



Chapter 7

WHY AND HOW DID THAILAND ACHIEVE GOOD HEALTH AT LOW COST?

**Walaiporn Patcharanarumol¹, Viroj Tangcharoensathien¹,
Supon Limwattananon¹, Warisa Panichkriangkrai¹,
Kumaree Pachanee¹, Waraporn Pongkantha¹,
Lucy Gilson^{2,3} and Anne Mills³**

1 IHPP, 2 University of Cape Town, 3 LSHTM



Health professional staff from the “Salah Chiang Tong Health Center” deliver outreach health services, including maternal and child care, to people in remote Karen villages in the Mae Sariang District, Mae Hong Son Province on the border between Thailand and Myanmar.

■ Key messages

- Thailand has outperformed many other countries in improving health outcomes at relatively low per capita health spending. Interventions essential to child survival and maternal health, notably free antenatal care, skilled birth attendance, family planning, and immunization, reached universal coverage by the 1990s, and all health Millennium Development Goals (MDGs) were achieved by the early 2000s.
- These services are provided mainly by the public sector – in primary health care centres and district hospitals geographically accessible to the rural poor. Longstanding policies of government bonding and rural deployment of all graduates of the health-related professions have been critical to the successful expansion of district health systems.
- Financial risk protection, introduced initially to protect the poor and vulnerable, was subsequently extended to achieve universal coverage of the entire population by 2002.
- Nine successive five-year national health plans ensured continuity over four decades of health system development. Generations of charismatic leaders and highly influential technocrats and medical leaders inside and outside of the Ministry of Public Health (MOPH), sharing a common vision of improving the health of the poorest, ensured that pro-poor, pro-rural health policies remained the priority of health system development.
- Royal Health projects, promoted by the Royal Family, contributed to comprehensive rural development, not only improving health but also empowering rural communities.
- Other contributing factors to Thailand's good health outcomes have been economic growth and poverty reduction, a high level of female literacy and a fall in the gender literacy gap.
- Thailand has developed the institutional capacity to generate evidence to inform policy, which puts it in a good position to deal with current and future health challenges.

■ Introduction

Thailand, a lower-middle-income country in South-east Asia with a population of 67 million, is the only nation in the region that has never been colonized. Thailand is a democratic country, with the King as head of state. Thailand is divided into 75 provinces, and there are also two special governed districts: the capital Bangkok and Pattaya. Each province is divided into districts and the districts are further divided into subdistricts (*tambons*). In 2010, there were 878 districts as well as the 50 districts of Bangkok.

One unique feature of the Thai health system is its extensive and long-term investment in a health care delivery infrastructure that reaches even the most rural and remote areas. Primary health centres, typically 1 per 5000 people, function well because the MOPH produces its own nurses and para-professionals and because rural service is mandatory for all health professionals. Thailand achieved all health MDGs in the early 2000s and introduced the concept of MDG Plus, a set of country-specific targets going well beyond the international targets. By adopting goals and targets that are customized to local needs and priorities, MDG Plus has become a central theme in Thailand's multisectoral human development movement^{1,2}.

Thai health spending was 4.3% of gross domestic product (GDP) in 2009. This is in line with the 4.3% of GDP spent on average by lower-middle-income countries as a group. However, when adjusted for purchasing power, Thailand's per capita health expenditure is higher, at Int\$ 345 compared with an average of Int\$ 145 for lower-middle-income countries. In addition, compared with other countries at a similar level of national resources, general government expenditure on health is higher (75.8% of total health expenditure), and private health expenditure lower (24.2%)^{3,4}. Donor resources contribute a very small share. As shown in Figure 7.1, which correlates under-5 mortality and total health expenditure per capita in all low- and middle-income countries, Thailand performs exceptionally well.

Since the 1980s, Thailand has benefited from a growing gross national income (GNI) per capita (Figure 7.2), with US\$ 3760 in 2009, which is higher than the average of the lower-middle-income group, US\$ 2316. Rapid economic growth has resulted in significant poverty reduction, from 49.7% of the population in 1988 to 10.7% in 2007, although income distribution as measured by the Gini index has not improved much.

However, Thailand also made significant health investment decisions at a time when it was not propitious from an economic point of view. Universal health coverage was introduced in 2002 during an economic decline following the

Box 7.1 Thailand at a glance

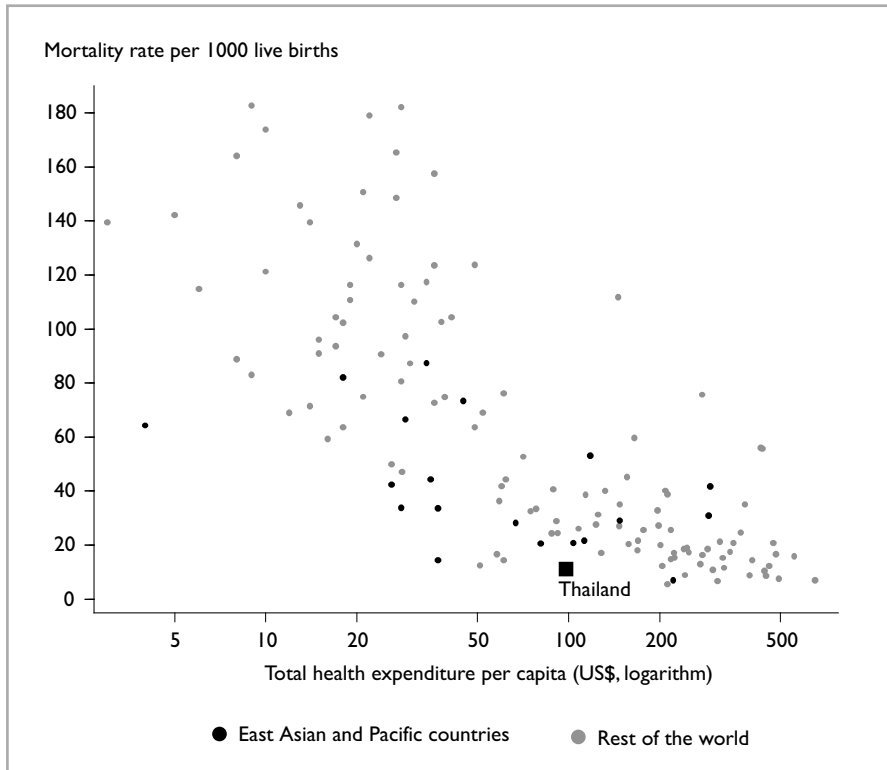
<i>Population</i>	67 million (2009) ⁵ , 66% of the population is rural (2009) ⁵ , concentrated in the rice-growing areas of the central and northern regions. 94.6% of the population is Buddhist ⁶ .	
<i>Geography</i>	Located in South-east Asia. Densely populated central plain, highland areas in the north-east and mountain range in the north, west and south-east.	
<i>Ethnic composition</i>	75% Thai, 14% Chinese and 11% other.	
<i>Government</i>	A democratic country, with the King as head of state, a constitutional monarchy since 1932. Thailand was never colonized. Recent period of political unrest but successful elections completed in 2011.	
<i>Health system</i>	Health expenditure per capita (constant 2005 Int\$) (2009) ⁷ : 344.69 Density of physicians, nurses and midwives per 10 000 ³ : 17 Extensive and long-term investment in primary health care, particularly in infrastructure and health workers in rural and remote areas. Achieved universal health coverage and low out-of-pocket payments. Coverage of key interventions is high (99% of deliveries with skilled attendance, over 90% of children vaccinated ⁸). Successful prevention and treatment programmes have turned a generalized HIV epidemic into a concentrated epidemic among specific groups.	
<i>Economic, demographic and social development indicators</i>	GDP per capita (constant 2005 Int\$) (2009) ⁵	7260
	Economic growth: GNI 2000 to 2008 ⁵	5.2% per annum
	Population living on less than \$1.25/day (2009) ⁵	10.8%
	Gini index ⁵	42.5 (2004)
	Infant mortality rate ⁹	8.3 (2010) ^a
	Maternal mortality ratio ¹⁰	47 ^b
	HIV prevalence (adults aged 15–49) (2009) ⁵	1%
	Life expectancy (2009) ⁵	69
	Total fertility rate (2009) ⁵	1.8
	Adult literacy (2005) ¹¹	93.5%
	Ratio girls to boys in education ^c	103%
	Access to improved water source (2008) ⁵	98%
	Internet usage (2009) ⁵	25.8%

Note: ^aPer 1000 live births; ^bPer 100 000 live births; ^cPrimary and secondary education.

Asian financial crisis (as shown in Figure 7.2), and when Thailand was still at the lower end of the GNI per capita range of lower-middle-income countries.

Empirical evidence shows that health financing is progressive (the richer groups pay relatively more than the poorer groups) because of the dominant role of general tax financing, and the reduction in the share of out-of-pocket payments

Figure 7.1 Correlation between under-5 mortality rate and per capita health expenditure in all low- and middle-income countries, 2005



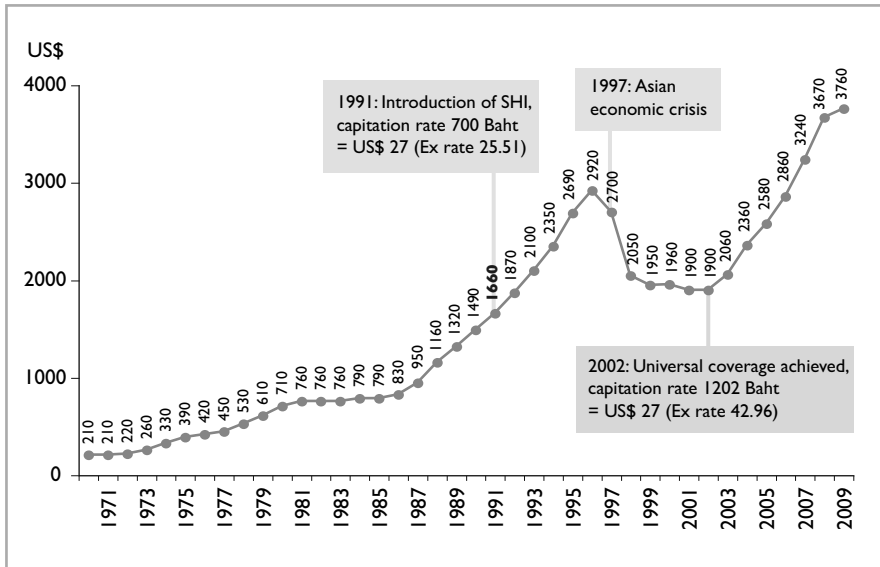
Source: Data from reference 3.

for health (to 18% of total health expenditure with a very low level of catastrophic health expenditure)¹². Equity in utilization has resulted in public subsidies which favour the poor¹³.

This chapter examines data for the period from 1970 to 2010 as well as interviews with key policy-makers, administrators and researchers. The research team was able to draw on the extensive knowledge of one of its members (Viroj Tangcharoensathien) who has been involved in the process of health development since the 1980s; however, information was validated through wider interviews.

Findings are presented in five sections. First, the improvements in health outcomes are described, in particular relating to maternal and child health. Next, information is provided on the coverage of specific health interventions that contributed to such achievements. Third, evidence is provided on how health

Figure 7.2 Thailand's GNI per capita, 1970–2009, current year prices



Note: SHI: Social Health Insurance.

Source: Data from reference 5.

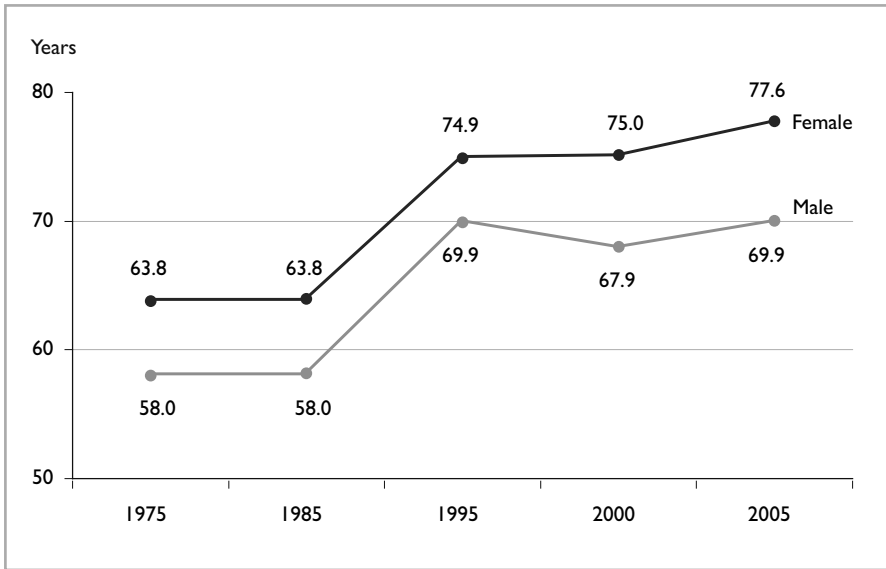
systems supported the effective delivery of these interventions. The fourth section examines how and why over time the health system's development and other wider policy interventions were possible. Finally, the contributions of other sectors and the sociopolitical and cultural factors influencing health gains are assessed.

■ Better health?

Between 1975 and 2005, life expectancy in Thailand increased markedly, with female life expectancy outpacing male (Figure 7.3) due to the impact of AIDS in the 1990s. The 1999 and 2004 studies on the burden of disease showed that HIV is the leading cause of disability-adjusted life years (DALYs) lost for both men and women¹⁴.

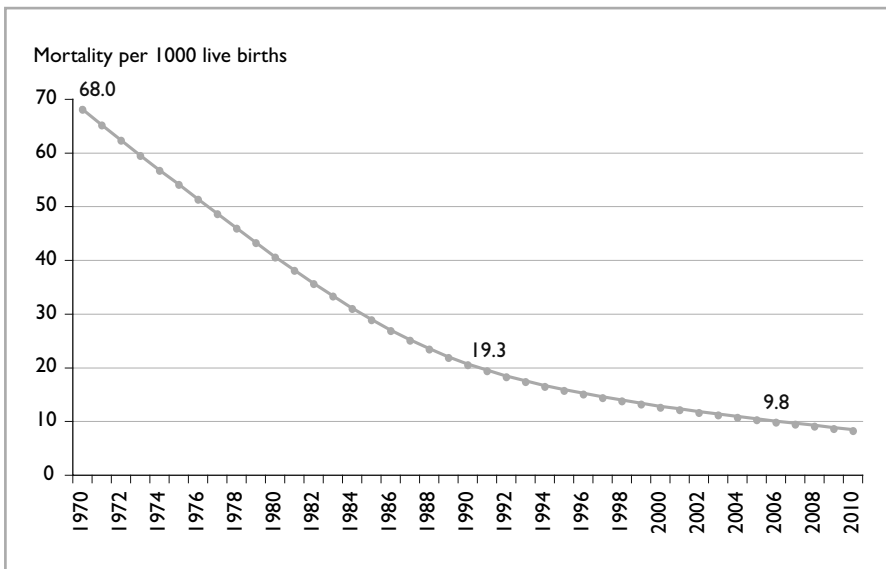
Infant mortality has fallen sharply in Thailand, from a rate of 68.0 per 1000 live births in 1970, to below 20 in 1991, reaching under 10 in 2006 (Figure 7.4). The urban–rural gap has decreased, although rural infant mortality was still 20% higher than urban infant mortality in the early 2000s. Likewise, a consistent reduction in under-5 mortality was observed, although it slowed in the mid-

Figure 7.3 Life expectancy at birth by sex, 1975–2005



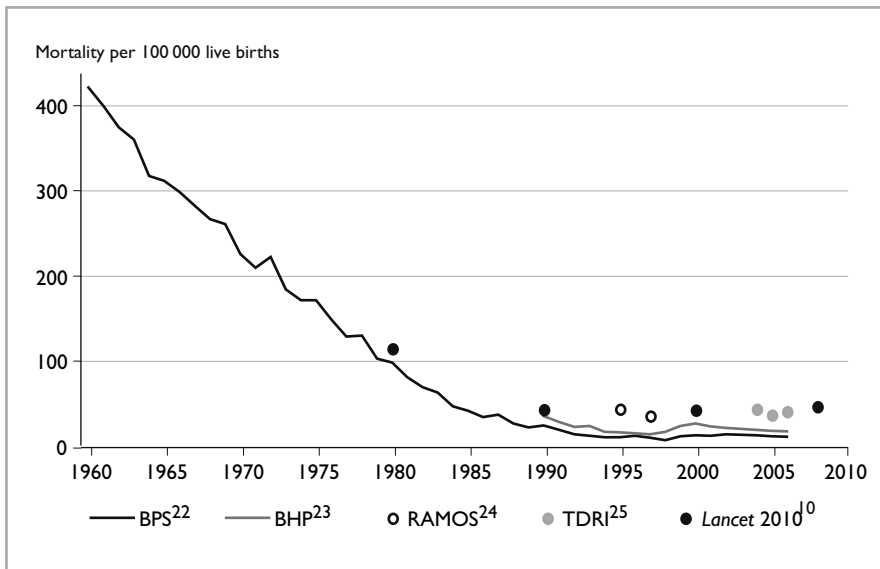
Source: Data from references 15 and 16.

Figure 7.4 Infant mortality rate, 1970–2010



Source: Data from reference 9.

Figure 7.5 Maternal mortality ratio, 1960–2008



Sources: Data from references 10 and 22–25.

2000s. Provincial disparities in mortality have decreased but still persist, with higher child and infant mortality in some provinces in the north-eastern, northern and southern regions of Thailand. Nonetheless, a substantially larger reduction in child mortality has been observed among the poorer quintiles, and the excess child mortality risk between the poorest and richest quintiles decreased by 55% (95% confidence interval, 39–68) between 1990 and 2000¹⁷. Low birth weight remains a concern, due to its implications for long-term poor adult health^{18,19}.

Thailand had the highest annual rate of reduction in child mortality among 30 low- and middle-income countries between 1990 and 2006²⁰, and in 2006, Thailand had the second lowest level of child mortality (Table 7.1).

Accurately establishing the level of maternal mortality is much more problematic. Various estimates show a steep reduction between 1960 and 1990, followed by relative stagnation since 1990 (Figure 7.5)²¹. In Table 7.1, Thailand can be seen to have a relatively low rate in 2005, but not markedly low (110 per 100 000 live births), although the most recent estimates, for 2008, were 47¹⁰ and 48²⁶ per 100 000 live births.

Table 7.1 Low- and middle-income countries ranked by average annual rate of reduction in under-5 mortality rate, 1990–2006

		Annual reduction under-5 mortality rate (1990–2006) (%)	Under-5 mortality rate 2006 (per 1000 live births)	Maternal mortality ratio 2005 (per 100 000 live births)
1	Thailand	8.5	8	110
2	Vietnam	7.1	17	150
3	Peru	7.1	25	240
4	Brazil	6.5	20	110
5	Indonesia	6.2	34	410
6	Syria	6.2	14	130
7	Egypt	6.0	35	130
8	Sri Lanka	5.6	13	58
9	Nepal	5.5	59	830
10	Morocco	5.5	37	240
11	El Salvador	5.5	25	170
12	Ecuador	5.4	24	210
13	Tunisia	5.1	23	100
14	Dominican Republic	5.0	29	150
15	Laos	4.9	75	660
16	Bangladesh	4.8	69	570
17	Honduras	4.8	27	280
18	Iran	4.7	34	140
19	Bolivia	4.5	61	290
20	Kazakhstan	4.5	29	140
21	Eritrea	4.3	74	450
22	Guatemala	4.3	41	290
23	Philippines	4.1	32	230
24	Turkmenistan	4.1	51	130
25	Haiti	4.0	80	670
26	Nicaragua	4.0	36	170
27	Paraguay	3.9	22	150
28	China	3.9	24	45
29	Cuba	3.9	7	45
30	Malawi	3.8	120	1100

Note: Table only includes countries with GNI US\$ 5000 per capita or less and births \geq 100 000/year.
Source: Data from reference 20.

The total fertility rate fell significantly from 6.3 births per woman in 1965, to below the replacement rate in 1994²⁷, and to 1.7 in 2003. In 2006, the average age of women at their first birth was 22.8 years, 24.0 in urban areas and 22.3 in rural areas²⁸. However, the prevalence of teenage pregnancies has increased, from 11% in 1996 to 12% in 2000 and to 15.7% in 2009, leading to problems of preterm delivery, low birth weight and neonatal mortality^{29,30}.

Progress in maternal and child health indicators was confirmed by the experiences of several experts who participated in this study. All of the people who were interviewed agreed that Thailand has achieved good maternal and child health in a relatively low-cost manner. They had evidence from their experience to justify their statements.

Good health, yes. Thailand has already achieved MDG numbers four and five. We are moving towards MDG Plus.

Policy-maker outside MOPH

... The health of pregnant women is fairly good. When I go to the field, about 100% of pregnant women get antenatal care from mostly public health facilities; there is only one case I have ever seen of a woman who had no antenatal care due to personal reasons, because she was a teenage pregnant woman. Probably the comprehensive distribution of primary health care services to the most peripheral areas of the system (subdistrict level) is the key explanation as to how good maternal and child health were achieved.

NGO representative

In order to relate reductions in death rates to contributions of the health system, it is important to understand changes in the causes of child and infant deaths. Table 7.2 shows the top 20 causes of deaths among children under 5 years of age in 1996, 2000, 2005 and 2009. Mortality from lower respiratory tract infections, heart failure, septicaemia, communicable and parasitic diseases, and diarrhoea demonstrated a downward trend between 1996 and 2009, and have been addressed by adequate access to primary care services, public health interventions and maternal and child health services. Drowning as the sixth cause of child mortality was unchanged, at 0.52 and 0.54 in 1996 and 2009, respectively, similar to road traffic accidents. Mortality from low birth weight, other congenital anomalies, congenital heart diseases and conditions arising from the perinatal period showed an increasing trend, and were the main contributors to perinatal mortality.

Table 7.2 Top 20 causes of death of children under 5 years, per 1000 live births, 1996–2009

	1996	2000	2005	2009
No diagnosis	1.29	3.26	1.47	1.45
▼ Other ill-defined	1.12	0.53	0.19	0.18
▼ Lower respiratory tract infections	1.03	0.47	0.56	0.46
▼ Heart failure	0.99	0.10	0.00	0.00
▼ Septicaemia	0.59	0.80	0.38	0.30
▼ Other chronic respiratory diseases	0.52	0.32	0.19	0.20
◆ Drowning	0.52	0.76	0.65	0.54
▼ Other communicable and parasitic diseases	0.35	0.28	0.15	0.15
▼ Other cardiovascular disease	0.30	0.06	0.09	0.10
▲ Low birth weight	0.29	0.25	1.01	1.04
▼ Diarrhoea	0.26	0.25	0.16	0.09
◆ Road traffic accidents	0.24	0.32	0.20	0.19
▲ Other congenital anomalies	0.24	0.39	0.76	0.77
▼ Ill-defined heart disease	0.24	0.08	0.05	0.05
▲ Congenital heart disease	0.23	0.36	0.61	0.67
▼ Other neurological diseases	0.21	0.13	0.09	0.07
▼ Endocrine and metabolic disorders	0.20	0.22	0.07	0.05
▼ Other digestive diseases	0.18	0.17	0.12	0.10
▼ Ill-defined unintentional accidents	0.17	0.08	0.04	0.02
▼ Other unintentional injuries	0.17	0.19	0.18	0.14
▲ Other conditions arising in the perinatal period	0.16	0.91	2.24	2.02
Top 20 causes of death, per 1000 live births	9.30	9.93	9.23	8.62
All others, per 1000 live births	1.25	2.01	1.55	1.31
Under-5 mortality rate, per 1000 live births	10.55	11.93	10.77	9.94

Note: ▼: Decreasing trend; ▲: Increasing trend; ◆: No change.

Source: Data from reference 31.

■ What has Thailand done to improve health?

The analysis of how Thailand achieved good maternal and child health outcomes sought to link the improvements to a range of specific interventions that have been undertaken over the years. Table 7.3 lists 25 interventions that are effective in addressing nine major causes of under-5 mortality^a and are generally viewed as critical for child survival³², as well as desirable for the survival of mothers. Table 7.3 presents an assessment of current coverage levels based on interviews with a maternal and child health programme expert (a clinician in a teaching hospital). Most interventions have high coverage, except for exclusive breastfeeding at six months, which was 5.3% in 2006, and antenatal steroids to prevent premature labour, which is in the scaling-up phase. There were no policies regarding the use of zinc to prevent diarrhoea, or antibiotics for premature rupture of membranes.

All interventions were fully integrated into primary health care networks and were implemented through district health systems. A typical district health system consists of 10–12 health centres, each covering 5000 people, and a district hospital covering 50 000 people. District health systems integrate maternal health, covering antenatal care, pregnancy, childbirth and early neonatal care, and family planning; and child health programmes, including immunization and well-baby clinics³⁷.

Nurses and public health workers are the backbone of rural health systems; they are multipurpose and are well trained to serve the community in particular public health functions, such as health promotion services, preventive services, and other community-based health services such as school health and home visits. Some professional nurses have one-year post-service training as anaesthetic nurses and conduct local and general anaesthesia in district hospitals, including for caesarean sections and other obstetric emergencies.

Nurses in district hospitals also provide the first antenatal care visit, which requires laboratory screening with consultation backup by general doctors (not obstetricians) for high-risk pregnancies, such as women with diabetes, a history of preterm labour and hypertension. Subsequent antenatal care visits are mostly managed by health centres. Nurses in district hospitals are also trained to provide counselling for HIV/AIDS in pregnancy, offering advice about prevention of mother-to-child transmission. Nurses are responsible for normal uncomplicated deliveries, while complicated cases are referred to general doctors in district hospitals or to provincial hospitals where obstetricians are available.

^a Diarrhoea, pneumonia, measles, malaria, HIV/AIDS, birth asphyxia, preterm delivery, neonatal tetanus and neonatal sepsis.

Table 7.3 Assessment of coverage of maternal and child survival interventions, 2010

Interventions	Coverage	Comments
I. PREVENTIVE		
Water, sanitation, hygiene	Universal	Universal coverage of safe water and clean sanitation achieved; 98% have access to safe water
Newborn temperature management	Universal	In-hospital case management for preterm newborns, incubators well equipped in all hospitals, including district, but not health centres
Tetanus toxoid	Universal	Integrated in antenatal care with high coverage
Nevirapine and replacement feeding	Universal	Triple ART (zidovudine, lamivudine, lopinavir) in PMTCT, high coverage as integrated with antenatal care, high level of vertical transmission prevention, PMTCT and breast milk substitutes up to 18 months of age are free of charge
Antenatal care	Universal	Very high coverage, with percentage of four visits increasing from 62% in 1988 to 82% in 2006. The national <i>Reproductive Health Survey</i> from 2006 ²⁸ reported 98.9% “ever antenatal care”. Government health services are the main antenatal care provider, with 80.3% of total services
Antenatal steroids to prevent preterm delivery	At scaling-up phase	National policy recently launched and implemented, rapid scale-up observed ³³
Safe delivery	Universal	Coverage increased from 66% in 1986 to >80% in 1990 and almost 100% since 1995. In 2006, 92.4% of total births in public sector, 6.2% in private sector and 1.3% home deliveries (most in the southern Muslim provinces) ²⁸ . Skilled birth attendants in 98.6% of total births in hospitals, according to the national <i>Reproductive Health Survey</i> 2009 ³⁴
Exclusive breastfeeding	Very low	Immediate mother–newborn bonding and breast milk initiation; support six-month exclusive breastfeeding but coverage is very low. The 2006 Multi-Indicator Cluster Survey reported that only 5.3% of infants under 6 months were exclusively breastfed ⁸

Table 7.3 (continued)

Interventions	Coverage	Comments
Measles and other EPI vaccines	Universal	Measles vaccine integrated in national EPI programme, although sporadic measles outbreaks from children >12 years, catch up campaign for measles not yet a policy. EPI is solely provided by public health sector, with very limited role of private sector. Vaccine-preventable diseases ³⁵ captured by MOPH diseases surveillance system were reduced sharply in association with >90% EPI coverage in 1990s ³⁶ . Mortality from these diseases was extremely low due to prompt detection and treatment
<i>Haemophilus influenzae</i> type B (Hib) vaccine	Not a major public health problem	Not implemented
Zinc	No policy	No clear policy
Antibiotics for premature rupture of membranes	No policy	There is no national guideline; implemented upon clinical judgment by individual physicians
Insecticide-treated materials	Not a major public health problem	Fully implemented in three provinces bordering Myanmar and Cambodia
Antimalarial intermittent treatment in pregnancy	Not a major public health problem	Not routinely practised
Complementary feeding	Cannot assess	Appropriate feeding advice in postnatal follow-up and well-baby clinics, no assessment on coverage
Vitamin A	Cannot assess	Combined in multivitamin in well-baby clinics
Family planning	Universal	CPR increased sharply from 14.7% in 1970, to 67.5% in 1987, 79.2% in 2003, and 81.1% in 2006. Rural–urban gap of CPR reduced until full equity was reached in 1984. The national <i>Reproductive Health Survey 2006</i> reported CPR of 81.2% in urban and 80.9% in rural areas ²⁸ . In 2006, health centres and district hospitals provided 62.6% of total family planning services. Private pharmacies have had an increasing role in recent years

Table 7.3 (continued)

Interventions	Coverage	Comments
II. TREATMENT		
Oral rehydration therapy	Universal	Full coverage, integrated at primary health care level, also support for home preparation
Antibiotics for pneumonia	Universal	Full coverage, integrated in health delivery systems + referral backup from health centre to district hospital, and from district to provincial hospitals
Antibiotics for sepsis	Universal	Available in district hospitals upward, high clinical competency in case management
Newborn resuscitation	Universal	Doctors well trained, core clinical competency in medical curriculum. Nurses responsible for delivery are also well trained
Antibiotics for dysentery	Universal	Appropriate antibiotics given on laboratory confirmation of diagnosis
Zinc	No policy	Not yet implemented
Antimalarial prophylaxis	Not a major public health problem	Not routinely practised
Vitamin A	Cannot assess	Combined in multivitamin in well-baby clinics

Notes: ART: Antiretroviral therapy; PMTCT: Prevention of mother-to-child transmission of HIV; EPI: Expanded Programme on Immunization; CPR: Contraceptive prevalence rate;

A recent assessment of the capacity of government hospitals to provide essential obstetric care found them to be satisfactory in term of accessibility, utilization and quality³⁸. Policies to reduce maternal mortality through unsafe abortions have yet to be developed. This is in light of the conservative stance towards, and societal dilemmas posed by, the provision of safe abortion services to respond to the increasing prevalence of unplanned pregnancies^{39,40}. Laboratory capacities for providing safe blood transfusion in most district hospitals are important backup services for obstetric emergencies.

Nurses and public health workers are major providers of family planning services, mainly through the distribution of birth control pills and condoms.

During the active family planning campaigns of the 1980s, professional nurses were trained to provide intrauterine devices to clients with outcomes comparable to those of doctors⁴⁰, but at lower cost and greater accessibility. District hospital doctors have competencies to provide vasectomy and permanent female family planning services. Vaccinations are given by staff in the public sector, in particular in health centres and district hospitals located close to where rural people live.

■ **What has the health system contributed to health improvement?**

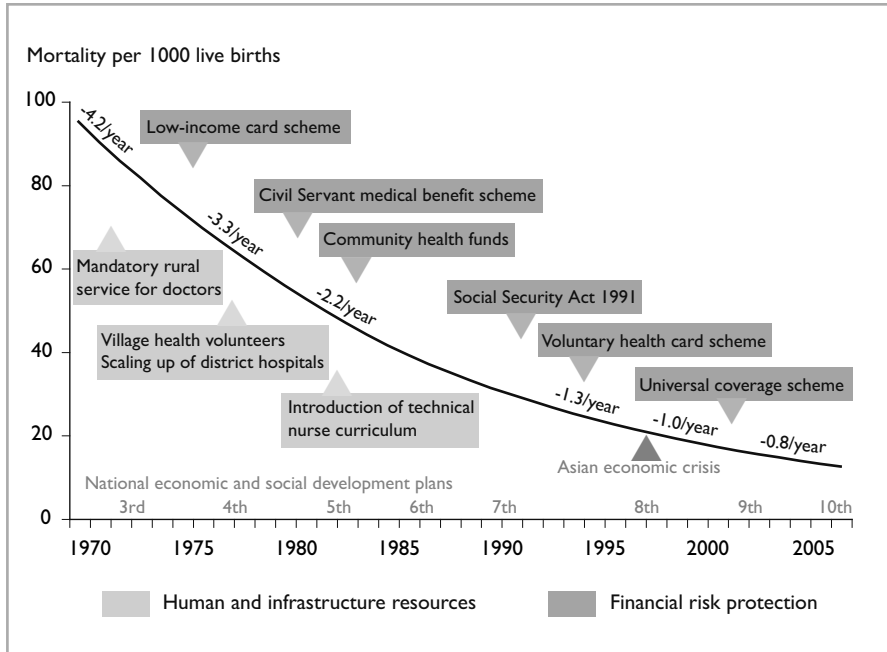
This section describes the key trends in health system development that ensured universal coverage of maternal and child health interventions and guaranteed that the vital services described above could be made widely available. The focus is on (1) developments in health care delivery and the health workforce that ensured the availability and functioning of the supply side, and (2) health financing reforms that ensured financial access to health care on the demand side. Both supply- and demand-side interventions concertedly address physical and financial barriers to access to care by the population.

Figure 7.6 plots chronological changes in the under-5 mortality rate through five-year National Economic and Social Development Plans (NESDP). The panel below the curved line shows significant health infrastructure and human resources developments, whereas the panel above the curved line tracks the extension of financial risk protection to different target populations. The annual reduction in under-5 mortality was high between 1970 and 1990 and levelled off thereafter.

Developments in health care delivery and the health workforce

When the MOPH was established in Thailand in 1942, it owned only 15 provincial hospitals outside Bangkok providing medical services for the entire population. The development of the health system – including infrastructure, human resources and financing – was guided by the five-year National Health Plan, which is an integral component of the NESDP. Expansion and upgrading of health facilities took 25 years, from the first NESDP until full coverage at all district and subdistrict levels by 1990 in the sixth NESDP. The first to the third NESDPs laid a solid foundation by expanding the number of provincial hospitals, to at least one in every province, and the fourth to sixth NESDPs did the same for district hospitals. Provincial hospitals were expanded first, in order to provide referral backup to district hospitals.

Figure 7.6 Under-5 mortality, development of human resources and infrastructure, and financial protection, 1970–2010



Source: Under-5 mortality data from reference 9.

Rapid scaling up of district hospitals began in 1977 and the next two decades witnessed a double-digit growth in the number of district hospitals (mostly with 10–60 beds) until every district had full coverage.

At the rapid scaling up of district hospitals during the fifth and sixth health plans, in Ubon province, six district hospitals were inaugurated each year; young doctors, nurses and other staff needed support but the Provincial Health Office was very stretched. Clinical, technical and administrative support from senior directors of neighbouring district hospitals was found to be very useful and practical. It was initiated based on a high spirit of commitment to rural health services.

Researcher, MOPH

This expansion of the district health system was critical. It laid a firm foundation for the future scaling up and equitable distribution of essential public health interventions and health services needed to achieve equitable and good maternal and child health outcomes.

Box 7.2 The history of government bonding of medical graduates

At the peak of the Vietnam War, American health care suffered from a lack of doctors as they were recruited to serve the war in Indochina. Thus, there was an exodus to the United States of a whole generation of Thailand's new medical graduates.

In 1967, having assessed the magnitude of loss and the lack of doctors serving rural areas, Thailand's Minister of Health, Phra Bamradnaradura, initiated a government bonding service policy for students in their first year of medicine. Opposition was minimized by making the policy prospective. Bonded students were required to serve three years in government health services. Students were initially allowed to opt out by paying a fine, but this was terminated a few years later because it benefited rich students. The first batch of bonded doctors graduated and started service in 1972.

The policy was fully supported by Professor Sood Sangwichian, former dean of the Faculty of Medicine at Siriraj Hospital. As he was one of the most charismatic leaders in medical education, the policy encountered no resistance from students and other faculties. Moreover, in 1967, students were in no mood to protest as the military government had recently suppressed their anti-American movement.

Excerpt from interview (retired MOPH policy-maker).

The adequate functioning of district health systems depended on the expansion of various cadres of health workers. One main achievement in human resources for health was mandatory public health service for all new medical graduates, which began in 1972 (Box 7.2). The government's bonding policy was considered to be legitimate, as medical and nursing education was heavily subsidized by tax-financed tertiary education. The bonding resulted in significantly increased numbers of doctors and nurses serving in rural district health services. Later, government bonding was extended to other cadres, such as pharmacists, dentists and other allied health professionals, including dental nurses, assistant pharmacists and laboratory technicians. Nursing students recruited from rural areas by the MOPH had fully funded four-year training in MOPH nursing colleges and had traditionally been able to serve their home town in MOPH health centres or district or provincial hospitals.

Historically, nursing faculties in universities under the Ministry of Education were unable to produce the number of nurses and midwives needed to meet demand for scaling up MOPH rural health services. In response to this challenge, in 1961, the MOPH established its own nurse and midwifery colleges, which were licensed and certified by the Thai Nurse and Midwifery Council.

Professional nurses were trained for four years and received bachelor degrees. In response to the rapid increase in the number of district hospitals, scaling up the production of nurses became a key policy goal. To do this, instead of nurses having four years of training, in 1982 a policy was introduced to produce a two-year trained diploma course for technical nurses. After a few years of mandatory rural services, these technical nurses completed an additional two years of post-service training, after which they were upgraded to professional nurses. The Nurse Council approved the technical nurse curriculum for a limited period of ten years, ensuring that all nurses ended up becoming professionally qualified.

To implement this policy, the MOPH benefited from its existing nursing colleges. There was no opposition from professional associations due to the undersupply of nurses. Producing more nurses eased the huge service loads in the public sector and had spillover benefits for the private health sector.

This policy got approval without resistance; the policy was welcomed by some universities (Siriraj, Khon Kaen and Prince Songkhla) and MOPH nursing colleges as was the policy on post-service upgrading to professional nurses.

Expert in the Thai Nurse and Midwifery Council

Nurses are the backbone of the health system, in particular, for primary health care and major maternal and child health service provision. Undeniably, it is the MOPH nursing colleges that produced these cadres of nurse personnel serving rural health systems, with universities having a limited role. We need to give credit to the predecessors in the MOPH who established nursing colleges and innovated these policies (particularly technical nurse production), and to nurse instructors and nurse fellows throughout the country.

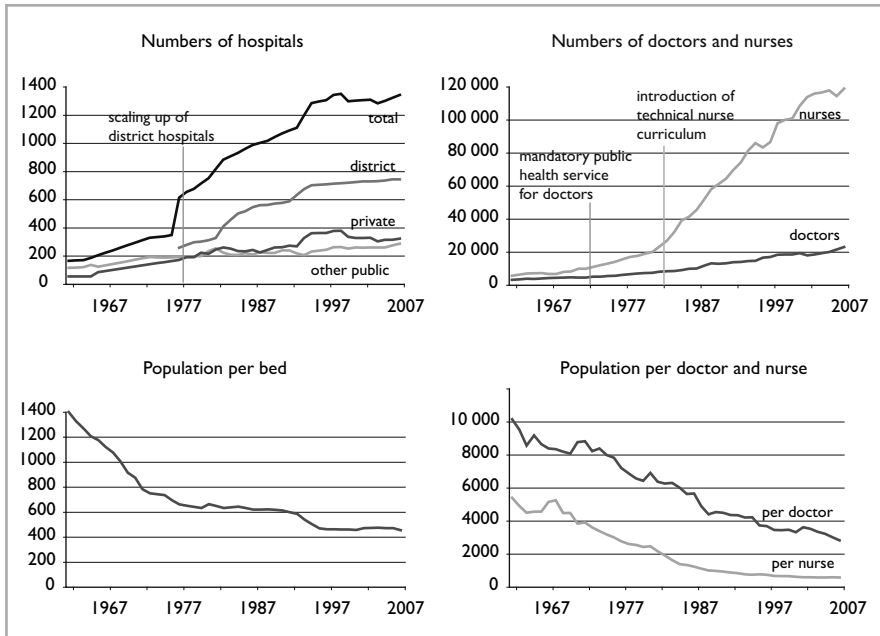
Retired MOPH policy-maker

The production capacity of MOPH nursing colleges today is 70% of total annual national nurse production; while Ministry of Education produces 20% and private nurse colleges produce the rest, 10%, of the total.

Expert in the Thai Nurse and Midwifery Council

Figure 7.7 shows the benefits of the infrastructure and human resources policies in terms of improved population ratios covering the period from 1962 to 2007.

Figure 7.7 Health infrastructure and human resources trends in Thailand, 1962–2007



Source: Analysis using dataset from reference 42.

Interviewees agreed that health infrastructure and health workforce development significantly contributed to the success of maternal and child health services.

The most important factor in the success of antenatal care was establishing health centres and district hospitals which covered all areas. It is not the private sector as advocated by many development partners. In the Thai context, it is the strength of public sector providers scattered around the country. I think extensive geographical coverage is a strong foundation for the health development of Thai people.

Current MOPH policy-maker

Health centres are the main contributor to the success of EPI [the Expanded Programme on Immunization]. It is the public health workers who lived in the staff house in the health centre or their own home in the village that provided these services. Undoubtedly, logistical support, and in particular, the cold chain, ensuring good quality vaccines from district hospital or district health offices, is also essential.

Retired MOPH policy-maker

Almost all interviewees emphasized the importance of the expansion of health infrastructure to cover all districts of Thailand.

When I worked upcountry, it was clear that public health infrastructure was the most important ... It was significantly developed during the era of rural development. The budget of provincial hospitals was shifted to rural areas, i.e. to build up the district hospitals.

Retired MOPH policy-maker

Over this period, there was constant turnover of governments and periodic economic crises (including the Asian economic crisis of 1997), but institutional continuity of senior officials in the MOPH, particularly in the Health Planning Division headed by the late Dr Damrong Boonyern^b played a significant role, facilitated by the continuity provided by the five-year health planning process⁴³. In addition, it should be stressed that the charismatic leaders who helped to steer the content of the National Health Plan came from rural areas and had experience working in rural health services. Thus, the content of the Plan was shaped by their conviction that favoured “good for the most” (benefits for the majority who were the rural poor) as opposed to “the best for a few” (the best for the urban elite). The continuity and engagement of young and old public health policy-makers ensured that this pro-rural ideology passed from generation to generation and that it remained the priority throughout four decades of health system development.

It is important to emphasize that these developments benefited from a supportive context. Peace and economic development were two other contributing factors for health infrastructure extension and human resource development. From 1965 to 1996, the Thai economy grew at a rate of 7.8% annually, with double-digit growth from 1986 to 1990. This sustained rapid economic growth allowed the government to pay off public debts and freed a large portion of the national budget for investment in the social sectors, including education and health. The proportion of the national budget devoted to public debt dropped from 24.7% in 1987 to 5% in 1997, and the education and health budgets rose from 18.1% and 4.1% in 1987, to 24.5% and 8% in 1998, respectively⁴⁴.

^b Dr Damrong Boonyern, MD, DrPH (Tulane) had eight years of rural service experience in two provinces of the north-east region (1964–1972). He was head of the Policy, Planning and Research section of the Health Planning Division for eight years (1973–1981), then Director of the Health Planning Division for eight years (1981–1989), then deputy Director-General Department of Health for three years (1989–1992), Inspector General for two years (1992–1994), Director-General of the Communicable Diseases Control Department in 1994 and Director-General of the Department of Health from 1995 to 1997, when he retired.

The national five-year health development plans are funded mandates with adequate resources for programmes and activities to translate policy into real outcomes. These are not rhetorical statements delivered in the parliament or cabinet meetings.

Researcher in MOPH

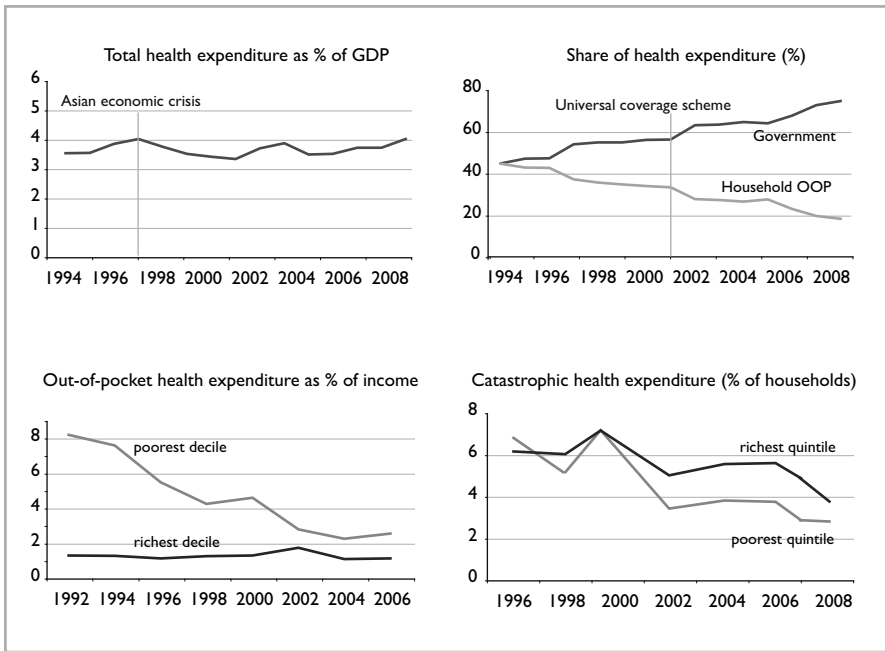
Extension of financial risk protection

Expanding financial protection was another factor that led to improved health outcomes and access to services. In the early 1970s, user fees provided approximately half of the income of the district health services in Thailand, and the cost of obtaining health care was recognized to be an important cause of rural impoverishment. A policy on waiving user fees for low-income households was launched in 1975 as a tax-financed public welfare scheme; later, the scheme was extended to other vulnerable groups, such as the elderly, children under 12 years, and the disabled. Compulsory social health insurance under the Social Security Scheme was launched in 1991 for private-sector employees using tripartite payroll-tax contributions by employers, employees and the government. Beginning in 1984, the informal sector was able to purchase financial protection through a community-based health insurance scheme, financed by voluntary household contributions, which evolved into the publicly subsidized voluntary health insurance scheme in 1994, financed half by households and half by budget subsidies. Government employees were covered by a tax-financed non-contributory Civil Servant Medical Benefit Scheme.

This piecemeal, gradual extension of financial protection schemes had reached 70% of the total population by 2001. Coverage was not complete for all eligible groups due to the difficulties in administering fee exemptions for vulnerable households and incomplete take-up of public voluntary health insurance. In 2001, the government decided to simplify and universalize the arrangements by introducing universal health care coverage (known as UC). This was achieved in 2002 when the entire population was covered by one of the three insurance schemes: the existing social health insurance, the civil servant scheme or a new scheme for the remainder of the population⁴⁵.

A significant result of the extension of financial health protection was the reduction in both household out-of-pocket payments and catastrophic payments for health care among the poorest deciles, which further accelerated when the universal coverage scheme was launched in 2001 (Figure 7.8). This was achieved with relatively stable health expenditure as a percentage of GDP, although there was a significant shift in the shares of public and private expenditures. While the Asian economic crisis that started in July 1997 hit the economy hard for a few

Figure 7.8 Health expenditure trends in Thailand, 1994–2008



Source: Data from references 4 and 46.
 Note: OOP: Out-of-pocket expenditure.

years, public spending on health was significantly protected and, indeed, universal coverage was introduced at the bottom of the slump in Thailand’s GNI.

■ **How has Thailand achieved health system development?**

This section explores why and how the policies that contributed to the development of the health system over the past four decades arose and were adopted. Who were the various actors involved in the policy processes, what was their power and position, and what were their motives?

Agenda setting: health has been given a high priority

Interviewees consistently argued that health received high priority in the national agenda, a point that was confirmed by the visibility of health plans in the NESDP process. Health has been included in policy statements by almost all

Thai Prime Ministers since 1942⁴⁷, and successive plans have introduced a number of key programmes such as the National Family Planning Programme in 1970, the national Expanded Programme on Immunization in 1977 and Safe Motherhood in 1998.

Prior to 1973, successive governments were dominated by military regimes, and after 1973, there was frequent political instability. Despite these difficulties, some health ministers appointed by military regimes were charismatic leaders who were also technocrats (civil servant administrators) with a strong public health or medical background and an equity orientation. Charismatic health ministers included Phra Bamradnaradura (1959–1969), Udom Posakrisana (1973–1975), Yongyouth Sajjavanich (1976–1978), Sem Pringpuangkeo (1980–1983), Pairoj Ningsanonda (1991–1992) and Mongkol Na Songkhla (2006–2008). For example, Minister Pairoj Ningsanonda, an ex-permanent secretary of the MOPH, passed a number of landmark laws including the Control of Tobacco Product Act 2535BE (1992), the Non-smoker Health Protection Act 2535BE (1992), the Health Systems Research Institute Act 2535BE (1992) and the Thailand Research Fund Act 2535BE (1992). The latter two contributed significantly to the strengthening of health system research and the generation of evidence for policy decisions. Minister Mongkol Na Songkhla fostered implementation of universal coverage by including renal replacement therapy for universal coverage scheme members. He also introduced a number of advanced laws, notably the National Health Act 2550BE (2007), which mandated an annual National Health Assembly to provide for grassroots participation in public policy development⁴⁸.

Whatever the MOPH does, it focuses on the poor or worse off and benefits the majority of the country, such as the rural sector where more than 60% of the Thai population live and are the most poor and socially disadvantaged.

Retired MOPH policy-maker

In addition, various director-generals and leaders in the MOPH had overseas training as well as experience as provincial public health managers. These leaders influenced policy formulation or, through their policy networks, indirectly swayed the policy agenda in favour of rural health development. They did this over two to three decades, maintaining policy continuity and coherence. The 1986 Sasakawa Health Prize⁴⁹ awarded to Dr Amorn Nondasuta, the MOPH permanent secretary, further boosted national commitment towards rural primary care development. He was the pioneer of the voluntary health insurance scheme introduced in 1984 for the informal population, one of the key foundations for future universal coverage.

Box 7.3 The evolution of the Rural Doctors Society

The first wave of government-bonded doctors sent to district hospitals faced many administrative and logistical problems, such as inadequate equipment, lack of health staff, and a huge load of clinical care. To address this problem, the Rural Doctors Society was formed in 1978, coinciding with the Declaration of Alma-Ata. The ideology of the democratization movement of the early 1970s drove the Society's direction. Key principles were work for the betterment of Thai society, teamwork, and a holistic approach. The early mandates of the Society were developing district hospital management guidelines, journals, a newsletter and an annual conference. Four years later, the Rural Doctor Foundation was established and the annual Best Rural Doctor Award was granted to the most dedicated doctors in remote or underserved areas, conferring prestigious social recognition on rural doctors.

Since completion of the rural hospital network, the Society has played an active watchdog role and has monitored corruption in the health system for the past two decades. Its exposure of a nationwide drug scandal in 1998 resulted in a jail sentence for the health minister⁵².

Source: Reference 53.

Although critical support for health from strategic interest groups persisted over the period 1970–1996, the relative power of these interest groups was constantly evolving⁵⁰. Between 1970 and 2000, political parties were not strong and most governments were coalitions. As a consequence, the bureaucratic elite or technocrats (military and civilian) played a significant role in policy formulation at the national level and in the translation of policy into effective implementation. However, the past two decades have seen a decline in the power of the bureaucratic elite and a related rise in the power of the economic elite, either directly or through their influence on political parties and government. With the landslide victory of the Thai Rak Thai party in 2001, the commercial economic elite started to play a significant role in setting the policy agenda: the so-called populist policies, advocating for the rights and interests of ordinary people in rural areas to obtain political advantages. This benefited health; in fact it was a political decision to put universal health care coverage on the election campaign agenda in 2001⁵¹.

Other significant groups supporting the health agenda included the media, nongovernmental organizations (NGOs) and professional groups. Informal policy groups were also significant. The Rose Garden group, convened monthly for the last 20 years, is a classic informal policy group, closely linked with the Rural Doctors Society of Thailand (Box 7.3). Various policy agendas were

generated from this think tank, such as universal health coverage and the anti-tobacco campaign, which led to two tobacco control acts⁵³.

Policy formulation: the role of technocrats and evidence

Although politicians determined and set elements of the health agenda, they had rapid turnover: specifically, there were 11 governments in the 19 years between 1969 and 1988. Therefore, technocrats were key players in policy formulation at national level and policy implementation at local levels. Between 1970 and 2000, technocrats with long-term institutional memory and exposure to rural health and public administration were promoted to high positions in the MOPH. They had strong direct and indirect influence in convincing politicians to endorse a number of key elements of the national health agenda.

Most MOPH policies (policy formulation, not setting the policy agenda) came from us, the health personnel on the ground, not the politicians. Many policies on health infrastructure and human resources development were initiated by us. When the politicians gave a policy the green light, the MOPH and health personnel at health facilities had to implement it until the targets and goals were reached.

Retired MOPH policy-maker

A number of success factors were synthesized from interviews and document reviews. Health personnel were culturally very well accepted by society, especially medical doctors, who usually received higher social recognition than other professions. In addition, they were recognized to be highly competent professionals and trusted by the communities.

We were really impressed by the medical doctors. They were the most able people in the country. Very high social and political recognition was given to the MOPH automatically. The MOPH was very active and the strongest players compared to other ministries. [The MOPH] led the team from various ministries to work together on rural development. The MOPH played the leading role in national policy development, e.g. rural development, such as for health education, hygiene and sanitation, 100% toilet coverage campaign, safe drinking water.

Policy-maker outside MOPH

Increasingly in Thailand, evidence is used to formulate policies, although strong individual and institutional capacity to generate evidence was only developed in the 2000s^{54,55}. Prior to 2000, policy formulation was mostly based on experience and pilot testing.

It was not difficult to present new programmes to the MOPH policy-makers because normally we used evidence to support our thinking. We did not just think it up by ourselves. Normally, we had a mini-trial programme or pilot project to see the feasibility first. Academic work was strong from our side compared to other sectors.

Retired MOPH policy-maker

For example, the launch of the 1970 National Family Planning Policy was a result of the *Potaram* pilot to test community acceptability in 1963. The provider payment choice for social health insurance in 1990 between fee-for-service reimbursement and a capitation contract model was analysed and proposed by able technocrats, in particular, the reform champion the late Dr Sanguan Nittayaramphong.

The doctors or health workers at MOPH are generally good people. We quite believe in whatever programme they would implement. Usually, they are strong in technical matters. No doubt about their scientific knowledge and skill.

NGO worker

Although scientific evidence played a critical role in policy formulation relating to specific interventions, judgement, values and implementation capacity were influential as well. For example, an analysis of costs and benefits of the hepatitis B vaccination guided the decision to add the hepatitis B vaccine to the Extended Programme on Immunization⁵⁶. However, the decision to adopt renal replacement therapy for universal coverage scheme members in 2007 set aside the evidence on cost-ineffectiveness⁵⁷ and the huge long-term budget implications⁵⁸, and prioritized evidence on the financial burden and impoverishment caused by payments for dialysis among affected households⁵⁹. The decision to adopt universal antiretroviral therapy in 2003 was made before information on cost-effectiveness, and driven by:

- international advocates of antiretroviral therapy such as the WHO 3 by 5 Initiative;
- the civil society movement at country and international level; and
- most importantly, the capacity of the Government Pharmaceutical Organization to produce a low-cost (at US\$ 300 per patient-year) generic combination of three medicines⁶⁰.

Meanwhile, the decision to adopt corticosteroid for treatment of preterm labour was based not only on published evidence from a multi-country trial involving Thai clinicians⁶¹, but also on clinical competency and the health system's readiness to scale up rapidly³³.

Policy implementation: competency, participation and pragmatism

Health managers at provincial and district levels were capable of translating policies into successful programmes on the ground⁶². They were pragmatic and had the flexibility to adapt national policy to the local context (from interviews with a number of retired MOPH policy-makers). Managers had a broad scope of authority in managing financial and human resources according to the government and MOPH regulations. For example, all revenue generated from user charges was retained at local level. In some provinces, a common drug list used by district and provincial hospitals was formulated and purchases of medicines were pooled to obtain the best possible prices; this voluntary process did not require MOPH approval. These innovations were not possible without flexibility and implementation capacity at local level. Effective communication and feedback loops between implementers and policy-makers fostered the successful implementation of policy.

The concept of integration drove the introduction of new policies, avoiding national vertical programmes. For example, the prevention of mother-to-child transmission of HIV programme was integrated with antenatal care at district level, and nurses responsible for antenatal care were given the additional task of the prevention programme. Pilots were customarily used to test, assess and adjust new programmes prior to nationwide scaling up, as in the case of family planning and the national Expanded Programme on Immunization.

The MOPH leaders are practical and they simplify things and make it easy for implementation to suit local context. A standard blueprint of different sizes of district hospitals made maintenance easy and future plans for expansion were well thought out from the drafting of the blueprint.

*Academic in a teaching hospital
who previously worked as a physician in a district hospital*

Reliance on domestic resources for health system development with independence from donors was another major contributing factor for sustainable programme implementation. Different governments demonstrated financial commitment to the health sector, as noted above.

Health programmes have been well received by villagers and communities. No resistance was observed, and publicity and community awareness – for example, of the need for family planning because of poverty related to large families – minimized demand-side barriers (from interview with a retired physician at district hospital). There has been very high compliance with family planning

services and immunization schedules, as well as confidence in the quality and safety of the free vaccination programme. Public trust and confidence have gradually been built into the district health delivery systems.

In summary, the development of the health delivery system and other health programmes were endorsed by governments at the highest level, driven by able technocrats, and well accepted by society and villagers. Effective implementation with limited resources, in addition to the strong motivation of all stakeholders to improve society, made the policies successful.

The intrinsic factors: role models and their inspiration

From various interviews, a key message emerged that intrinsic factors relating to authoritative individuals played a critical role in setting a standard of high commitment and motivation in order to bring health to the rural poor. This was reflected by their lifetime of hard work, dedication and sacrifice.

Professor Sem Pringpuangkeo is our 'grandfather'... as director of Chiangrai Prachanukhror^c hospital, he introduced user charges without official approval to mobilize local resources to expand service capacity in light of the meagre government budget. He was investigated by the finance ministry for not abiding by the rules, but finally high-level policy-makers understood the real situation and an official user charge policy emerged... His lifelong contribution to health development in Thailand is enormous.

Retired MOPH policy-maker

In addition, Dr Boonyong Wongrakmit's lifelong contribution to health in the rural northern mountainous province of Nan was recognized by His Majesty King Bhumibol Adulyadej in 1968. He was awarded a Royal Privy grant to upgrade the infrastructure of Nan provincial hospital during the royal visit to the hospital by the King and Queen of Thailand (from interview with a retired physician at a provincial hospital). Twenty years after his retirement, Dr Boonyong Wongrakmit still plays an active role in the civil society health movement. Such doctors are highly regarded and are heroic leaders for the younger generations.

^c Prachanukhror is a combination of two words: *pracha* means people or public, and *anukhror* means sponsor or support. Chiangrai Prachanukhror means the Chiangrai hospital, which is financially sponsored by the people through user charges.

Financial incentives, although important, had less influence than social recognition (from a number of interviews with retired MOPH policy-makers, retired physicians at district and provincial hospitals, and a health officer at a provincial level).

A medical doctor always gets high recognition from villagers. Even if he is a new graduate he would be greeted by older villagers and he would be invited to be a chairperson of many important events in the district, e.g. funerals, sports day and the New Year festival. This high social recognition is naturally given to medical doctors and other health personnel. When one gets high recognition, he or she should preserve it as much as possible by paying back to the society.

Academic in a teaching hospital

The most important reason, cited frequently by many interviewees to explain the dedication of public doctors, is that the MOPH health personnel are civil servants who work for the King. Therefore, it is the highest honour “to serve the country for the King and Royal Family”.

A key role model was Prince Mahidol Na Songkhla, the father of the present King Bhumibol, who trained in public health in the early years of the 20th century. He untiringly promoted public health and medical care in Thailand through his work with the Rockefeller Foundation in establishing medical colleges in Thailand. He is revered as the father of modern medicine in Thailand.

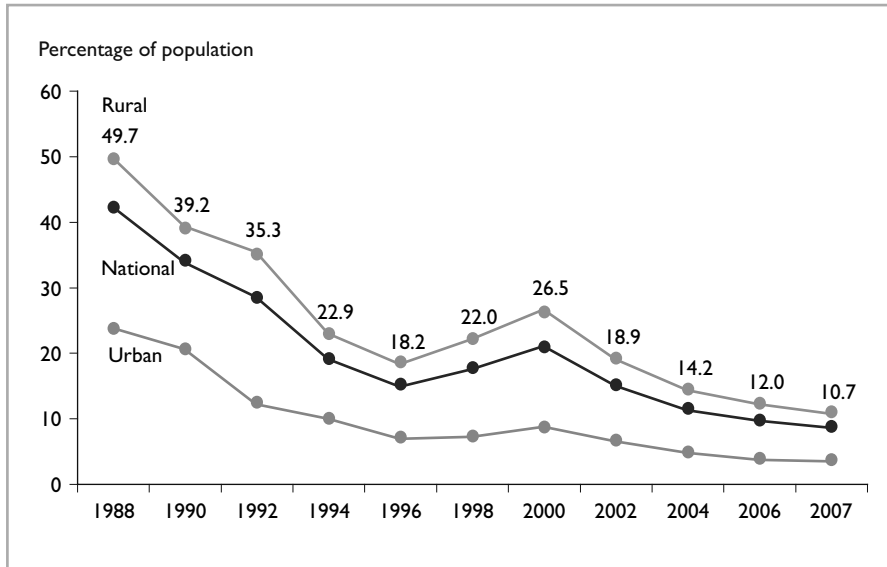
■ What have other sectors contributed?

A number of other sectors and developments also contributed to improving the health of the Thai population, including economic growth and poverty reduction, education, social equity and inclusion policies, and public infrastructure.

Economic growth and poverty reduction

Rapid economic growth (Figure 7.2) was associated with significant poverty reduction, as indicated by a fall in poverty incidence from 49.7% of the rural Thai population in 1988 to 10.7% in 2007 (Figure 7.9). The rural–urban gap has been reduced although it is still large, with the urban population much less affected by the economic crisis of 1997 than the rural sector.

Despite the reduction in the incidence of poverty, income distribution has been very slow to change. It took almost 25 years to reduce Thailand’s Gini index

Figure 7.9 Poverty incidence, selected years, 1988–2007

Source: Data from reference 63.

from 45.2 in 1981 to 42.5 in 2004. It has never been on Thailand's political agenda to introduce land and inheritance tax, a major policy instrument for income redistribution.

Education

Thailand started the period under examination with relatively high levels of literacy. These further improved and gender disparities decreased and even disappeared with respect to youth literacy (Table 7.4)¹¹. In 2002, universal basic education was extended to compulsory secondary education.

Social equity and inclusion

The Gender-related Development Index (GDI) measures inequalities between women and men: it is simply the Human Development Index (HDI) adjusted downward for gender inequality. The greater the gender disparity in basic human development, the lower a country's GDI relative to its HDI. Thailand's GDI value is 99.9% of its HDI value. Out of the 155 countries having both HDI and GDI values, only 14 countries have a better ratio than Thailand's.

Table 7.4 National adult (15+) and youth (15–24) literacy rate, 1980, 2000 and 2005

	Adult literacy, >15 years (%)				Youth literacy, 15–24 years (%)			
	Both	Male	Female	Gender parity	Both	Male	Female	Gender parity
1980	88.0	92.2	83.9	0.91	96.9	97.6	96.2	0.99
2000	92.6	94.9	90.5	0.95	98.0	98.1	97.8	1.00
2005	93.5	95.6	91.5	0.96	98.1	98.2	97.9	1.00

Source: Data from reference 11.

The Gender Empowerment Measure (GEM) reveals whether women take an active part in economic and political life, tracking gender inequality in opportunities in selected areas, including the share of seats in parliament held by women and the gender disparity in earned income, reflecting economic independence. In contrast to the GDI, Thailand does not perform well on the GEM, ranking 76th out of 109 countries in the GEM and indicating a large scope for improvement regarding women's engagement in economic and political life. Female labour force participation is high, although a gender gap persists. In 2008, 81% of men, but only 65.9% of women, aged 15 years or older participated in the labour market.

Public infrastructure

Economic growth enabled substantial government investment in infrastructure, such as provincial and district feeder roads and communication. For example, the percentage of paved roads increased from 50% of the total roads in 1990 to almost 100% in 2000. This not only supported the distribution of agricultural products and generated income for rural populations, but it also facilitated access to health and education services. Various health and welfare surveys reported improved access to health services by rural populations, in particular during the 1990s. Moreover, increased household income facilitated investment in safe water and sanitation, better shelter and healthier cooking fuels (replacing charcoal with natural gas), improved diets and higher nutritional status.

The percentage of the population with access to improved water sources increased from 91% in 1990 to more than 98% by 2008⁵, with a preferential

growth of coverage in rural areas. Access to safe water significantly contributed to personal hygiene, food safety and a reduction in gastrointestinal diseases. At the same time, the percentage of the population covered by mobile and fixed-line telephones increased significantly in the 2000s, from less than 20% in 2000 to 100% in 2008.

■ **Lessons learned and future challenges**

Relative to countries with similar income levels, Thailand has achieved significant health improvements at relatively low cost in terms of total health expenditure per capita and percentage of GDP devoted to health. Health gains have been achieved in conjunction with reductions in the rich–poor health inequity gap, although there are continuing challenges of geographical inequity.

These achievements have been possible because, over a 40-year period, critical maternal and child health interventions addressing the key causes of mortality and morbidity were made widely available, achieving high coverage of the rural population. These interventions were predominantly provided through the public primary care and district health infrastructure, which was substantially and deliberately expanded over the same period, with concomitant investment in human resources and adequate financial resource allocation to make primary health care a reality. District health systems, including subdistrict health centres and district hospitals, function as strategic hubs, translating national health plans into effective programmes on the ground.

Later, action was taken to limit the financial barriers to accessing care, through a range of financing schemes for specific population groups, such as low-income households, the informal sector, civil servants and private-sector employees. These fragmented schemes were succeeded by the 2001 reform, which ensured universal coverage for the entire population. Consistent improvements in financial protection have clearly led to reduced levels of both catastrophic health expenditure and health impoverishment¹³.

In addition, there were developments in other sectors, which wider evidence indicates would have contributed to health improvements. Among others, economic growth and poverty reduction, an increased level of adult literacy, a diminished gender literacy gap and a high level of female literacy contributed to health gains.

These health and wider development gains were underpinned by the implementation of a series of five-year National Health Plans and NESDPs over a 45-year

period (1960–2006). These Plans provided consistent and sustained support for a range of interacting health and development policies, focusing on rural development between the 1970s and 1990s.

The consistent development and implementation of these sets of policies was made possible by pro-poor, pro-rural ideology covering not only health but also other key sectors such as education, agriculture, employment, transportation and public infrastructure. Commitment to health was not rhetoric, but reflected actual allocations assisted by favourable economic growth. The consistent increase in public expenditure on health resulted in the reduction in household out-of-pocket payments for health to the level of the Organisation for Economic Co-operation and Development average in 2008.

The consistent pro-poor line of health policy reflected a particular national focus on equitable health and health development, the role of strong policy networks favouring rural areas and a strong and stable technocratic base (despite highly unstable politics). This included use of evidence and experience in policy formulation, strong implementation capacity and a pragmatic, learning approach to policy implementation. Finally, the value base of policy-makers in the MOPH and leading role models in the medical profession demonstrating lifelong commitment to improving the health of the poorest were a vital influence, underpinned by the motivation of the Royal Family and its support to health.

With improvements in child health secured, current challenges are in improving adult health, and especially reducing adult mortality⁶⁴ and morbidity from traffic injuries, HIV/AIDS and chronic noncommunicable diseases. A burden of disease study revealed that the top five causes of total mortality among men were HIV/AIDS, cerebrovascular diseases, accidents and injuries, liver cancer and chronic obstructive pulmonary diseases. Similarly, among women, HIV/AIDS ranks second and cerebrovascular diseases ranks first. Multisectoral action is required to address risk factors such as tobacco and alcohol use, changing diets and poor law enforcement, which contributes to traffic injuries; the future challenges are daunting. While sustaining mother and child health outcome achievements, there is need for a major policy review on how Thailand controls risk factors contributing to adult mortality. Policy-makers are aware of the emerging challenges; major programmes addressing the social determinants of chronic noncommunicable diseases have been launched.

ACKNOWLEDGMENTS

We wish to thank all those interviewed for their frank views and experiences on the historical development of the health system in Thailand. Findings indicated untiring contributions by public health workers throughout the country, technocrats who influenced policy formulation and various leaders in the MOPH who were highly committed to contributing to the health development of the country.

The National Statistical Office, which generates evidence from household surveys and routine administrative datasets maintained by relevant departments of the MOPH and other ministries, provided indispensable support. Thanks to all colleagues in the International Health Policy Programme who were involved in supporting this work. Without them, this chapter would not have been possible.

We enjoyed working with other members of the London School of Hygiene & Tropical Medicine who steered this work, as well as colleagues from four other countries – Bangladesh, Ethiopia, Tamil Nadu (India) and Kyrgyzstan. Thanks to Lesong Conteh who visited Thailand and provided technical support on qualitative analysis using NVivo.

REFERENCES

1. United Nations. *MDG-Plus: a case study of Thailand*. New York: United Nations Development Programme; not dated (<http://www.undp.org/mdg/goodpractices/Thailand-casestudy.pdf>, accessed 4 January 2010).
2. Waage F et al. The Millennium Development Goals: a cross-sectoral analysis and principles for goal setting after 2015: Lancet and London International Development Centre Commission. *Lancet* 2010; 376(9745):991–1023.
3. WHO. *World health statistics* [online database]. Geneva: World Health Organization; 2010 (<http://www.who.int/whosis/whostat/en/index.html>, accessed 7 June 2010).
4. Thai working group on National Health Account. *The report on 1994–2008 National Health Expenditure*. Nonthaburi: International Health Policy Program, Ministry of Public Health; 2010 (http://www.ihppthaigov.net/nha/thai_nha_1994-2008.xls, accessed 20 February 2010).
5. World Bank. *World development indicators* [online database]. Washington DC: World Bank; 2011 (<http://data.worldbank.org/country/thailand>, accessed 17 July 2011).

6. Thailand National Statistical Office. *Population and housing survey 2000*. Bangkok: National Statistical Office; 2001.
7. WHO. *National health accounts, country health information*. Geneva: World Health Organization; 2011 (<http://www.who.int/countries/tha/en/index.html>, accessed 17 June 2011).
8. Thailand National Statistical Office. *Thailand multiple indicator cluster survey (MICS) December 2005 – February 2006, final report*. Bangkok: National Statistical Office; 2006 (http://www.unicef.org/thailand/resources_356.html, accessed 7 June 2010).
9. Institute for Health Metrics and Evaluation. *Infant and child mortality estimates by country 1970–2010*. Seattle: Institute for Health Metrics and Evaluation; 2010 (<http://www.healthmetricsandevaluation.org/record/infant-and-child-mortality-estimates-country-1970-2010>, accessed 7 June 2010).
10. Hogan MC, et al. Maternal mortality for 181 countries, 1980–2008: a systematic analysis of progress towards Millennium Development Goal 5. *Lancet* 2010; 375(9726):1609–23.
11. UNESCO. *National literacy rates for youth (15–24) and adults (15+)* [online database]. Montreal: UNESCO Institute for Statistics; 2010 (<http://stats.uis.unesco/TableViewer/tableView.aspx?ReportID=210>, accessed 18 April 2010).
12. Limwattananon S, Tangcharoensathien V, Prakongsai P. Catastrophic and poverty impacts of health payments: results from national household surveys in Thailand. *Bulletin of the World Health Organization* 2007; 85(8):600–6.
13. Prakongsai P, Limwattananon S, Tangcharoensathien V. The equity impact of the universal coverage policy : lessons from Thailand. In: Chernichovsky D, Hanson K, eds. *Innovations in health system finance in developing and transitional economies*. London: Emerald Group; 2009:57–81.
14. Bundhamcharoen K et al., eds. *Burden of disease and injuries in Thailand: priority setting for policy*. Bangkok: Thai Working Group on Burden of Disease and Injuries, Ministry of Public Health; 2002.
15. Thailand National Statistical Office. *Expectation of life at birth from the 1995–1996 and 2005–2006. Survey of population change* [online database]. Bangkok: Thailand National Statistical Office; 2007 (<http://web.nso.go.th/eng/en/stat/popchang/popchg00.htm>, accessed 18 April 2010).
16. Bureau of Policy and Strategy. *Thailand health profile 2001–2004*. Bangkok: Ministry of Public Health; 2008 (http://www.moph.go.th/ops/thp/index.php?option=com_content&task=view&id=7&Itemid=2, accessed 18 April 2010).

17. Vapattanawong P et al. Reductions in child mortality levels and inequalities in Thailand: analysis of two censuses. *Lancet* 2007; 369:850–5.
18. Barker DJP. Maternal nutrition, fetal nutrition, and disease in later life. *Nutrition* 1997; 13:807–13.
19. Morley R. Fetal origins of adult disease. *Seminars in Fetal and Neonatal Medicine* 2006; 11:73–8.
20. Rohde J et al. 30 years after Alma-Ata: has primary health care worked in countries? *Lancet* 2008; 372:950–61.
21. WHO. *Maternal mortality in 2005*. [Estimates developed by WHO, UNICEF, UNFPA and the World Bank.] Geneva: World Health Organization; 2007 (http://www.who.int/whosis/mme_2005.pdf, accessed 19 April 2010).
22. Ministry of Public Health. *Maternal deaths 1960–2006* [online database]. Nonthaburi: Ministry of Public Health, Bureau of Policy and Strategy; 2010 (<http://bps.ops.moph.go.th/Mather.html>, accessed 19 April 2010).
23. Ministry of Public Health. *Maternal mortality ratio 1990–2006* [online database]. Nonthaburi: Bureau of Health Promotion, Ministry of Public Health; 2008 (<http://www.anamai.moph.go.th/main.php?filename=Statistics>, accessed 19 April 2010).
24. Kanchana S, Amornvichet P, Kulruek N. *Reproductive age mortality study (RAMOS) in 1995–1997 in Thailand. Thai report*. Nonthaburi: Bureau of Health, Ministry of Public Health; 1999 ([www.hiso.or.th/hiso/picture/reportHealth/pro2-chapter1\(4\).doc](http://www.hiso.or.th/hiso/picture/reportHealth/pro2-chapter1(4).doc), accessed 19 April 2010).
25. Chandoevhit W et al. Using multiple data for calculating the maternal mortality ratio in Thailand. *TDMI Quarterly Review* 2007; 22(3):13–19 (http://www.tdri.or.th/library/quarterly/text/s07_2.pdf, accessed 19 April 2010).
26. WHO. *Trends in maternal mortality: 1990 to 2008*. Geneva: World Health Organization, 2010.
27. Prachuabmoh V, Mithranon P. Below-replacement fertility in Thailand and its policy implications. *Journal of Population Research* 2003; 20:35–50.
28. National Statistical Office. *The Fourth Reproductive Health Survey*. Bangkok: Ministry of Information, Communication and Technology; 2006.
29. Chen XK et al. Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. *International Journal of Epidemiology* 2007; 36:368–73.
30. Ohlsson A, Shah P. *Determinants and prevention of low birth weight: a synopsis of the evidence*. Alberta: Institute of Health Economics; 2008.

31. Thai Working Group on Burden of Disease. *Unpublished report on causes of death of children under 5 years, 1996–2009*. Nonthaburi; International Health Policy Program, Ministry of Public Health; 2010 (retrieved data from Civil Registration Office, Ministry of Interior, Thailand).
32. Jones G et al. How many child deaths can we prevent this year? *Lancet* 2003; 362: 65–71.
33. Saengwaree P, Liabsuetrakul T. Changing physician's practice on antenatal corticosteroids in preterm birth. *Journal of the Medical Association of Thailand* 2005; 88:307–13.
34. Thailand National Statistical Office. *Reproductive health survey 2009*. Bangkok: Ministry of Information, Communication and Technology; 2010.
35. Bureau of Epidemiology. *National diseases surveillance report*. Nonthaburi: Ministry of Public Health; various years.
36. Bureau of General Communicable Diseases. *Thai report on EPI coverage applying thirty cluster sampling surveys in 1990*. Nonthaburi: Department of Disease Control, Ministry of Public Health; 1990. (<http://thaigcd.ddc.moph.go.th/download//EPI/20090201-Survey51-1.pdf>, access 7 June 2010).
37. Lawn J et al. Why are 4 million newborn babies dying each year? *Lancet* 2004; 364:399–401.
38. Liabsuetrakul T et al. Emergency obstetric care in the southernmost provinces of Thailand. *International Journal for Quality in Health Care* 2007; 19(4):250–6.
39. Warakamin S, Boonthai N, Tangcharoensathien V. Induced abortion in Thailand: current situation in public hospitals and legal perspectives. *Reproductive Health Matters* 2004; 12:147–56.
40. Boonthai N et al. Improving access to safe termination of pregnancy in Thailand: an analysis of policy developments from 1999 to 2006. In: Whittaker A, ed. *Abortion in Asia: local dilemmas, global politics*. New York: Berghahn Books; 2010:221–39.
41. Tangcharoensathien V et al. Intrauterine contraceptive devices: comparing health centre and district hospital costs in Thailand. *Health Policy and Planning* 1990; 5:177–81.
42. Bureau of Policy and Strategy. *Data of health resources, 1994–2009*. Nonthaburi: Ministry of Public Health (<http://moc.moph.go.th/Resource/index.php>, accessed on 17 April 2010).

43. Sala C, Wongpiyachon S, It-tisan P. *Thai report on special interview of Dr Damrong Boonyern – a doctor and national public health planning expert*. Nonthaburi: Ministry of Public Health; 1997 (<http://advisor.anamai.moph.go.th/211/21109.html>, accessed 7 June 2010).
44. Wibulpolprasert S, Thaiprayoon S. Thailand: “good practice” in expanding health care coverage lessons from the Thai health care reforms. In: Gottret P, Schieber G, Waters H, eds. *Good practices in health financing: lessons from reforms in low and middle-income countries*. Washington, DC: World Bank; 2008:355–83.
45. Tangcharoensathien V et al. From targeting to universality: lessons from the health system in Thailand. In: Townsend P, ed. *Building decent societies: rethinking the role of social security in development*. Basingstoke: Palgrave Macmillan; 2009:301–21.
46. Thailand National Statistical Office. *Database of socio-economic survey 1996–2008*. Bangkok: National Statistical Office; 2010. (data retrieved directly from the National Statistical Office, Thailand, 20 November 2010).
47. Jindawatana A, Wibulpolprasert S. *The first Thai National Health Assembly 1988*. Bangkok: Ministry of Public Health; 1988.
48. Rasanathan K et al. Innovation and participation for healthy public policy: the first National Health Assembly in Thailand. *Health Expectations* 2011; doi: 10.1111/j.1369-7625.2010.00656.
49. WHO. *Recipients of the Sasakawa Health Prize*. Geneva: World Health Organization; 2010 (http://www.who.int/governance/awards/sasakawa/sasakawa_winners/en/index.html, accessed 8 June 2010).
50. Green A. Reforming the health sector in Thailand: the role of policy actors on the policy stage. *International Journal of Health Planning and Management* 2000; 15:39–59.
51. Pitayarangsarit S. *The introduction of the universal coverage of health care policy in Thailand: policy responses*. [Doctoral thesis]. London: London School of Hygiene & Tropical Medicine, University of London; 2004.
52. Cameron S. Corruption in Ministry of Public Health, Thailand. In: Transparency International. *Global Corruption Report 2006*. London: Pluto Press; 2005 (http://www.transparency.org/publications/gcr/gcr_2006#download, accessed 8 June 2010).
53. Wibulpolprasert S et al. *Twenty-five years of rural doctor movement in Thailand*. Bangkok: Srangsue; 2003.

54. Pitayarangsarit S, Tangcharoensathien V. Sustaining capacity in health policy and systems research in Thailand. *Bulletin of the World Health Organization* 2009; 87:72–4.
55. Pitayarangsarit S, Tangcharoensathien V. Capacity development for health policy and systems research: experience and lessons from Thailand. In: Green G, Bennett S, eds. *Sound choices: enhancing capacity for evidence-informed health policy*. Geneva: World Health Organization; 2007:147–66.
56. Munira SL, Fritzen S. What influences government adoption of vaccines in developing countries? A policy process analysis. *Social Science & Medicine* 2007; 65:1751–64.
57. Teerawattananon Y, Mugford M, Tangcharoensathien V. Economic evaluation of palliative management versus peritoneal dialysis and haemo-dialysis for end-stage renal disease: evidence for coverage decisions in Thailand. *Value in Health* 2007; 10:61–72.
58. Kasemsup V, Prakongsai P, Tangcharoensathien V. Budget impact analysis of a policy on universal access to RRT under universal coverage in Thailand. *Journal of the Nephrology Society of Thailand* 2006; 12:136–48.
59. Prakongsai P et al. The implications of benefit package design: the impact on poor Thai households of excluding renal replacement therapy. *Journal of International Development* 2009; 21:291–308.
60. Tantivess S. *Universal access to antiretroviral therapy in Thailand: an analysis of the policy process* [doctoral thesis]. London: London School of Hygiene & Tropical Medicine, University of London; 2006.
61. Pattanittum P et al. Use of antenatal corticosteroids prior to preterm birth in four South East Asian countries within the SEA-ORCHID project. *BMC Pregnancy and Childbirth* 2008, 8:47.
62. Russell S, Bennett S, Mills S. Reforming the health sector: towards a healthy new public management. *Journal of International Development* 1999; 11:767–75.
63. National Economic and Social Development Board. *Thai report on poverty mitigation and income distribution*. Bangkok: Division of Data Analysis for Development, National Economic and Social Development; 2009 (<http://www.nesdb.go.th/econSocial/macro/macroeconomic/dev3.html>, accessed 17 April 2010).
64. Rajaratnam JK et al. Worldwide mortality in men and women aged 15–59 years from 1970 to 2010: a systematic analysis. *Lancet* 2010; 375(9727):1704–20.