Health systems development in Thailand: a solid platform for successful implementation of universal health coverage

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Thailand's health development since the 1970s has been focused on investment in the health delivery infrastructure at the district level and below and on training the health workforce. Deliberate policies increased domestic training capacities for all cadres of health personnel and distributed them to rural and underserved areas. Since 1975, targeted insurance schemes for different population groups have improved financial access to health care until universal health coverage was implemented in 2002. Despite its low gross national income per capita in Thailand, a bold decision was made to use general taxation to finance the Universal Health Coverage Scheme without relying on contributions from members. Empirical evidence shows substantial reduction in levels of out-of-pocket payments, the incidence of catastrophic health spending, and in medical impoverishment. The scheme has also greatly reduced provincial gaps in child mortality. Certain interventions such as antiretroviral therapy and renal replacement therapy have saved the lives of adults. Well designed strategic purchasing contributed to efficiency, cost containment, and equity. Remaining challenges include preparing for an ageing society, primary prevention of non-communicable diseases, law enforcement to prevent road traffic mortality, and effective coverage of diabetes and tuberculosis control.

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Thailand: context, health achievements, and challenges

Thailand has become internationally known for its success with universal health coverage (UHC) policy and health development.[1] In this Review, we analyse the historical evolution of health systems development that culminated in the implementation of UHC in 2002, focusing on the primary health-care infrastructure, health workforce training and distribution, and the extension of financial risk protection to different target populations. We also analyse the achievements of UHC and factors contributing to these achievements. Although the six building blocks of health systems[2] are interlinked and contribute collectively to the successful implementation of UHC, here we focus on the important elements of the health delivery system, health workforce development, and financing reforms towards UHC.

We draw on an extensive review, analysis, and synthesis of evidence from published and grey literature (eg, government reports) in the areas of health systems development, health workforce, financial risk protection, outcomes of UHC, and health and health systems challenges. Lessons drawn from this Review will aid policy makers in low-income and middle-income countries in their quest to achieve UHC as part of their commitment to the Sustainable Development Goals (SDGs).

The Kingdom of Thailand is at the centre of the Indochina peninsula, with land bordered by Myanmar, Laos, Cambodia, and Malaysia (figure 1). In 2017, the total surface area of 513 120 km² hosted a population of 68·9 million people.[3,4] Politics have been quite unstable, with frequent military takeovers since the 1932 democratic revolution. The current military government has been in power since 2014. According to the Worldwide Governance Indicators, political stability has deteriorated, with the percentile rank down from 58% in 1996, to 16% in 2015 (the higher the rank, the better the governance). Ranking for control of corruption is low and deteriorated from 55% to 43% between 1996 and 2015. Although the Thai Government has been relatively stable, the ranking of its effectiveness only increased from 60% to 65% during the same period.[5]

Economic and health development

Periods of rapid economic growth between the 1960s and 1990s resulted in a 7·5% per annum increase in gross domestic product (GDP). However, Thailand had three macroeconomic crises and related structural adjustments between the 1970s and the 2000s: the first (1973–75) and second (1979–85) oil crises; and the 1997–99 currency crisis. The second oil crisis, which saw oil prices in 1979 increase by 131% to US$29·92 per barrel, lasted longer than the first oil crisis and resulted in macroeconomic instability and slow GDP growth. The 1997 Asian economic crisis was triggered by the collapse of Thailand's financial stock market. It took more than a decade for the

Search strategy and selection criteria

We searched the scientific literature systematically and within the framework of this Review's main objectives: how health systems development has contributed to the implementation of universal health coverage, what are the outcomes of universal health coverage, what were the processes of expansion of financial risk protection to different population groups until the whole population was covered. We searched Google Scholar for literature relating to health systems development, with a specific focus on health delivery systems, primary health-care development, and health workforce training and retention. We retrieved both published and grey literature in English and Thai. Literature related to socioeconomic development, burden of disease, challenges associated with non-communicable diseases, alcohol, and road safety, adult mortality, and the contextual background were searched for and synthesised from World Heath Statistics and from global reports on tuberculosis, road safety, and non-communicable diseases. World Development Indicators were used for international comparisons. Evidence related to outcomes of universal health coverage and the Universal Health Coverage Scheme was retrieved only from peer-reviewed, published literature that was scrutinised for quality of analysis before use.

Figure 1: **Map of Thailand**

GDP per capita to recover to the pre-1997 level. The economic outlook has been sluggish in the past decade. Average GDP growth was 3·5%, although Thailand did reach upper-middle-income country status in 2011.[6]

Despite the political instability and periodically slow economy, social and health development has not been negatively affected. For example, the implementation of the social agenda foreseen in the Fourth National Economic and Social Development Plan (1977–81) was postponed to the next plan (1982–86) because of the fiscal squeeze.[7] A loan was obtained from the International Monetary Fund, and within the health fiscal envelope for the 1982–86 plan, the government prioritised pro-rural health development to help fight poverty in the context of rising Communism in neighbouring countries. Investment was focused on district hospitals and health centres, whereas capital investment in provincial tertiary care hospitals was frozen.[8]

Remarkable achievements in recent decades include a reduction of extreme poverty to less than 1% since 2004, an increase in primary education enrolment of more than 95% since 1980, and the introduction of UHC in 2002. Key indicators for Thailand and other upper-middle-income countries (China, Malaysia, Mexico, South Africa, Turkey) are shown in table 1.

Demographic and epidemiological transition

Low fertility, birth, and mortality rates and rapid demographic transition has reduced the size of the working-age population and increased the size of the ageing population that demands higher health and social care expenditures.[9]

Mortality from infectious diseases decreased five fold between 1958 and 1997 after an annual reduction of 3·2 deaths per 100 000 population, largely due to reductions in malaria, tuberculosis, pneumonia, and gastrointestinal infections. Between 1998 and 2003, an increase in mortality from infectious diseases to 70·0 deaths per 100 000 population coincided with an increased mortality from AIDS, tuberculosis, and pneumonia. The introduction of universal antiretroviral therapy (ART) decreased AIDS mortality and reduced infectious disease mortality to 41·0 deaths per 100 000 population between 2004 and 2009.[10] Despite these improvements, tuberculosis is still a major public health problem. Thailand is among the 20 countries with the highest burden of tuberculosis in terms of absolute number of incident cases.[11] Mortality and disease statistics for 1990–2015 are shown in table 2.

Remaining health challenges caused by determinants beyond the health sector

Non-communicable diseases accounted for 71·3% of total mortality in 2015 and demand effective policy responses in primary prevention and to contain the commercial determinants of health, particularly tobacco, alcohol, and unhealthy diets.[12] Fast-growing markets in Asia are main targets of the alcohol industry.[13] Despite the substantial economic burden caused by tobacco use ($2·2 billion in 2009 [82% of which is from productivity losses], equivalent to 0·8% of GDP or 18·2% of total health expenditure[14]), many policy interventions against tobacco have been undermined by the industry.[15–17]

Thailand was one of six upper-middle-income countries with the slowest reduction in adult mortality between 1990 and 2015 (figure 2). The slow progress is in large part due to death from road traffic injuries in men. 13 650 deaths from road traffic injuries were reported in 2012, 79% of which were in men. Taking into account inaccurate classification of cause of death, WHO has estimated that 24 237 adults died from road traffic injuries in 2012, giving a road traffic injury mortality of 36·2 deaths per 100 000 population. The high economic impact of road traffic injuries (3% of GDP) has triggered policy and legislative actions, but despite its importance, enforcement has been rated by WHO as poor.[18] Speed limits exist, but enforcement was rated 3 out of 10. Enforcement of drink–driving regulation was rated 6 out of 10, as 26% of road traffic deaths involved use of alcohol. Enforcement of motorcycle helmets was rated 6 out of 10, as only 52% of drivers and 20% of passengers used a helmet. Enforcement of the seatbelt law was rated 6 out of 10, as only 58% of drivers and 54% of front-seat passengers wore a seatbelt. Overall, law enforcement in Thailand was rated 3–6 out of 10, compared with 8–10 out of 10 in high-income countries.[18]

	China	Malaysia	Mexico	South Africa	Thailand	Turkey
Economic and fiscal space						
GDP per capita in 2016, current US$	8123	9503	8201	5274	5908	10788
Annual GDP growth in 2016	6·7%	4·2%	2·3%	0·3%	3·2%	2·9%
Revenue as percentage of GDP, excluding grants (year)	15·8% (2014)	18·9% (2015)	..	31·5% (2015)	20·7% (2015)	32·4% (2015)
Tax revenue as percentage of GDP (year)	9·7% (2014)	14·3% (2015)	..	27·3% (2015)	16·3% (2015)	18·2% (2015)
Demography						
Population size in 2016	1379 million	31 million	128 million	56 million	69 million	80 million
Annual population growth in 2016	0·5%	1·5%	1·3%	1·6%	0·3%	1·6%
Proportion of population in poverty based on headcount ratio, US$1·90 per day, 2011 PPP (year)	1·9 (2013)	..	3 (2014)	..	0 (2013)	0·3 (2013)
Proportion of population living in urban areas in 2016	57%	75%	80%	65%	52%	74%
Health expenditure						
Health expenditure per capita in 2014, current US$	420	456	677	570	228	568
Total health expenditure in 2014, as percentage of GDP	5·5%	4·2%	6·3%	8·8%	4·1%	5·4%
Public health expenditure in 2014, as percentage of total health expenditure	55·8%	55·2%	51·8%	48·2%	77·8%	77·4%
Public health expenditure in 2014, as percentage of government expenditure	10·4%	6·4%	11·6%	14·2%	13·3%	10·5%
Out-of-pocket health expenditure in 2014, as percentage of total expenditure on health	32·0%	35·3%	44·0%	6·5%	11·9%	17·8%
Health						
Life expectancy at birth in 2015, years	76	75	77	57	75	75
Fertility in 2015, births per woman	1·6	1·9	2·2	2·5	1·5	2·1
Under-5 mortality in 2015, deaths per 1000 livebirths	11	7	13	41	12	14
Births attended by skilled health staff as percentage of total births (year)	100% (2013)	99% (2013)	96% (2012)	..	100% (2012)	97% (2013)
Immunisation for DPT in 2016, as percentage of children aged 12–23 months	99%	98%	97%	66%	99%	98%
Prevalence of HIV in 2015, as percentage of population aged 15–49 years	..	0·4%	0·2%	19·2%	1·1%	..
Access to water source in 2015, as percentage of population	96%	98%	96%	93%	98%	100%
Access to sanitation facilities in 2015, as percentage of population	77%	96%	85%	66%	93%	95%
Education						
Adult literacy in 2015, as percentage of people aged 15 and older	96%	95%	95%	95%	94%	96%
Primary school enrolment, as percentage of gross primary school enrolment (year)*	104·1% (2015)	101·8% (2015)	103·4% (2014)	99·7% (2014)	102·7% (2015)	102·5% (2015)
Primary school completion rate, as percentage of relevant age group (year)	92% (2015)	101% (2015)	105% (2014)	..	93% (2015)	92% (2015)
Secondary school enrolment as percentage of gross secondary school enrolment (year)	94% (2015)	78% (2015)	91% (2014)	99% (2014)	129% (2015)	102% (2015)

GDP=gross domestic product. PPP=purchasing power parity. DPT=diphtheria, pertussis, and tetanus. Source: World Development Indicators database (retrieved in August, 2017). *Gross primary school enrolment ratio is the number of children enrolled in primary school, irrespective of age, divided by the population of the age group that officially corresponds to the same level. If numerators are also from older or younger age groups than the official defined age group, the gross enrolment is more than 100%.

Table 1: **Key health indicators for Thailand and five peer upper-middle-income countries**

Mental disorders: depression, screening, treatment, and suicide prevention

In 2013, the total burden of disease in Thailand was estimated at 10·6 million years of disability-adjusted life-years (DALYs; 6·1 million DALYs for men and 4·5 million DALYs for women). Mental disorders were the largest cause of DALYs lost in men as they accounted for 34% of total DALYs lost and 23·7 DALYs lost per 1000 population. Mental disorders ranked as the second largest cause of DALYs lost in women, accounting for 21% of total DALYs lost and 12·7 DALYs lost per 1000 population. In men, alcohol dependence or harmful use, depression, and schizophrenia accounted for the three largest causes of DALYs lost, whereas depression, dementia, and schizophrenia were associated with most DALYs lost in women.[19]

Unrecognised and untreated depression contributes substantially to suicide. In response to these challenges, the Thai Ministry of Public Health (MOPH)[20] introduced integrated surveillance, prevention, and treatment in 2009. Using the primary care platform, the programme includes community-based depression screening and severity assessment using two-question and nine-question tools. People who are at risk of severe depression are confirmed and treated by general doctors in district hospitals, whereas nurses provide psychosocial support, monitor relapses, and manage support programmes to prevent suicide.

	1990	1995	2000	2005	2010	2015
Life expectancy at birth, years	70·2	70·2	70·6	72·2	73·7	74·6
Mortality						
Adult men, per 1000 adult men	228	254	258	234	216	204
Adult women, per 1000 adult women	136	135	137	124	111	104
Death from communicable diseases or maternal, prenatal, and nutrition conditions as a percentage of total mortality	..	..	26·1%	24·3%	20·7%	18·3%
Death from non-communicable diseases as a percentage of total mortality	..	..	64·0%	64·6%	67·7%	71·3%
Death from injury, as a percentage of total mortality	..	..	9·9%	11·0%	11·6%	10·4%
Mortality from road traffic injury, per 100 000 population	..	..	26·5	29·8	32·7	31·7
Prevalence of HIV as a percentage of population aged 15–49 years	0·5%	1·9%	1·7%	1·4%	1·3%	1·1%

Source: World Development Indicators database (retrieved August, 2017).

Table 2: **Thailand mortality and disease statistics, 1990–2015**

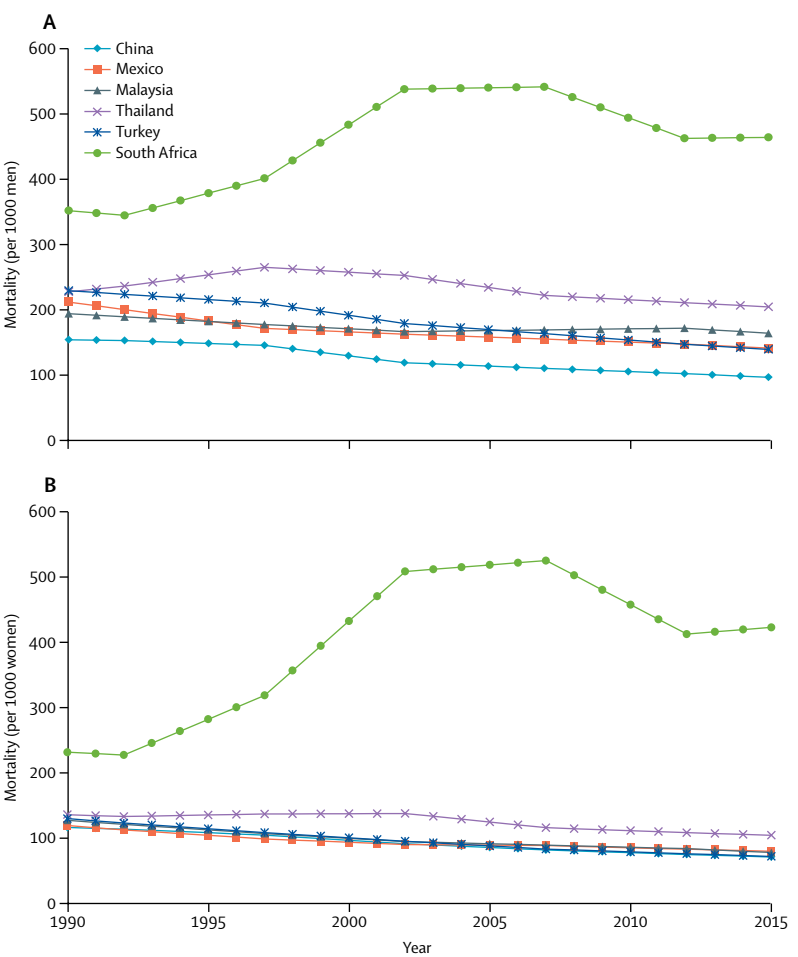

Figure 2: **Adult mortality in Thailand and in five peer upper-middle-income countries**
(A) Mortality in men aged 15–60 years. (B) Mortality in women aged 15–60 years.

By 2016, more than 14 million people at risk of depression were screened and received mental health education. More than 1·7 million people were diagnosed and received psychosocial support; of these, 0·7 million people received antidepressants, and 0·8 million people were followed up for relapse and suicide prevention. This programme increased access to standard care from 5·1% of total depressive disorders in 2009 to 48·5% in 2016.

The suicide prevention programme has borne fruit, although there is still much to improve. In 2012, the age-standardised suicide incidence was 11·4 suicides per 100 000 population (19·1 suicides per 100 000 men, and 4·5 suicides per 100 000 women). The incidence of suicide decreased by 24·6% between 2000 and 2012 (by 22·4% in men and by 32% in women).[21]

Health systems development: a historical perspective

Health development since King Rama VI (1910–25) has been focused on controlling infectious diseases such as smallpox and yaws, improving access to safe water and sanitation, and extending health services through outreach activities in remote areas, which were gradually transformed into static facilities. Successive governments have established universities to train health professionals and other workforce cadres.[22]

National socioeconomic development from the 1970s

The Indochina war and conflicts between communist and democratic countries in southeast Asia in the 1970s triggered the dominos theory of fear that Thailand would fall under Communist domination. In response, government policy sought to fight poverty through rural development and improved health, education, and agricultural extension services.[23] Health, along with education and agriculture, became cornerstones of rural development and poverty reduction.[24]

Health development started in the 1970s as an integral part of the 5 year National Economic and Social Development Plan. A few foundation stones were laid, such as the National Population Policy in 1970 and the National Expanded Programme of Immunisation in 1976. A family planning policy contributed to four decades of success in reducing the population growth, from 2·9% in 1970, to 0·3% in 2016. In other countries, such as the Philippines, family planning policy was less successful than it might have been mainly because of opposition from the Roman catholic church. In 1970, Thailand and the Philippines had the same population size of 36 million people, whereas by 2016, the Philippine population had reached 103 million people and the Thai population had reached 69 million people.[25,26]

Health delivery systems development: building a solid foundation

Large-scale investment in health infrastructure at district and subdistrict levels began during the fourth

National Economic and Social Development Plan in 1977.[27] Full coverage of district hospitals was achieved by 1990[28] and was followed by a decade of health-centre development in 1992–2001. By the 2000s, all subdistricts had a health centre.

The district health system, consisting of health centres and a district hospital, is the backbone of health development. A health centre serves 3000–5000 people, whereas a district hospital typically serves 30 000–50 000 people and has 30–150 beds, depending on the local population size. A health centre is staffed by a team of three to five nurses and paramedics, whereas a 30-bed district hospital is staffed by three to four general practitioners, 30 nurses, two to three pharmacists, one to two dentists, and more than 20 paramedics and other administrative staff.

Nurses are essential to the Thai health system because of their numbers (180 000 nurses in 2016), qualifications, geographical distribution, and wide-ranging contributions to public health, patient care, and clinical services. With additional postgraduate training, nurses can respond effectively to the emerging needs of patients for chronic care, home care, and clinical services associated with non-communicable diseases, general anaesthesia, and intensive care.

The health centre is the first point of contact by the population and provides primary health care such as basic treatment, prevention, and health promotion through nurses and public health workers. District hospitals provide more comprehensive secondary-level curative services, prevention and health promotion, and admission facilities. Specialists, in particular those covering obstetrics, internal medicine, surgery, and paediatrics, are available in large district hospitals. Historically, provincial hospitals in all provinces have offered tertiary care and have received referral cases from district hospitals in all clinical specialties. During the era of district health-systems investment, provincial hospitals received less infrastructure development support than district hospitals did, but there was a greater focus on strengthening their clinical capacities by training additional specialists.

Despite rapid private sector growth at various times, including private hospitals in the main cities,[29] the public sector dominates the Thai health delivery system. By 2014, 67% of the country's 161 000 hospital beds were in MOPH facilities, 14% of beds were in other public, non-MOPH facilities, and 19% of beds were in private hospitals. The private sector generally has a small role in health delivery: in 2015, it contributed 14% of total outpatient visits (9% at private clinics and 5% at private hospitals) and 11·3% of total admissions.[30]

Functioning of district health systems: the development of the health workforce

The achievement of full coverage of health services provided by the district health system was accompanied by health workforce development by the MOPH. Adequate numbers of competent and committed health workers are indispensable for a well functioning district health system, and the provision of good quality services gained the people's trust. Thailand's health workforce policies integrated recruitment, training, distribution, and rural retention.[31,32]

In 1972, the MOPH introduced a 3 year mandatory rural health-service placement for all medical and nursing graduates and, subsequently, dentists and pharmacists. The policy equitably enforced the same for medical graduates from private medical schools. The mandatory rural service policy was accompanied by financial incentives such as a hardship allowance and incentives for out-of-hours work. Non-financial incentives were also important: annual recognition awards for dedicated front-line workers were organised regularly by various agencies, and the MOPH provided housing benefit in all health centres and district hospitals as in-kind support to ensure 24 h services.

In 1994, the MOPH introduced a special track to recruit high-school students from rural and underserved areas for medical and nursing education on the condition that they worked in their home district upon graduation. This special track has contributed to 20% of total annual national medical student enrolment in the past decade, and in 2013, it contributed to 30% of enrolment.[33,34] The probability of fulfilling the 3 years of mandatory service is 10–15% higher for staff who were recruited through the special track than for staff recruited through the normal track (accessed through a national entrance examination).[35] The special track also has fewer resignations each year than the normal track.[36] Although students in the special track had slightly lower examination grades at recruitment than those on the normal track, both tracks had similar success rates (99·6%) in the national licensing examination for practice required for all graduates.[33]

To increase medical production capacities, the MOPH strengthened its regional hospitals as clinical training centres for students in years 3–6 of the special track programme.[37] Students in the special track would study together with students in the normal track during their first year of basic science and during years 2–3 of preclinical courses. Whereas students in the normal track programme continue years 4–6 of their clinical training in the faculty of medicine of their registered university, students in the special track programme continue their training in one of the 37 MOPH clinical training centres. Students in both tracks are trained with the same curriculum and instructional style but in different institutes. Teachers in these clinical training centres are trained in instructional skills, supervision, and marking examination papers, and their diplomas are conferred by 14 affiliated universities. Between 2000 and 2014, 5927 medical graduates from the special track programme added substantially to the provision of rural services.

Universities have greater capacity to scale up basic science and preclinical training than clinical training, so the MOPH clinical training centres fill an important gap.

Recognising the potential of nursing, the MOPH has since 1946 compensated for the limited training capacities in government universities by establishing nursing and midwifery colleges that are licensed and certified by the Thai Nurse and Midwifery Council. In 2017, 30 MOPH nursing colleges contributed 34% of total national graduates, whereas public and private universities produced 37% and 29%, respectively.[38] Since 2002, all nurse graduates from public, private, and MOPH colleges have been required by the Nurse and Midwifery Council to pass a national nursing licensing examination to ensure adequate competencies. Also, all practising nurses are required to renew their licence every 5 years based on the achievement of 50 credits of Continued Professional Education.

The MOPH also established nine public health schools to train other paramedical personnel (eg, dental public health, community public health, and pharmacist assistants), mostly on 2 year diploma courses. These diplomas filled the gaps during the rapid extension of the district health systems; the needs for diploma level personnel are now met, and diploma courses have been replaced by bachelor level courses in response to the need for improved quality and standards.

The expansion of the health workforce was facilitated by a supportive context. Between 1976 and 2015, tertiary school enrolment (post-secondary education in universities, colleges, technical training institutes, and vocational schools) increased for men and women (from 4% to 41% for men, and from 3% to 57% for women). Female labour force participation is high (78% of total health care workforce in 2015), on a par with the average female workforce in countries within the Organisation for Economic Co-operation and Development (OECD; 76%).

Extension of financial risk protection mechanisms

While ensuring the availability of a functioning service delivery system, parallel policies extended financial coverage to certain groups of the population, with the application of a targeted approach.[39]

1975: introducing the Low-income Scheme for poor and vulnerable populations

In 1975, the Low-income Scheme was launched to provide free medical care on the basis of so-called means testing. The household income was assessed, and if below an MOPH benchmark (not the national poverty line, which was too low), households were granted a card entitling them to free medical care at MOPH facilities with no co-payment. A major weakness of means testing was that the card could be distributed to non-poor households, whereas some poor households were not covered.[40] The Low-income Scheme was later extended to elderly people, disabled people, and children younger than 12 years.

The Low-income Scheme was tax-financed through an annual budget allocation to MOPH health facilities, the size of which depended on the number of registered poor households in the catchment area. The service package covered outpatient, inpatient, and dental services and medicines; a few high-cost services were excluded.

1980: introducing the Civil Servant Medical Benefit Scheme (CSMBS) for government employees

The non-contributory CSMBS for government employees and their dependants (including parents, spouse, and children younger than 18 years) was managed by regulations until a Royal Decree was promulgated in 1980. A fee-for-service reimbursement model was applied for health care from the start. Services are funded by taxation to compensate for the low salaries of government officials, and the package includes pension, housing benefit, and child allowance.

1983: introducing voluntary health insurance for the informal sector

In 1983, the MOPH initiated the Health Card Project, a voluntary community-based health insurance for an annual premium of 500 Thai Baht (the equivalent of $20 at the time) per household of up to five members. The benefit package was comparable to that of the Low-income Scheme. The main weakness was adverse selection whereby members were mostly chronically ill and high users of services, whereas healthy members did not buy the insurance. In 1994, to increase enrolment, the Health Card Project became a publicly subsidised voluntary insurance scheme, and the MOPH subsidised 500 Thai Baht per card.[41] Despite the additional income, the scheme was financially non-viable, with expenditure exceeding revenue. Spill-over benefits included increased MOPH capacity in managing insurance funds, registration, fund allocation, and monitoring and evaluation.

1990: introducing social health insurance for private sector employees

A Social Security Act covering private sector employees was passed in 1990. Social health insurance is a component of a comprehensive social security system including pension, disability compensation, and funeral grants and is financed by equal tripartite contributions from a payroll tax paid by employers, employees, and the government. The Social Security Office used single-capitation payment to purchase a comprehensive set of services, including outpatient, inpatient, and high-cost services from existing public and private hospitals. This marked the first application of capitation payment in Thailand, and it was generally well received by public and private hospitals and appeared to provide decent quality of care to members.[42] Social health insurance thus set the precedent of a capitation contract model, which UHC later built on by adopting capitation payment for outpatient care and diagnostic-related groups payment within a global budget

for inpatient care[43] (this dual payment system has now been introduced in social health insurance).

The expansion of the health infrastructure and developments in financial risk protection are mapped against the reduction in under-5 mortality between 1970 and 2010 in figure 3.

2001: a political window of opportunity for UHC

Different targeting approaches gave rise to a variety of benefit package designs and purchasing methods, which resulted in inefficiency and inequity. Despite much effort, 30% of the population was still uninsured by 2001. In January, 2001, a Universal Health Coverage Scheme (UCS) featured in the political manifesto of the general election campaign. After victory, the Thai Rak Thai party led the government-piloted implementation of the UCS in six provinces in April, 2001, and the scheme was rolled out nationwide by April, 2002.[44] At this time, the gross national income (GNI) per capita was not high ($1990 per capita), and the fiscal space was small (government tax amounted to 13% of GDP). In parallel, a legislative process enacted the 2002 National Health Security Act in November, 2002.[45]

Thai people referred to the UCS as the 30-Baht Scheme, reflecting the political slogan "30 Baht treats all diseases" used to promote the scheme and highlight the comprehensiveness of the benefit package. 30 Thai Baht (about $1) was the co-payment for an outpatient visit or an admission paid by the non-poor.

The UCS was established to cover members of the Low-income Scheme, the Health Card Project, and the 30% of the population that were uninsured. It was managed by the National Health Security Office (NHSO), a statutory agency established by the 2002 National Health Security Act. Today, the UCS, CSMBS, and social health insurance collectively comprise UHC, although there is some variation in their design features (table 3).

The UHC trajectory is outlined in figure 4. Populations are classified into three layers, with poor and vulnerable groups at the bottom, government and private sector employees at the top, and the large informal sector in the middle.[46] To keep the promises to the electorate, politicians endorsed the reformists' recommendation to finance the UCS by general tax. Enforcing premium payment by the large informal sector with their irregular income was neither technically feasible nor politically palatable, whereas resource needs for the scheme were within the government's fiscal capacity. At the inception of the UCS in 2002, the total estimated resource requirement for 47 million members was 56·5 billion Thai Baht. The existing MOPH's pooled budget for health services provided 26·5 billion Thai Baht, and the Prime Minister had the leadership ability and capacity to mobilise the shortfall of 30 billion Thai Baht from tax funding. The decision to adopt closed-end budgets (per capita budgets based on unit cost and utilisation rates of different types of services, and service reimbursement through capitation and diagnostic-related groups payment within a global budget) facilitated the projection of total funding needs and hence assessment of financial feasibility.[47]

UHC was a political decision at heart. Its success has been attributed to a big-bang policy reform led by a populist government and to the established institutional capacity mobilised by technocratic reformists in the MOPH who influenced political decisions through evidence-based knowledge, previous practical experience, and institutional networks.[48] An understanding of political economy is crucial in understanding policy change and the political processes in adopting, achieving, and

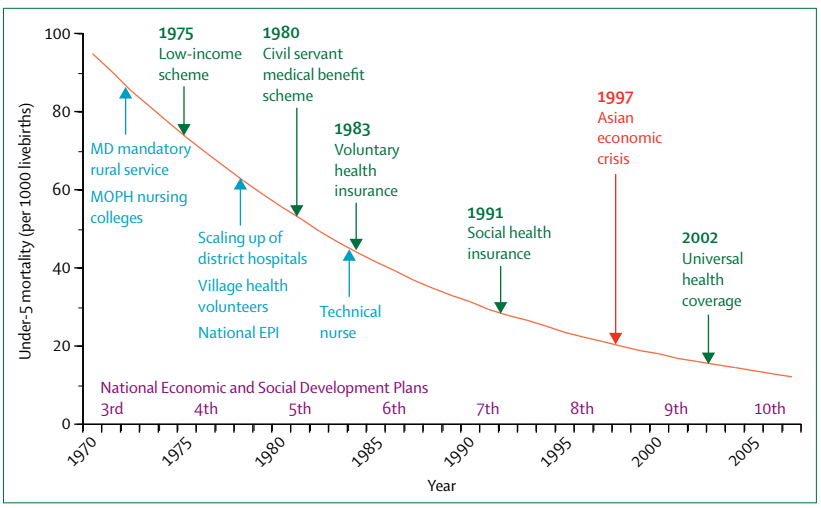

Figure 3: **Health system development in delivery and health workforce and financial protection, 1970–2010, and trend in under-5 mortality reduction**

Under-5 mortality was analysed from Institute of Health Metrics and Evaluation data. MOPH=Ministry of Public Health. MD=medical doctor. EPI=Expanded Programme of Immunisation. Adapted from Patcharanarumol et al (2011),[23] by permission of The London School of Hygiene & Tropical Medicine.

	Civil Servant Medical Benefit Scheme	Social Health Insurance	Universal Health Coverage Scheme
Legislation	Royal Decree 1980	Social Security Act 1990	National Health Security Act 2002
Purchaser	Comptroller General's Department, Ministry of Finance	Social Security Office, Ministry of Labour	National Health Security Office
Population coverage	4·4 million	10·6 million	48 million
Source of finance	Tax-based, non-contributory	Tripartite contribution by employer, employee, and government	Tax-based, non-contributory
Budgeting	Open-ended budget	Closed-ended budget	Closed-ended budget
Expenditure in 2016, Thai Baht	71·02 billion	37·7 billion	109·3 billion
Payment method	Out patient: fee-for-service; in patient: diagnostic-related groups with multiple cost bands	Out patient: capitation; in patient: diagnostic-related groups within global budget	Out patient and prevention and health promotion: capitation; in patient: diagnostic-related groups with global budget; fee schedule for specific high-cost procedures

Source: Thai National Health Accounts 2013, International Health Policy Program, and Ministry of Public Health.

Table 3: **Characteristics of the three public health insurance schemes in Thailand, 2017**

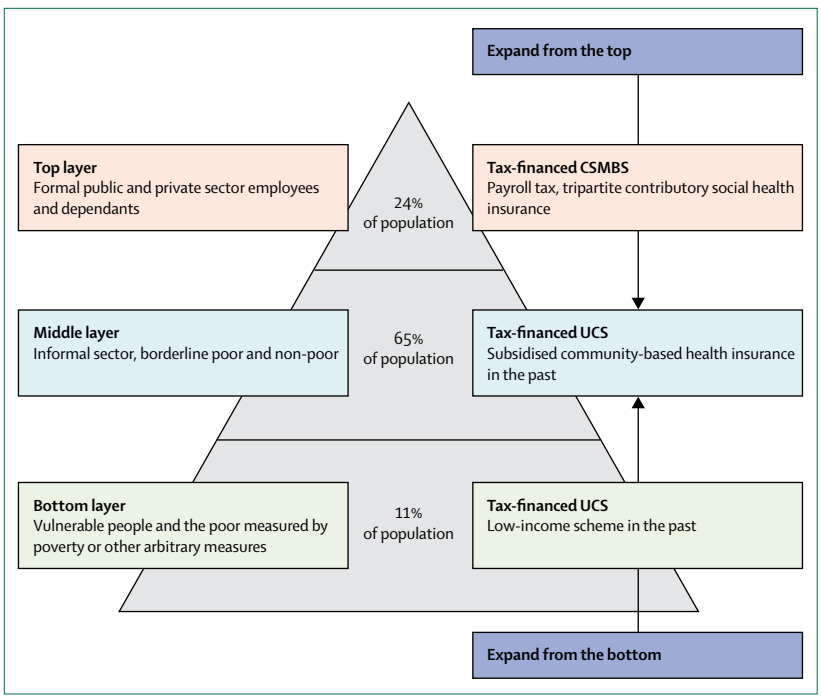

Figure 4: **Trajectory for achieving universal health coverage**
CSMBS=Civil Servant Medical Benefit Scheme. UCS=Universal Health Coverage Scheme. Adapted from Tangcharoensathien et al (2017).[46]

sustaining UHC in the context of competing interests amongst actors.[49] Examples of decisions that required careful management of conflicting interests and tensions between key players are described in panel 1. The examples also show the importance of political leadership and provision of evidence.

Successful implementation benefitted from supply-side capacity.[54] The rapid implementation was made possible by the Civil Registration and Vital Statistics system, established in 1956, which mandates the registration of all births and deaths and assigns a unique citizen ID number to each citizen, making it possible to identify all members of the UCS and register them with a preferred provider network. This system also facilitates the transfer of members between the three public insurance schemes for seamless continuity of health coverage. For example, citizens with social health insurance who become unemployed are automatically transferred to the UCS; and vice versa, members of the UCS receive social health insurance when they become employed.

In summary, improved fiscal space from economic development, political leadership and commitment, and health systems readiness were enabling factors for the adoption and successful implementation of the UCS.

Health coverage for non-Thai citizens

Although the government did not recognise the right to health care of some 400 000 people registered as stateless during the lengthy process of national identity verification, the humanitarian pressure from civil society organisations and the financial deficits from subsidised services to this group offered by district hospitals along the Thai–Myanmar border has pushed the government to allocate an annual budget for this group since 2010.[55] This temporary financial measure eases access to service, while the government commits to end statelessness by 2024.

The MOPH had introduced a voluntary migrant health insurance in 2001 that was funded by annual premiums paid by migrant workers and extended migrant-friendly health services using migrant health volunteers. In 2016, this scheme covered 34% of the 3·4 million migrants (mostly unregistered) and their dependents.[56]

Ensuring accountability and responsiveness of UHC

Previous decades of health system development had ensured that services were available to respond to the health-care demands that would arise from UHC and that design features ensured cost control. Important features of any UHC design also include processes for accountability across stakeholders and responsiveness to citizens, thereby ensuring the continued society-wide support and trust needed for UHC to survive in the long term.

Split role between purchasers and health-care providers increases accountability

Both the social health insurance and the CSMBS had split the roles of purchaser and provider from the beginning. The Low-income Scheme and Health Card Project applied an integrated model in which the MOPH served in roles of purchasing and service provision, and this was considered less responsive than other models.[57] For the UCS, the NHSO purchased services from public and private provider networks (mostly MOPH provider networks because of their geographical monopoly of district health systems in rural areas) through annual contractual agreements using the dual payment system of capitation and diagnostic-related groups. The UCS completely separated the two functions from the previous single MOPH administrative entity,[58] which meant that the NHSO could purchase services uninfluenced by provider self-interest. Capitation payment linked with the number of registered members, a call centre for grievance management and disputes settlement, and the annual public hearing for members of the UCS are designed by the NHSO to increase health-care provider accountability.

From our analysis, the decision to split the two MOPH functions was a political decision. Social health insurance had set the precedent since 1991 as a purchaser organisation negotiating and purchasing services from existing public and private providers on

***Panel 1*: The political economy of the Universal Health Coverage Scheme (UCS): achievements amidst tensions and conflicts**

The UCS benefit package initially excluded renal replacement therapy because of its high cost and the incapacity to deliver services equitably. The cost of dialysis (US$7000 per patient per year) caused patients in the UCS and their families to incur catastrophic expenditure.[50] Most patients died from suboptimum treatment when they could no longer sell assets or borrow further. Inclusion of renal replacement therapy in the package was a political decision based on ethical and equity concerns: members of the Civil Servant Medical Benefit Scheme (CSMBS) and citizens receiving social health insurance, having higher social status, job security, and employment, already had full access to renal replacement therapy. With evidence and the support of a coalition of nephrologists, civil society organisations, and an End Stage Renal Disease patient group, Minister of Health Mongkol Na Songkhla, as chair of National Health Security Office (NHSO) Board, boldly submitted and gained Cabinet approval for full subsidy of renal replacement therapy[51] based on a Peritoneal Dialysis First policy. The Thai Government included renal replacement therapy in the benefit package although it was relatively less cost-effective, at four times the indicative benchmark of one gross national income per capita per quality-adjusted life-year gained.[52,53] The effect on the budget was large because of the high and increasing prevalence of risk factors of renal failure (such as diabetes and hypertension).

The Private Hospital Association was very unhappy with the Peritoneal Dialysis First policy, since the NHSO centrally negotiated the prices of supplies whereas hospitals could generate profit from haemodialysis. Reformists argued that as haemodialysis would be provided for patients for whom peritoneal dialysis fails (eg, because of complications from peritonitis), there was a market for private haemodialysis centres. With strong political leadership, the Minister of Health made a firm decision for Peritoneal Dialysis First against commercial interests.

Strategic purchasing adopted by the NHSO, despite the efficiency and equity advantages, created tensions among actors. First, closed-end payment such as capitation and diagnostic-related groups under global budget was unpopular with providers who favoured fee-for-service payment similar to the CSMBS outpatient payment, as more diagnostics and non-essential medicines could be provided. Fee for service can also boost pharmaceutical and diagnostic markets. Second, the hospitals' gaming of NHSO by falsely reporting complications and comorbidity to increase payment for inpatient care was checked by the office's stringent audits, which required over-claimed amounts to be return. Third, despite substantial cost savings and assured quality of medical products procured through monopsonistic bargaining, strategic purchasing by the NHSO was unpopular both with hospitals that might benefit from their own purchases of medical devices and with pharmaceutical companies that could gain higher margins from selling to hospitals instead of the NHSO. These tensions resulted in a recent interpretation by the Auditor General Office that the NHSO has no legal mandate to exercise monopsonistic purchaser power.

To sustain the good performance of the UCS, the NHSO, civil society, and active citizens need to collectively steer and balance different interests to safeguard the interest of scheme members. Most importantly, politicians must have ethical leadership and be free from conflict of interest. Evidence on positive outcomes of the UCS, such as enhanced financial risk protection, number of lives saved, and reduced inequitable mortality gap, is powerful and needs to be made known to politicians and legislative bodies.

an equal footing. By contrast, the MOPH, which managed the Low-income Scheme and the voluntary health insurance scheme, was perceived by private providers to face a conflict of interest and to favour contracting its own providers. The MOPH is also mandated as a regulatory agency, setting norms and standards, and has a policy formulation and oversight role rather than a purchaser role.

Financial accountability framework

The MOPH's annual budget allocations for service provision at subdistrict, district, and provincial levels were terminated and integrated into the UCS budget managed by the NHSO.[41] This supported the clarity of accountability between purchasers and providers because the MOPH and other public hospital revenues were generated only from service provision to members of the three insurance schemes, encouraging providers to be responsive to patients. The same rates of capitation and diagnostic-related groups payment (which included health-worker salaries) were also applied to purchasing services from the private sector. The level playing field in purchasing services between public and private providers smoothened the implementation of the reform and gained private sector collaboration.

Budgeting: the role of evidence, participation, and transparency

The per-capita budgeting applied by the NHSO for the UCS changed the budgeting system substantially. Initially, the budget for the UCS had been estimated on the basis of unit costs and utilisation rates of different services, and this principle is still applied. Cost and use rates are projected for the budget year. Unit cost includes labour, medicines, supplies, and depreciation of major equipment. The total budget request is the product of per-capita budget and the population covered by the UCS. The Bureau of Budget can no longer exercise its discretionary power, given the evidence of costs and utilisation. The multi-stakeholder membership of a budgeting subcommittee appointed by the National Health Security Board has balanced power because the Bureau of Budget is one of the

members. All members have equal influence and use evidence to make recommendations.

A further example of how evidence is used to support budget requests is the use of health technology assessment. Thailand strengthened and sustained its institutional capacity in health technology assessment by creating the Health Intervention and Technology Assessment Programme,[59] which prioritises the inclusion of new medicines into the National List of Essential Medicines and new interventions into the UCS benefit package.[60]

Panel 2: The Rural Doctors Society

The Rural Doctors Society, also known as the Rose Garden group after the hotel where it meets, was established in 1978 as a self-help group for district health systems and primary health-care development.[65] Its establishment coincided with the 1978 Alma Ata movement. Convening monthly for the past 30 years, the Rural Doctors Society is an informal policy group with close links to civil society that has generated various policy agendas[66] such as the anti-tobacco campaign, universal health coverage, the Sin Tax Health Promotion Fund, and the Health Systems Research Institute. The society's early mandate was collective support, and it convened an annual conference. 4 years later, the Rural Doctors Foundation was established, and an annual Best Rural Doctor Award was conferred on the most dedicated doctors in remote or underserved areas. This has become a prestigious award to give social recognition to rural doctors and promotes rural retention; the award has been followed by similar recognition of several other professional cadres.

Since completion of the district hospital network, the society has expanded its role to political advocacy and oversight. In the International Monetary Fund package related to the 1997 economic crisis, the Ministry of Public Health earmarked 1·4 billion Thai Baht for medicines procurement. The Rural Doctors Society, the Rural Pharmacists Forum, non-governmental organisations, and the Drug Study Group and Consumer Protection Group formed a coalition of 30 organisations against corruption, and exposed a scandal associated with medicines procurement. Their efforts resulted in a 15 year imprisonment of a Public Health Minister who was found guilty of accepting bribes from drug companies. The corrupt senior officials were dismissed and their pension benefits suspended.[67]

Panel 3: Thailand's Peritoneal Dialysis First policy: outcomes and challenges

Thailand has seen the world's fastest increase in provision of renal replacement treatment, with a 120% increase in the number of treated patients with end-stage renal disease between 2008 and 2013, from 100·3 patients per million population in 2008, to 220·2 patients per million population in 2013.[75] The Universal Health Coverage Scheme has prolonged the lives of nearly 50 000 patients with end-stage renal disease since 2008.[53] The main challenge is the increased incidence and poor control of diabetes and hypertension, which are key determinants of end-stage renal disease. Between 2000 and 2012, the prevalence of diabetes-related end-stage renal disease increased rapidly to what became the highest prevalence in the world, from 98 patients per million population in 2000, to 1097 patients per million population in 2012. A shortage in donor kidneys means that kidney transplantation does not meet demands.

The Peritoneal Dialysis First policy has explicit goals of efficiency and equity, as patients can manage at home with no travelling costs, unlike three haemodialysis sessions per week at a provincial city that is not accessible for poor rural people. The National Health Security Office can also better contain the costs of periotoneal dialysis through national negotiation of solution costs, whereas haemodialysis is labour-intensive and vulnerable to increasing labour costs.

Primary health care in UHC

The strong public health, primary care, efficiency, and equity orientation of UHC was driven by an exceptionally strong cadre of public health experts who have been influential health technocrats. The MOPH's investment in postgraduate training in key health policy and systems areas, using WHO and other funding sources, yielded a high pay-off when the public health experts returned to Thailand and served in positions of influence.[61] Continuing capacity development in health systems and policy research supported evidence-based health reforms.[62–64] Developments in district health systems and primary health care were further encouraged by a self-help social movement to develop and support district public health leaders, some of whom later became prominent national public health leaders (panel 2).

The well functioning primary health-care system in Thailand was the foundation for implementing UHC and achieving the health-related Millennium Development Goals well before the target date of 2015.[68] Primary health care and UHC (SDG 3.8) are designed to achieve the maternal and child health targets in SDG 3.1 and 3.2 and to facilitate access to reproductive health services, including family planning (SDG 3.7). Thailand has eliminated vertical transmission of HIV by preventing mother-to-child transmission,[69] and the high coverage of universal ART indicates the likelihood of ending the AIDS epidemic as a public health threat by 2030 (SDG 3.3), although the country still faces challenges in ending tuberculosis as a major public health threat. Strategic purchasing by the NHSO helps the primary health-care system improve the detection, screening, prevention, and effective coverage of several non-communicable diseases such as diabetes, hypertension, and cervical cancer.

Achieving the mortality targets for non-communicable diseases (SDG 3.4) requires the whole government, not the MOPH, to counteract the strong influence of commercial determinants and the resistance from tobacco (SDG 3.a), alcohol (SDG 3.5), and obesogenic foods industries. Addressing commercial determinants requires policy coherence between government sectors and effective multisectoral action for health. The health-service sector, although crucial, is not adequate to achieve this SDG target when determinants are outside the direct command and control of the health sector. The MOPH must have the capacity to ensure a health lens is adopted in government and private sector policies.

UHC achievements

Improved level and distribution of health service utilisation

The UCS has reduced the probability of its members not receiving formal ambulatory care when sick by 3·2 percentage points.[70] The scheme has also increased the probability of members using outpatient care at public service providers by 2·7 percentage points (5%) and of hospital admission to a public hospital by

1 percentage point (18%). These effects have been largest in the population of elderly people.

UHC has increased the likelihood of having annual check-ups, particularly for women, and has increased access to hospital admission by more than 2% and outpatient visits by 13%.[71] No evidence exists of moral hazard such as increased unhealthy behaviour or reduced preventive efforts. The increased use of health service favours the poorest people, and this is shown clearly in benefit-incidence analysis (an assessment of who the government budget benefits the most).[72] The benefit incidence is pro-poor because use of health services is higher in the poorest wealth quintile than in the richest wealth quintile, especially at health centres and district hospitals.

Another aspect of health service utilisation is the low prevalence of unmet health-care needs. Results of the nationally representative household survey on unmet needs by the National Statistical Office[73] showed a low prevalence of unmet needs for both outpatients and inpatients, on a par with that of OECD countries.[74] The inclusion of renal replacement therapy in the UCS benefit package in 2008 has improved equitable access to services, saved lives, and deepened financial risk protection (panel 3).

Factors that contribute to pro-poor outcomes for both utilisation and benefit incidence include the extensive geographical distribution of a well functioning, close-to-client district health system (the provider for members of the UCS)[76] and the comprehensive benefit package free at the point of service. By 2016, the use of UCS by members had reached 3·5 visits per capita per year and 0·13 hospital discharges per capita per year, with an average length of hospital stay of 4·1 days. This level of use is seen in a few other OECD countries.[77]

The district health system is very often the only provider in the district with whom the NHSO can set up contracts. Strict quality conditions such as accreditation status cannot be applied if there is a geographical monopoly. The Healthcare Accreditation Institute has developed stepwise quality improvement processes since 2003. In 2007, the NHSO offered stepwise financial incentives that were highest for accredited hospitals and lowest for those in the process of quality improvement. By 2012, almost all hospitals were accredited or had quality assurance processes in place.[78]

Equity in health financing and financial risk protection

General tax, the sole source of financing the UCS, is the most progressive financing source because the rich contribute a higher proportion of their income to taxes than the poor.[79] A comprehensive benefit package and services that are free at the point of use have reduced household out-of-pocket payments from 34% of total health expenditure in 2000 (before the UCS) to 12% of total health expenditure in 2014.[4]

***Panel 4*: Chronology of the benefit package extension in the Universal Health Coverage Scheme**

2002
- Outpatient and inpatient services; high-cost care; accident and emergency, personal prevention, and health promotion services; rehabilitation services; pre-hospital care

2006
- Universal antiretroviral therapy including provision of medicines, voluntary counselling and testing, monitoring CD4 cell count, viral load testing, and condoms distribution

2008–09
- Thai traditional medicine
- Renal replacement therapy: Peritoneal Dialysis First policy, haemodialysis, and kidney transplants, including of all related medicines
- Voluntary methadone replacement therapy for drug addictions
- Access to expensive drugs in the National List of Essential Medicines (eg, linezolid for meticillin-resistant *Staphylococcus aureus*, Botulinum A toxin for idiopathic cervical dystonia)
- Seasonal influenza vaccination for at-risk groups

2010
- Access to all orphan drugs and antidotes
- Treatment of psychiatric patients as inpatients without limits on length of hospital stay

2011
- Secondary prevention for diabetes and hypertension
- Specific drugs for psychiatric patients

2012
- Liver transplantation for hepatic failure in patients younger than 18 years
- Heart transplantation

2013
- Extension of seasonal influenza vaccine to additional target groups
- Stem-cell transplantation for patients with leukaemia and lymphoma with specific indications

2014
- Special earmarked budget for populations hard-to-reach areas

2015
- Detect-and-treat policy for HIV, with any level of CD4 cell count

2016
- Long-term home and community care for frail elderly people
- Home-based and community-based psychiatric care

Generally, the lower the out-of-pocket spending, the lower the prevalence of households facing catastrophic health expenditure (defined as households spending more than 10% of total household spending on health services).[80] UHC as a whole (including all three insurance schemes) has reduced the prevalence of households facing catastrophic health expenditure and medical impoverishment.[81] The UCS has reduced the probability of catastrophic health expenditure and reduced out-of-pocket spending in high-income households. The UCS thus provides a safety net to all

	Market price per unit, US$	Negotiated price per unit, US$	Units purchased	Cost difference, US$	Cost savings, US$
Medical supplies					
Folding lens (2011–12)	133	93	64 100	40	2 564 000
Unfolding lens (2011–12)	133	23	7197	110	791 670
Balloon stent (2009–12)	667	23	26 655	334	8 902 770
Coronary stent (2009–12)	1000	167	10 575	833	8 808 975
Drug-coated stent (2009–12)	2833	567	33 794	2266	76 577 204
Drug-eluting alloy stent (2012)	1833	833	343	1000	343 000
Medicines					
Antiretroviral therapy (2010–12)	747	658	29 973	89	2 667 597
High-cost drug (2010–12)	4508	3197	4674	1311	6 127 614
Influenza vaccine (2010–12)	7	5	643 319	2	1 286 638
Erythropoietin (2009–12)	22	8	1 634 239	14	22 879 346
Continuous ambulatory peritoneal dialysis solution (2010–12)	7	4	19 095 657	3	57 286 971
Total cost saving to the Universal Health Coverage Scheme	..	..	..	..	188 235 785

Source: National Health Security Office, 2012.

Table 4: **Cost savings from central negotiation by the National Health Security Office for medical supplies and medicines**

people, including the rich.[70] In an analysis of a counterfactual scenario without the UCS,[82] 100 604 households nationwide would have been impoverished by out-of-pocket payments for health services in 2008. The UCS had reduced the number of health-impoverished households by 37 628 (37·4%).[82]

The chronology of coverage extension to certain high-cost services has contributed to deepening financial risk protection (panel 4). Inclusion of these new interventions was accompanied by increased financial allocations. Certain cost-effective interventions, such as dental root implants, are still not covered because these services are available only in certain urban centres and access would be inequitable.

Compared with countries that have similar economic performance, health financing, and outcomes, UHC in Thailand reduced out-of-pocket payments by 13 percentage points of total health expenditure and increased annual government per capita spending on health by $79. This amount is worthwhile if financial risk protection for households is a societal goal. In terms of macro-economic impact, the UCS had a small effect of an additional $60·8 on the total health expenditure per capita and did not appear to have affected the size of GDP or the share of the government budget devoted to health.[83]

Efficiency and cost containment

Although the UCS uses mixed provider payment methods, the main mode for more than 90% of payments is closed-end payment (capitation and diagnostic-related groups payment within a global budget); the rest of payments are based on fixed-fee schedules for certain services such as dialysis and other high-cost interventions. Closed-end payments contain cost and can provide incentives for increased efficiency because they limit the opportunity for supplier-induced demand. Capitation disciplines providers to prescribe items in the National List of Essential Medicines for members of the UCS, whereas fee-for-service payment in the CSMBS influences providers to prescribe drugs outside the National List of Essential Medicines—these comprise up to 41% of total prescriptions and 67% of outpatient medicines expenditure in the CSMBS.[84]

The NHSO can assert monopsonistic purchasing power because it is a large purchaser and can negotiate prices with assured quality from domestic and international suppliers and from sole source producers (eg, for cataract lenses, medical devices, and certain drugs such as erythropoietin). Cost savings estimated from the difference between market and negotiated prices and actual volumes purchased are shown in table 4. The total savings of $188 million are substantial and make it possible to provide more services for patients in the UCS.

A risk in a system where expenditure is strictly controlled by the government through global budgets is that health expenditure is not allowed to increase to match increasing demands and benefit package extensions. Although appropriate levels of expenditure are not easily assessed, the continuously increasing government allocation to the UCS (reflecting the extension of the benefit package, increased use of health services, and general price and wage inflation) does suggest that funding is keeping pace with increasing requirements (figure 5).

Health gain

Gruber and colleagues[85] assessed the effect of UHC using mortality statistics from all provinces between 2000 and 2002, and did a regression analysis of the effect of increased access to health services within the UCS. The results showed a sharp equalisation of infant mortality between provinces, which was consistent with the increased access to medical services for the poor and the resulting decrease in infant mortality. In an assessment of mortality change between 2001 (when UHC was being introduced) and 2014,[86] using mixed effects modelling to test whether the changes in standardised mortality ratio between super-districts were equal, all-cause mortality was found to have decreased steadily, although with a varying degree of reduction in the inequality of adult mortality between geographical areas.

Satisfaction and concerns with the UCS: monitoring for improvement

The satisfaction with the UCS has been surveyed annually since 2003 by an independent agency. The results of these surveys show a high level of satisfaction

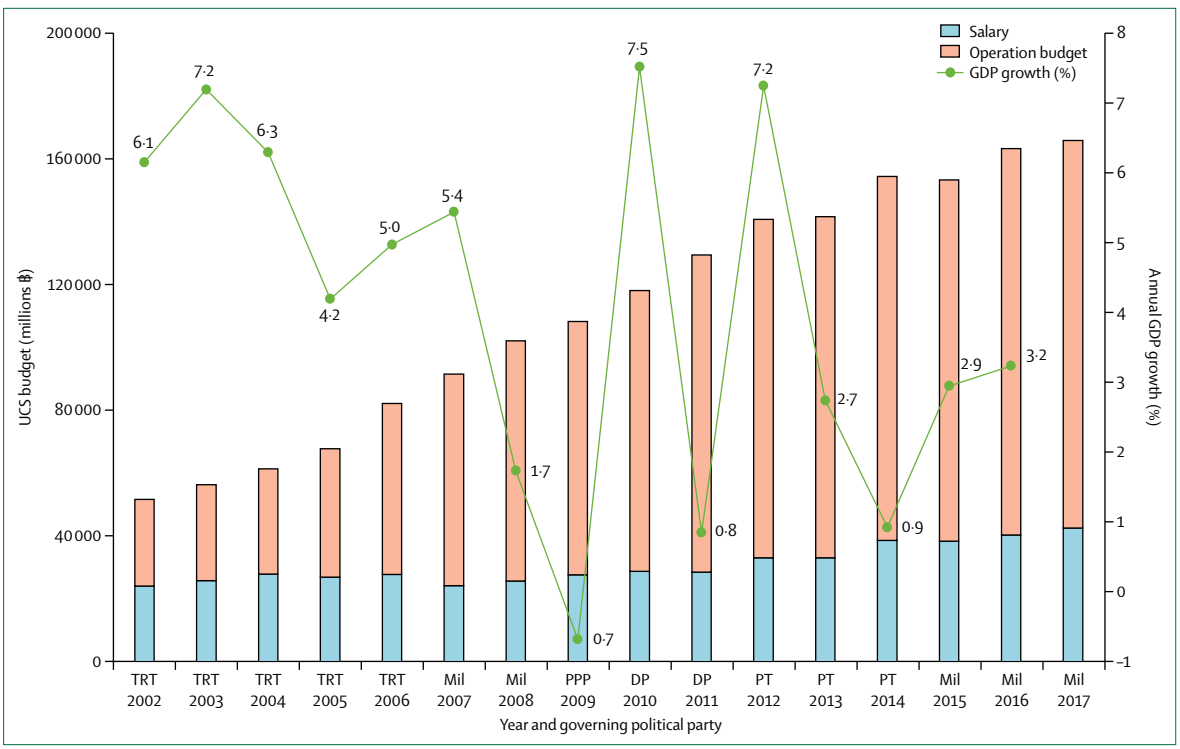

Figure 5: **Continued political commitment to the Universal Health Coverage Scheme across rival governments, 2002–17**
GDP=gross domestic product. TRT=Thai Rak Thai party. Mil=military government. PPP=People's Power Party. DP=Democrat Party. PT=Pheu Thai party.

by members of the UCS (8·0 out of 10). Provider satisfaction was lower (at 6·2 out of 10) in 2003 but increased to 7·6 out of 10 in 2010 and has been sustained.[87] The main patient concerns are long waiting time and service quality, whereas providers are worried about lack of financial and human resources to meet the patients' high expectations.

Unmet health-care needs are low: 1·4% for outpatient care and 0·4% for inpatient care in 2010,[73] compared with 1·5% for outpatient care and 0·1% for inpatient care in 2015.[88] The reasons for unmet needs are long waiting times for outpatients and geographical barriers for inpatient care.

Challenges and solutions

Achieving UHC in Thailand has not been without difficulties. The first challenge was to manage the survival of the financing model for UCS throughout a turbulent political climate. Between 2001 and 2015, the UCS survived eight rival governments, six elections, two coup d'états, and 13 health ministers. Political analysts foresee continued protracted conflicts in the current political climate. Despite political turmoil, GDP growth fluctuation, and the 2009 economic crisis, the total budget for the UCS has continued to increase. The scheme has gradually become owned by the people, not the political party that initiated it. Its positive effect on improved access and financial protection of households has meant that governments from all parties continue to support the scheme.[45]

Finding ways for budget decisions to become more transparent, participatory, and effective has been an important aspect of meeting the challenge. Not only is the annual budget prepared on the basis of evidence of service use and unit cost, but civil society representatives in the National Health Security Board help safeguard the interests of UCS members, and national media publicity on annual budget processes helps support continued funding of the scheme.

The termination of supply-side financing previously managed by the MOPH has led to a protracted conflict between the MOPH and the NHSO. For example, as a monopsonistic purchaser, the NHSO has been able to decrease the purchase price of medical products while ensuring quality. This has reduced the profit margin of suppliers and has been unpopular with a few right-wing conservatives in the Medical Council and Private Hospital Association. Claims of corruption in the NHSO's purchasing of medical products have, however, been proved untrue.[89]

Not all planned developments in the UCS have been possible. In particular, progress was slow in addressing the segmentation of the insurance schemes. The National Health Security Act of 2002 provided harmonisation between the schemes, and progress has indeed been made in harmonising the benefit package and using

closed-end provider payment between the UCS and social health insurance. However, the CSMBS remains problematic, in particular the cost escalation and inefficiency generated from fee-for-service payment for outpatient services. For inpatients, CSMBS applies multiple bands of diagnostic-related groups payment that favour tertiary and teaching hospitals over other hospitals for clinical conditions of similar case mix and severity. This different payment system is an important explanation for why expenditure per capita in the CSMBS is four times higher than that of the UCS. In a context of weak governance by the Comptroller General's Department, reform of the fee-for-service outpatient reimbursement system in the CSMBS has been retarded by resistance from health-care providers and conflicts of interests in prescribing medicines.[90]

The second challenge relates to the health workforce in the context of the Association of Southeast Asian Nations (ASEAN) Economic Community, which since 2015 has facilitated people, labour, and capital movements across the borders of ASEAN member states, global medical tourism, and health worker retention in a global market for health workers. The density of doctors, nurses, and midwives in 2007–13 was 24·7 workers per 10 000 population,[91] slightly higher than the threshold of 22·8 workers per 10 000 population that has been defined as adequate,[92] but lower than the threshold of 34·5 workers per 10 000 population proposed by the International Labour Organization.[93] Ageing and chronic diseases put pressure on the health workforce, and the current density is vulnerable to shortages. Although the ASEAN Economic Community does not have immediate effects on the out-migration of health workers, there is a need to continue monitoring its implications.

Evidence from the Thai nurse cohort study[94] suggested that in 2012, about 15% of the cohort intended to leave their nursing career in the next 2 years, an increase from 11% of the cohort in 2009. Short retention in the nursing profession has major implications for nurse shortages, and transformative health professional education is being implemented through reforms to the curriculum and instruction methods so that graduates are responsive to the emerging health needs of people.

International out-migration of Thai doctors and nurses is not common,[95] but international patients seeking hospital care in Thailand is common and has implications for the demand for doctors and other medical personnel. Available estimates for annual numbers of international patients range from a high estimate of 8·3–9·5 million visits in 2010[96] to a low estimate of 0·515 million visits in the same year, which would have limited impact on the health workforce.[97] A recent phenomenon is retirement of Japanese people to Thailand: its effect on demand for health services and the health workforce has so far been minimal, although numbers are increasing.[98]

The third challenge relates to ensuring policy coherence and effective multisectoral action from both health and non-health sectors to respond to the health challenges arising from demographic and epidemiological transitions and economic development. Promoting healthy ageing and the development of community-based and social care for elderly people is at an early stage of policy development.[99] The epidemiological transition towards non-communicable diseases,[100] technological progress, and increased expectations from citizens for new and expensive interventions adds pressure for more resources.[101] Non-communicable diseases in Thailand claim 75% of DALYs lost and result in $404 million in annual economic losses.[102,103] Primary prevention requires bold government leadership to address the commercial determinants, particularly tobacco, alcohol, and obesogenic food industries. The best-buy interventions for tobacco and alcohol, particularly those relating to prices and taxation, have yet to be scaled up in Thailand.[104,105] The stagnation of high mortality from road traffic injuries warrants stronger law enforcement and a comprehensive package of interventions.

Fighting commercial interests and protecting the health of the population necessitates strong ethical leadership and active citizenry guided by evidence, as shown in recent events relating to breast-milk substitutes. Concerns with the low level of exclusive breastfeeding of newborn babies for the first 6 months (23% in 2016[106]) and the repeated violations of the International Code of Marketing of Breast-milk Substitutes[107] by the formula milk industry led to government efforts to make the voluntary code a national law. In the public hearings of

***Panel 5*: Lessons learned from Thailand's universal health coverage (UHC)**

- Extensive geographical coverage of functioning primary health care provides a solid platform for implementing UHC
- Rural recruitment, home town placement, and financial and non-financial incentives can improve the availability of health workers in underserved areas and strengthen primary health care
- The district health system is a strategic hub for translating UHC policy into pro-poor utilisation and benefit incidence
- A tax-financed universal coverage scheme proved the most feasible and progressive route to achieve UHC in the context of a large informal sector
- A comprehensive benefit package, with minimal co-payment at the point of service, prevents catastrophic health spending and protects households from being impoverished
- Well designed strategic purchasing organisations and provider-payment methods support efficiency, cost containment, and equity outcomes
- Stringent health technology assessment for inclusion of new medicines and interventions into the benefit package enhances health systems efficiency
- An understanding of the political economy of health and the importance of good governance, an active citizenry and civil society, provision of evidence, and ethical leadership help manage tensions and conflicts and safeguard the interests of members of the Universal Health Coverage Scheme

the draft bill proposed by the MOPH, there was strong resistance from certain paediatricians and the Medical Council who amplified the disadvantages of breastfeeding by quoting a conclusion from a study in Nepal,[108] that prolonged breastfeeding beyond 12 months results in stunting. However, the opponents concealed the many factors contributing to stunting such as socioeconomic status, maternal education, poverty, and inadequate and inappropriate supplementary feeding practices.[109] An official letter in support of legislative measure from the WHO Director General to Thailand's Prime Minister influenced the National Legislative Council consensus vote for the draft bill.

Management of diabetes is a particular problem. The prevalence of diabetes in adults (>15 years) increased from about 7% in 2009[110] to about 9% in 2014 (8% of men, 10% of women).[111] Of further concern is the low level of effective coverage of diabetes management: in 2014, 43% of patients with diabetes were undiagnosed; 3% of those who were medically diagnosed were not on treatment; and only 43% of patients receiving treatment were well controlled (fasting blood sugar <130 mg/dL). Overall, only 24% of patients with diabetes were well controlled. The effective coverage in 2009 was better than in 2014; 31% of patients were undiagnosed, and 31% of patients had diabetes that was well controlled.

An increased incidence of end-stage renal diseases from inadequate control of diabetes and hypertension has put pressure on the budget for renal replacement therapy and prompted serious policy intervention by the MOPH. Urine test screening by village health volunteers and laboratory confirmation by district hospitals, screening of diabetic retinopathy to ensure prompt treatment, and identification and treatment of chronic kidney disease have been implemented to delay progression of chronic kidney disease to end-stage renal disease.[112]

The fourth challenge is tuberculosis. Despite good progress in controlling infectious diseases,[113] 117 000 new tuberculosis cases and 12 000 deaths were reported in 2015.[114] Thailand is listed as one of the 30 countries with the highest burden of tuberculosis, tuberculosis and HIV, and multidrug-resistant tuberculosis. The complexity of case finding, contact tracing, and successful treatment is challenging in highly mobile populations, including migrants, in whom the prevalence of tuberculosis is high.

Conclusions and lessons

Lessons learned from Thailand's UHC are summarised in panel 5. The progress and achievements of Thailand's UCS have been substantial. Increased fiscal space from favourable economic growth (even with some interruptions), when matched with political and financial commitments to health development, has ensured favourable resources for health infrastructure and health workforce development. The 5 year planning process ensured long-term policy continuity despite short-lived governments. Full geographical coverage of functioning primary health care within a district health system provided a solid foundation for implementing UHC. Although over time, benefit packages have been harmonised to reduce the extent of fragmentation and inequity between the three schemes, large differences remain in expenditure per capita, and the CSMBS payment reform faces serious resistance from health-care providers.

Although most countries target various population groups using different sources of finance, the last phase of achieving UHC is usually to cover the uninsured population that is mostly engaged in the informal sector. The financing choice between voluntary contributions and general taxation for this population will rely on an informed and bold political decision. General taxation must be supported by adequate fiscal space and political commitment to increase the fiscal space for health. A contributory scheme needs enforcement and administrative capacity to collect premiums; with this approach, it could take a few decades to reach UHC because of the large size of the informal sector in developing countries. Thailand made the decision in 2002 to use general taxation, despite its small GNI per capita of $1990 and tax revenue at 13% of GDP. UHC was financially feasible because closed-end payments have contained costs effectively.

In addition to the inheritance of a solid platform of health delivery, the system whereby the NHSO enters into contractual agreement with a primary health-care network has resulted in pro-poor use of health services and benefit incidence. Closed-end payment has enabled cost containment and improved efficiency; a comprehensive benefit package and extension to high-cost but cost-effective interventions has deepened risk protection and reduced the prevalence of catastrophic spending and impoverishment from health-care costs.

Contributors

All authors contributed to and agreed with the conceptual framework of this Review. VT provided the first draft, and all authors commented and strengthened the text and approved the final draft. AM is the guarantor of this Review.

Declaration of interests

We declare no competing interests.

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