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Thailand's Health Workforce: A Review of Challenges and Experiences

Nonglak Pagaiya and Thinakorn Noree

November 2009



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Health, Nutrition and Population (HNP) Discussion Paper

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Health, Nutrition and Population (HNP) Discussion Paper

Thailand's Health Workforce: *A Review of Challenges and Experiences*

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Abstract: Thailand's health system is a dynamic entity that continues to change and grow. The country's health policies greatly affect the health workforce, the choices they make, their numbers and their availability. This paper explores the relationship between Thai health workers and the policies that affect them.

Keywords: Human resources for health, Health workforce, Thai health policies, Thai health system, Rural retention

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Table of Contents

ACKNOWLEDGEMENTS	VII
PREFACE.....	IX
PART I – THE THAI HEALTH SYSTEM AND HEALTH WORKFORCE	1
1.1 THE HEALTH SYSTEM CONTEXT	ERROR! BOOKMARK NOT DEFINED.
1.1.1 Environmental context.....	Error! Bookmark not defined.
(1) Economic situation and health financing	1
(2) Demographic and epidemiological changes	2
(3) Public reform and health policy	Error! Bookmark not defined.
1.2 THAILAND’S HEALTH WORKFORCE.....	5
1.2.1 Existing health workforce.....	6
1.2.2 Health workforce production.....	7
PART II – HEALTH WORKFORCE CHALLENGES AND A REVIEW OF POLICY EXPERIENCES.....	8
2.1 THE INEQUITABLE DISTRIBUTION OF HEALTH WORKERS AND STRATEGIES TO IMPROVE EQUITABLE DISTRIBUTION	8
(1) <i>Educational strategies</i>	8
(2) <i>Compulsory strategies</i>	9
(3) <i>Motivation and management strategies</i>	9
3.1 Financial motivation	9
3.2 Non-financial motivation	9
2.2 EVOLUTION AND IMPACTS OF STRATEGIES TO IMPROVE EQUITABLE DISTRIBUTION ..	10
(1) <i>Phase 1: The 1st-3rd National Health Plans</i>	10
(2) <i>Phase 2: The 4th-5th National Health Plans</i>	12
(3) <i>Phase 3: The 6th-7th National Health Plans</i>	15
(4) <i>Phase 4: The 8th-9th National Health Plans</i>	17
2.3 THE PRIVATE SECTOR AND INTERNATIONAL MIGRATION: RISKS AND OPPORTUNITIES	ERROR! BOOKMARK NOT DEFINED.
(1) <i>Economic Growth Phase</i>	19
(2) <i>Economic Crisis Phase</i>	20
(3) <i>Medical Tourism Phase</i>	21
2.4 MEETING FUTURE NEEDS	22
2.5 MANAGING THE HEALTH WORKFORCE IN A DECENTRALIZED CONTEXT	26
PART III – KEY LESSONS AND FUTURE CHALLENGES	27
REFERENCES.....	29

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PREFACE

The health workforce means nothing in isolation; it must link closely with a health system. However, the health system and the health workforce are dynamic entities that are shaped by country and global contexts. This discussion of the Thai health workforce focuses on 3 cadres: doctors, nurses and primary care workers (PCWs). These three interrelated groups are critical to the Thai rural health system. Doctors play important roles as clinical experts. However, nurses have become attractive middle-level care providers who are able to fill in gaps when there is shortage of doctors and a great need for cost-effective care. Primary care workers play active roles in preventive care and the promotion of care.

This paper will discuss the experiences and challenges of the Thai health workforce in a dynamic context. The discussion starts with an overview of Thailand's health system in relation to economic, demographic, public and health policy changes. The health workforce situation and challenges as well as policy initiatives and programs aimed at addressing health workforce challenges are subsequently discussed. The paper ends with a discussion of future challenges and key information and evidence gaps.

I. THE THAI HEALTH SYSTEM AND HEALTH WORKFORCE

1.1 THE HEALTH SYSTEM CONTEXT

Thailand is a lower middle-income country with a population of about 65.1 million (NSO, 2007). Approximately 65.7% of the population resides in rural areas. According to local administrative functions, the country is divided into 76 provinces, 877 districts and 7255 sub-districts.

The Thai health service system is dominated by the public sector and operates under a three-tier system made up of sub-district health centers, district hospitals and general/regional hospitals. The rural health system serving the majority of Thai citizens is comprised of district hospitals and sub-district health centers. Sub-district health centers serve as frontline health facilities and are staffed by nurses and primary care workers. They each cover approximately 5,000 people while district hospitals staffed by doctors and health teams each serve a population of about 50,000 people. District hospitals serve as an essential link between health centers and upper-tier general or regional hospitals by implementing effective referral systems. The increase in coverage by public health facilities has been quite satisfactory in the past three decades due to heavy government investment in health infrastructure. Currently, there are 725 district hospitals covering 82.6% of all districts and 95 general/regional hospitals covering all the provinces in Thailand. There are 9,765 sub-district health centers that cover all sub-districts (Wibulpolprasert ed, 2005). Aside from public health facilities, there are a number of private facilities spread throughout the country but concentrated in urban areas. Private clinics (without inpatient beds) play an important role as primary health care providers, particularly in urban areas, whereas private hospitals serve as secondary care providers in the health service system. As of 2007, there were 16,800 private clinics and 429 private hospitals throughout the country (NSO, 2007).

1.1.1 Environmental context

The changes in the country's environmental context that have directly affected the health service system and health workforce include the economic situation; epidemiological and demographical transitions; and social and public reform.

(1) Economic situation and health financing

Before 1997, Thailand enjoyed an average annual economic growth rate above 7%. However, the economic crisis that Thailand encountered in 1997 resulted in a sharp decline in annual economic growth, from 7% to -1.7% in 1997 and then to -10.8% in 1998. It was only recently that the economic growth rate increased from 0.23% in 1999 to 7.1% in 2003 (Office of National and Social Development Board 2003).

The growth of the country's economy after 1999 resulted in the expansion of existing private health facilities. At the same time, the medical tourism policy that Thailand adopted opened the gates for foreign clients to take advantage of the country's health services (See 2.2). The growth of private health facilities over the years has fluctuated and reflects the country's economic situation. During times of high economic growth, private hospitals increased from 132 hospitals in 1985 to 473 in 1995; however, after the economic crisis, the number of private hospitals declined to 456 in 2000 and 429 in 2006. The number of private clinics decreased from 16,722 in 1990 to 14,953 in 2006. However, the majority of private facilities are located in Bangkok (MOPH, 2006 and NSO, 2007). On the other hand, public health facilities have gradually increased. The number of district hospitals has increased from 480 hospitals in 1985 to 688 in 1995 and continued to increase even after the economic crisis hit, to 725 in 2006. District hospitals and health centers have increased from 6,992 in 1990 to 9,765 in 2003. This evidence shows that with regards to health facilities, the public sector has been able to cover the majority of the country, including rural areas.

(2) Demographic and epidemiological changes

The country's demographic and epidemiological changes have inevitably affected health system services. The success of family planning in the past has resulted in a decline in the number of children less than 15 years of age. As a result of the development of the overall health system throughout the past few years, the proportion of older Thais has increased. Population structure forecasts show the decline of children (less than 15 years old) from 42.4% of the population in 1940 to 19.1% in 2030 as well as an increase in the number of citizens 60 years old and above from 4.8% in 1940 to 8.2% in 2007 and to 15.9% in 2030 (Office of National and Social Development Board 2003). Chronic and behavior-related diseases have become major health problems for the Thai population and the incidence of virulent infectious disease such as HIV/AIDS and Tuberculosis (TB) has increased. Evidence shows that heart disease and cancer are now among the leading causes of mortality. Heart disease hospitalization increased from 56.5 per 100,000 people in 1985 to 109.4 per 100,000 people in 1994 to 618.5 per 100,000 people in 2003. This trend is similar to those of cancer and diabetes patients. Cancer rates have increased from 34.7 per 100,000 people in 1994 to 124.4 per 100,000 people in 2006 and diabetes rates have increased from 90 per 100,000 people in 1994 to 618.7 per 100,000 people in 2006. HIV/AIDS also continues to be a major health problem. It is forecasted that in 2008, the number of HIV/AIDS patients receiving anti-retroviral therapy will be as high as 250,000 people. The re-emergence of TB, mainly related to the presence of HIV/AIDS, is also evident. Moreover, the emergence of new and virulent diseases such as Avian Influenza and SARS underscores the need for an appropriate and effective health care system (MOH 2006). These complex diseases indicate that there is a need for skilled and adequate numbers of health workers, beyond what the health care system is currently providing, in order to combat the diseases.

(3) Public Reform and Health Policy

Changes in health issues have prompted the Thai government to introduce healthcare reform and implement policies to address health problems. The critical reforms and policies affecting the health care system and health workforce are discussed below.

Health care reform

The universal coverage scheme introduced in Thailand in 2001 to increase coverage and quality of care has drastically altered the health care system. The three main goals of the universal coverage scheme were to increase the accessibility of care to the population, re-structure health financing, and improve quality of care (MOH 2002). Since the advent of the new health care reform scheme, primary care units have served as the front-line of the new system. A number of financing schemes were merged into four schemes: the universal coverage scheme, the Civil Service Medical Benefit Scheme (CSMBS), the Social Security Scheme (SSS) and the private insurance scheme. The health budget is also now allocated to health facilities based on a capitation basis. The universal coverage scheme covers 77.8% of population, while SSS, CSMB and private health insurance cover 12.2%, 9.5% and 2.3% respectively (NSO, 2006). The SSS is the insurance system for workers in the private sector and premiums are paid jointly by employees, employers and the government. The CSMBS is the insurance system for government and state enterprise employees as well as their spouses, children and parents and it is paid for by the government. The private insurance system is run by a private company.

The reforms have impacted both the health services system as well as the health workforce. Evidence from a survey done by NSO (2001 and 2003) showed that service utilization at health facilities increased after the reforms were introduced in 2001. Due to increased accessibility of care, the in-patient rate has increased from 0.076 visit per person per year in 2001 to 0.083 visit per person per year in 2003 (an increase of 9%) while the rate of out-patient visits has increased from 4.07 visits per person per year in 2001 to 5.15 visits per person per year in 2003 (an increase of 26.5%). Compared with 2001, the proportion of self-care among people in 2003 decreased from 35% to 29% while the proportion of people using services from health facilities increased from 66% to 71% in 2003. With regards to the health workforce, an increased need for staffing levels in rural health facilities (based on the population) has not yet been met.

The Ministry of Public Health (MOPH) has adopted policies to promote a healthy population and environment at all levels of care. The definition of health now includes physical, mental, social and spiritual well-being. An independent institute, the Health System Reform Office (HSRO), was established in 2000 to draft a National Health Bill that will guide holistic health system development. The National Health Bill was approved in 2007 and is helping to facilitate a holistic approach to a healthy society (NHSO, 2007). HSRO has not only encouraged civil participation in health but it has also raised awareness about the fact that health-related activities and health service provision are not limited to just health professionals. The health workforce is made up of many health providers such as traditional healers, health volunteers, civil health networks, consumer networks, local authorities, not-for-profit non-government organizations (NGO), for-profit health facilities, and government authorities. Traditional and alternative

Thai medicine and local wisdom have been emphasized in new health policies as alternative approaches for health service provision. This approach has indicated that the responsibility for good health is shared among individuals, traditional healers, community groups, local authorities, health professionals, and many others.

Decentralization

The 1999 Act on operation of decentralization, an organic law of the new 1997 constitution, mandated that the functions, facilities, budgets, and personnel of central ministries must be devolved to local authorities, primarily Tambol (sub-district) Administrative Organizations (TAO). According to the Act, the local authorities must play active roles in comprehensive approaches related to community health care. This includes improvement of quality of life, social and community management, environmental and natural resource management and culture and local wisdom preservation. According to the Act, local health facilities such as health centers and hospitals will be the responsibility of the local authorities. Although the progress of decentralization of health systems has been slow, local authorities have begun to be important stakeholders in the health system. In some cases, local authorities have established effective working relationships with local health facilities (Jindawatthana 2006). Many initiatives undertaken were begun by the TAOs. Such initiatives include supporting student recruitment, scholarship and employment for nurses and dental nurses, and co-operating with local health facilities to provide medical services (Nunthabud 2004). An increasing number of TAOs have begun to allocate funds to communities for health-related activities and have integrated their health development plans into the sub-district plans. The National Health Security Office has allocated the health prevention and promotion budget to the TAOs in order to encourage community and local authority participation in health promotion and prevention (Kulsarawut 2007). In the meantime, the Ministry of Public Health has piloted the decentralization model in some health centers in order to prepare for the full implementation of the model.

Health Plan and Policy

The health system has been shaped by Thai national policies and plans that have evolved since the early 1960s. The 1st-3rd National Plans (1961 – 1976) primarily targeted health infrastructure development (Wibulpolpraset ed 2005). In the 4th National Health Plan (1977- 81), primary health care was the main focus of the plan. ‘Health For All by the Year 2000’ was set as a long term goal during this plan and its primary health care strategies were continued through the 5th Plan (1982-1986). The 5th Plan opened the door for initiatives related to community health care (Pagaiya 2007a).

During the 6th and 7th National Health Plans (1987-1996), Thailand was enjoying high economic growth and the country was in a transitional phase of socio-cultural change, rural migration and an increase of non-communicable diseases. As a result, the plan was geared toward the development of health infrastructure, health technology and producing more health workers in order to make primary health care facilities more accessible to

people. A decade of health center development (1992-2001) aimed to establish more health centers, provide medical equipment and train more health center staff.

During the implementation of the 8th plan (1997- 2001), Thailand faced four major challenges: the economic crisis in 1997 that forced the country to try to reduce the cost of health services, the Ottawa charter of health promotion, the new Thai constitution that made room for democratic discussion, and the adoption of the decentralization to local authority Act. The plan during this period emphasized a holistic approach to health promotion. A movement toward health care reform was initiated and Thailand started to develop a new health care act that continued throughout the 9th Plan (2002-2006). A universal coverage scheme was introduced in 2001. During this period, the national health plan emphasized coverage of services, quality of services and a new approach to health promotion. Many initiatives were implemented during this period to ensure the provision of services that were accessible, cost-effective and responsive to individuals.

1.2 Thailand's health workforce

The health workforce in Thailand provides care that relates to health promotion, curative care, health prevention, and rehabilitation. The workforce includes health professionals, allied health professionals, Thai traditional medicine personnel, local health wisdom healers, alternative medicine personnel, health volunteers, and civil health networks including health and health-related activities in the public sector, the private sector and communities. However, the discussion in this paper will focus only on the three main health professionals that are critical to rural health, namely doctors, nurses and primary care workers. Doctors play important roles as clinical experts. Nurses have become attractive middle-level care providers who can fill the gaps when there is a shortage of doctors and a need for cost-effective care. Primary care workers play active roles in relation to preventive care and promotion of care for individuals and communities. These three types of health workers work as a team. Because an adequate health workforce is vital to an adequate provision of care, shortages of health workers have led to inequitable access to health care as well as both poor quality of care and inefficient care, particularly in rural areas.

1.2.1 Existing health workforce

In 2006, according to the Medical Council of Thailand, there were 33,166 medical doctors registered with the council (Medical Council, 2006). There were also 130,000 registered nurses and 30,441 primary care workers. Only 16.5% of doctors worked in district hospitals in rural areas, a much lower proportion than those who worked in private hospitals (21.6%). The majority of doctors worked somewhere other than health facilities (identified in table 1) such as at universities, as administrators at provincial, regional and central levels, as researchers and in non-health related work. As for nurses, a high proportion of them worked in rural areas (28%) while only 12.2% worked in the private sector and about 30% of them served in regional and provincial hospitals. Similar to doctors, nurses who did not work in health services comprised almost 30% of the total. PCWs have played an important role as front-line care providers at health centers (57.2%) which means that the proportion of such workers working in rural areas was as

high as 77.6%, while only 22.5% of them served at regional/provincial hospitals and provincial health offices (Wibulpolprasert ed 2008).

Table 1: Distribution of doctors, nurses and primary care workers

<i>Settings</i>	<i>Facilities</i>	<i>Doctors (%)</i>	<i>Nurses (%)</i>	PCW (%)
Urban	Private hospitals	21.6	12.2	-
	Regional hospital	12.6	12.7	22.5
	Provincial hospital	12.4	17.7	
Rural	District hospital	16.5	28.0	20.4
	Health center	-	NA	57.2
Others (not in health facilities)		36.9	29.5	NA

Source: Wibulpolprasert ed (2008)

Thailand's health worker ratio to people (3:1,000) and a comparison with other regions can be found in Table 2. The number of doctors per 1,000 people in Thailand is slightly higher than countries in Africa but slightly lower than countries in the Eastern Mediterranean, South-East Asian and Western Pacific Regions. The European Region has an extremely high number of doctors per 1,000 people as compared to other countries. The nurse per population ratio of Thailand is higher than those of the African, Eastern Mediterranean, and South-East Asia Regions. However the European region and Western Pacific region have a higher ratio of nurses per person than does Thailand (WHO, 2004). The ratio of primary care workers to people is ambiguous since the definition of a PCW varies from country to country. In Thailand, a primary care worker refers to health auxiliaries who are recruited locally, trained for 2 years at local training institutes, and placed in work in their hometown provinces. Their main job is health prevention and promotion. However, they also provide basic medical care at the health center under the jurisdiction or responsibility of the medical chief of the provincial health office. PCWs are found in developing countries more than in developed countries. This is likely the result of the substitution of highly qualified professionals such as doctors and nurses for PCWs. The ratio of PCWs per 1,000 people in the South-East Asia region is higher than in other parts of the world and Thailand's PCW ratio per person is higher than that of the doctors but less than that of the nurses.

Table 2: Thai Doctors, Nurses and PCWs per 1,000 population comparing with global situations, in 2003 and 2004

<i>Health workforce</i>	<i>Doctors</i>	<i>Nurses</i>	<i>PCWs</i>	Doctor: Nurses
Thailand	0.3	1.5	0.5	1:5
Africa	0.2	1.3	0.6	1:6.5
Eastern Mediterranean	0.4	1.4	0.5	1:3.5
South-East Asia	0.4	0.9	1.0	1:2.3
Western Pacific	0.5	2.0	n/a	1:4
Europe	2.9	6.2	n/a	1:2

Source: WHO (2004)

1.2.2 Health workforce production

Doctors in Thailand are trained for 6 years in medical school. In Thailand, there are 14 medical schools-- 13 public universities and 1 private university. Four more public universities have started to provide training for doctors in 2008. The majority of medical schools are located in regional areas. Thailand has set the doctor production plan at approximately 1,000-1,400 medical doctors a year. To address the problem of a shortage of doctors in public health services, the doctor training plan for the next 10 years (2004-2013) has almost doubled the number of doctors in the original plan. As a result, medical student recruitment targets have been set at approximately 2,000 – 2,300 students per year (Wibulpolprasert ed, 2005). Medical training institutes in Thailand are mainly public sector; there is only one private institute that provides training courses for 100 medical students each year, a number that accounts for only 4.3% of all medical students.

Nurses are trained for 4 years at nursing colleges. Of the 64 nursing colleges in Thailand, 35 are under the MOPH, 19 are under the Ministry of Education and other ministries, and 10 are private colleges. The nursing colleges are spread throughout Thailand, especially the nursing colleges under the MOPH. In 2006, approximately 5,885 nurses graduated and entered the labor market. Of these, 975 nurses (16.6%) were trained by private colleges, 2,500 nurses (42.4%) were trained by the MOPH and the rest (41%) were trained by universities and other public colleges (Wibulpolprasert ed 2005). However, due to a severe shortage of health workers in the three southernmost provinces, a plan to produce 3,000 nurses was implemented in 2007 (MOH 2007). On average, during 2005 – 2014, 6,000 nursing students were recruited annually to join the training institutes. In addition, 3,000 nursing students were recruited in 2007; therefore, there are 9,000 nursing students for that batch. Similar to doctors, private training institutes for nurses play a very limited role. This is possibly due to the high qualification requirements for academic institutes governed by professional associations.

PCWs are trained for 2 years at Public Health colleges, which are under the purview of the MOPH. The PCWs are trained to provide comprehensive care- health promotion, prevention and rehabilitation and curative care- when there is shortage of doctors and nurses, particularly at rural health centers. PCWs are locally recruited, trained with local curriculum in local training institutes and posted close to their home town after graduation. During the decade of health center development (1992-2001), approximately 1,600 PCWs graduated annually and then the production plan was reduced to 1,500 PCWs annually. After graduation, all of them returned to their home provinces. A retention study of PCWs in 8 provinces found that after 10 years of service, the retention rate was high; approximately 60-80% still worked in rural areas (Pagaiya, 2007b). With the increase in the production of doctors and nurses, the production of PCWs decreased (MOH, 1991).

II. HEALTH WORKFORCE CHALLENGES AND A REVIEW OF POLICY EXPERIENCES

2.1 The inequitable distribution of health workers and strategies to improve equitable distribution

The production of health workers, particularly doctors and nurses, has been increased to meet health workforce requirements. However, the main health workforce problem severely affecting the health system is the maldistribution of the health workforce. More doctors and nurses work in urban areas than in rural areas, although the majority of Thais reside in rural areas. This indicates the inequitable distribution of the health workforce in relation to geography.

The development of a rural health infrastructure to support the functioning of rural health services has been implemented to help distribute and retain health workers in rural areas. The result has been an increase in rural health facilities such as health centers and district hospitals (detail in 2.2). Along with this, logistic support such as housing, drugs and equipment, transportation and communication have been provided. Furthermore, the government has implemented a range of strategies to attract and retain health workers in rural areas. These strategies are grouped into educational strategies, compulsory strategies, and motivation and management strategies.

(1) Educational strategies

Increase production: The classic approach to solving the problem of a shortage of health workers is to increase the production of workers. This approach has often been used by the government to increase the number of doctors, nurses and PCWs as well as to improve the distribution of such workers.

Local recruitment, local training and hometown placement: This strategy was initially implemented with nurses and PCWs. Local students are recruited through their hometown provincial communities and trained at regional colleges with government scholarship provisions. They are required to sign a contract to return to provide public health services for 4 to 8 years. This approach was introduced to increase the production of doctors.

Curricula reform: The health workforce production process can contribute to the attitudes of health workers toward working in rural areas. Since PCWs mainly serve rural areas, their curriculum has been rurally-oriented. Nurse and doctor curricula have also been developed to include primary health care approaches as well as serving rural areas.

(2) Compulsory strategies

Compulsory public service: All PCWs and nurses trained by colleges under the MOPH are required to obtain a government scholarship and to sign a contract for

compulsory public service for 4- 8 years after graduation. Due to a zero growth civil servant policy, this approach was terminated in 2001. In the case of doctors, this approach was initiated to address a critical shortage of doctors in rural areas. Since 1972, all doctors have been compelled to serve in rural public hospitals for 3 years. If they breach their contract, they are required to pay a fine of USD 3,000 (1997 price). This fine was increased to USD 8,000 and 16,000 in 1971 and 1977, respectively.

(3) Motivation and management strategies

3.1 Financial motivation: The difference in pay between the public and private sectors is considered an important factor for drawing health workers from the public/rural sector to the private sector, especially for doctors. To cope with internal brain-drain, the government has used financial incentives to retain doctors in rural areas by increasing the rural hardship allowance for such doctors. This incentive has gradually increased to keep pace with the economic growth of the country. Because the rural retention of nurses was higher than that of the doctors, financial incentives for nurses were introduced very late, in 1998. Unlike that of the doctors and nurses, PCW rural retention was perceived to be very high and as a result, financial incentives were never implemented.

3.2 Non-financial motivation

Career Development: To make working in rural areas more attractive to health workers, career advancement for those who work in such areas has been introduced for doctors, nurses and PCWs. For example, district doctors start their career at PC level 4 and they are promoted to PC level 7 after approximately 8 years of service and could be at PC level 8 after 12 years of service. Nurses and PCWs have career advancement opportunities as well, although they are not as high as that of doctors.

Specialist Training/continuing education: There has been an attempt to provide specialist training as an incentive for doctors working in rural areas as well as for district hospital development. Experience in rural services is a prerequisite for residency training programs. A minimum of one year of service in a rural area is required for most training. Rural doctors fall under a special quota for specialty training on the condition that they return to a district hospital afterwards. However, due to resistance from medical schools, this scheme is now being neglected and rural experience no longer counts for specialty training. Though further education opportunities are offered to rural nurses and PCWs, the opportunities are no different from those provided to nurses and PCWs in urban areas.

Social strategies: Social recognition and job satisfaction are important aspects of attracting health workers to rural areas. Networks of rural doctors have been established so they can provide moral and technical support to one other and to help encourage recognition within the field. Also, several awards recognizing the work of rural doctors have been established. “Best rural doctor” has been awarded each year and several medical schools also give special recognition to their alumni who perform outstanding work in rural areas.

Job substitution: An alternative approach to addressing doctor shortages is to shift tasks from doctors to other professionals such as nurses and PCWs, as long as it does not diminish quality of care. Such job substitution is seen at the early stages of health system development among doctors, nurses and PCWs. Appropriate training and technical supervision is needed with this approach.

2.2 Evolution and impacts of strategies to improve equitable distribution

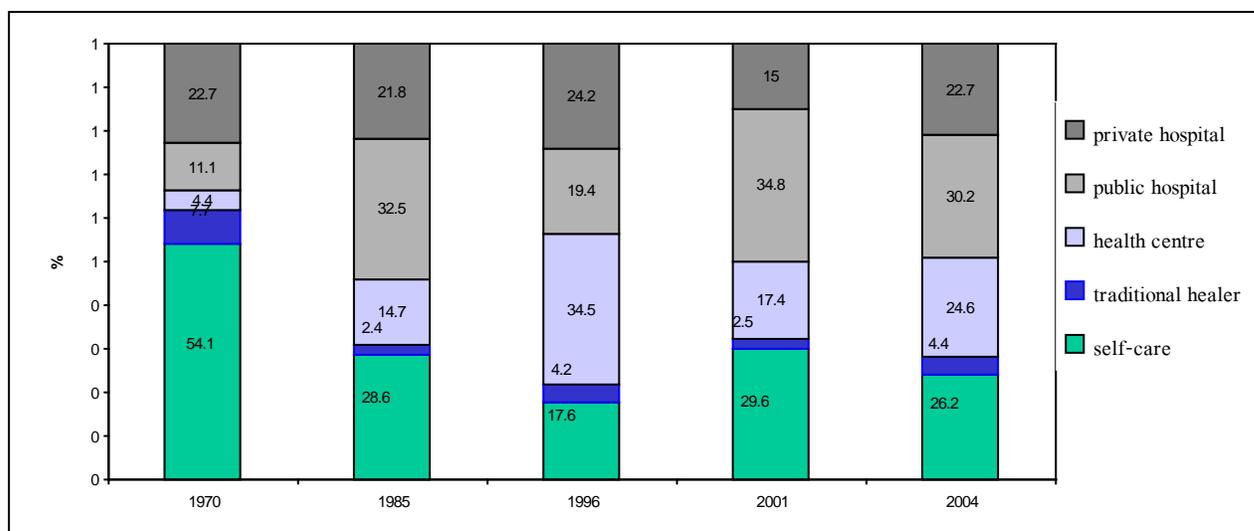
The strategies discussed above were implemented at different periods of time in response to various crises. Some strategies were successful early on but became less effective once the situation changed. The success of each measure is difficult to prove as several measures are often implemented at the same time. This discussion will try to link strategies with both the context and the impacts on the distribution of the health workforce chronologically, from the 1st National Health Plan (1961- 1965) to the 9th National Health Plan (2002-2006). The discussion is divided into 4 periods of time: the 1st to 3rd National Health Plans (1961-1975), the 4th and 5th National Health Plans (1976-1985), the 6th and 7th National Health Plans (1986- 1995), and the 8th and 9th National Health Plans (1996- 2005).

(1) Phase 1: The 1st-3rd National Health Plan

During the 1st – 3rd National Health Plans (1961-1970), the Thai health system was in its very early stages and the health plan was not very constructively developed. Since there were limited health facilities, the majority of people did not seek care from professionals (Fig 1). With regards to the health workforce, according to Wibulpolprasert (2003), it was the so-called external brain-drain era. Due to the high demand for doctors in the United States during the early 1960s, many doctors trained in Thailand emigrated to work in the United States. This period lasted over a decade. Over all, Thailand lost approximately 1,500 doctors due to migration, 25% of the limited number of well-trained doctors (Wibulpolprasert, 1999).

Fig1 Pattern of health care seeking behavior, 1970- 2004¹

|— 1st Decade---|-----2nd Decade---|-----3rd Decade-----|



Sources: NSO- cited by Wibulpolprasert ed. (2008)

The country's brain-drain problem prompted the Thai government to implement measures to improve the country's distribution of doctors and attract them to rural areas. The government also started to look at other options for providing accessible care to people, particularly those in rural areas. A 3 year compulsory public service measure for doctors was initiated in 1967 to enforce contracts with medical students for compulsory public service in an attempt to solve the brain-drain problem.

A second measure was implemented that allows for the substitution of doctors by other health workers. PCWs are care providers at rural health centers and nurses have been trained as nurse practitioners to provide care at community hospitals. Those living in rural areas are often able to access care by PCWs and nurses. Nurses and PCWs are recruited locally, trained locally and join a home town placement scheme upon completion of their training. This approach has been found to be effective because of high retention rates among nurses and PCWs (Jindawatthana et al, 1998). Nursing colleges and colleges of public health have been established at the regional level throughout the country. The graduates of these schools are required to spend 4-8 years in public service.

A third measure attempted to use rural recruitment, local training and home town placement in a pilot project in one of the medical schools in 1974. Under this measure, medical students were recruited from the provinces and trained with community-oriented curriculum. They were then posted in their home town provinces after their graduation. An evaluation found that two-thirds of doctors continued to work in rural areas after 3 years of working under compulsory contracts (Wibulpolprasert and Pengpaibon, 2003). This educational approach was extended to other medical schools and some medical schools continue to implement this strategy. A fourth measure that provided financial incentives to doctors was introduced in 1975. Under this measure, doctors practicing in rural areas received a special allowance of USD 60 – 88 per month, depending on the severity of hardship in the area where they worked.

These 4 measures - educational, compulsory, substitution and financial strategies - introduced over the first phase, helped to make doctors, nurses, and PCWs available in rural areas. However, the number of health workers was still insufficient given the vastness of the rural areas.

(2) Phase 2: The 4th -5th National Health Plan (1976 – 1985)

During the 4th and 5th National Health Plans, measures were geared towards primary health care and rural development. There was particular attention paid to service provision at the primary care level, to health centers and to district hospitals. A need for greater health workforce availability in rural areas as well as a need to provide workers with the right skills to work in rural areas forced the MOPH to initiate some measures.

With the goal of “Health for All” by 2000 (the resolution of the fourth national medical education conference in 1979), a focus was placed on primary health care curriculum development that prepared medical doctors to work in rural hospitals (Kongkam 2007). Before graduation, all medical students had to undergo training at district hospitals. The curriculum for nurses and PCWs was also re-oriented toward primary health care so that they would have the skills needed to work with rural communities (Kunawikitkul, 2007 and Wongsawadi, 2004). Village health volunteers were created to encourage community participation and since this approach was implemented, the number of community health workers has continued to increase.

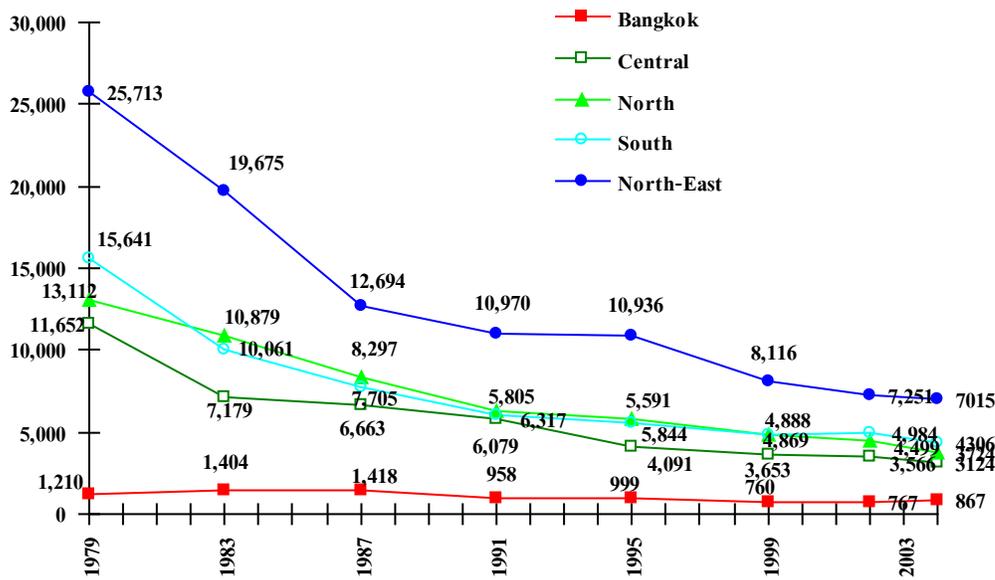
The measures that were implemented during this period were mainly educational. An increase in the production of doctors, thanks to an additional 200 enrolled medical students, was evident by 1979. The production of nurses and PCWs increased as well. To provide career advancement and to improve the rural retention of doctors, specialist training programs for rural doctors was linked to their work development. To enter specialist training, a minimum of 1 year in rural service was required as a prerequisite, except for some specialty training. It was also required that doctors return to a district hospital after their training (Wibulpolprasert and Pengpaibon 2003). However, provisions associated with specialist training garnered resistance from both medical schools and doctors. Presently, this policy is neglected due to a great need for specialists and the needs of medical schools.

An initiative to create a social network was undertaken in 1978. At this time, rural doctors formed and established the Rural Doctor Society in order to support rural doctors in administrative and other respects as well as provide moral support. The organization evolved into the Rural Doctor Foundation in 1982. To date, the society has carried out many critical actions relating to the rural health system and overall rural health workforce development.

Overall, these strategies were very successful. The ratio of people to doctors and to nurses sharply declined between 1979 and 1987 (Fig 2, Fig 4). Moreover, the proportion of doctors working in the private sector remained the same over this period, while that of

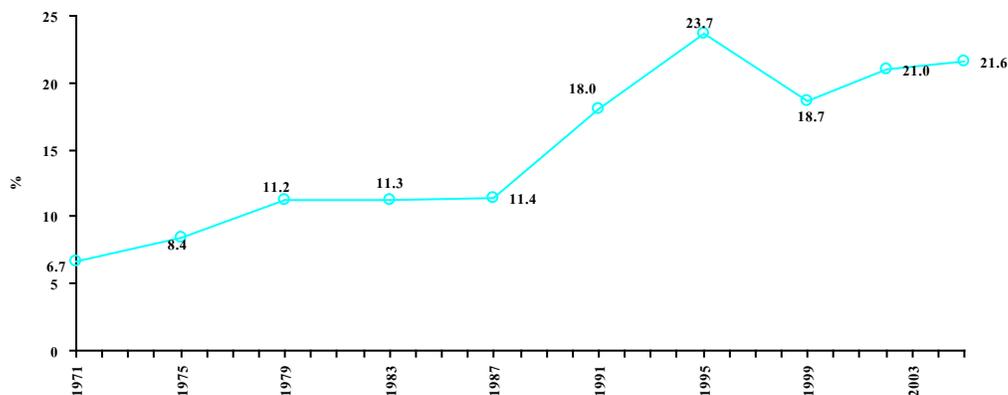
the nurses declined (Fig 3 and Fig 5). Service utilization public facilities such as health centers and public hospitals increased from 1970 to 1985 while self-care declined (Fig 1). This suggests that overall access to care was dramatically improved.

Fig 2: Trend of population per doctor ratio between 1977- 2004 by region.



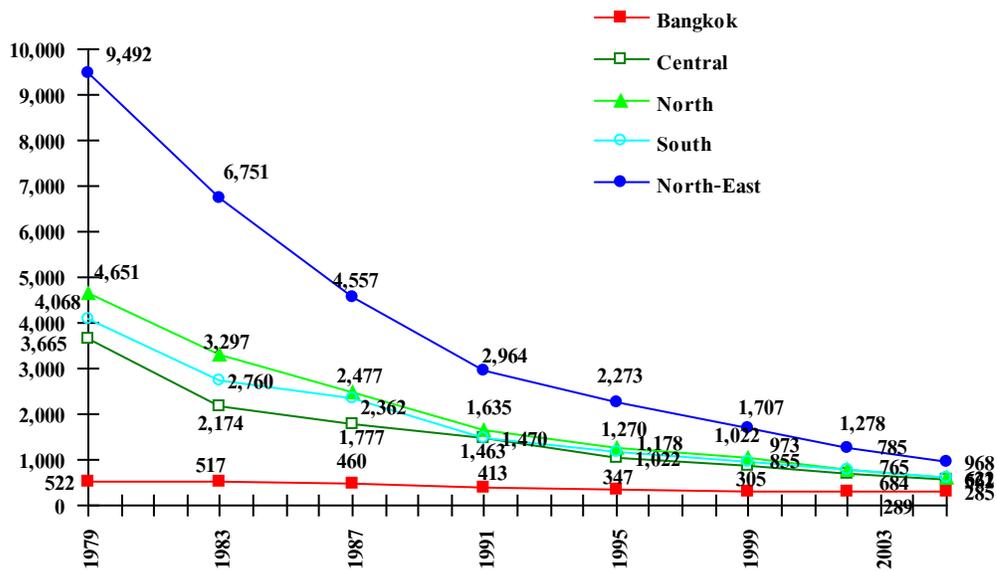
Sources: Wibulpolprasert, ed (2005,2008) and MOH (2006b)

Fig 3: Trend of the proportion of doctors working in private sector compared to all existing doctors.



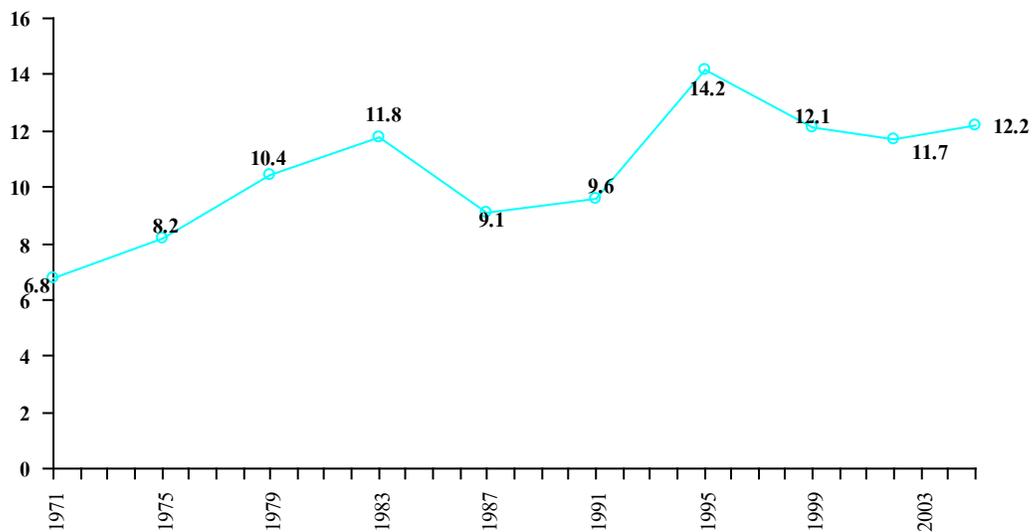
Sources: Wibulpolprasert, ed (2005,2008) and MOH (2006b)

Fig 4: Trend of population per nurse ratio between 1977- 2004 by region.



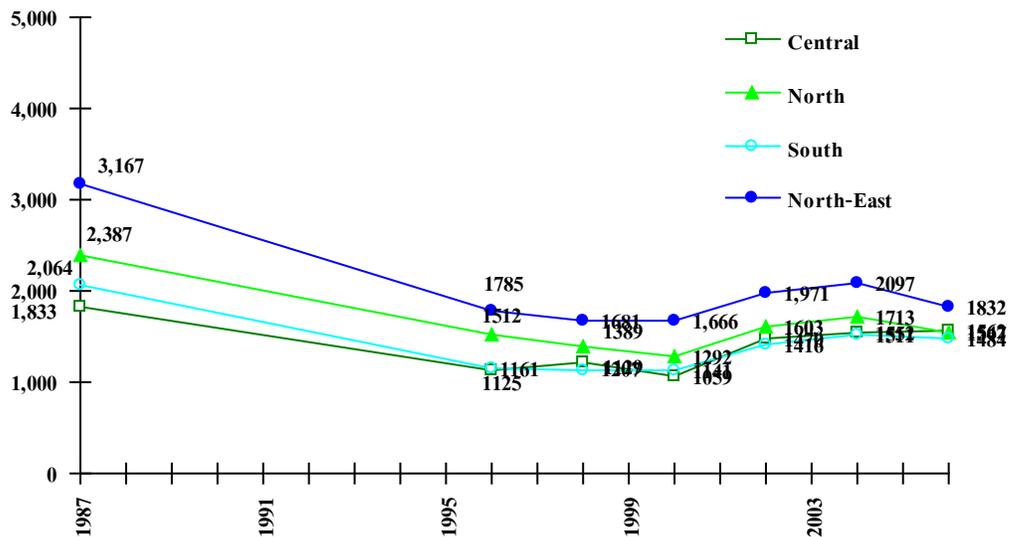
Sources: Wibulpolprasert, ed (2005,2008) and MOH (2006b)

Fig 5: Trend of the proportion of nurses working in private sector (%)



Sources: Wibulpolprasert, ed (2005,2008) and MOH (2006b)

Fig 6: Trend of population per primary care worker ratio between 1987- 2004 by region.



Sources: Wibulpolprasert, ed (2005,2008) and MOH (2006b)

(3) Phase 3: The 6th -7th National Health Plan (1986 – 1995)

From 1987 to 1996, Thailand enjoyed high economic growth. The policies of the National Health Plan were thus geared toward the development of health infrastructure and health technology. Other goals included the production of more health workers and making health facilities more accessible to people. The government implemented a decade of health center development (1992-2001) with the goal of increasing the number of health centers, providing more medical equipment and producing more health center staff (Pagaiya 2007a). Rapid economic growth and government policies that supported private hospital investment resulted in the growth of the private sector. The number of private hospitals increased from 132 hospitals in 1985 to 473 in 1995. The internal brain-drain of doctors moving from the rural public sector to the private sector occurred consistently throughout this period. The net loss of doctors from the MOPH as compared to new entrants rose from 8% in 1994 to 61% in 1996 (Table 3). The gap between the person to doctor ratio of Bangkok compared to that of the North-East region of Thailand remained large during 1987-1995.

As a result of the fierce competition between the public and private sectors, measures implemented during this period focused on minimizing the pull factors from the public sector. Investments in both infrastructure and equipment occurred during this period and health centers and district hospitals were widely established. Career advancement measures for rural retention were introduced in 1991 and applied to doctors who worked 7-12 years in rural areas.

An approach to increase the production of doctors was put in place in 1993. The goal was to increase enrolled medical students by 300 a year in order to meet the country's need

for doctors. Due to the high turnover rate of rural doctors, a local recruitment, local training and hometown placement approach was implemented by the MOPH in collaboration with the Universities in 1994. The 10-year project was called Collaborative Project to Increase Production of Rural Doctor (CPIRD) and its goal was to produce 300 doctors each year specifically for rural areas. The students were recruited by participatory mechanisms at the provincial level. They were required to spend their first three years at medical school and their next three years at one of 12 regional hospitals or district hospitals. The project helped to increase the proportion of rural medical students from 23% in 1994 to 31.5% in 2001 (Wipulprasert and Pengpaibon, 2003).

However, the high income received by doctors working at private hospitals contributed to the draining of doctors from the rural public sector. Financial incentives were introduced again in 1995 in order to motivate doctors to work in rural areas and to try equalize rural salaries with private sector income. Measures such as financial incentives, a non-private practice allowance of USD 400 per month to public doctors who did not engage in private practice, non-work hour practice and on duty pay were introduced in 1995. A special rural hardship allowance that paid according to the severity of hardship areas was implemented in 1997. The scale went from USD 55 per month in regular districts to USD 250 per month in more remote districts to USD 500 per month in the most remote districts.

Besides incentives to doctors, other approaches to strengthen primary care services were carried out. The production of health center staff and PCWs was increased in order to keep pace with an increase in health infrastructure. Nurse production was also increased thanks to the establishment of new nursing colleges during this period.

The internal brain-drain of doctors was evident throughout this period as the proportion of doctors in the private sector increased from 1.3% in 1985 to 23.7% in 1995, and the proportion of nurses in the private sector also increased (Fig 4 and Fig 6). Table 3 shows that doctor turnover from the public sector in relation to new entrants into public hospitals increased sharply from 8% in 1994 to 61% in 1996. The expansion of the private sector was supported by government policy from 1988-1997 (See fig 7) and this served to draw doctors from the public to the private sector. The lack of doctors in public hospitals was so severe in late 1996 that there were no doctors in 21 of the district hospitals (Wibulprasert and Penpaiboon, 2003). However, the number of nurses and PCWs increased during this period as a result of increased production. The financial incentives for doctors were implemented during the last part of the plan so the results of implementing this measure were not yet evident during the plan.

Table 3: Trend of turnover rate of doctors from the public sector in relation to new doctors entering the labor market.

Year	New Entrants	Loss			
		Civil servant	Government staff	Total(n)	%
1994	526	42	-	42	7.98

1995	576	260	-	260	45.14
1996	568	344	-	344	60.56
1997	609	336	-	336	55.17
1998	711	299	-	299	42.05
1999	887	204	-	204	23.00
2000	991	201	-	201	20.28
2001	952	193	83	276	28.99
2002	916	401	163	564	61.57
2003	1047	287	508	795	75.93
2004	1020	464	-	464	45.49
2005	1070	670	-	670	62.62
2006	1089	631	-	631	57.94
2007	N/A	717	-	717	N/A

Sources: Wibulpolprasert, ed (2005,2008) and MOH (2006c)

(4) Phase 4: The 8th -9th National Health Plans (1996 – 2005)

The severe economic crisis that began in mid-1997 resulted in a rapid decline in demand for private hospital services. Most private hospitals reduced their number of beds and doctors and some of them closed entirely (Wibulpolprasert and Pengpaiboon 2003). During the 8th National Health Plan (1996 – 2000), the health workforce situation was one that might have been expected. The reverse brain-drain was apparent and the rate of turnover among public doctors in relation to new entrants dropped from 61% in 1996 to 20% in 2000. The result was that the proportion of doctors practicing in the private sector dropped from 24% in 1996 to 19% in 1999 (Fig 3). Accordingly, the proportion of nurses in the private sector declined as well.

As a result of the measures implemented during the 7th National Health Plan, the geographical distribution of the health workforce improved. An increase in the production of doctors, nurses and PCWs under the previous plan boosted the numbers of the health workforce in the public sector and improved the ratio of the population to doctors, nurses and PCWs. The gaps in the ratio of people to health workers between Bangkok and the North-East narrowed (Fig 2, 4, and 6). This suggests that financial incentives and production increase measures during recessions are effective measures for retaining doctors in the public sector.

A new round of brain-drain from the public sector didn't begin until 2001. The universal coverage introduced in 2001 had some important implications for the health workforce. The increased service utilization of approximately 26.5% for outpatient visits and 9% for in-patients after the introduction of the universal coverage scheme added greatly to the high workloads of doctors and nurses. Furthermore, the economic recovery after 2001 resulted in higher demand for care in the private sector and the consequent revitalization of private facilities. Moreover, in early 2003, the Thai government implemented a policy to promote Thailand as a medical hub and began to invite medical tourism (MOH, 2004). Consequently, the proportion of doctors moving from the public sector increased from 29% in 2001 to 63% in 2005 and then to 58% in 2006 (Table 3). The proportion of

doctors practicing in private facilities increased from 19% in 1999 to 22% in 2005 (Fig 3). From 2001-2003, the zero growth civil servant policy introduced by the government led to a high turnover of doctors because public doctors were given civil servant posts.

Evidence from a study done by Preuksananond et al (2003) that looked at 958 doctors who resigned from the public sector found that the main factors associated with their resignation were a high workload in public facilities, organizational policy and management constraints and low work satisfaction. One factor that also influenced doctor mobility was an increase in specialist training because many young doctors seek such training (Noree, 2007). Since 2003, a high proportion of young doctors (those with less than 3 years of service) have left public service to pursue specialist training. According to Thamarangsri et al (2005), of those who left the public sector, half of them breached their contracts. The study revealed that the main factors driving doctors away from the public sector were a desire for continuing specialist education, a high workload, working far away from family, a need for higher income and dissatisfaction with organizational management.

Recognizing that the trend of high doctor turnover is primarily due to the higher salaries offered by the private sector, the government again implemented a financial incentive for health professionals (doctors, dentists, pharmacists and nurses) in the form of a special allowance. Senior nurses receive a special allowance of about USD 88 per month if they are at nurse PC level 7 and USD 138 per month if they are at nurse PC level 8. However, PCWs, the backbone of rural primary care, felt neglected by the government with regards to financial incentives and other forms of incentives and they started to call for professional recognition. Although the trend toward reducing health expenditures by expanding health promotion approaches has been widely accepted, there is insufficient discussion about which categories of the health workforce would function best at this task. The primary role that PCWs play in health prevention and promotion has been played down. Fig 6 shows that since 2000, the population to PCW ratio has been increasing in all 4 regions of the country, while the ratio of population to doctors and nurses has improved. This suggests that the focus of the health system is still on curative care.

2.3 The private sector and international migration: risks and opportunities

The private sector played an important role in the health service system before the development of the public health service system. Fig 1 shows that the pattern of care seeking behavior in 1970 in the private sector was higher than that of the public health sector. The ups and downs of the private health sector is closely associated with the country's economic situation. In this discussion, the transition of the private health sector has been divided into 3 phases: economic growth, economic crisis and medical tourism.

Economic growth phase

Throughout the economic growth phase, when public health facilities at the primary care level were developed during the first decade of primary health care (1978-87), service

utilization increased at public facilities and slightly declined in the private sector. Since the late 1980s, the country's economic development stimulated the growth of the private health sector and its foreign commercial presence increased. At the same time, the government promoted trade in health services through tax incentives for investment in private hospitals. Between 1987 and 1997, 190 private hospitals were established using tax incentives (Board of Investment in Thailand 2004- cited by Pachanee and Wibulpolprasert 2006). Table 5 shows that the number of hospital beds in private facilities increased from 6,139 beds in 1978 to 37,880 in 1997. The number of doctors working in the private sector in 1997 increased by approximately 5 times compared to 1978 (Wibulpolprasert ed 2008). Regarding health workforce migration, international migration was evident during the early 1960s. Thailand lost approximately 1,500 doctors due to the migration of doctors to the United States. To date, doctor migration within Thailand, from public to private facilities, remains one of the heretofore unsolvable problems of the health system. As shown in Fig 3, economic and policy changes had an impact on the health workforce. The proportion of doctors in the private sector increased dramatically, particularly from 1987 to 1995, and the trend was similar to that of the nurses (see Fig 5). The rate of doctor resignation from the public sector was dramatically increased from 8% in 1994 to 61% in 1996 (Table 3).

Economic crisis phase

When Thailand entered an economic crisis in 1997, the private sector was hit hard. Fig 1 shows that at this time, people had limited purchasing power for health care. The service utilization of private health facilities dropped markedly in 2001, resulting in a reduction of revenue in the private sector. People who could not afford private health services turned to public health facilities or did not seek out care, as shown in Fig 1. A study by Phuthasri et al. (2003) confirmed that the number of out-patients and in-patients in private facilities tended to decrease, especially in hospitals with more than 50 beds. The bed occupancy rate dropped by 20-30% in large hospitals and by over 50% in small hospitals. Several hospitals reduced the number of staff as well as staff salaries and compensation (Jindawatthana et al, 1999). The number of hospitals that closed down increased from 3 hospitals in 1995 to 43 hospitals in 1998 and the number of newly established private hospitals declined from 51 hospitals in 1994 to 9 hospitals in 1999 (Fig 7).

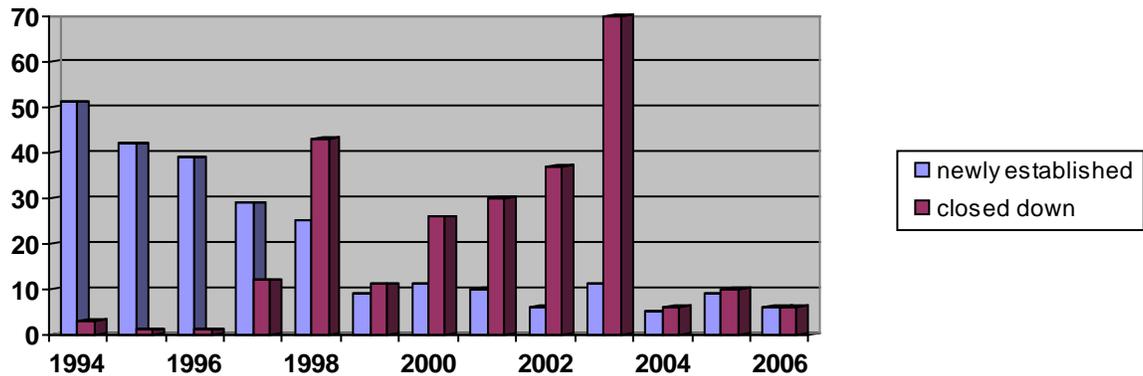
Table 4: Trends of hospitals, beds and doctors in the private sector

Year	No. hospitals	No. of beds	No. of doctors
1972	28	2,281	329
1978	67	6,139	687
1982	112	8,066	819
1988	203	13,024	1065
1992	335	21,297	2,552
1997	445	37,880	3,244
1999	471	40,852	3,403

2001	436	39,551	4,384
2002	405	38,370	3,572
2007	333	35,792	NA

Source: MOH (2007) and Wibulpolprasert ed (2008)

Fig 7 Number of private hospitals which were newly established and closed down.



Source: MOH (2003) and Wibulpolprasert ed (2008)

The economic crisis had a positive impact on some aspects of the health workforce. The doctor turnover rate in the public sector declined from 61% in 1996 to 20% in 2000 and the proportion of doctors working in the private sector decreased from 24% in 1995 to 19% in 1999. The nursing population mirrored the doctor's trends (Fig 3 & 5 and Table 3).

Medical tourism phase

After the economic crisis phase, the private sector began to gradually grow again beginning in 2000. In order to make use of the private health facilities built during the previous years, the private sector, with the support of the government, began an intensive marketing program in order to attract foreign patients and stimulate economic growth. Two main challenges had a direct impact on both the health service system and the health workforce during this phase. First, a universal coverage scheme of health insurance was introduced in 2001 to cover the entire population. Public health facilities are the country's main health providers and serve more than 95% of beneficiaries. Approximately 80 private hospitals have joined the scheme and registered around 4% of beneficiaries. Secondly, the Thai government implemented a policy in early 2003 to promote medical tourism and set a target to attract 850,000 foreign patients in 2004. The Board of Investment (BOI) provides tax incentives to local and foreign investors for investing in new health facilities designed to provide services to foreign patients (Pachanee and Wibulpolpraseart 2006). Fig 7 shows that some private hospitals were established from 2001-2006. As a result of the medical tourism policy, the number of foreign patients increased more than expected, from 550,161 in 2001 to 1,249,984 in 2005 (Department of Export Promotion- cited by Noree, 2008). At the same time, due to the increase in accessibility of care resulting from the universal coverage policy, service utilization at

public health facilities increased after the policy was implemented in 2001. Overall, demand for health services increased at both public and private facilities. Even though the number of hospitals and beds decreased (Table 4), service utilization in the private sector increased from 15% in 2001 to 23% in 2004 (Fig 1). Trends in Table 5 show that the proportion of patients using in-patient services in the private sector compared to that of MOPH hospitals was very high during the period of economic growth (1996-1997), decreased to 21% of all in-patients in 2000, and then increased to 23% of all in-patients in 2002 (MOH 2002- cited by Wibulpolprasert ed, 2005).

Table 5: Trends in number and percent of in-patients in private hospitals compared to those of public hospitals under MOPH.

Year	MOH hospitals (million patients) IP	Private hospitals	
		Number (million patients)	%
1992	3.78	0.64	14.5
1994	4.21	0.85	16.8
1996	4.85	1.63	25.2
1998	5.44	1.62	22.9
2000	5.48	1.48	21.3
2002	5.17	1.54	23.0

Source: MOH (2007)

The above changes have affected the health workforce, particularly doctors and nurses. Doctors working in the private sector have repeated the trend of service utilization. The proportion of doctors in the private sector increased from 18.7% in 1999 to 22% in 2005, while that of nurses slightly increased. It is clear from Table 3 that, on average, the proportion of doctors resigning from the public sector was more than half of the new entrants since 2002. In 2003, the number of doctors who left the public sector was more than two thirds of the new doctors entering the public health system. The Thamarangsri study found that of all the doctors leaving rural public facilities, 52.3% turned to private hospitals. A look at specialist migration from rural public hospitals shows that 83% moved to private hospitals (Thamarangsri, 2005). These statistics indicate that many highly skilled doctors have left the public sector, which serves the majority of the Thai population, to move to the private sector, which serves a minority of Thais and foreign patients. Continuing to provide health services to foreign patients is likely to widen the gap between high purchasing power individuals, such as foreigners and the rich, and low purchasing power individuals such as the poor Thai (Noree, 2008).

Another important factor driving the brain-drain of doctors in the public sector is differences in income. A study conducted by Pannarunothai (1999) after the economic crisis found that remuneration in the public sector was much lower than that in the private sector. A doctor working in the private sector can make 6-11 times as much as those who work in the public sector. Other professionals face a similar trend: dentist wages are 3-8 times higher in the private sector, pharmacist wages are 2-3 times higher, and nurse

wages are 1.5-2 times higher. A number of health professionals also have dual practices and so it is difficult to estimate actual figures.

2.4 Meeting future needs

Forecasting health workforce requirements for the future has been done by a group of researchers. For the doctors, two scenarios have been applied. The first forecast carried out by Sirikanokwilai et al. (1998) employed a modified population to doctor ratio and took into account the specific characteristics of the Thai health system and future economic trends. The projection found that, for the 1,400 to 1,600 population to doctor ratio, the doctor requirement is about 47,212 in 2020 (Table 6). Compared with the forecasted doctor supply there will be a moderate shortage of doctors, especially during the first 10 years (1995-2005) and there are likely to be small differences between supply and requirements in 2020. However, the growth of the private sector and the 2000 policy promoting medical tourism changed the scenario and the doctor requirement forecasting study was reviewed. Pachanee and Wibulpolprasert (2006) used a moving average method to project medical doctor requirements. The method took into account the increase in service utilization at the primary care level of the public sector (resulting from the universal coverage scheme) and the increase in demand for private sector health services, including the growth of foreign patients. This scenario projects a need for approximately 1,000 – 2,000 additional doctors annually; of these, 40% will be required by the private sector (Table 6). The regressive increasing rate shows that, due to demand from foreign patients, the number of additional doctors needed is around 176-303 in 2015, accounting for 9-12% of all additional medical doctors and 23-34% of those required by private hospitals.

Table 6: Projected supply and requirements of medical doctors.

Year	Supply	Requirements ¹	No. of additional doctors required ²			
			Thai patients		Foreign patients	
			Total	Private sector	Total	Private
1995	17,166	24,644	-	-	-	-
2000	21,065	25,600	-	-	-	-
2003	N/A	N/A	2443-2795	1001-1157	109-113	11
2005	26,608	31,039	1134-1315	465-539	83-11	18-21
2007	N/A	N/A	1596-1838	654-753	115-160	18-21
2009	N/A	N/A	1815-2083	744-854	123-181	17-21
2010	33,161	37,012	N/A	N/A	N/A	
2011	N/A	N/A	1639-1889	672-775	159-244	24-31
2013	N/A	N/A	1830-2105	750-863	145-242	19-28
2015	39,750	43,342	1891-2175	775-892	176-303	23-34
2020	45,774	47,212	N/A	N/A	N/A	

1. modified population to physician ratio method (Sirikanokwilai et al,1998)

2. moving average method (Pachanee and Wibulpolprasert, 2006)

Nursing workforce forecasting was conducted in 1995-1996 to help plan for nursing shortages (Srisuphan et al, 1998). Based on information from the professional council, MOPH, and a production plan from nursing universities, a 20-year nurse forecasting study was carried out. Previous research showed that the trend of nurse loss went from 8.23% in 1969 to 5.8% in 1985, to 4.69% in 1990 and finally to 3.14% in 1993. Data from MOPH showed the trend of the rate of loss to be lower each year and projected it to be 1.5% in 2015. However, the assumption of a 2% and 3% loss rate was taken into account and a supply of 173,321 and 148,304 nurses, respectively, was foreseen for 2015. The requirement forecasting study employed a staff per facility ratio approach. The development of health infrastructure in the public and private sectors and service provision trends were also taken into account. The projection showed that in 2015, the public sector will need 92,375 nurses and the private sector will require 49,991 nurses (Table 7). According to this projection, it is likely that the nursing supply will exceed the nursing requirement and this has led to suggestions that the government reconsider its production plan. However, the forecasting failed to take into account the ups and downs of economic situations and the increase in demand for health care related to aging and chronic disease. Various factors have been shown to affect the increase in demand for nurses. As Sawaengdee (2007) has pointed out, a shortage of nurses at all levels of care-- primary care, secondary care and tertiary care-- has been found. The problem has been aggravated by two main factors: an increase in the demand for healthcare and inadequate workforce supply. Government policy in relation to promoting Thailand as the medical hub of the region and the universal coverage scheme have resulted in increasing demand for care by both foreign and Thai patients. The expansion of private health facilities, resulting from the country's economic growth and government policy, has drawn the health workforce from rural public facilities to private facilities. Furthermore, an increase in the number of elderly citizens along with an increase in the prevalence of chronic illnesses has led to an increasing demand for health services (HRU 2005). The decrease in the production of nurses over the last 5 years due to the economic crisis has added to the nursing shortage problem. Moreover, the Sawaengdee study observed a trend of increasing nursing loss rates-- 2.2 % in 2000 and 3.3% in 2004. Due to the fact that nurses spend an average of only 22 years in their profession, a low number compared to other professionals, a minimal loss rate could have a dramatic effect on the shortage of nurses. Therefore, nurse workforce forecasting and planning are needed to keep pace with changing contexts.

Table 7: Comparison between future supply and requirements for registered nurses.

Year	Future supply		Future requirements		
	2% loss rate	3% loss rate	Public	Private	Total
2000	70,738	69,104	51,513		15,466
			96,979		
2005	105,486	99,415	87,156		27,678
			114,834		
2010	140,404	129,884	92,375		49,991
			142,366		
2015	173,321	148,304	92,375		49,991
			142,366		

With regards to PCWs, Jindawatthana (1997) forecasted that a total of 56,937 PCWs will be required. The study's findings are based on the population to PCW ratio method (600 people to each PCW). Presently, the seven colleges of public health (institutions under the MOPH) are able to produce 1,500 PCWs per year. However, the plan to produce PCWs is a short-term plan and the PCW requirement is tied closely to the needs of MOPH health services.

A Thai health workforce planning and production effort has been in place for over 2 decades and yielded some satisfactory results. 2001 data on human resources for health in both the public and private sectors shows that there were 22,465 doctors with a doctor per population ratio of 1:2,750, there were 84,683 nurses with a nurse per population ratio of 1: 739 and the number of primary care workers was 28,839 with a staff per population ratio of 1:2,177. Each cadre has its own production plan for both the public and private sector, as shown in Table 8 (Wibopolprasert ed, 2005). An increase in production is one important measure that the government has used to solve the workforce shortage problem. The country needs both an adequate number of doctors as well as adequate distribution of those doctors but the regular doctor production plan is not likely to fill current needs. A plan to increase the production of doctors has been put in place. Additional production has been set at approximately 1,215 medical students annually from 2007 to 2014 (Table 8). The local recruitment, local training and hometown placement of doctors led to the recruitment of an additional 300 medical students during 1993-2003. That project has now ended and the results are not yet known. The private sector plays a limited role with regards to the production of doctors. It can only produce approximately 4% of all new students (100 students out of 2282).

Table 8 Production plan of doctors, nurses and PCWs.

Professional	Existing HRH (2001)	Production Plan									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Doctor	22,465	2,139	2,179	2,247	2,247	2,282	2,282	2,282	2,282	2,242	2,242
	Regular	1,458	1,458	1,032	1,032	1,032	1,032	1,032	1,032	1,032	1,032
	increase	681	721	1,215	1,215	1,250	1,250	1,250	1,250	1,250	1,250
Nurse	84,683	4,505	5,885	5,885 + 3,000	5,885	5,915	5,915	5,915	5,915	5,915	5,915
PCW	28,839	1,500	1,500	1,500	NA						

Source: Wibopolprasert ed (2005).

Due to the economic crisis in 1997, the production of nurses was decreased and this resulted in the current shortage of nurses faced by the country (Sawaengdee, 2007). As a result, a plan to increase nursing production is currently being discussed. To address the shortage of nurses in the three southernmost provinces, a project to produce an additional 3,000 nurses was implemented in 2007. However, the country context can change any time and affect the current high demand for nurses. As a result, an overarching plan to increase nurse production is needed. Similar to doctors, the private sector plays a limited role in the production of nurses. The proportion of nurses trained by the private sector is approximately 16.5% (975 out of 5,915). Because there is a need for nurses at rural health facilities where there are often no doctors, in 2003 an initiative to produce nurses began with the collaboration of three parties: academic institutes, health facilities and Tambol (sub-district) administration organizations (Nunthabud, 2003). The local recruitment, community-oriented training and hometown placement approach has been used. The project was piloted in one district (Asawapak, 2004- personal communication) and it has recently been carried out in several provinces.

With the increase in need for and availability of nurses, the need for PCWs has declined. However, the last two National health plans (2001-2011) have emphasized a health promotion approach at the community level. Since PCWs have long been the health personnel with the closest ties to communities, they are seen as good examples of health workers who can foster health promotion at the community level. However, a clear plan for meeting PCW requirements has not yet been put in place.

2.5 Managing the health workforce in a decentralized context

The promulgation of the Thai Constitution and the economic crisis in 1997 were the prime factors driving the decentralization of health function to local authorities. The Decentralization Act states that basic service functions are to be decentralized to local administrative organizations within 4 years. Regarding financial issues, the law requires that a minimum of 20% of the national budget be allocated to local authorities by 2001 and not less than 35% in 2006. However, in 2005, only 23.5% of the national budget was allocated to local authorities (Wibulprasert ed, 2005).

To date, decentralization of the health system has made slow progress. There are some concerns over decentralization hindering its implementation. First, putting different levels of health facilities under separate administrative units has led to questions about service fragmentation. Second, new administrative managers place more emphasis on infrastructure development and neglect health service development. Third, inexperienced local authorities might support a rigid management system and may not allow enough flexibility in health workforce management and general management. Fourth, the health workforce is concerned with their civil servant status and this has created a sense of insecurity in their positions. Because they are civil servants, they were guaranteed life-long employment with a pension and other benefits.

To cope with the concerns mentioned above, the Area Health Board (AHB), a local health administrative body, has been proposed (Wibulprasert ed, 2008). The AHB

will be responsible for health development in local administrative units. The AHB could cover one district or a combination of a number of local administrative units from a few districts. This opens up the possibility of having a combination of health facilities at different levels within one local administration, thus allowing a better referral system and ensuring the provision of appropriate qualified health services to people.

With regards to health financing and health workforce management, an initiative to allocate funding per capita to local health facilities and health workforce remuneration was implemented with the universal coverage scheme in 2001. This initiative has allowed many health facilities to exercise control over the distribution of their health workforce with a cost-effective approach in response to local health needs. Some provincial health systems that have a small number of users have stopped increasing the health workforce and some health facilities have started to hire more staff because the financial system is more flexible (Watcharanukulkeit, 2003). It is believed that this approach makes for better health workforce distribution because provinces with a small number of people get less health workers compared to provinces that have more people. However, the health workforce budget consumes a large part of the overall budget and the MOPH has decided to exclude health workforce financing from the per capita allocation budget. Because the health workforce budget is paid by the central government, health facilities have started to call for more staff. As a result, the opportunity for health workforce management at the local level has been limited.

Decentralization of the health system in Thailand is still in the early phases and there is much to be learned before full-fledged implementation. Some things that need to be looked at are: the need for research and development to guide the implementation of decentralization, the need for capacity building at local administrative organizations, service providers and health managers at the provincial and district levels, and the need for capacity building at the central level to monitor and provide technical support in order to achieve good health outcomes.

III. KEY LESSONS AND FUTURE CHALLENGES:

Health workforce problems are centered around inequitable geographical distribution and the rural VS urban and public VS private sectors. The rural public sector has been hit hard by the shortage of highly qualified professionals, particularly doctors. This problem has been aggravated due to two main factors. The first factor is the increase in demand for care due to a demographic and epidemiological transition, international trade policy and the country's economic situation. The second factor is the shortage of health worker supply due to the low production and high turnover rates. The discussion above has shown the evolution of health workforce strategies to tackle the problem of health worker shortages in rural areas. However, the strategies implemented were reactions to the problems at hand and because they were targeted at particular professionals, they sometimes created conflict within health teams. Systematic and holistic strategies are needed to solve the health workforce problem. Internal brain-drain between the public and private sectors has long been an unsolvable problem. The problems mentioned above

need more explicit evidence in order for effective solutions to be generated. Therefore, research needs to be carried out in order to generate evidence for the following policy recommendations:

1. The magnitude of internal brain-drain between the public and private sectors, dual practices and push factors that draw health workers to the private sector as well as how to develop public/ private mix approach in order to share resources.
2. Health workforce forecasting and planning that takes into account important factors and that is carried out at the national level as well as the local level. As mentioned earlier, increases in the aging population, chronic diseases and foreign patients as well as the private sector and the important roles they play in health workforce requirements. It is necessary to emphasize these in planning for the future health workforce.
3. Health workforce management in the context of decentralization.
4. Evaluation of the retention strategies implemented by the government as well as suggestions for more effective retention strategies/ policies.
5. Impact of medical tourism on the health workforce and how to prevent negative impacts on the Thai health system.

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