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1 **Review section: Lancet**

2 **Health systems development in Thailand: a solid platform for**
3 **successful implementation of Universal Health Coverage**

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5

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14

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20 Box 4

21

22 **Abstract**

23 Thailand's health development since the 1970s has focused on investment in the health delivery
24 infrastructure at the district level and below, and training the health workforce. Deliberate policies
25 guided increased domestic training capacities for all cadres of health personnel and distributed them
26 to rural and underserved areas. Since 1975, targeted insurance schemes to different population
27 groups improved financial access up to when universal health coverage was implemented in 2002.
28 Despite its low GNI per capita, Thailand made a bold decision to use general taxation to finance the
29 universal coverage scheme, not relying on contributions by members. Empirical evidence shows
30 significant reduction and current low levels of out-of-pocket payments, incidence of catastrophic
31 health spending and medical impoverishment; and greatly reduced provincial gaps in child mortality.
32 Certain interventions such as antiretroviral and renal replacement therapy saved adult lives. Well-
33 designed strategic purchasing contributed to efficiency, cost containment and equity. Challenges
34 remain including on preparation for an ageing society, primary NCD prevention, law enforcement to
35 prevent road traffic mortality, and effective coverage of diabetes and TB control.

36

37

38 **Thailand: context, health achievements and challenges**

39 Thailand has become internationally known for its Universal Health Coverage (UHC) policy and
40 health development successes.¹ This paper reviews and analyzes the recent historical evolution of
41 health systems development focusing on the primary health care infrastructure, health workforce
42 training and distribution, and extension of financial risk protection to different target populations
43 culminating in UHC in 2002. The achievements of UHC, and factors contributing to them, are
44 analyzed. Although the six building blocks of health systems² are inter-linked and contribute
45 collectively to successful implementation of UHC, this paper focuses on the critical elements of the
46 health delivery system and health workforce development and financing reforms towards UHC.

47
48 The paper draws on an extensive review, analysis and synthesis of evidence from published and grey
49 literature (such as government reports) in the areas of health systems development, health
50 workforce, financial risk protection, outcomes of universal health coverage, and current health and
51 health systems challenges. Box 1 describes the search strategy for this review. Lessons drawn from
52 the review may contribute to low- and middle-income country policy makers' understanding in their
53 quest to achieve UHC as they have committed to do in the Sustainable Development Goals.

54
55 The Kingdom of Thailand is located at the centre of the Indochina peninsula, with land bordered by
56 Myanmar, Lao PDR, Cambodia and Malaysia. The total surface area of 513,120 km² hosts a
57 population of 68.9 million in 2017.^{3,4}

58
59 [<Box 1 here>](#)

60
61 [<Figure 1 Map of Thailand here>](#)

62
63 Politics have been quite unstable, with frequent military takeovers since the democratic revolution
64 in 1932. The current military government has been in power since 2014. Political stability according
65 to the Worldwide Governance Indicators has deteriorated with the percentile rank down from 58%
66 in 1996 to 16% in 2015 [the higher the rank, the better the governance]. Ranking for control of
67 corruption is poor and deteriorated from 55% to 43% in this time. Although the government has
68 been relatively stable, its effectiveness ranked only 60% and 65% during the same period.⁵

69 **Economic and health development**

70
71 Periods of rapid economic growth between the 1960s and 1990s resulted in Gross Domestic Product
72 (GDP) growth of 7.5% per annum. However, between the 1970s and the 2000s, Thailand
73 experienced three macroeconomic crises and related structural adjustment; the first (1973--1975)
74 and second (1979--1985) oil crises and the 1997--1999 currency crisis. The second oil crisis, when oil
75 prices in 1979 rose by 131% to 29.92 USD per barrel, was longer lasting and resulted in
76 macroeconomic instability and slow GDP growth. The 1997 Asian economic crisis was triggered by
77 the collapse of Thailand's financial stock market. It took more than a decade for GDP per capita
78 to recover to the pre-1997 level. The economic outlook has been sluggish over the last decade when
79 average GDP growth was 3.5%, although Thailand did reach upper-middle income (UMIC) status in
80 2011.⁶

81
82 Despite the political instability and periodically slow economy, social and health development has
83 not been negatively affected. For example, the implementation of the social agenda foreseen in the
84 4th National Economic and Social Development Plan (1977--1981) was postponed to the next (1982--
85 1986) due to the fiscal squeeze.⁷ An IMF loan was obtained and within the health fiscal envelope for
86 the 1982-1986 plan, the government prioritised pro-rural health development to help fight poverty
87 in the context of the rise of communism in neighboring countries. Investment was focused on district

88 hospitals and health centres, while capital investment in provincial tertiary care hospitals was
89 frozen.⁸

90

91 There have been remarkable achievements over recent decades: extreme poverty has been less than
92 1% since 2004, gross enrolment in primary education has been over 95% since 1980, and universal
93 health coverage was achieved in 2002. Table 1 shows key indicators for Thailand and UMIC peers
94 (China, Malaysia, Mexico, South Africa, Turkey).

95

96 <Table 1 here>

97

98 **Demographic and epidemiological transition**

99 Low fertility, birth and mortality rates and rapid demographic transition has resulted in the shrinking
100 of the working-age population and an increased ageing population which demands higher health and
101 social care expenditures.⁹

102

103 Between 1958 and 1997, infectious disease mortality declined five fold, with an annual reduction of
104 3.2 deaths per 100,000 of the population; this was largely due to reductions in malaria, tuberculosis,
105 pneumonia and gastrointestinal infections. Between 1998 and 2003, infectious disease mortality
106 increased to 70.0 per 100,000 of the population, coinciding with increased mortality from AIDS,
107 tuberculosis and pneumonia. Between 2004 and 2009, mortality declined to 41.0 per 100,000 of the
108 population, attributable to decreased AIDS mortality due to universal ART.¹⁰ Despite these
109 improvements, tuberculosis remains a major public health problem. Thailand is one of the top
110 twenty countries with a high TB burden, based on the absolute number of incident cases.¹¹ Table 2
111 shows mortality and disease statistics 1990 to 2015.

112

113 <Table 2 here>

114

115 **Remaining health challenges caused by determinants beyond the health 116 sector**

117 Non-communicable diseases (NCDs) accounted for 71.3% of total mortality in 2015, and demand
118 effective policy responses on primary prevention and the commercial determinants of health, in
119 particular tobacco, alcohol and unhealthy diets.¹² Fast-growing markets in Asia are main targets of
120 the alcohol industry.¹³ Despite the significant economic burden caused by tobacco use - US\$ 2.2
121 billion in 2009 (82% from productivity losses) equivalent to 0.8% of GDP or 18.2% of total health
122 expenditure¹⁴ - policy interventions against tobacco have been undermined by the industry.¹⁵⁻¹⁷

123

124 Across six UMIC, Thailand performed worst in adult mortality reduction with the exception of South
125 Africa (Figure 2a for males and 2b for females). Mortality from road traffic injuries (RTI) in men
126 explained the slow progress. There were 13,650 RTI deaths in 2012, and 79% were male. Taking into
127 account inaccurate classification of cause of death, WHO has estimated a total of 24,237 deaths and
128 an RTI mortality rate of 36.2 deaths per 100,000 of the population. High economic impact from RTI
129 at 3% of GDP has provoked policy and legislative action but enforcement is poor despite its
130 importance.¹⁸ Speed limits exist but enforcement was rated 3 out of 10. Enforcement of drink-
131 driving was rated as medium at 6 out of 10; and 26% of road traffic deaths involved use of alcohol.
132 Enforcement of motorcycle helmets was rated 6 out of 10 and the use rate was 52% and 20% among
133 drivers and passengers respectively. Enforcement of seat-belt law was rated 6 as only 58% of drivers
134 and 54% of front seat passengers wore them. Overall, law enforcement in Thailand was rated 3 to 6,
135 compared with 8-10 in high-income countries.¹⁸

136

137 <Figures 2a and 2b here>

138

139 **Mental disorders: depression, screening, treatment and suicide** 140 **prevention**

141 Of the total 10.6 million years of Disability-Adjusted Life Years (DALY) lost in Thailand in 2013 (male
142 6.1 and female 4.5 million years), mental disorders ranked top among men, 34% of total DALYs lost
143 with a DALY rate of 23.7 per 1000 population. They ranked second among women, 21% of total
144 DALYs and 12.7 per 1000 population. Among men, alcohol dependence/harmful use, depression and
145 schizophrenia accounted for the top three conditions; while depression, dementia and schizophrenia
146 were the top three in women.¹⁹

147

148 Un-recognized and un-treated depression contributes significantly to suicide. In response to these
149 challenges, the MOPH in 2009²⁰ introduced integrated surveillance, prevention and treatment.
150 Using the primary care platform, the programme includes community-based depression screening
151 and severity assessment using a two-and nine-question tool. Those at-risk of severe depression are
152 confirmed and treated by general doctors in district hospitals, while nurses provide psychosocial
153 support, monitoring of relapses and prevention of suicide.

154

155 By 2016, more than 14 million people at risk of depression were screened and primary prevention
156 provided. More than 1.7 million were diagnosed and received psychosocial support; of these 0.7
157 million received antidepressants, and 0.8 million were followed up for relapse and prevention of
158 suicide. This programme increased access to standard care from 5.1% of total depressive disorders in
159 2009 to 48.5% in 2016.

160

161 The suicide prevention program has borne fruit, though there is still much to improve. In 2012, the
162 age standardized suicide rate was 11.4 per 100,000 population (male 19.1 and female 4.5). The
163 suicide rate reduction between 2000 and 2012 was 24.6% (male 22.4% and female 32%).²¹

164

165

166 **Health systems development: a historical perspective**

167 Health development since King Rama VI (1910-1925) focused on control of infectious diseases such
168 as smallpox, yaws, improved safe water and sanitation, and extension of health services through
169 outreach activities in remote areas which were gradually transformed into static facilities. At the
170 same time, successive governments established universities for training health professionals and
171 other workforce cadres.²²

172

173 **National socio-economic development from the 1970s**

174 The 1970s Indo-China war and conflicts between communism and democracy across nations in
175 South East Asia triggered the “dominos theory” fearing that Thailand would fall under communist
176 domination. In response government policy sought to fight poverty through rural development, and
177 improved health, education, and agricultural extension services.²³ Health, along with education and
178 agriculture, became cornerstones of rural development and poverty reduction.²⁴

179

180 Health development started in the 1970s as an integral part of the five-year National Economic and
181 Social Development Plan (NESDP). A few foundation stones were laid such as a national family policy
182 in 1970 and the National Expanded Program of Immunization (EPI) in 1976. Family planning policy
183 contributed to a subsequent four decades of success in reducing the population growth rate, from
184 2.9% in 1970 to 0.3% in 2016. In other countries, such as the Philippines, family planning policy was
185 less successful than it might have been mainly due to opposition from the Church. The Philippines
186 with the same population as Thailand, of 36 million in 1970, reached 103 million in 2016 while
187 Thailand had 69 million.^{25,26}

188

189 **Health delivery systems development: a solid foundation**

190 Large-scale investment in health infrastructure at district and sub-district levels began in 1977 during
191 the fourth NESDP.²⁷ Full coverage of district hospitals was achieved by 1990²⁸ and was followed by a
192 decade of health centre development (1992-2001). By the 2000s, all sub-districts were covered by a
193 health centre.

194

195 The district health system, consisting of health centres and a district hospital, is the backbone of
196 health development. A health centre covers between 3,000 to 5,000 people, while a district hospital
197 covers between 30,000- 50,000 people. A health centre is staffed by a team of three to five nurses
198 and paramedics, and a 30-bed district hospital is staffed by three to four general practitioners, thirty
199 nurses, two to three pharmacists, one to two dentists, more than twenty paramedics and other
200 administrative staff. The size of a district hospital ranges from 30 to 150 beds based on the local
201 population size.

202

203 Nurses are critical in the health system, due to their numbers (180,000 in 2016), qualifications,
204 geographical distribution and wide-ranging contributions to public health, patient care and clinical
205 services. With additional postgraduate training, they can respond effectively to the emerging needs
206 for NCD chronic care, home care and clinical services including general anaesthesia and intensive
207 care.

208

209 The health centre, the first point of contact by the population, provides primary health care such as
210 basic treatment, prevention and health promotion through nurses and public health workers.

211 District hospitals provide more comprehensive secondary level curative services, prevention and
212 health promotion and admission facilities. Specialists, in particular covering obstetrics, internal
213 medicine, surgery and paediatrics, are available in larger district hospitals.

214

215 Historically, provincial hospitals in all provinces have offered tertiary care and received referral cases
216 from district hospitals in all clinical specialties. During the era of district health systems investment,
217 provincial hospitals received less infrastructure development support but there was a greater focus
218 on strengthening their clinical capacities through training additional specialists.

219

220 Despite rapid private sector growth at various times, including of private hospitals in the main
221 cities²⁹, the public sector dominates the Thai health delivery system. By 2014, the Ministry of Public
222 Health (MOPH) had 67% of the 161,000 hospital beds, other public non-MOPH had 14% and private
223 hospitals had 19%. In general the private sector plays a minor role: in 2015 it contributed 14% of
224 total outpatient visits (9% at private clinics and 5% at private hospitals) and 11.3% of total
225 admissions.³⁰

226

227 **Functioning of district health systems: the development of the health 228 workforce**

229 The achievement of full coverage of health services provided by the district health system was
230 accompanied by MOPH health workforce development. Adequate numbers of competent and
231 committed health workers are indispensable for a well-functioning district health system and the
232 quality services provided gained the people's trust. Thailand's health workforce policies integrated
233 recruitment, training, distribution and rural retention.^{31,32}

234

235 Firstly in 1972, the MOPH introduced the policy of a three-year mandatory rural health service
236 placement, which was enforced with all medical and nursing graduates and subsequently dentists

237 and pharmacists. The policy equitably enforced the same for medical graduates from private medical
238 schools.

239

240 Secondly, the MOPH introduced in 1994 a special track which recruited high school students from
241 rural and under-served areas for medical and nursing education on condition they worked in their
242 home district upon graduation. This special track contributed to 20% of total annual national medical
243 student enrolment over the last decade and increased to 30% in 2013.^{33,34} Studies showed a 10% to
244 15% higher probability of staff fulfilling the three mandatory years' service than those on the normal
245 track (accessed through a national entrance examination).³⁵ There were also fewer annual
246 resignations in the special track than the normal track.³⁶ Although students in the special track had
247 slightly lower examination grades at recruitment than those on the normal track, both tracks had
248 similar success rates (99.6%) in the national licensing examination for practice required for all
249 graduates.³³

250

251 Thirdly, to increase medical production capacities, the MOPH strengthened its regional hospitals as
252 clinical training centres for the third to sixth clinical years of special track students.³⁷ Students in the
253 special track study together with the normal track students during their first year of basic science,
254 and second and third year of preclinical courses. The normal track students continue their fourth to
255 sixth clinical years in the faculty of medicine of their registered university; students in the special
256 track are trained in the 37 MOPH centres. Both tracks are trained using the same curriculum and
257 instructional style, though in different institutes. Medical teachers in these centres are trained in
258 instructional skills, supervision and marking exam papers and their diplomas are conferred by 14
259 affiliated universities. Between 2000 and 2014, a total of 5,927 medical graduates from the special
260 track added significantly to the provision of rural services. Universities have greater capacity to scale
261 up basic science and preclinical training than clinical training so the MOPH clinical training centres fill
262 the gap.

263

264 Recognizing the potential of nursing, since 1946 the MOPH has compensated for the limited training
265 capacities in government universities by establishing MOPH nursing and midwifery colleges, which
266 are licensed and certified by the Thai Nurse and Midwifery Council. In 2017, there were 30 MOPH
267 nursing colleges which contributed 34% of total national graduates, while public and private
268 universities produced 37% and 29% respectively.³⁸ To ensure adequate competencies, all nurse
269 graduates from public, private and MOPH colleges are required by the Nurse and Midwifery Council
270 to sit and pass a national nursing licensing examination since 2002. Also, all practicing nurses are
271 required to renew their license every five years based on the achievement of fifty credits of
272 Continued Professional Education.

273

274 Fifthly, the MOPH established nine public health schools to train other paramedical personnel,
275 mostly on two-year diploma courses; for example, dental public health, community public health
276 and pharmacist assistants. These diplomas filled the gaps during the rapid extension of district
277 health systems; the needs for diploma level personnel are now met and diploma courses have been
278 replaced by bachelor level courses in response to the need for improved quality and standards.

279

280 Finally, the mandatory rural service policy was accompanied by financial incentives such as a
281 hardship allowance and incentives for out-of-hours work. Non-financial incentives also played an
282 important role: annual recognition awards for dedicated front line workers were organized regularly
283 by various agencies, and the MOPH provided housing benefit in all health centres and district
284 hospitals as in-kind support to ensure 24-hour services.

285

286 Health workforce expansion was facilitated by a supportive context. Tertiary school enrolment (post-
287 secondary education in universities, colleges, technical training institutes, and vocational schools)

288 increased for men and women respectively from 4% and 3% in 1976 to 41% and 57% in 2015.
289 Female labour force participation is high; the ratio of female to male labour force participation in
290 2015 was 78%, on a par with 76% in the OECD.
291

292 **Extension of financial risk protection mechanisms**

293 While ensuring the availability of a functioning service delivery system, parallel policies extended
294 financial coverage to certain groups of the population, with the application of a targeted approach.³⁹
295

296 **1975: Scheme for low-income and vulnerable populations**

297 Free medical care for the poor using “means testing” was launched in 1975. The household income
298 was assessed and if it fell under a MOPH benchmark (not the national poverty line which was too
299 low), households were granted a card entitling them to free medical care at MOPH health facilities
300 with no copayment. The means testing method had a major weakness of leakage of the card to non-
301 poor households while some poor households were not covered.⁴⁰ The scheme was later extended
302 to the elderly, disabled and children under 12 years old.
303

304 The scheme was tax financed through an annual budget allocation to MOPH health facilities based
305 on the number of registered poor households in the catchment area. The service package covered
306 outpatient, inpatient, and dental services and medicines; a few high cost services were excluded.
307

308 **1980: Civil Servant Medical Benefit Scheme (CSMBS) for the government employees**

309 The non-contributory CSMBS covered government employees and their dependants well before
310 1980 when a Royal Decree was adopted. A fee-for-service reimbursement model was applied for
311 health care from the start. Services were funded by taxation to compensate for the low salaries of
312 government officials, as part of a package of social security including pension, housing benefit and
313 child allowance. The scheme covered not just government officials but also their dependants
314 including parents, spouse and children under 18 years old.
315

316 **1983: Voluntary health insurance for the informal sector**

317 In 1983, the MOPH initiated the Health Card Project - a voluntary community-based health insurance
318 - with an annual premium of 500 Baht (or US\$ 20 at that time) per household (up to five members).
319 The benefit package was comparable to the Low-Income Scheme. The main weakness was adverse
320 selection, whereby members mostly consisted of the chronically ill and high users of services, while
321 healthy members did not buy the card. In 1994, to increase enrolment, this scheme became a
322 publicly-subsidized voluntary insurance scheme and the MOPH added 500 Baht per card.⁴¹ Despite
323 the additional income, the scheme was financially non-viable with expenditure exceeding revenue.
324 Spill over benefits included increased MOPH capacity in managing insurance funds, registration, fund
325 allocation and monitoring and evaluation.
326

327 **1990: Social Health Insurance for private sector employees**

328 In 1990 the Social Security Act was passed, covering private sector employees. Social Health
329 Insurance (SHI) was a component of a comprehensive social security system including pension,
330 disability compensation and funeral grants. SHI is financed by equal tripartite contributions from a
331 payroll tax paid by employers, employees and the government. The Social Security Office (SSO)
332 purchased a comprehensive set of services including outpatient, inpatient and high cost services
333 from existing public and private hospitals using a single capitation payment. This was the first time
334 that capitation payment had been applied in Thailand, and in general it was well received by public
335 and private hospitals and appeared to provide decent quality of care to members.⁴² Thus SHI set the
336 precedent of a capitation contract model, which UHC later built on by adopting capitation payment
337 for outpatient care and Diagnostic Related Groups (DRG) payment within a global budget for
338 inpatient care⁴³ (this dual payment system has now been introduced in the SHI).

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Figure 3 shows the developments over time in health infrastructure expansion and financial risk protection mapped against the reduction in under-five mortality between 1970 and 2010.

[<Figure 3 here>](#)

Political window of opportunity for UHC in 2001

Different targeting approaches resulted in variations in the design of benefit packages and purchasing methods, resulting in inefficiency and inequity. Despite multiple efforts, 30% of the population were still uninsured by 2001. A Universal Health Coverage Scheme (UCS) was featured in the political manifesto of the January 2001 general election campaign. After victory, the Thai Rak Thai led government-piloted implementation of the UCS in six provinces in April 2001, and rolled it out nationwide by April 2002.⁴⁴ At this time the GNI per capita was not high, US\$ 1,990, and the fiscal space was low - 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. Thirty Baht (approximately US\$ 1) was the copayment for an outpatient visit or an admission paid by the non-poor.

The UCS was established to cover members of the Low Income Scheme, Health Card Scheme and the 30% uninsured and was managed by the National Health Security Office (NHSO), a statutory agency established by the Act. The UCS, CSMBS and SHI collectively comprise the UHC, though there is some variation in their design features (Table 3).

[<Table 3 here>](#)

The UHC trajectory is demonstrated in Figure 4. Populations are classified into three layers: 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, political decisions 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; while resource needs for the UCS were within government fiscal capacity. At the UCS inception in 2002, total estimated resource requirements for 47 million members were THB 56.5 billion. The existing MOPH pooled budget for health services provided THB 26.5 billion, and the Prime Minister had the leadership ability and capacity to mobilize the shortfall of THB 30 billion from tax funding.

The decision to adopt closed-end budgets (per capita budgets based on unit cost and utilization rates of different types of services, and service reimbursement through capitation and DRG payment within a global budget) facilitated projection of total funding needs and hence assessment of financial feasibility.⁴⁷

[<Figure 4 here>](#)

UHC was at heart a political decision; success has been attributed to a ‘big bang’ policy reform, led by a populist government; and to the established institutional capacity mobilised by reformists who were technocrats in the MOPH influencing political decisions based on evidence-based knowledge, previous practical experience and institutional networks.⁴⁸

390 An understanding of political economy is critical in understanding policy change, in other words the
391 political processes in adopting, achieving and sustaining UHC in the context of competing interests
392 amongst actors.⁴⁹ Box 2 provides several examples where decisions required conflicting interests and
393 tensions among key players to be carefully managed. The examples also demonstrate the
394 importance of political leadership and provision of evidence.

395

396 <Box 2 here>

397

398 Successful implementation benefited from supply side capacity.⁵⁴ In addition, rapid implementation
399 was made possible by the Civil Registration and Vital Statistics (CRVS) system, established since
400 1956. This mandates registering all births and deaths and assigns a unique citizen ID number to
401 everyone, making it possible to identify all UCS members and require them to register with a
402 preferred provider network. In addition, this facilitates transfer of members across the three public
403 insurance schemes to ensure seamless continuity of health coverage. For example, SHI members
404 who become unemployed are automatically transferred to UCS; vice versa, UCS members once
405 employed are transferred to SHI.

406

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

410

411 **Ensuring accountability and responsiveness of UHC**

412 Previous decades of health system development had ensured services were available to respond to
413 the health care demands which would arise from UHC, and design features ensured cost control.
414 Critical features of any UHC design also include processes for accountability across stakeholders and
415 responsiveness to citizens, to ensure the continuing society-wide support and trust needed for UHC
416 to survive into the longer term.

417

418 **Split role between purchasers and healthcare providers increases accountability**

419 Both the SHI and CSMBS had split the roles of purchaser and provider from the beginning. The Low
420 Income Scheme and Health Card Project applied an integrated model with the MOPH serving roles of
421 both purchasing and service provision, and this was considered to be less responsive than other
422 models.⁵⁵ For the UCS, the National Health Security Office (NHSO) purchased services from public
423 and private provider networks (though mostly MOPH provider networks due to their geographical
424 monopoly of district health systems in rural areas) through annual contractual agreements using the
425 dual payment system of capitation and DRGs. UCS completely separated the two functions from the
426 previous single MOPH administrative entity⁵⁶, and meant that the NHSO could purchase services
427 uninfluenced by provider self-interest. Capitation payment linked with the number of registered
428 members, a call centre for grievance management and disputes settlement, and the annual public
429 hearing for UCS members are designed by NHSO to increase healthcare provider accountability to
430 UCS members.

431

432 From our analysis, the decision to split the two MOPH functions was a political decision. The SHI had
433 set the precedent, since 1991, as a purchaser organization negotiating and purchasing services from
434 existing public and private providers on an equal footing. In contrast the MOPH, which managed the
435 low income and voluntary health insurance scheme, was perceived by private providers to face a
436 conflict of interest and to favour contracting its own providers. Also the MOPH is mandated as a
437 regulatory agency, setting norms and standards and with a policy formulation and oversight role
438 rather than a purchaser role.

439

440 **Financial accountability framework**

441 The MOPH annual budget allocations for service provision at sub-district, district and provincial
442 levels were terminated and integrated into the UCS budget managed by the NHSO.⁴¹ This supported
443 the clarity of accountability between purchasers and providers, as MOPH and other public hospital
444 revenues were generated only from service provision to members of the three insurance schemes,
445 encouraging providers to be responsive to patients. Also the same rates of capitation and DRG
446 payment (which included health worker salaries) was applied to purchasing services from the private
447 sector. The level playing field in purchasing services across public and private providers smoothed
448 the implementation of the reform and gained private sector collaboration.

449

450 **Budgeting: role of evidence, participation and transparency**

451 The per capita budgeting applied by NHSO for the UCS significantly changed the budgeting system.
452 From the start of the UCS, the budget was estimated based on unit costs and utilization rates of
453 different services and this principle is still applied. Cost and use rates are projected for the budget
454 year. Unit cost includes labour, medicines, supplies and depreciation of major equipment. The total
455 budget request is the multiplication of per capita budget and the UCS population. The Bureau of
456 Budget cannot exercise its discretionary power as before, given the evidence of costs and utilization.
457 The multi-stakeholder membership of the Budgeting Subcommittee appointed by the National
458 Health Security Board has balanced power, as the Bureau of Budget is one of the members. All
459 members have equal influence and use evidence to make recommendations.

460

461 A further example of use of evidence to support budget requests is the use of health technology
462 assessment. Thailand strengthened and sustained its institutional capacity in health technology
463 assessment through creating the Health Intervention and Technology Assessment Program⁵⁷, whose
464 role has included prioritizing the inclusion of new medicines into the National List of Essential
465 Medicines, and new interventions into the UCS benefit package.⁵⁸

466

467 **The role of primary health care (PHC) in UHC**

468 The strong public health, primary care, efficiency and equity orientation of UHC was driven by an
469 exceptionally strong cadre of public health experts who have been influential health technocrats.
470 Investment by the MoPH in postgraduate training in key health policy and systems areas using WHO
471 and other funding sources yielded high pay-off when all returned to Thailand and served in positions
472 of influence.⁵⁹ Continuing capacity development in health systems and policy research supported
473 evidence based health reforms.⁶⁰⁻⁶² Developments in district health systems and PHC were further
474 encouraged by a self-help social movement developing and supporting district public health leaders,
475 some of whom later became prominent national public health leaders; see box 3.

476

477 <Box 3 here>

478

479

480 The well functioning PHC system developed in Thailand was the foundation for implementing UHC
481 and achieving the health MDGs well before the target date of 2015.⁶⁶ PHC and UHC (SDG 3.8) are
482 designed to achieve the maternal and child health targets in SDG 3.1 and 3.2, and facilitate access to
483 reproductive health services including family planning (SDG 3.7). Thailand has eliminated vertical
484 transmission of HIV through PMTCT⁶⁷, and the high coverage of universal ART indicates the
485 likelihood of ending the AIDS epidemic as a public health threat by 2030 (SDG3.3), though it still
486 faces challenges in ending TB as a major public health threat. NHSO strategic purchasing helps the
487 PHC system enhance its detection, screening, prevention and effective coverage of several NCDs,
488 including through diabetes, hypertension and cervical cancer screening.

489

490 However, achieving the NCD mortality targets (SDG 3.4) requires the whole of government, not the
491 MOPH alone, to counteract the strong influence of commercial determinants and the resistance

492 from tobacco (SDG3.a), alcohol (SDG3.5) and unhealthy food industries. This requires policy
493 coherence across government sectors and effective multisectoral action for health. The health
494 service sector, though critical, is not adequate to achieve this SDG target when determinants are
495 outside the direct command and control of the health sector. The MOPH must have the capacity to
496 ensure a health lens is adopted in government and private sector policies.
497

498 **UHC achievements**

500 **Improved level and distribution of health service utilization**

501 The UCS reduces the probability of its members going without formal ambulatory care when sick by
502 3.2 percentage points (PPT).⁶⁸ UCS increases the probability of using outpatient care at public service
503 providers by 2.7 PPT (5%) and of hospitalization to a public hospital by 1 PPT (18%); these effects are
504 largest among elderly people.

505
506 Another study⁶⁹ shows that UHC increases the likelihood of having annual check-ups, in particular for
507 women, and increases access to hospitalization by over 2% and outpatient visits by 13%. No
508 evidence is noted of moral hazard such as increased unhealthy behaviour or reduced preventive
509 efforts. Beyond improved access to care, higher utilization favours the poorest people and this is
510 shown clearly in benefit incidence analysis.⁷⁰ Benefit incidence - assessing whether the government
511 budget benefits more the rich or the poor - is pro-poor due to higher utilization by the poorest than
512 the richest wealth quintiles, especially at health centres and district hospitals.

513
514 Another aspect of utilization is the low prevalence of unmet healthcare needs. The nationally
515 representative household survey on unmet needs, conducted by the National Statistical Office⁷¹,
516 reports low prevalence of unmet needs for both outpatient and inpatients on a par with OECD
517 peers.⁷² The extension of renal replacement therapy into the UCS benefit package in 2008 has
518 improved equitable access to services, saved lives and deepened financial risk protection (see Box 4).
519

520 **<Box 4 here>**

521
522 Factors that contribute to pro-poor outcomes for both utilization and benefit incidence include the
523 extensive geographical distribution of a well-functioning close-to-client district health system⁷⁵ (the
524 provider for UCS members) and the comprehensive benefit package free at the point of service. By
525 2016, the use rate among UCS members had reached 3.5 visits per capita per year, and 0.13 hospital
526 discharges per capita per year with an average length of stay of 4.1 days. These utilization rates are
527 similar to a few of the OECD countries.⁷⁶
528

529 Very often the district health system is the only provider in the district with whom the NHSO can
530 contract. Strict quality conditions such as accreditation status cannot be applied where there is a
531 geographical monopoly. The Healthcare Accreditation Institute has developed step-wise quality
532 improvement processes since 2003. In 2007 the NHSO offered step-wise financial incentives, which
533 were higher for accredited hospitals and lower for those in the process of quality improvement. By
534 2012, almost all hospitals were accredited or had quality assurance processes well in place.⁷⁷
535

536 **Equity in health financing and financial risk protection**

537 General tax, the sole source of financing UCS, is the most progressive financing source as the rich
538 contribute a higher proportion of their income to taxes than the poor.⁷⁸ A comprehensive benefit
539 package and services free-at-the-point-of-use have resulted in reduced household out-of-pocket
540 payments (OOP), from 34% of Total Health Expenditure in 2000 (prior to UCS) to 12% in 2014.⁴
541

542 The lower the OOP, the lower the prevalence of households facing catastrophic health expenditure
543 is.⁷⁹ The Thai UCS has reduced the probability of catastrophic health expenditure, defined as
544 households spending on health more than 10% of total household spending, and there has been a
545 greater reduction of OOP spending among high-income households. UCS provides a safety net to all
546 people including the rich.⁶⁸

547
548 UHC as a whole (including all three insurance schemes) has reduced the prevalence of households
549 facing catastrophic health expenditure and medical impoverishment.⁸⁰ A counter-factual scenario
550 estimated that without the 2002 UCS, a total of 100,604 households nationwide would have been
551 impoverished by out-of-pocket payments for health in 2008. UCS had reduced the number of health-
552 impoverished households by 37,628 or 37.4%.⁸¹

553
554 The chronology of coverage extension to certain high-cost services, as described in Table 4, has
555 contributed to deepening financial risk protection. Inclusion of these new interventions was
556 accompanied by increased financial allocations. Certain cost-effective interventions, such as dental
557 root implants, are still not covered as these services are available only in certain urban centres and
558 so access would be inequitable.

559
560 [<Table 4 here>](#)

561
562 Relative to countries comparable to Thailand in terms of economic performance, health financing
563 and outcomes, UHC reduced out-of-pocket payments by 13 percentage points of total health
564 expenditure, and increased annual government per capita spending on health by US\$ 79. This
565 amount is worthwhile if financial risk protection for households is a societal goal. In terms of macro-
566 economic impact, UCS had a small effect of an extra US\$ 60.8 on the total health expenditure per
567 capita and did not appear to have affected the size of GDP or the share of the government budget
568 devoted to health.⁸²

569 **Efficiency and cost containment**

571 Although UCS employed mixed provider payment methods, the main mode for over 90% of
572 payments was closed-end payment (capitation and DRG payment within a global budget); the
573 remainder were based on fixed fee schedules for certain services such as dialysis and other high-cost
574 interventions. Closed-end payments contain cost and can provide incentives for increased efficiency
575 as they limit the opportunity for supplier-induced demand. Capitation disciplines providers to
576 prescribe items in the National List of Essential Medicines (NLEM) for UCS members, while fee for
577 service payment in the CSMBS influences them to prescribe drugs outside the NLEM - these
578 comprise up to 41% of total prescriptions and 67% of outpatient medicines expenditure in the
579 CSMBS.⁸³

580
581 The NHSO is able to assert monopsonistic purchasing power, since it is a large purchaser and can
582 negotiate prices with assured quality from domestic and international suppliers for example for
583 cataract lenses, medical devices and certain medicines such as erythropoietin, even from sole source
584 producers. Table 5 shows cost savings estimated from the difference between market and
585 negotiated prices and actual volumes purchased. The total savings of US\$ 188 million are significant
586 and make it possible to provide more services for UCS patients.

587
588 [<Table 5 here>](#)

589
590 A risk in a system where expenditure is strictly controlled by the government through global budgets
591 is that health expenditure is not allowed to rise to match increasing demands and benefit package
592 extension. While it is not easy to assess appropriate levels of expenditure, the continuously

593 increasing government allocation to the UCS, reflecting the extension of the benefit package,
594 increased utilization, and general price and wage inflation, does suggest that funding kept pace with
595 increasing requirements (Figure 5).

596
597 <Figure 5 here>
598

599 **Health gain**

600 Gruber et al⁸⁴ in their assessment of the impact of UHC using mortality statistics from all provinces
601 between 2000 and 2002, and regression analysis of the impact of increased access to health services
602 under UCS, reported a sharp equalization of infant mortality rates across provinces. This was
603 consistent with the increased access to medical services for the poor leading to a reduction in infant
604 mortality rates.

605
606 Assessment of mortality change between 2001 (when UHC started to be introduced) and 2014 using
607 mixed effects modeling to test whether the slopes of Standardized Mortality Ratio across super-
608 districts were equal showed a steady decline of all cause mortality, though with a varying degree of
609 reduction in the inequality of adult mortality across geographical areas.⁸⁵
610

611 **UCS members' satisfaction and concerns: monitoring for improvement**

612 The satisfaction survey conducted annually by an independent agency since 2003 shows high level of
613 satisfaction amongst UCS members - 8 out of 10. Provider satisfaction was lower at 6.2 in 2003, but
614 increased to 7.6 in 2010 and has been sustained.⁸⁶ Main causes of patient concern are long waiting
615 time and service quality while providers are worried about lack of financial and human resources to
616 meet patients' high expectations.

617
618 Unmet health care needs are low: 1.4% and 0.4% for out- and in-patient care in 2010⁷¹ and 1.5% and
619 0.1% in 2015.⁸⁷ Reasons for unmet needs are long waiting times for outpatients, and geographical
620 barriers for inpatient care.
621

622 **Challenges and solutions**

623 Achieving UHC has not been without its difficulties for Thailand. The first challenge was to manage
624 the survival of the UCS financing model throughout a turbulent political climate. Between 2001 and
625 2015, UCS survived eight rival governments, six elections, two coup d'états and thirteen health
626 ministers. Political analysts foresee continued protracted conflicts in the current climate. Despite
627 political turmoil, GDP growth fluctuation and the economic crisis in 2009, the total UCS budget
628 continually increased. UCS has gradually become owned by the people, not the political party which
629 initiated it. Its positive impact on improved access and financial protection of households has meant
630 that governments from all parties have continued support.⁴⁵
631

632 Finding ways to make budget decision-making more transparent, participatory and therefore
633 effective has played a part in meeting the challenge. Not only is the annual budget prepared based
634 on evidence of service utilization and unit cost, but also civil society representatives in the National
635 Health Security Board help safeguard the interests of UCS members, and national media publicity on
636 annual budget processes helps support continued funding of the UCS.
637

638 The termination of supply side financing previously managed by the MOPH has led to protracted
639 conflict between the MOPH and the NHSO. For example, as a monopsonistic purchaser, NHSO has
640 been able to drive down the purchase price of medical products while ensuring quality. This has
641 reduced the profit margin of suppliers and been unpopular with a few right wing conservatives in the

642 Medical Council and Private Hospital Association and led to claims of corruption in NHSO purchasing
643 of medical products, which have been proved untrue.⁸⁸

644

645 However, not all planned UCS developments have proved possible. In particular, slow progress was
646 made addressing the segmentation of the insurance schemes. The National Health Security Act of
647 2002 provided for harmonisation of the schemes, and progress has indeed been made between the
648 UCS and SHI in harmonising the benefit package and using closed-end provider payment. But the
649 CSMBS remains problematic, in particular the cost escalation and inefficiency generated from fee for
650 service payment for outpatient services. For inpatients, CSMBS applies multiple bands of DRG
651 payment favouring of tertiary and teaching hospitals over other hospitals for clinical conditions of
652 similar case mix and severity. This different payment system is an important explanation for why
653 expenditure per capita in the CSMBS is four times higher than for the UCS. Reform of the fee-for-
654 service outpatient reimbursement system in the CSMBS has been retarded by resistance from
655 healthcare providers and conflicts of interests in prescribing medicines⁸⁹, in a context of weak
656 governance by the Comptroller General Department.

657

658 The second challenge relates to the health workforce in the context of the advent of the ASEAN
659 Economic Community (AEC) in 2015 which has facilitated people, labour and capital movements
660 across ASEAN member states' borders, global medical tourism, and health worker retention in a
661 global market for health workers. The density of doctors, nurses and midwives between 2007 and
662 2013 was 24.7 per 10,000 population⁹⁰, slightly above the threshold of 22.8 defined as adequate⁹¹,
663 but below the proposed threshold of 34.5 of the International Labour Organization.⁹² Ageing and
664 chronic diseases put pressure on the health workforce; the current density is vulnerable to
665 shortages. Although the AEC does not have immediate effects on the out-migration of health
666 workers, there is need to continue monitoring its implications.

667

668 Evidence from the Thai Nurse Cohort indicated that in 2012, 15.4% of the cohort intended to leave
669 their nursing career in the next two years,⁹³ an increase from 11.2% in 2009. Shorter retention in the
670 profession has major implications for nurse shortages, and transformative health professional
671 education is being implemented through reforms to the curriculum and instruction methods so that
672 graduates are responsive to the emerging health needs of people.

673

674 International out-migration of Thai doctors and nurses is not common⁹⁴, but international patients
675 seeking hospital care in Thailand, so called medical tourism, is more common and has implications
676 for demand for doctors and other medical personnel. There are conflicting estimates for annual
677 international patients: a high estimate of 8.3 to 9.5 million visits in 2010⁹⁵ and a low estimate of
678 0.515 million visits in the same year which would have limited impact on the health workforce.⁹⁶ A
679 recent phenomenon is retirement of Japanese to Thailand: its impact on demand for health services
680 and the health workforce is so far minimal though numbers are increasing.⁹⁷

681

682 The third challenge relates to ensuring policy coherence and effective multi-sectoral action from
683 both health and non-health sectors in order to respond to the health challenges arising from
684 demographic and epidemiological transitions and economic development. Promoting healthy ageing
685 and the development of community-based and social care for the elderly is at an early stage of policy
686 development.⁹⁸ The epidemiological transition towards NCDs⁹⁹, technological progress and increased
687 expectations from citizens for expensive new interventions add pressure for more resources.¹⁰⁰
688 NCDs in Thailand claim 75% of disability adjusted life years lost and give rise to US\$ 404 million
689 annual economic losses.^{101,102} Primary prevention requires bold government leadership to address
690 the commercial determinants, in particular tobacco, alcohol and obesogenic food industries. The
691 best buy interventions for tobacco and alcohol have yet to be scaled up in Thailand, in particular

692 relating to prices and taxation.^{103,104} The stagnation of high mortality from road traffic injuries
693 requires stronger law enforcement and a comprehensive package of interventions.

694
695 Fighting commercial interests and protecting health of the population requires strong ethical
696 leadership and active citizenry guided by evidence, witness recent events concerning breast-milk
697 substitutes. Concerns over the low level of exclusive breast feeding for the first six month in
698 newborns, 23% in 2016¹⁰⁵, and the repeated violations of the International Code of Marketing of
699 Breast-milk Substitutes¹⁰⁶ by the formula milk industry, led to government efforts to make the
700 voluntary Code a national Law. In the public hearings of the MOPH-proposed draft Bill, there was
701 strong resistance from certain pediatricians and the Medical Council who amplified the downsides of
702 breast feeding by quoting a study in Nepal¹⁰⁷ that “prolonged breast feeding beyond 12 months
703 results in stunting”. This concealed the multiple factors contributing to stunting such as socio-
704 economic status, maternal education, poverty, and inadequate and inappropriate supplementary
705 feeding practices.¹⁰⁸ The WHO Director General’s strong advocacy for the Thai law with the Prime
706 Minister influenced the National Legislative Council consensus vote for the draft Bill.

707
708 Management of diabetes mellitus is a particular problem. Diabetes prevalence in adults (>15 years)
709 increased from 6.9% in 2009,¹⁰⁹ to 8.9% in 2014 (males 7.9%, females 9.8%).¹¹⁰ Of further concern is
710 the low level of effective coverage of diabetes management: in 2014, 43.1% of diabetic patients
711 were un-diagnosed; 2.7% of those medically diagnosed were not on treatment; and only 43% of
712 treated patients were well controlled (fasting blood sugar <130 mg/dl). Overall, only 23.5% of
713 diabetes patients were well controlled. The effective coverage in 2009 was better than in 2014;
714 undiagnosed was 31.2%, and overall well controlled was 30.6%.

715
716 Increased incidence of End Stage Renal Diseases (ESRD) due to inadequate control of diabetes and
717 hypertension has put pressure on the Renal Replacement Therapy (RRT) budget. This has prompted
718 serious policy intervention by the MOPH, on urine test screening by Village Health Volunteers and
719 laboratory confirmation by district hospitals, screening of diabetic retinopathy to ensure prompt
720 treatment, and identification and treatment of Chronic Kidney Disease (CKD) in order to delay
721 progression of CKD to ESRD.¹¹¹

722
723 The fourth challenge concerns tuberculosis. Despite good progress in controlling infectious
724 diseases¹¹², in 2015 there were 117,000 new tuberculosis cases and 12,000 deaths.¹¹³ Thailand is
725 listed as one of the 30 high burden countries for TB, TB and HIV, and MDR-TB. The complexity of
726 case finding, contact tracing and successful treatment is challenging in highly mobile populations
727 including migrants who have high TB prevalence.

728
729

730 **Conclusions and lessons**

731
732 Empirical evidence has demonstrated the significant progress and achievements of Thailand’s UCS.
733 Increased fiscal space from favourable economic growth (even with some interruptions), when
734 matched with political and financial commitments to health development, ensured favourable
735 resources for health infrastructure and health workforce development. The five-year planning
736 process ensured long term policy continuity despite short-lived governments. Full geographical
737 coverage of functioning primary health care within a district health system provided a solid
738 foundation for implementing UHC. Though over time, benefit packages have been harmonised to
739 reduce the extent of fragmentation and inequity across the three schemes, there remain large
740 differences in expenditure per capita and CSMBS payment reform faces serious resistance from
741 healthcare providers.

742

743 Although most countries target various population groups using different sources of finance, the last
744 phase of achieving UHC is usually to cover the uninsured population who are mostly engaged in the
745 informal sector. This needs an informed and bold political decision on the financing choice between
746 voluntary contributions and general taxation. A choice in favour of general taxation must be
747 supported by adequate fiscal space and political commitment to increase the fiscal space for health.
748 The choice in favour of a contributory scheme needs enforcement and administrative capacity to
749 collect premiums; with this approach it may take a few decades to reach UHC due to the large size of
750 the informal sector in developing countries. Thailand made the decision in 2002 to use general
751 taxation, despite its small GNI per capita of US\$ 1,990 and tax revenue at 13% of GDP. UHC was
752 financially feasible because closed-end payment from the start contained costs effectively.

753

754 In addition to the inheritance of a solid platform of health delivery, the system whereby the NHSO
755 contracts a PHC network has resulted in pro-poor utilization and benefit incidence. Closed-end
756 payment has enabled cost containment and improved efficiency; a comprehensive benefit package
757 and extension to high-cost but cost-effective interventions has deepened risk protection and
758 resulted in low prevalence of catastrophic spending and impoverishment due to health care costs.

759

760

Lessons learned from Thailand's UHC

1. Extensive geographical coverage of functioning PHC provides a solid platform for implementing UHC.
2. Rural recruitment, home town placement, financial and non-financial incentives can improve the availability of health workers in underserved areas and strengthen PHC.
3. The district health system is a strategic hub for translating UHC policy into pro-poor utilization and benefit incidence.
4. Tax-financed UCS proved the most feasible and progressive route to achieve UHC in the context of large informal sector.
5. A comprehensive benefit package, with minimal copayment at the point of service, prevents catastrophic health spending and protects households from being impoverished.
6. A well designed strategic purchasing organization and provider payment methods support efficiency, cost containment and equity outcomes.
7. Stringent health technology assessment for inclusion of new medicines and interventions into the benefit package enhances health systems efficiency.
8. 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 helps manage tensions and conflicts and safeguard the interests of UCS members.

761

762

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777

778 **Conflict of interest**

779 Declared none

780

781

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Box 1 Search strategy of literature used by this review

Literature was searched for systematically, framed under the main objectives of the paper: how health systems development has contributed to the implementation of UHC, what are the UHC outcomes, what have been the processes of expansion of financial risk protection to different population groups up to when the whole population was covered.

Using Google scholar search, we retrieved literature relate to health systems development with a specific focus on health delivery systems, PHC development, health workforce training and retention. We retrieved both published and grey literature in English and the Thai language. Literature related to socio-economic development, burden of disease, NCD challenges, alcohol and road safety, adult mortality and the contextual background were searched for and synthesized from World Heath Statistics, and global reports such as for TB, road safety, and NCDs. World Development Indicators were used for international comparisons.

Evidence related to outcomes of UHC and UCS was retrieved only from peer reviewed published literature, and were scrutinized for quality of analysis prior to use.

Box 2 The political economy of UCS: achievements amidst tensions and conflicts.

The benefit package initially excluded renal replacement therapy (RRT) because of its high cost and lack of capacity to deliver services equitably. The government decided to include RRT in the UCS package although it was relatively less cost effective, at four times the indicative benchmark of one GNI per capita per Quality Adjusted Life Year gain^{50,51}; the budget impact was high due to high and increasing prevalence. Inclusion was a political decision based on ethical and equity concerns: CSMBS and SHI members, having higher social status, job security and employment, already had full access to RRT. The cost of dialysis--US\$ 7,000 per patient year – caused UCS patients and their families to incur catastrophic expenditure.⁵² Most patients died from sub-optimum treatment when they could no longer sell assets or borrow further. Given the evidence, and backed by a coalition of nephrologists, civil society organizations, and an End Stage Renal Disease patient group, Minister of Health Mongkol Na Songkhla, as chair of NHSO Board, boldly submitted and gained Cabinet approval for full subsidy of RRT⁵³, based on a ‘PD (Peritoneal Dialysis)’ First policy (see Box 4).

The Private Hospital Association was very unhappy with the PD First policy, since NHSO centrally negotiated the prices of supplies whereas hospitals could generate profit from Haemodialysis (HD). Reformists argued that as HD will be provided for patients who fail PD, for example because of complications from peritonitis, there was a market for private HD centres. With strong political leadership, the Minister of Health made a firm decision for PD 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 DRG 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 also can boost pharmaceutical and diagnostic markets. Second, the hospitals’ gaming of NHSO by falsely reporting complications and co-morbidity to gain higher payment for inpatient care was checked by NHSO’s stringent audits which required over-claimed amounts to be return to NHSO. Third, despite significant cost savings and assured quality of medical products procured through NHSO monopsonistic bargaining (see Table 5), it was unpopular both with hospitals who might benefit from their own purchases and medical device and pharmaceutical companies who could gain higher margins from selling to hospitals rather than to 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 UCS, NHSO, civil society and active citizens need to collectively steer and balance different interests to safeguard the interest of UCS members. Most importantly, politicians must have ethical leadership and be free from conflict of interest. Evidence on positive outcomes of UCS such as enhanced financial risk protection, number of lives saved, reduced inequitable mortality gap is powerful and needs to be made known to politicians and legislative bodies.

Box 3 The Rural Doctors Society

The Rural Doctors Society, 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 PHC development⁶³; it coincided with the 1978 Alma Ata movement. Convened monthly for the last thirty years, it is an informal policy group, closely linked with civil society, where various policy agendas were generated ⁶⁴ 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. Four 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 which gives social recognition to rural doctors and promotes rural retention; it 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 IMF package related to the 1997 Economic Crisis, the MOPH earmarked 1.4 billion THB for medicines procurement. The Rural Doctors Society, the Rural Pharmacists Forum, NGOs, and the Drug Study Group and Consumer Protection Group formed a coalition of 30 organizations against corruption, and exposed a scandal associated with the medicines procurement. This resulted in a fifteen-year term of imprisonment for a Public Health Minister who found guilty in November 2004 of accepting bribes from drug companies. The corrupt senior officials were dismissed and their pension benefits suspended.⁶⁵

Box 4 Thailand's Peritoneal Dialysis (PD) First policy: outcomes and challenges

Thailand has seen the world's fastest increase in RRT treatment, with a 120% increase in the number of treated ESRD patients, from 100.3 per million population (PMP) in 2008 to 220.2 PMP in 2013.⁷³ The UCS has prolonged the lives of nearly 50,000 ESRD patients since 2008.⁷⁴ The main challenge is the increased incidence and poor control of diabetes and hypertension which are key determinants of ESRD. Between 2000 and 2012, Thailand has experienced rapid increases in diabetes-related ESRD and the highest increase in ESRD prevalence in the world, from 98 to 1,097 PMP. Kidney transplantation performs poorly in Thailand due to a donor shortage.

The PD First policy had explicit goals of achieving efficiency and equity, as patients can manage at home with no travelling costs, compared to three HD sessions a week at a provincial city which is not accessible for poor rural people. Also NHSO can better contain the costs of PD through national negotiation of solution costs, while HD is labour intensive and vulnerable to increasing labour costs.



Figure 1 Map of Thailand

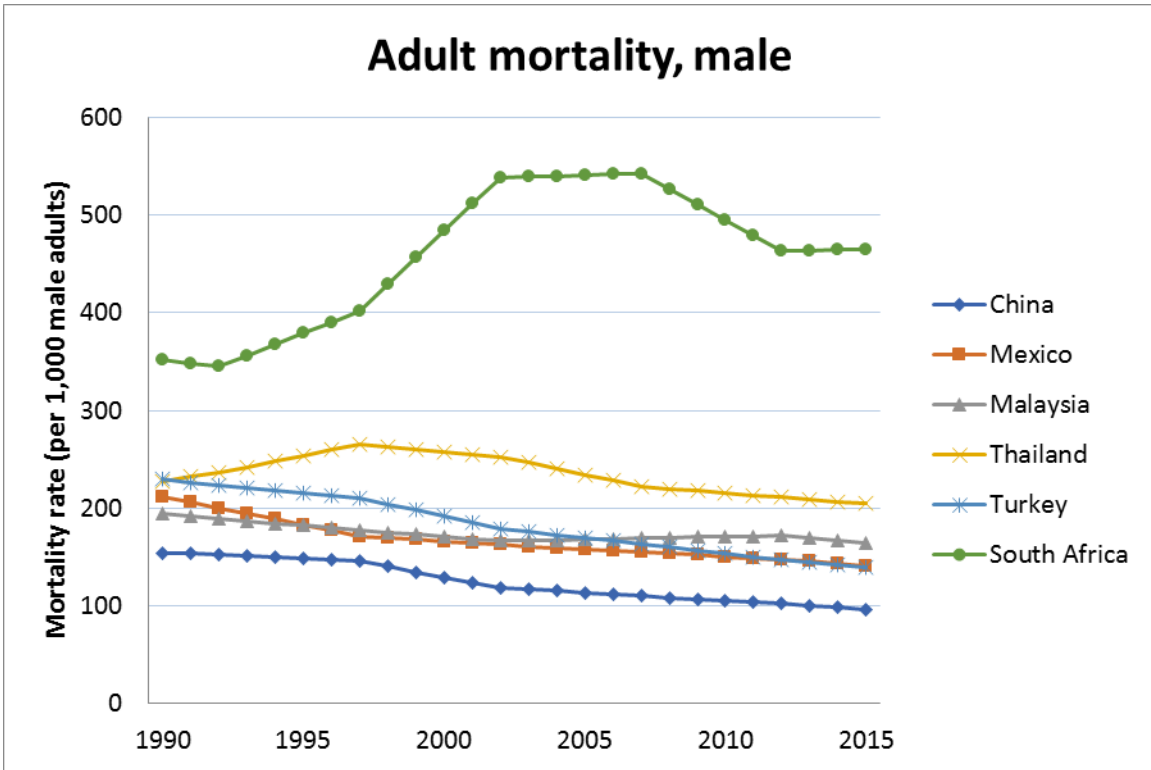


Figure 2a Adult mortality rate of 15-60 year-old males (per 1,000 males) for Thailand and five upper-middle income peers

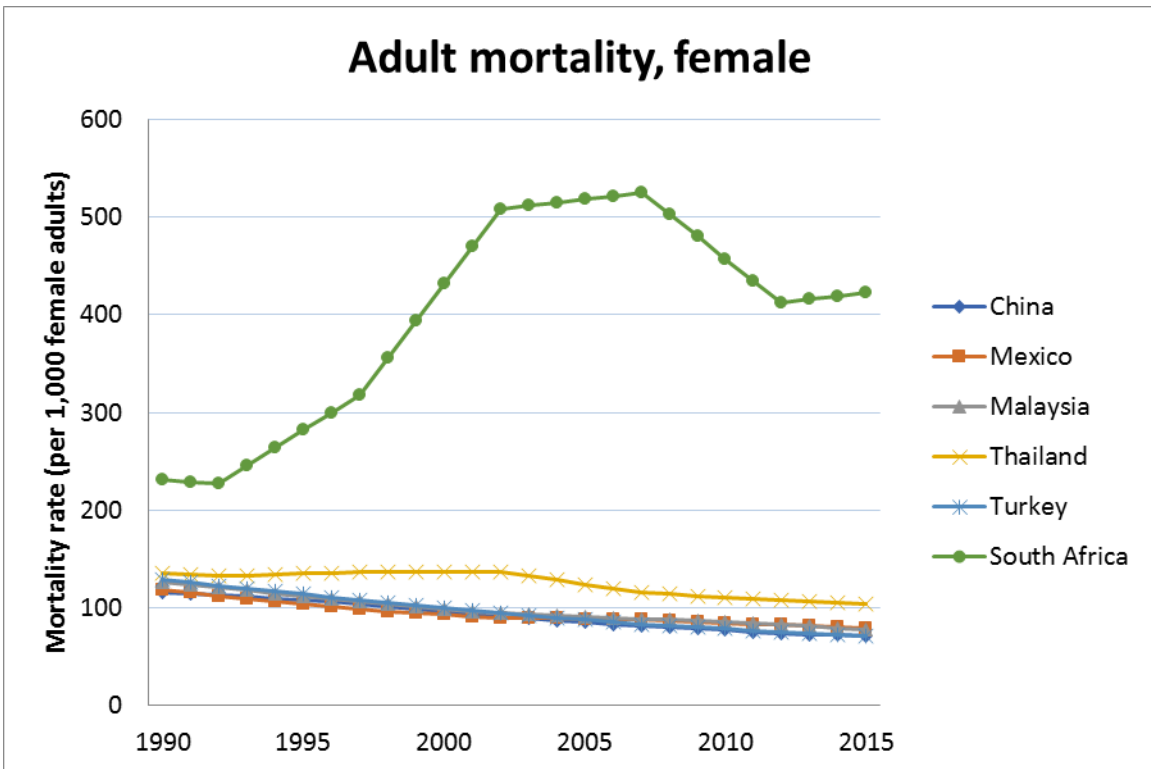


Figure 2b Adult mortality rate of 15-60 year-old females (per 1,000 females) for Thailand and five upper-middle income peers

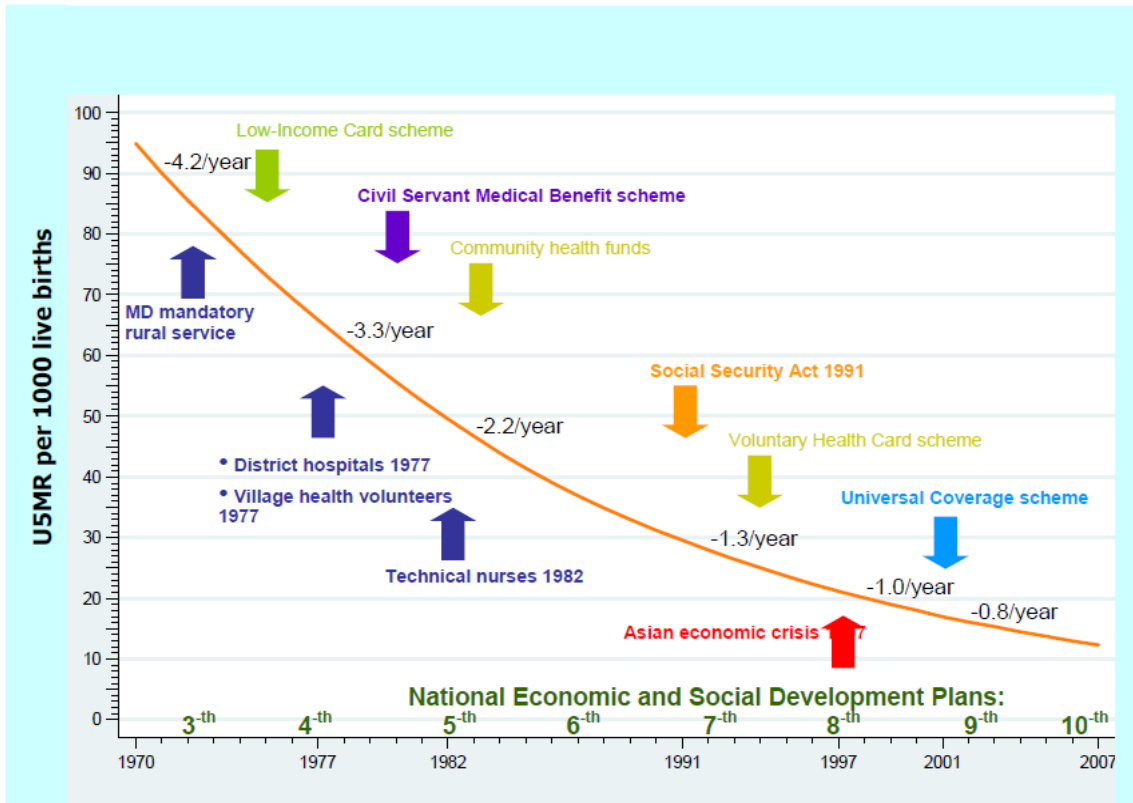


Figure 3 Two strands of health system development, a) delivery and health workforce, b) financial protection, 1970-2010, and trend in under-five mortality reduction
 Source: Reference 23

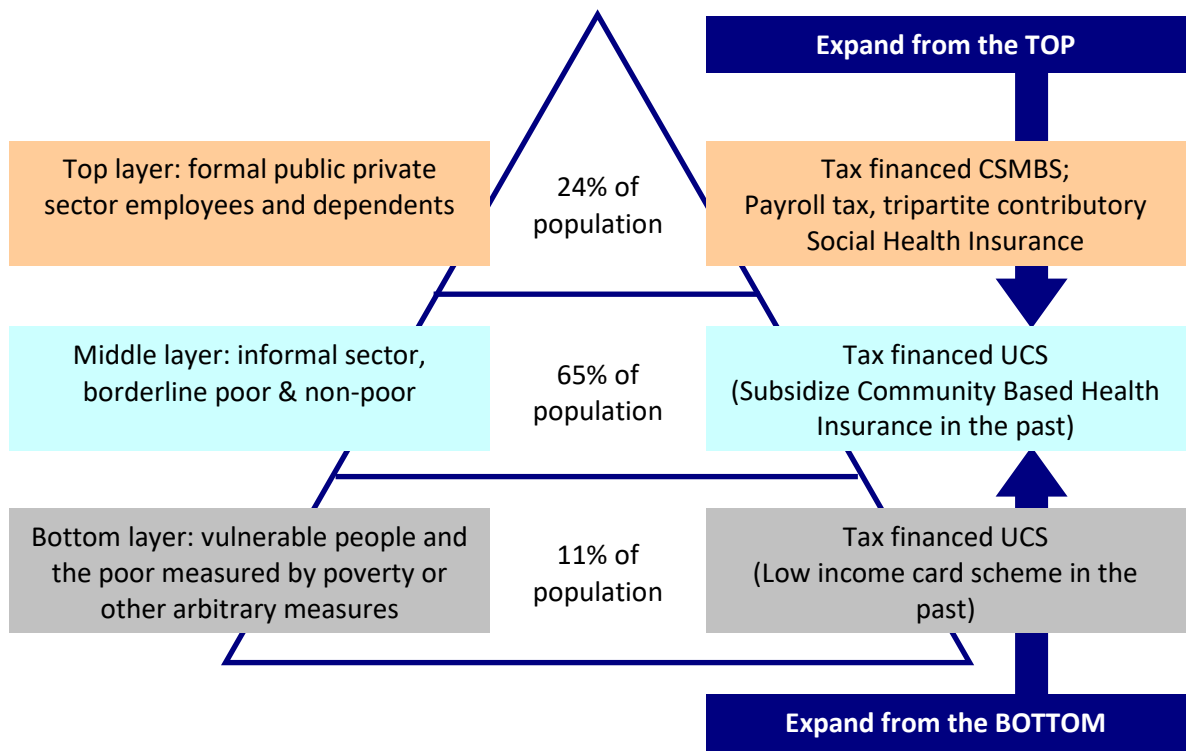


Figure 4 Trajectory for achieving UHC
 Source: Reference 46 with some modifications

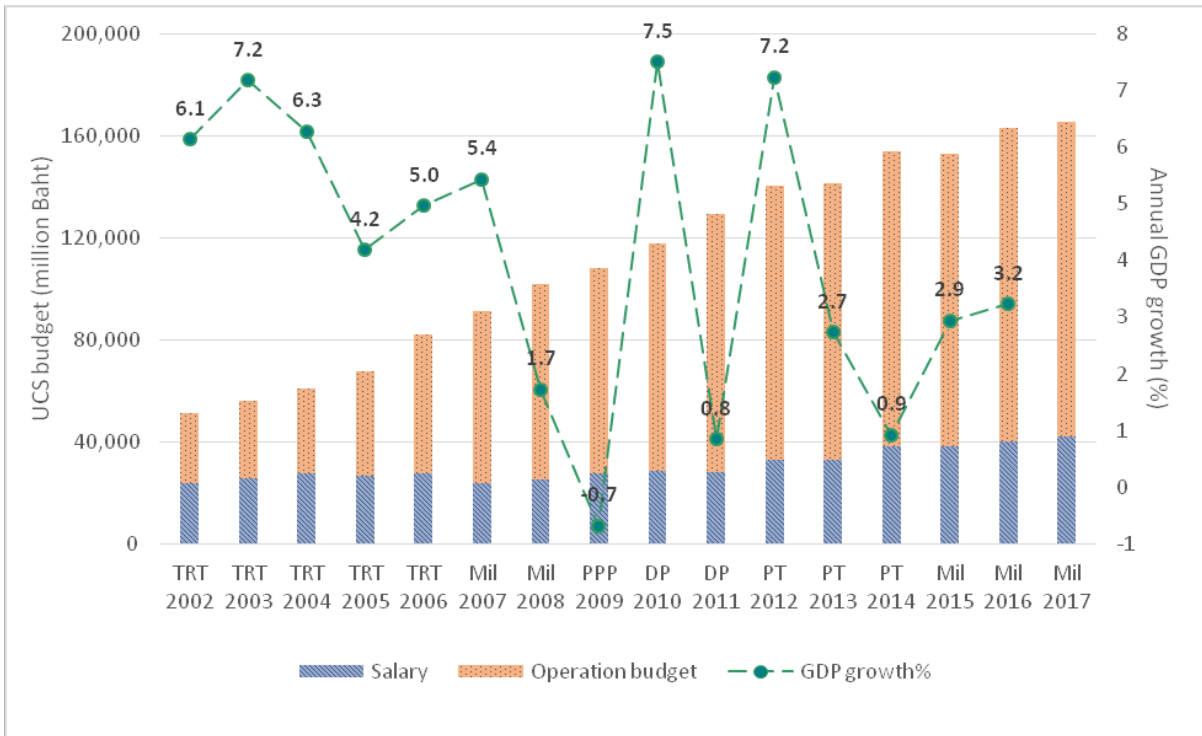


Figure 5 Continued political commitment to UCS: annual budget, across rival governments, 2002-2017

Note: TRT denotes Thai Rak Thai party, Mil denotes military government, PPP denotes People's Power party, DP denotes Democrat party and PT denotes Pheu Thai party

Table 1 At a glance, Thailand and five upper-middle income peers

	China	Malaysia	Mexico	South Africa	Thailand	Turkey
Economic and fiscal space						
• GDP per capita (current US\$), 2016	8,123	9,503	8,201	5,274	5,908	10,788
• GDP growth (annual %), 2016	6.7	4.2	2.3	0.3	3.2	2.9
• Revenue, excluding grants (% of GDP)	15.8 (2014)	18.9 (2015)	..	31.5 (2015)	20.7 (2015)	32.4 (2015)
• Tax revenue (% of GDP)	9.7 (2014)	14.3 (2015)	..	27.3 (2015)	16.3 (2015)	18.2 (2015)
Demography						
• Population, total (millions), 2016	1,379	31	128	56	69	80
• Population growth (annual %), 2016	0.5	1.5	1.3	1.6	0.3	1.6
• Poverty headcount ratio, \$1.90 a day (2011 PPP) (% of population)	1.9 (2013)	..	3 (2014)	..	0 (2013)	0.3 (2013)
• Urban population (% of total), 2016	57	75	80	65	52	74
Health expenditure						
• Health expenditure per capita (current US\$), 2014	420	456	677	570	228	568
• Health expenditure, total (% of GDP), 2014	5.5	4.2	6.3	8.8	4.1	5.4
• Health expenditure, public (% of total health expenditure), 2014	55.8	55.2	51.8	48.2	77.8	77.4
• Health expenditure, public (% of government expenditure), 2014	10.4	6.4	11.6	14.2	13.3	10.5
• Out-of-pocket health expenditure (% of total expenditure on health), 2014	32.0	35.3	44.0	6.5	11.9	17.8
Health						
• Life expectancy at birth, total (years), 2015	76	75	77	57	75	75
• Fertility rate, total (births per woman), 2015	1.6	1.9	2.2	2.5	1.5	2.1
• Mortality rate, under-5 (per 1,000 live births), 2015	11	7	13	41	12	14
• Births attended by skilled health staff (% of total)	100 (2013)	99 (2013)	96 (2012)	..	100 (2012)	97 (2013)
• Immunization, DPT (% of children ages 12-23 months), 2016	99	98	97	66	99	98
• Prevalence of HIV, total (% of population ages 15-49), 2015	..	0.4	0.2	19.2	1.1	..
• Improved water source (% of population with access), 2015	96	98	96	93	98	100
• Improved sanitation facilities (% of population with access), 2015	77	96	85	66	93	95
Education						
• Literacy rate, adult total (% of people ages 15 and above), 2015	96	95	95	95	94	96
• School enrolment, primary (% gross)	104.1 (2015)	101.8 (2015)	103.4 (2014)	99.7 (2014)	102.7 (2015)	102.5 (2015)
• Primary completion rate, total (% of relevant age group)	92 (2015)	101 (2015)	105 (2014)	..	93 (2015)	92 (2015)
• School enrolment, secondary (% gross)	94 (2015)	78 (2015)	91 (2014)	99 (2014)	129 (2015)	102 (2015)

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

Table 2 Thailand mortality and disease statistics, 1990-2015

Key indicators	1990	1995	2000	2005	2010	2015
Life expectancy at birth, (years)	67.2	74.8	69.2	76.2	70.5	77.3
Mortality rate, adult, male (per 1,000 male adults)	228	254	258	234	216	205
Mortality rate, adult, female (per 1,000 female adults)	136	135	137	124	111	104
Cause of death, by communicable diseases and maternal, prenatal and nutrition conditions (% of total)	..	..	26.1	24.3	20.7	18.3
Cause of death, by non-communicable diseases (% of total)	..	..	64.0	64.6	67.7	71.3
Cause of death, by injury (% of total)	..	..	9.9	11.0	11.6	10.4
Mortality caused by road traffic injury (per 100,000 people)	..	..	26.5	29.8	32.7	31.7
Prevalence of HIV, total (% of population ages 15-49)	0.5	1.9	1.7	1.4	1.3	1.1

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

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

	Civil Servant Medical Benefit Scheme	Social Health Insurance	Universal Coverage Scheme
Legislation	Royal Decree 1980	Social Security Act 1990	National Health Security Act 2002
Purchaser	Comptroller General Department, Ministry of Finance	Social Security Office, Ministry of Labour	National Health Security Office
Population coverage, million	4.4	10.6	48
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, 2016, Thai Baht	71.02 billion	37.7 billion	109.3 billion
Payment method	OP: Fee-for-service, IP: DRG with multiple cost bands	OP: Capitation, IP: DRG within global budget	OP and prevention and health promotion: Capitation, IP: DRG with global budget; fee schedule for specific high cost procedures

Source: Thai National Health Accounts 2013, International Health Policy Program, MOPH

Note: OP = Out-patient, IP = In-patient, PP = health promotion and prevention

Table 4 Chronology of UCS benefit package extension

Year	Benefit package
2002	<ul style="list-style-type: none"> • Outpatient and Inpatient services, high cost care, accident and emergency, personal prevention and health promotion services, rehabilitation services, pre-hospital care
2006	<ul style="list-style-type: none"> • Universal Anti Retroviral Therapy including provision of medicines, voluntary counselling and testing, monitoring CD4 count, viral load testing and condoms distribution
2008-2009	<ul style="list-style-type: none"> • Thai Traditional Medicine • Renal replacement therapy: Peritoneal Dialysis First policy, haemodialysis, kidney transplants inclusive of all related medicines • Voluntary methadone replacement therapy for drug addictions • Access to expensive medicines in the national list of essential medicines, e.g. linezolid for methicillin resistant staphylococcus aureus, Botulinum A toxin for idiopathic cervical dystonia • Seasonal Influenza vaccination in at-risk groups
2010	<ul style="list-style-type: none"> • Access to all orphan medicines and antidotes • Treatment of psychiatric patients as inpatient without length of stay limits.
2011	<ul style="list-style-type: none"> • Secondary prevention for diabetes and hypertension • Specific medicines for psychiatric patients
2012	<ul style="list-style-type: none"> • Liver transplantation for hepatic failure in patients <18 years • Heart transplantation
2013	<ul style="list-style-type: none"> • Extension of seasonal influenza vaccine to more target groups • Stem cell transplantation in leukaemia and lymphoma with specific indications
2014	<ul style="list-style-type: none"> • Special earmarked budget for hard-to-reach areas
2015 2016	<ul style="list-style-type: none"> • Detect and treat policy for HIV, with any level of CD4 count • Long term home and community care for frail elderly • Home and community based psychiatric care

Table 5 Cost savings from central negotiation by NHSO for medical supplies and medicines, various years, US \$

	Market price per unit US\$	Negotiated price per unit US\$	Units purchased	Cost difference US\$	Cost savings US\$
Medical supplies					
• Folding lens (2011-2012)	133	93	64,100	40	2,564,000
• Unfolding lens (2011-2012)	133	23	7,197	110	791,670
• Balloon stent (2009-2012)	667	23	26,655	334	8,902,770
• Coronary stent (2009-2012)	1,000	167	10,575	833	8,808,975
• Drug-coated stent (2009-2012)	2,833	567	33,794	2,266	76,577,204
• Drug eluting alloy stent (2012)	1,833	833	343	1,000	343,000
Medicines					
• ARV (2010-2012)	747	658	29,973	89	2,667,597
• High cost drug (2010-2012)	4,508	3,197	4,674	1,311	6,127,614
• Influenza vaccine (2010-2012)	7	5	643,319	2	1,286,638
• Erythropoietin (2009-2012)	22	8	1,634,239	14	22,879,346
• Continuous ambulatory peritoneal dialysis solution (2010-2012)	7	4	19,095,657	3	57,286,971
Total cost saving to UCS					188,235,785

Source: NHSO 2012