patients who had complications to SuratThani Hospital, while the patients whose high blood and diabetes levels were controllable, and whose complications were already diagnosed would be sent to nurse practitioners for further treatment or transferred back to the sub-district health promoting hospitals near their homes on a voluntary basis.

NCD Clinics at the Sub-district Health Promoting Hospitals of 4 Corners

The patients whose blood pressure and diabetes levels were controllable and did not have any complications could receive medical treatment at the NCD clinics at the four sub-district health promoting hospitals located in the areas area closest to their home.Receiving the services there would help save travel time to other hospitals and money. At the four sub-district health promoting hospitals, they would find nurse practitioners and a multidisciplinary medical team from the Pha Nom Hospital. They would also be registered to receive complication evaluations by nurses and given medical treatment and medications by doctors. For those without complications, diagnoses and treatment done by the nurse practitioners and and the pharmacists could dispense the same medications as Pha Nom Hospital. However, if

complications were found, patients would be transferred back to Pha Nom Hospital, or to SuratThani Hospital, for further treatment.

Diet and Physical Activity Clinic: DPAC

The Diet and Physical Activity Clinic provides services on a case by case basis with focus on physical activities and food consumption control. The clinics, which have continuously been operated at all the nine sub-district health promoting hospitals and Pha Nom Hospital since the end of B.E. 2555, have conducted a lot of medical activities, including verbal screening tests, measuring weights, heights, and waistlines, as well as blood pressure and finger-prick blood sugar level tests. By doing all these annually, high-risk groups, which include those who have high mass body indexes and expanding waistlines, Pre-DM groups, and Pre-HT group, as well as diabetes patients and high blood pressure patients who are overweight and have expanding waistlines, can be given advice on eating behaviors and physical activities. Follow-ups on changes of their behaviors are done every one or two months and are evaluated based on their body mass index and waistline measurements.

The Villages' Change of Behaviors

All nine sub-district health promoting hospitals and Pha Nom Hospital encouraged villagers to exercise regularly, at least three times a week or 30 minutes a day, eat at least half a kilogram of fresh vegetables and fruits, and eat less salty and oily foods. Together with local volunteers, community leaders, and local administrative organizations, they also combined the activities with ones for disease screenings of target groups. All of the mentioned activities were successfully launched in 54 out of 56 villages, or 96.43 percent of the villages in the district.

Table 4.21 includes the information on gaps in chronic non-communicable disease service system management.

Structure	**Work Performance**	**Gap**
Leadership and Governance	- Policies designed and launched - Support systems organized - Follow-ups and evaluations done	- Lack of operational integration in practice - Separation of the policies and budgets - Excessive emphasis on quantitative results
Health Finances	- Overhead cost managed - NCD Management Fund organized - Sub-district Health Promoting Fund organized - Donations received	- Insufficient budget in contrast to work load - Cost paid according to the quality of work - Being unable to respond to the goals of the funds - High cost of patient transfer
Health Work Force	- Multidisciplinary team organized - Staff development activities performed	- Lack of staff and high turnover rate - Excessive work load
Medical Product and Technology	- Same types of medicines used - Same types of medicines used with patients who were transferred back to the regional hospital	- Higher cost of medicines - High cost of medicines purchased from the regional hospital - The Governmental Pharmaceutical Organization's cancellation of production of certain medicines
Health Information System	- Personal health books used - Referral forms used - Hos.XP and JHCIS programs used - 21-file and 43-file reports systems used	- Connection between the Hos XP program and JHCIS programs - Data connection with the regional hospital - Inaccurate patient data transfer between hospitals
Health Service Delivery	- Screenings for risk factors performed - Behavior changing activities performed - NCD Clinics established	- Insufficient coverage - Effectiveness of behavior modifications - Participation from the community

Analyses of Gaps in Chronic Non-Communicable Disease Service System Management

To be able to provide quality health care and treatment, as well as bring better clinical results to patients, an effective disease management system should be established. The main factors in chronic non-communicable disease management at the district level are the policies and supporting mechanisms launched by offices and organizations involved, as well as effective internal management of the District Health System.

Chronic Non-Communicable Disease Policies

Although national policies on chronic non-communicable disease operations were launched by the Ministry of Public Health,the integration of the operations between the related divisions, departments, and health service networks at the regional level and the Provincial Public Health Office was not well done. That is, each unit on the District Public Health Networks had their own set of indicators and those indicators were then to the sub-district health promoting hospitals, which had limited number of staff while, to be put into practice while at the same time, they were required to complete every plan according to the established policies.

Moreover, difficulties with operational integration between offices was seen.For example, the lack of an integrated system for funding the activities required by the policies between the Public Health Ministry, which was responsible for budget allocation for operational procedures, and the National Health Security Office was a direct cause of certain health activities not being able to reach their goals. To illustrate, the Ministry of Public Health did not provide a budget to support undertaking the activities in the strategic plans to the offices responsible for implementing them, while the National Health Security Office only allocated budget funds from the Chronic Non-Communicable Disease Management Fund to specific networks based to work performances that had previously met the quality standards. The result was that the affected activities receive din sufficient, or no, funding to support them.

As for follow-ups and evaluations of operations and work performance, more emphasis was placed on quantifiable indicators and quantitative results rather than on the satisfaction of patients or service receivers.

In addition, the lack of effective follow-ups and evaluations was clearly seen and analyses of work performance were not done consistently. Consequently, the direction of NCD policies could not be adjusted to improve the system's management and the service units and involved sectors were not given feedback relating to their work operations and performances.

Finance and Budget

In order to manage the chronic non-communicable disease system at the district level, a budget for overhead costs was provided by the National Health Security System (UC).However, it was dependent on the number of registered patients in the system and a set rate for overhead costs of 2,895.09 baht per patient. The budget, unfortunately, did no account for structural factors, work force, and other workloads.

Furthermore, the budget from the Chronic Non-Communicable Disease Management Fund under the supervision of the National Health Security Office was allocated to health service networks at the district level only when their work performances met the required standards.Meanwhile, the budget from the Disease Prevention and Health Promotion Fund was used differently at the district level, and was allocated depending on each local administrative organization's agenda. Unfortunately, it was found that the budget was frequently used for r purposes other than health promotion and disease prevention operations.

Overall, the operation of chronic non-communicable disease services in the health networks still meet with financial difficulties. Every year there are new NCD patients and more expenses, while the budget continues to be allocated based on overhead cost. Other expenses also increased, especially when patients were transferred to SuratThani Hospital, as it cost 750 baht per patient transfer, which was considered a high rate. Other expenses included medicine costs and laboratory test costs that SuratThani Hospital charged for at higher rate than their actual cost.

Medicines, Medical Supplies, and Medical Equipment

Although the same system of medication usage was used by all of the health networks and for the patients transferred from SuratThani Hospital, problems with medications were still found. For example, the high cost of NCD medications, the cancellation of production of certain medicines by the Government Pharmaceutical Organization, and the higher cost of medications purchased from SuratThani Hospital.

Workforce

In theory, in order to provide effective NCD services a multidisciplinary team is required. In practice, however, the health networks at the district level still lacked sufficient staff, and they could not manage the recruitment processes because of the limitations of the GIS system, which focused more on the number of staff per population rather than on the staff's current work load. Today, as we know, plans and policies for service management are more quality-based,but meanwhile the number of patients keeps rising each year, thus resulting in a higher work load for the current staff.

The limited number of multidisciplinary team members and high work rotation rates of staff were another problem found in terms of the workforce. For example, every 1 or 2 years general practitioners (GPs) rotated to another hospital/health unit.When compared with hospital directors, who stayed at hospitals for approximately 13 years, thus having lower rate of rotation, the turnover in GPs is quite rapid. More problems related to the workforce were seen when registered nurses who had a thorough understanding of the plans and systems moved to another hospital, took maternity leave, or changed their duties. Thus, it was difficult to regain the trust of patients and the service systems still lacked quality and efficiency.

Other problems concerning medical staff included the following: the staff's lack of motivation to work in distant areas**;** an insufficient number of medical staff produced each yearby medical institutes, for example clinical psychologists and community public health officers; an insufficient number of medical staff due to the cancellation of medical programs, for example radiographers; inefficient staff, for example public health officers. To conclude, all these problems caused operational difficulties at the sub-district health promoting hospitals.

Information Technology

To make chronic non-communicable disease service management effective, the development of clinical information technology is essential. For Pha Nom Hospital, the use of Hos xp program was adopted for patient data recording,while the sub-district health promoting hospitals used the JHCIT program. Using different programs caused difficulty in linking the data of an individual patient at the district network level. At SuratThani Hospital, yet another program was used for data recording, so its patient data could not be linked with that of the other hospitals in cases where patients were transferred or when registering patients in the Data Center of the Provincial Public Health Office.Although the Refer Link and Thai Refer Link were used to solve the problem, high-speed Internet was still needed for better linking of data. Other problems that occurred due to the use of different programs included out-of-date and ineffective data in the systems and their complicated and impractical procedures.

To conclude, according to the survey, different data systems were used by the health units at the district, provincial, and department levels, as well as by the Ministry of Public Health, and this resulted in accuracy problems with data that could later be used for problem analyses and for further development of health policies.

Service Delivery System Management

The disease screenings for people aged between 15 and 35 were not widely done and the activities to change the behaviors of the at-risk, diabetes, and high blood pressure groups were not done consistently and lacked long-term evaluations, especially for patients on self-management. Also, although the clinical practice guidelines were formed at provincial level and in the hospitals, most of them were in the form of documents and were not applied to use in practice. Home visits for NCD patients were not widely done and follow-ups were ineffective and not done consistently for patients who were first transferred to SuratThani Province and then later back to the sub-district health promoting hospitals.

Service Delivery

Disease screenings of risk groups

All ten sub-district health promoting hospitals, Pha Nom Hospital, and the community public health volunteers cooperated in verbal screenings for diseases among the at-risk groups aged over 15. When the results returned a positive, a finger-prick test for blood sugar and a high blood pressure test would be done and advice be given to the following groups:

- Normal Group: People who had a normal health condition were given advice on health promotion and how to stay healthy.
- Risk Group: People at risk were given advice on how to change their behaviors at the DPAC clinics in order to reduce risk factors; they would later be reevaluated and given the tests again.
- Patient Group: The patients who had an abnormal blood pressure of over 140/90 mmHg or a random blood sugar test of over 250 mg% were sent to the sub-district health promoting hospitals for confirmation of the test. Prior to that, they were required to refrain from drinking water and eating food for 8 hours and they would be given a fasting blood sugar test. If, after the fasting, an abnormal blood pressure of over140/90 mmHg or a blood sugar of over 110 mg% was found, they would be transferred to Pha Nom Hospital to be diagnosed by doctors, except for ones with critical levels, who would be given treatment immediately.

Services at the NCD Clinics of Pha Nom Hospital

In B.E. 2553 Pha Nom Hospital separated diabetes and high blood pressure patients from general out-patients because there were too many patients waiting for a long time to receive services and treatment at the Out-Patient Department. Despite the separation, they still needed to receive their medicines from the Pharmacy Department together with the other patients because of the limited number of pharmacy staff. Services were offered to diabetes patients on Tuesdays and Fridays and to high blood pressure patients on Wednesdays and Thursdays.

In B.E. 2555 when more physiotherapists, mental health nurses, Thai tradition doctors, and pharmacists were recruited, a multidisciplinary team was formed to provide treatment to NCD patients at Pha Nom Hospital and one-stop services at the

NCD clinics. The patients who had made an appointment through the appointment system could walk straight to the NCD clinics as their medical data had already been prepared beforehand by the Medical Records Office of the hospital. At the NCD clinics, the patients could receive various services ranging from blood pressure and blood sugar tests by medical technologists, risk screenings by nurse practitioners, dentists, community mental health nurses, and physiotherapists. Also, they could be diagnosed and their medicines prescribed by doctors, given further advice by nurse case managers, and have their medications dispensed by pharmacists.

Treatment Procedures at the NCD Clinics

The patients who had abnormal blood pressure and blood sugar levels would be sent for doctors' confirmations of the levels and further analyses, including screening for possible complications and evaluating the severity of the abnormality, as well as evaluating end organ damage. Additionally, they would be sent to meet the NCD nurse case managers who would register them for risk evaluations for coronary heart disease and stroke and divide them into three groups. The nurse case managers would also be joined by physiotherapists who would do foot assessment, dentists, mental health nurses who would assess the patients' depressive disorder condition, doctors who would do evaluations for complications based on the patients' annual health records, and ophthalmologists who would evaluate eye complications through the use of retinal pictures.In addition to the staff mentioned, at the clinics patients could receive the right medication by permanent doctors who would make judgments about increasing, reducing, or changing medicines. The patients who had complications would be given advice by specialists and transferred to SuratThani Hospital for further treatment while those who had diabetes and high blood pressure at controllable levels and were without complications would be given treatment by nurse practitioners and transferred back, on a voluntary basis, to the sub-district health promoting hospitals closest to their homes.

Patient Groups	Treatments
Green (not urgent)	General treatments given according to their problems by nurse practitioners An appointment made for follow-up within two months' time
Yellow (urgent at medium level)	Follow-ups on their health problems done by nurses, Nurse case managers, consulting doctors,and the multidisciplinary team on a case by case basis An appointment made for follow-up every one or two months
Red (highly urgent)	Urgent follow-ups on their health problems done by nurse case managers and the multidisciplinary team Home visits done every one to three weeks

NCD Clinics at the Sub-district Health Promoting Hospitals

High blood pressure and diabetes patients who did not have complications could choose to receive treatments at the NCD clinics located in the four sub-district health promoting hospitals located in the four areas to help them save travel time to other hospitals and reduce their expenses. At the sub-district health promoting hospitals nurse practitioners were available and the multidisciplinary team from the Pha Nom Hospital would also provide mobile services to them. In addition to receiving services and treatments, the patients would be registered for evaluations for complications by nurses and their medications would be dispensed by doctors. Furthermore, all patients would be given the same types of medicines by pharmacists as given by Pha Nom Hospital. However, patients with complications would be transferred to Pha Nom Hospital or SuratThani Hospital for them to receive further treatment.

Measures for chronic non-communicable disease operations in Pha Nom District

Table 4.22 shows the measures for chronic non-communicable disease operations in Pha Nom District.

Measures	Activities/Projects	Coverage	Intensity	Continuity	Target Group
Disease Surveillance and Prevention					
Food	- Villages' Change of Behaviors - "Raipoong" schools	+++ ++	+ +	++ +	People
Physical Activity	District sports	+	+	+	Students
Alcoholic Drinks	Legal measures	+	+	+	People
Cigarettes	Legal measures	+	+	+	People
Care and Treatment					
Screenings of Risk Groups	Screenings of risk groups	+++	+++	+++	People aged over 15
Changing risk groups' behaviors	DPAC Clinic	++	+	+	Risk groups
Treatment	NCD Quality Clinic	+++	+++	+++	NCD patients
Screenings for Complications	Screenings for CVD risks	+++	+++	+++	NCD patients
Patient transfers	- NCD clinics at the 4 sub-district health promoting hospitals - Stroke , STEMI Fast track	++ +++	+++ +++	+++ +++	NCD patients Patients with complications

Note: +++ = high level of operation, ++ medium level of operation, + low level of operation

Although measures on chronic non-communicable diseases, health promotion, and disease control were launched, and activities, work operation, and evaluation systems were systematically organized at all levels, including by the Ministry of Public Health, a lack of intensity and continuity of the activities were noticed in practice. Also, there was still a lack of a clear budget support system by the Ministry of Public Health, which only allocated budgets for overall health promotion activities while the Sub-district Health Promotion and Disease Control Fund provided a different type of budget. However, measures for diagnosis and treatment of NCD patients were well perceived and had a good level of intensity and related projects were focused on the right target groups. Disease screenings of people aged over 15 were successfully done and treatments were provided to patients at the clinics at an impressive level.Unfortunately, an effective budget support system and an evaluation system by the National Health Security Office were still unavailable. However,despite the success, a lack of intensity and continuity of evaluations of the risk groups' behaviors and patients were found.To conclude, the main factors for the success of the measures are indicators related to inspections and evaluations at the regional and provincial levels, budget allocation, and how level of importance and intensity placed on each activity by the service units.

Table 4.23 shows work performance for chronic non-communicable disease operations in Pha Nom District in B.E. 2557.

Work Performances	**Work Completion Rate according to Standards**	**Coverage**	**Gap/Limitation**
Disease Surveillance and Prevention			
Villages' Change of Behaviors	96.43%	++	Lack of continuous operation and accurate evaluations
DPAC Clinic	1 sub-district health promoting hospital	+	Lack of continuous operation
Treatment			
Screenings of Risk Groups	Passed the standards	+++	Certain operation done only in certain periods of the year
Changing risk groups' behaviors	Passed the standards	+	Lack of follow-ups and accurate evaluations
Control of Diseases	Below the standards with regard to diabetes patients	++	Higher number of patients
Screenings for Complications	Passed the standards	++	High laboratory cost

Table 4.23 shows work performance for chronic non-communicable disease operations in Pha Nom District in B.E. 2557. (cont.)

Work Performances	**Work Completion Rate according to Standards**	**Coverage**	**Gap/Limitation**
Operation			
District Health Systems (DHS)	Score of 3.5 (out of 5)	++	Lacks integration of policies in practice Lack of staff Lack of budget Patient data link inadequate Community participation
NCD quality clinics	Passed the standards at very good level (with a score of 104)	+++	Use of evaluation results for future improvement Community participation
NCD clinics at the 4 sub-district health promoting hospitals	100%	++	Not available at some sub-district health promoting hospitals

CHAPTER V
CONCLUSIONS AND DISCUSSIONS

This qualitative research was undertaken to study the outcomes of administrative management and health care delivery in non-communicable chronic disease (NCD) management and is limited only to diabetes and hypertension cases within the district health system (DHS) in the Phanom district of Surat Thani province, Thailand. Mixed-methods were used to collect data due to the nature of this study. A combination of both new and existing quantitative and qualitative data was used. This chapter will describe the key findings, suggestions for policy making, and applications for further research and health care administration.

1. Key Finding

Analysis of the development of non-communicable chronic disease (NCD) management **policy**

The development of policy for non-communicable chronic disease (NCD) management was initiated as a part the Tenth National Economic and Social Development Plan (B.E.2550-2554). Since then, it has been continuously carried out to provide direction to the development of Thailand's healthy lifestyle strategy. Many different ministries in Thailand, including the Ministry of Public health (MoPH), the National Health Security Office (NHSO), and the Thai Health Promotion Foundation (THPF), have adopted the strategies leading to the development of healthy lifestyle promoting policies, plans, and projects. Healthy lifestyle promoting projects have mainly been supported financially by the National Health Security Office and the Thai Health Promotion Foundation.

With regarding to Thailand's healthy lifestyle strategy, the MoPH has created national health development plans and service plans and delegated the implementation of the policies and the strategy's mission to the related departments,

including the Department of Disease Control, the Department of Health Service Support, the Department of Medical Services, and the Department of Health. At the national level, the Department of Disease Control is the main department in charge of development of the working strategies, plans, and projects and setting-up the NCD care delivery administration system. Such strategies and administrative systems were then transferred to the local-level health offices, such as the district health services centers, centers for disease control, the centers of health, then to the provincial public health centers, and finally to the district health care networks as the lowest level of the healthcare delivery system. Different modes of communications were used as the means for transferring and implementations policy and strategies from the national level to the district level. The means included administrative meetings, official letters and documents, and the office web-sites, as well as on site visits and supervision. To accomplish the Thailand's Healthy Lifestyle Strategy activities were focused more on the care and treatment of the affected persons than disease surveillance, health promotion, and disease prevention. Among other departments, the NHSO created practical implementation systems, conducted healthy lifestyle promotion activities, and developed a transparent and systematic financial fund administration system for NCD care delivery, created a highly effective evaluation and informatics management systems, and a transparent budgeting system to allocate the funds to the service centers based on their service care.

NCD care implementation structure

The administrative structure of the NCD care management system consists of the different departments within the organizational structures of the MoPH and the other involved health-related government agencies, including the NHSO and the THPF. The MoPH and the NHSO are the primary institutes that have a proven system for developing strategies, plans, and projects. As previously mentioned, the NHSO has well developed, working systems for health care policy implementation, evaluation, and financial funding to support health promotion plans and projects at the district level, while, the THPF mainly focuses on carrying out general activities that can be undertaken throughout the country.

Additionally, at the national level the MoPH assigns each planned strategy for NCD care management and implementation to a department in relation to its major responsibility at the national level, and each department has its office implement that strategy as planned at the provincial and district levels. The Health Promotion Department and the Department of Health mainly focus on NCD surveillance, health promotion, and disease prevention and control using DPAC clinic and community behavioral modification to reduce NCD, while the Department of Disease Control and the Department of Medical Services are primarily responsible for strategic planning and projects focused on providing NCD medical treatment and care. The projects include quality NCD clinics, at-risk group screening, and providing a Stroke and STEMI FAST Track for those who have cardio-vascular diseases that need immediate care and treatment. Accordingly, each department works collaboratively with its local office, not only at the regional health care service level, but also at the provincial and district levels, in order to achieve their goals in their major areas of responsibility. It is quite clear that the organizational lines to carry out these strategic plans are clear, however, these departments have not allocated any budget to financially support the projects to accomplish the strategic plans in the health care delivery setting.

At the provincial level, the Provincial Health Office assigns each mission to a specific office according to its job description and area of responsibility. The Office of Disease Control is responsible for medical care and treatment projects, while the Office of Health Education takes care of community of behavioral modification projects to reduce NCD. The Office of Health Promotion is in charge of the DPAC clinic. Based on the document reviews and interviews, it was found that there is a lack of integration and collaboration of NCD administrative management activities in the real world; thus, it is difficult to have continuity and consistency of NCD care, especially between the administrative level and the service setting at the district level.

The district NCD administrative management networks that were reviewed in this study are the Phanom community hospital, the Phanom district health office, sub-district health promotion hospitals (SHPHs), network collaboration, and the Phanom community board. These health care networks are the major organizations that implement the policies and the planned projects targeting their clients in the community. The Phanom District Health Office and the Office of Family and

Community Primary Medical Practice of the hospitals have a designated officer who is responsible for ensuring that each activity meets the activity indicators focusing on NCD surveillance, health promotion, NCD prevention, and NCD screening for at-risk groups. On the other hand, the Phanom Community Hospital, which provides both in- and out-patient care, is primarily responsible for the care and treatment of those who already have NCD. A NCD nurse case manager is the coordinator of both the care and treatment provided by the quality NCD clinic in the Phanom hospital, referring well-controlled NCD cases to the nearby SHPHs and screening for risks and complications that NCD cases might have in order to refer them to the Surat Thani provincial hospital to receive care and treatment by the NCD specialists. Unfortunately, it is evident that there is a lack of a tracking system to monitor the outcomes of care and treatment in terms of the continuity and completeness of the NCD standards of care.

It is an important point that it is clear from the organizational structure and lines that responsibility for implementing these policies ultimately falls on the SHPHs in the primary care setting. On the bottom line, all of the strategic plans, projects, activities, and indicators of NCD administrative management policies, and other health care policies, developed by the MoPH, fall upon the SHPH staff's shoulders. Only 3-4 nurses and public health officers work for each SHPH in the Phanom area. It meant that the number of staff is not sufficient, compared to the load of works needed to be done by them. Some may make the observation that there are other health care offices under the MoPH located in the Phanom district that may be able to work collaboratively with the SHPHs. However, the differences of the nature of each office, especially the differences in organizational lines and specific job responsibilities and descriptions, as well as a lack of understanding of the actual district health systems, affect the work integration and collaboration among district-level health care offices and have a vital effect on their work effectiveness.

Measures for NCD implementation

In terms of the measures for NCD surveillance, health promotion, and disease control, although the policy, activities and program evaluation systems are well-established at all levels from the top line of administrative management at the MoPH, to the local level, the implementation in practice still lacks the intensity and

continuing administrative management processes. Additionally, the specified target population for each activity and the clarity of budgetary support from the MoPH are not well defined. Most of budgeting was spent for general health promotion activities. Moreover, the amount of budgeting allocated from the district health promotion and disease control funds to the health care setting varied from location to location. On the other hand, the measures of NCD care and treatment were well-developed and implemented. The study also found the intensity of the projects, the target population, the continuity of NCD care and treatment activities (including the screening system for those older than 15 years old and the clinical care and treatment provided), and the NHSO monitoring and budgeting systems are very well-established and effective. However, a lot of works need to be done in terms of the continuity of the monitoring system for behavioral modification among the at-risk and affected groups. More importantly, when the effectiveness of the behavioral modification program is set as the work performance indicator for supervision and work performance, evaluation at both the regional and provincial levels, which are related to the budgeting allocation in the following year, can be important factors that may have an effect on assigning the weighted scores, priority setting, and the intensity of the activity's performance within the service care setting. This activity is more likely to receive more attention than others as the staff would tend to focus on this aspect to ensure that their office would look good on the work performance scores.

Outcomes of DHS administrative management

When UCARE's Development Criteria for District Health Systems and Score Levels were used for the HDS work performance evaluation, the Phanom DHS passed, ranking third out of five levels. This means that, overall; every activity had met the following criteria: 1) having clear methods for development 2) all areas of administrative management and operations were covered, 3) having partially shared the learning process and community and network collaboration. The next step needs to be taken is to meet the fourth and fifth criteria; which means fully integrating team networks, both vertically and horizontally, and being joined by other associates and communities to work together as a health network team on important health issues,

need to be accomplished so that the DHS's administrative management can be continuously improved.

Administration of the DHS administrative management support system

This study has found that there are many factors affecting the administration of the support system for DHS administrative management. These includes leadership and governance, health finances, health workforces, medical products and technology, the health informatics system, health services delivery, and the quality of the NCD clinic.

Leadership and Governance: It was found that the leadership and governance are less integrated and mis-matched with regard to the administrative policy and the budget. Moreover, the evaluation system is more focused on the quantitative aspects of the numbers, or scores rather than the qualitative aspect of outcomes, or the actual outcomes experienced by the target groups. It would be more practical if the qualitative data were used to assess the effectiveness of NCD surveillance, health promotion, and NCD prevention and control.

Health finances: The public sectors of all health care services, including Phanom Hospital, receive health finances allocated by the NHSO through the universal health care program of Thailand mainly based on a per capita basis. Problematic issues that were found are insufficient budgets to deliver and cover important healthcare issues and the budget not being related to the actual workload required. Additionally, the MoPH itself does not have a budget allocation for overall administrative management, with the funding provided being focused on paying for the care and treatment services which are paid for based on the standard of care delivery assessed by strict work performance evaluation criteria. In contrast, the surveillance and health promotion activities get paid for out of health promotion funds. However, the budgetary allocation from the sub-district health promotion and disease prevention and control fund for these activities does, not match with the objectives of the THPF sometimes, and it is not clear which activities would get paid for and how much would be allotted.

Healthcare Workforce: In terms of the health workforce, although personal resources are shared within the network of healthcare service providers at the district level, it was found that a workforce shortage still existed not only with regard to the number of workers when compared to the ever increasing workload, but also the competency of each health professional, especially physicians. Insufficiency of the internal medicine specialists affects the quality of NCD care. The high turnover rate of the hospital directors, attending physicians, and the head of the district public health office also has an effect on the continuity of healthcare and policy implementation, especially for the DHS and primary care delivery.

Medial Products and Technology: NCD pharmaceuticals used within the healthcare setting network are similar. Since the cost of NCD drugs is very high, the budgeting for medicines, medical supplies, and laboratory supplies for NCD screening is generally allocated to the contracting unit for primary care (CUP) to reduce the cost of NCD care and treatment at the Sub-district health promotion hospitals (SHPHs).

Health Information Systems: There are some problematic issues with connecting the Hos HP program used in the community hospital, the JHCIS program used at the SHPHs, and the program used in the Surat Thani provincial hospital to share individual health information and data. It was also found that information cannot be shared between the national health database and the district health databases due to the differences in the database programs used.

Health Services Delivery: Insufficient levels of health care service coverage, efficiency of behavioral modifications for NCD control, NCD patient monitoring, and community network collaboration exist in the Phanom HDS administrative management system for NCD.

The 11th Center of Disease Control awarded an excellent working performance to the quality NCD clinic of the Phanom community hospital, based on their standard of work performance criteria.

The outcomes of Healthcare delivery

Compared to the national, provincial, and district population health status data for the years of B.E. 2555 to 2557, the trend of NCD cases in Phanom district is increasing for all three years and at all three levels.

Phanom district's NCD situation. There are more hypertension than diabetes. The prevalence rate of hypertension is 6,000: 100,000 population, while that of diabetes is 2,333.3: 100,000 population. Importantly, its prevalence rate for hypertension is also higher than that of the country (5,288.01: 100,000 population). On the other hand, its prevalence rate for diabetes is lower than that of the country (2,800.81: 100,000 population). The characteristics of those who have hypertension and diabetes are quite similar. For diabetes, the majority are females (69.38%), working in agriculture (89.75%). Their average age is 59 years old, 50.17% of them have the onset at younger than 60 years old, and the number not reporting their education level is high (55.3%). For hypertension cases, the majority are females (64.59 %) working in agriculture (85.79 %). Their average age is 58 years old, 45.51% of them experienced the onset aged between 35- 60 years old, and the number not reporting their education level is high (55.2%).

The outcomes of health care delivery administrative management

Outcomes of diabetes case administrative management

The screening coverage of the target population for diabetes, persons who are 15 years old and older, in the Phanom district falls within the goal setting and is higher than that at the provincial and national levels. The outcomes of diabetes prevention and risk reduction assessed by the performance on the behavioral modifications among those who are at risk for NCD met the goal set, > 50%, and trend is increasing every year. Their performance has been higher than that of Surat thani province, unfortunately, the national data is not available for comparison.

The global outcomes of diabetes screening for complications, complication incidences, the rate of missed follow-up, and missed medication doses, the incident rate of new cases, and mortality rate met the standard criteria. Unfortunately, the global rate of well-controlled diabetes with Hb. A1 C levels < 7 % is lower than the

target goal (> 50%). However, this is improving and it is still close to Surat Thani province's average outcomes.

Outcomes of hypertension case administrative management

In B.E. 2556, the screening coverage of the target population for hypertension, persons who are 15 years old and older, in the Phanom district fell below the goal set (90 %). However, in the following year (B.E. 2557) the screening coverage was higher than the target goal and higher than that of the provincial and national levels.

In the year B.E. 2555, the outcomes of hypertensive prevention and risk reduction assessed by the performance on the behavioral modifications among hypertension persons whose blood pressure levels were well-controlled were a little bit lower than the goal set, > 60%. However, in later years it met the set goal and was higher than that of Surat Thani province and the national data.

The global outcomes of hypertension complications screening for cardiovascular risk is lower than the set goal (>80 %), however, it is higher than that of the province. Unfortunately there is no national data for comparison. In the year B.E. 2555, the outcomes of hypertensive complication screening for kidney and heart disease were lower than the goal set, > 60%. However, in the following years they met the set goals and were higher than those of Surat Thani province and the national data. In terms of the well-being situation, the incident rate for new cases of hypertension, the complication rate, and the mortality rate of hypertension cases is within their set goals. Surprisingly, the incident rate of new cases of hypertension in Phanom district is lower than that of Surat Thani province and the country as a whole.

2. Summary

The NCD administrative management and its national policy are well-established and are parts of the current National Economic and Social Development Plan. To accomplish the policy, the Thailand Healthy Lifestyle Strategy was initiated. The Ministry of Public Health (MoPH) is the major institute that has set-up the strategic planning, plans, and projects under the strategy by setting the work performance indicators and criteria and the top-down transfer of them to the various other health care setting throughout all levels in its organizational structure and lines, especially the DHS, as it is the system that brings the policy into action by providing healthcare to the target populations in their communities. Many modes of communications are used to ensure that essential and important information and instructions are well-transferred and able to be followed. Plans, projects, and measures for all aspects of care, including health promotion, disease prevention, care and treatment, were well-set-out. Such work is financially supported by the NHSO based on the outcomes of healthcare services and administrative management within the standards and criteria of care and the evaluation system that had already been planned and established. The work under the DHS is carried out at district level in the public healthcare setting.

In the Phanom district, the strategy for NCD administrative management was carried out under the Phanom project and the supporting system were supported through the NCD CUP board. Medical supplies and medicines, health workforces for healthcare services, data and informatics systems for service delivery were provided. These supporting systems are important factors that have allowed the Phanom project to be able to manage NCD care and treatment to meet the standards, the target goals, and target indicators for NCD work performance.

It should be mentioned that, in general, the coverage, intensity, and continuation of all aspects of the surveillance, health promotion, and disease control activities, and the evaluation system still need to be improved. However, the outcomes of NCD care and treatment with regard to the performance of the quality NCD clinic was awarded an excellent work performance rating, while the outcome for NCD screening was higher than its set goal. Unfortunately, a lack of continuing and systematic monitoring of conducting the behavioral modification activities among at-

risk and affected persons exists. The global NCS complication screening rate is still lower than the goal set, however, that might be a result of the high number of affected persons. Additionally, due to the different software programs used within each healthcare setting, linking of the health informatics and individual health data and information among the SHPHs, Phanom district hospital and the Surat Thani provincial hospital has yet to be effectively established.

3. Policy making suggestions for improving the district health system of the country

The study findings suggested that policy makers should pay more attention to the following issues:

1. Policy and budget integration between the MoPH as the working health care and service institute and the budget support agencies including the NHSO and the THPF should be undertaken as it is found that some MoPH healthcare and service activities were funded by the NHSO and the THPF but the MoPH did not have any authority to allocate the budgets.

2. The qualitative data of outcomes of care and services experienced by the target populations should be taken into account as a part of the project evaluation and the project budget allocation process in conjunction with the scores from the quantitative aspects of the project evaluations, which is what has been primarily used.

3. With regard to concerns about the effectiveness and efficacy of health finance, the health workforce, the medical products purchasing system, and technology supporting systems should be considered.

3.1 The additional costs and expenses of basic factors that are necessary for NCD service management should be taken into account, instead of only strategic performance based budgeting systems.

3.2 Structuring of the healthcare workforce should be undertaken to meet the healthcare needs of the community. For example, community public health officers who are highly competent in their areas of service provide better public healthcare services. Moreover, the district health system (DHS)

also needs clinical psychologists and radiology technicians to increase the effectiveness of DHS administration.

3.3 The whole purchasing system for pharmaceuticals, medical supplies, and scientific materials should be set-up in order to effectively decrease the administrative costs.

3.4 An IT system should be developed and shared among the departments of the MoPH and the NHSO in order to effectively gather, access, and link the service data and individual patient data from all of the different stakeholders and health care providers at all levels to ensure proper care and treatment and data reporting management. Doing so would also help reduce the software program cost burden for hospitals all over the country.

3.5 Working collaboratively under the concept of a “Single management team” as administratively planned is very challenging in regard to the differences in the natures of the district health care offices. In this case, it is not only difficult to make it work within the network of district health care offices, community hospitals, district health offices, and the SHPHs, but also in dealing with outside networks and the civil society within the district.

4. To improve DHS administrative management, there should be a focus on disease prevention and control. Moreover, development of the performance indicators for such focuses should be done collaboratively in order to make the indicators well-targeted, more intensely pursued, and improve continuity of implementation.

4. Suggestions for future research

Future research should be conducted focused on population-based surveys of people in good health, including groups of youth, working age people, and the elderly who do not have NCD.

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APPENDIX

The In- depth interview

The frame of individual interviews (In - depth Interview) about diabetes mellitus and hypertension.

- Policy
- Policy Implementation
- Support system
- Problem and Obstacle
- Results of operations

Questions

- General Personal Data : Name , Position , Period of position today.
- How do you have a role to action on diabetes and Hypertension?
- How do you have a policy action on diabetes and Hypertension high blood pressure ?
- How do you have a support system in action on diabetes and Hypertension ?
- What is the Obstacles and opportunities for action on diabetes and Hypertension?
- What are the main key of success in action on diabetes and hypertension ?
- The results to be expected in operations, such as diabetes and Hypertension ?
- How do you evaluate the results of the action on diabetes and Hypertension?

The Target group

- Chief of Provincial Health Officer
- Director of the Community Hospital
- Chief of District Health Officer
- Director of the Tumbol Health Promoting Hospital
- NCD. Nurse Case Manager

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