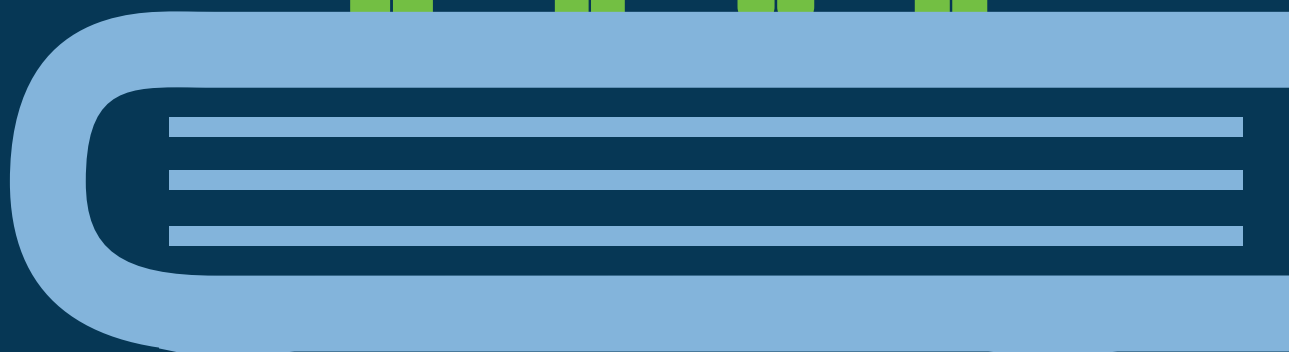




Progress report:

Strengthening Human Resources for Health through Transformative Education and Rural Retention in Thailand



Human Resources
for Health Research
and Development Office

International Health Policy Program
Ministry of Public Health, Thailand

April 2016



World Health
Organization
Country Office for Thailand

IHPP
Thailand

Progress report: Strengthening Human Resources for Health through Transformative Education and Rural Retention in Thailand

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The Technical Working Group

April 2016



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Abbreviations

ANHER	Asia Pacific Network on Health Professional Education Reform
APN	Advance practice nurse
BPS	Bureau of Policy and Strategy
CPIRD	Collaborative Project to Increase Production of Rural Doctor
HA	Hospital Accreditation
HPE	Health Professional Education
HPER	Health Professional Education Reform for the 21 st Century
HRDO	Human Resources for Health Development Office
HRH	Human Resources for Health
HSRI	Health System Research Institute
HWF	Health Workforce
IHPP	International Health Policy Program
LGOs	local government organizations
MOPH	Ministry of Public Health
NHCO	National Health Commission Office
NHWC	National Health Workforce Commission
NHPERC	National Health Professional Education Reform for 21 st Century Commission
ODOD	One District, One Doctor
ODON	One District, One Nurse
ONESQA	Office of National Education Standard and Quality Assessment
PBRI	Praboromrajchanok Institute for Health Workforce Development
SEAR	South East Asia Region
TNMC	Thailand Nursing and Midwifery Council
WHO	World Health Organization



Background

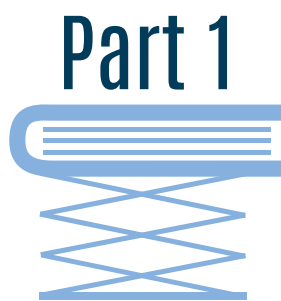
Shortage of health workers and unequal distribution between urban and rural (or remote) areas remain significant problems for countries around the world. The problems are particularly worse in low and middle income countries due to limited capacity and resources, inadequate leadership and political commitment, and a lack of inter-sectoral collaboration between relevant sectors to either train or employ health workers. Insufficient number of skilled and motivated health workers at the right place and the right time are a key barrier for health system effectiveness as this can prevent access to care, decrease quality of health services, and hamper improvement of health outcomes.

To address this global concern, in 2010, the World Health Organization (WHO) issued 16 recommendations to increase access to health workers in remote and rural areas through improved retention of the health workers [1]. Raising just number may not be enough, but having health workers with qualified competencies and motivation to work effectively in responding to population health needs as well as the changing world are highly crucial. Thus, in 2013, WHO also provided guiding principles on transformative education for health workforce development, starting from pre-service education to continuous professional development [2]. This would lead to an increase in production of desirable graduates who are both well-equipped to work in a dynamic health system and responsive to the needs of the population.

Recognizing that health workforce is one of the key determinants of a well-functioning health delivery system and a critical pathway to the success of the Universal Health Coverage, SEAR Member States approved the resolution on health workforce education and training (SEA/RC67/R6) in 2014. According to this resolution, there was a request for the Regional Director to 'report on progress in health workforce development to the Regional Committee (RC) every two years for the next ten years, starting in 2016'. In November 2014, a regional meeting was held in Bhutan under the theme 'the Decade for Strengthening Human Resources for Health in the WHO South-East Asia Region 2015-2024', which included a particular focus on two key areas: transformative education and rural retention. In the meeting, SEAR Member States drafted a two-year action plan and agreed to take steps forward in addressing the aforementioned two areas.

This report provides a progress on Strengthening Human Resources for Health (HRH) through transformative education and rural retention strategies in Thailand, which was conducted under a comprehensive literature review and brainstorming meetings among key stakeholders. Current situations of Thai HRH are updated. All relevant platforms and strategies used for HRH development are described and discussed for potential improvement. Lessons learned and recommendations for further steps in moving forward on transformative education, rural retention, and other related HRH strategies are also provided.





Part 1: Health workforce trends and situation

1. Health workforce trends and distribution

Health workforce is a critical component of a well-functional health system. Meanwhile, analysis of the health workforce situation requires consideration of its trends and distribution. For Thailand, it can be observed that there has been a consistent increase in the number of health professionals in four categories (Table 1).

In addition, distribution of health workforce by age, gender, geographical area, urban vs rural area and public vs private sector are shown in Tables 2-6. The trends of numbers and ratios of health professionals are provided in 2006, 2011, 2014 and 2015 or nearest years subject to data availability.



Table 1 Number and density of health professionals by category in 2006-2015

Sub- category	2006		2009		2010		2011		2014		2015	
	Number	Density per 1,000	Number	Density per 1,000	Number	Density per 1,000	Number	Density per 1,000	Number	Density per 1,000	Number	Density per 1,000
Medical practitioners	34,820 ¹	0.55	39,204 ¹	0.62	41,015 ¹	0.64	42,890 ¹	0.67	49,036 ¹	0.75	50,573 ²	0.75
Dentists ³	8,809	0.14	9,926	0.16	10,515	0.16	11,070	0.17	12,600	0.19	N/A	N/A
Dental nurses ³	3,697	0.06	4,313	0.07	4,664	0.07	4,670	0.07	6,613	0.10	N/A	N/A
Dental technicians ³	96	0.00	98	0.00	98	0.00	99	0.00	92	0.00	N/A	N/A
Pharmacists ⁴	21,238	0.34	25,157	0.40	26,832	0.42	28,488	0.44	33,241	0.51	34,777	0.52
Nursing-Midwifery Professionals ⁵	101,797	1.62	109,797	1.73	119,966	1.88	128,878	2.01	137,080	2.10	146,534	2.18
Ratio of physician to nurses and midwives	1:2.92		1:2.80		1:2.92		1:3.00		1:2.80		1:2.90	

Source:

1. Suphanchaimat R, Wisaijohn T, Thammathacharee N and Tangcharoensatien V. Projecting Thailand physician supplies between 2012 and 2030: application of cohort approaches. Human Resources for Health 2013; 11:1-11.
2. The Medical Council of Thailand 2015
3. Dental Health Personnel Report, Bureau of Dental Health, Department of Health, Ministry of Public Health
4. The Pharmacy Council (The total number of pharmacists is not adjusted for deaths, non-professional employment and retirement.)
5. Thailand Nursing and Midwifery Council Report

Note:

- 1) The total number of physicians includes general medical practitioners and medical specialists.
- 2) The total numbers of physicians and dentists refer to those currently registered with the councils, including retired and/or inactive personnel, while the total numbers of pharmacists and nurses are relatively accurate as a result of the requirement for re-registration (every five years).
- 3) The total numbers of physicians in 2006, 2009, 2010, 2011 and 2015 are based on the aggregated data reported by the Medical Council of Thailand, while the total number of physicians in 2014 is statistically estimated by the authors.
- 4) Mid-year population of each year is obtained from the National statistics Office of Thailand, except in 2015, in which data is obtained from the National Economic and Social Development Board, Office of the Prime Minister.
- 5) Density of health workforce per 1,000 populations of each professional category is calculated by using the total number of the indicated mid-year population derived from the National Statistics Office of Thailand.



In 2006, the total number of medical practitioners was 34,820 doctors. The ratio of doctors to 1,000 populations was 0.55. The number of doctors did not significantly changed between 2009 and 2011, registering at 39,204 (0.62 per 1,000 populations) and 42,890 (0.67 per 1,000 populations) doctors, respectively. The ratios of physicians to nurses in 2009 and 2011 were 1:2.8 and 1:3.0, respectively. According to the report of the Medical Council of Thailand 2015, the ratio of physicians to nurses was 1:2.9 [3]. It should be noted that professional nurses in Thailand are trained to be nurses-midwives, thus, only one professional category 'nursing-midwifery professionals' is included.

Data from Dental Health Personnel Report, Bureau of Dental Health, Department of Health, Ministry of Public Health indicated that the total numbers of dentists were 8,809, 9,926, 10,515, 11,070 and 12,600 dentists in 2006, 2009, 2010, 2011 and 2014, respectively [4, 5]. An increase in the ratio of dentists to populations can be observed in Table 1. It should be noted that accurate and reliable statistics are not available on medical specialists and that Thailand does not produce medical (physician's) assistants.

During 2009-2011, the proportion of dental nurses changed only slightly though a significant increase can be observed in 2014. At the same time, dental technicians also slightly increased. Similarly, the overall situation of pharmacy practitioners during the past periods, represented by the ratio of pharmacists to populations, is depicted by a steady improvement in trend. Nonetheless, according to the Pharmacy Council, it should be noted that data on the total number of pharmacists is not adjusted for deaths, non-professional employment and retirement.

Moreover, there was an increasing trend in the number and density of professional nurses in Thailand. In this connection, Thailand Nursing and Midwifery Council reported that the total number of nurses was 101,797 nurses in 2006 compared to 146,534 nurses in 2015 [6, 7]. Similarly, the ratio of nurses to 1,000 populations increased from 1.62 in 2006 to 2.18 in 2015.



Table 2. Age distribution by health workforce category comparing 2010 and 2015

Sub-Category	Retirement age (Please specify)	2010						2015								
		Total Number	≤ 30 Yrs Number	31-40 Yrs Number	41-50 Yrs Number	≥ 51 Yrs Number	%	Total Number	≤ 30 Yrs Number	31-40 Yrs Number	41-50 Yrs Number	≥ 51 Yrs Number	%			
Medical practitioners	60	37,396 ¹	9,865	10,553	7,386	9,484	25.36	47,809 ²	12,800	14,484	8,145	17.04	12,271	25.67	109	0.23
Dentists	60	11,847 ¹	2,974	3,743	2,534	2,596	21.91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-
Pharmacists	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-
Nursing-Midwifery Professionals	60	N/A	N/A	N/A	N/A	N/A	N/A	39,324	26.84	46,834	38,137	26.03	22,238	15.18	-	-

Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand 2010, Page 18
2. The Medical Council of Thailand 2015
3. Thailand Nursing and Midwifery Council 2015

Note:

- 1) The total number of 47,809 physicians in 2015 includes connectable physicians only. There is no information about connectable physicians in previous years.



In 2010, there were 37,396 general medical practitioners [8] whereby 26.38% were under 30 years of age, 28.22% were between 31-40 years of age (the highest among four groups, equivalent to 10,553 practitioners), 19.75% were between 41-50 years of age and 25.36% were over 51 years of age. A similar distribution can be found in 2015 with the lowest percentage found in doctors in the 41-50 years age group. It should be noted that, in 2015, some physicians could not be connected, resulting in their ages being unidentified.

The percentages of dentists in 2010 were reported in professional councils 2010 [8] whereby the total number of dentists recorded at 11,847. Age distribution is reported in Table 2 with a more or less similar pattern to that of medical doctors (25.10%, 31.59%, 21.39% and 21.91% across the four groups). There is no update available on age distribution of dentists in 2015. Meanwhile, data on age distribution among other dental personnel and pharmacists is unavailable.

For nursing and midwifery professionals, data on age group distribution is unavailable in 2010. Nonetheless, in 2015, there was a total of 146,534 nurses and midwives. Among those, nearly one third was between 31-40 years of age, representing the highest proportion of 31.96 %, followed by 26.84%, 26.03% and 15.18% in the ≤ 30 years, 41-50 years and ≥ 51 years age groups, respectively [7]. This reflects a general aging trend in nursing professionals as the proportion of young nurses (≤ 30 years) was less than 30% compared to older age groups.

Table 3 Gender distribution by health workforce category in 2010 and 2015

Sub-Category	2010					2015				
	Total Number	Male		Female		Total Number	Male		Female	
		Number	%	Number	%		Number	%	Number	%
Medical practitioners	37,396 ¹	22,243	59.48	15,153	40.52	50,573 ²	28,436	56.23	22,137	43.77
Dentists	11,847 ¹	4,227	35.70	7,620	64.30	N/A	N/A	N/A	N/A	N/A
Pharmacists	28,311 ¹	9,344	33.00	18,967	67.00	N/A	N/A	N/A	N/A	N/A
Nursing-Midwifery Professionals	N/A	N/A	N/A	N/A	N/A	146,534 ³	6,990	4.77	139,544	95.23

Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand 2010, Page 18
2. The Medical Council of Thailand 2015
3. Thailand Nursing and Midwifery Council 2010 and 2015

From Table 3, it can be seen that gender distribution among medical practitioners slightly changed to become less male dominant with the proportion of male practitioners declining from 59.48% to 56.23% while that of female practitioners increased from 40.52% to 43.77% in the five-year period [3].

Data is unavailable for gender trend among professional nurses in 2010. In 2015, however, of the total 146 thousand nurses, 95.23% were female [7]. Meanwhile, in 2010, dentistry and pharmacy were female dominant professional categories, with 64.30% female dentists and 67.00% female pharmacists, respectively [8]. Data is unavailable for gender trend among these two professional categories in 2015. From the analysis, it can be concluded that three out of four major professional categories are female dominant, while medical practitioner is becoming less male dominant, with a decline in the proportion of male doctors as earlier mentioned.



Table 4.1 Region/State/Province distribution by health workforce category in 2010

Region/State/ Province	2010			2010			2010			2010						
	Physicians ¹	Nurses and Midwives ²	Dentists ³	Pharmacists	Number	%	Density of physicians per 1,000 populations in region/state/ province	Number	%	Density of nurses and midwives per 1,000 populations in region/state/ province	Number	%	Density of dentists per 1,000 populations in region/state/ province	Number	%	Density of pharmacists per 1,000 populations in region/state/ province
Bangkok	9,082	34.71	1.59	19,654	16.38	3.45	5,198	49.43	0.91	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Central	5,832	22.29	0.37	30,758	25.64	1.93	1,857	17.66	0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
North	3,848	14.71	0.33	22,354	18.63	1.90	1,224	11.64	0.10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
South	2,809	10.7	0.32	16,781	13.99	1.89	918	8.73	0.10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
North-East	4,591	17.74	0.21	30,418	25.36	1.41	1,318	12.53	0.06	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total number	26,162	100	0.41	119,966	100	1.88	10,515	100	0.16							

Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand 2010, Page 19
2. Thailand Nursing and Midwifery Council 2010
3. Dental Health Personnel Report 2010, Bureau of Dental Health, Department of Health, Ministry of Public Health

Note:

- 1) Density of health workforce per 1,000 populations of each professional category is calculated using the total number of the indicated mid-year population by region derived from the National Statistics Office of Thailand.



Table 4.2 Region/State/Province distribution by health workforce category in 2015

Region/State/ Province	2015											
	Physicians			Nurses and Midwives			Dentists 2014 ¹			Pharmacists		
	Number	%	Density of physicians per 1,000 populations in region/state/province	Number	%	Density of nurses and midwives per 1,000 populations in region/state/province	Number	%	Density of dentists per 1,000 populations in region/state/province	Number	%	Density of pharmacists per 1,000 populations in region/state/province
Bangkok	N/A	N/A	N/A	N/A	N/A	N/A	5,533	43.91	0.97	N/A	N/A	N/A
Central	N/A	N/A	N/A	N/A	N/A	N/A	2,339	18.56	0.14	N/A	N/A	N/A
North	N/A	N/A	N/A	N/A	N/A	N/A	1,695	13.45	0.14	N/A	N/A	N/A
South	N/A	N/A	N/A	N/A	N/A	N/A	1,185	9.40	0.13	N/A	N/A	N/A
North-East	N/A	N/A	N/A	N/A	N/A	N/A	1,848	14.66	0.08	N/A	N/A	N/A
Total number	N/A	N/A	N/A				12,600	100	0.19			

Source:

1. Dental Health Personnel Report 2014, Bureau of Dental Health, Department of Health, Ministry of Public Health

Note:

1) Density of health workforce per 1,000 populations of each professional category is calculated using the total number of the indicated mid-year population by region derived from the National Statistical Office of Thailand



Due to lack of a comprehensive health workforce information system, there is limited information on geographical distribution of health professionals. In particular, there is no information on pharmacists while there is only one observation for doctors and nurses, and two observations for dentists.

From Tables 4.1 and 4.2, while the percentage distribution of health professionals convey important information, the professional to population densities across geographical regions offer more critical insight, reflecting inequity of distribution, hence, gaps in access to health professionals. Geographical distribution and population density of the three professionals are in favor of Bangkok, as it hosts the largest number of tertiary and university hospitals. On the other hand, the Northeast region lags behind for all three cadres. Between 2010 and 2014, the two thousand additional dentists into the pool had little impacts on the inequitable distribution across geographical regions. It should be noted that the inequitable geographical distribution of health workforce is influenced by distribution of the number of hospitals and their sizes, i.e. the higher the number of large hospitals, the more influence on the equitability of health professional distribution.

Box A: Density of health professionals to 1,000 populations - latest available data

Region	Physicians 2010	Professional nurses 2010	Dentists 2010	Dentists 2014
Bangkok	1.59	3.45	0.91	0.97
Central	0.37	1.93	0.12	0.14
North	0.33	1.90	0.10	0.14
South	0.32	1.89	0.10	0.13
North-East	0.21	1.41	0.06	0.08

Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand, 2010, Page 19
2. Thailand Nursing and Midwifery Council 2010
3. Dental Health Personnel Reports, 2010 and 2014, Bureau of Dental Health, Department of Health, Ministry of Public Health



Table 5 Urban/Rural distribution by health workforce category in 2015 or the most recent year

Sub-Category	2010				2015			
	Total Number	Urban %	Density of HW per 1,000 populations in urban	Rural %	Total Number	Urban %	Density of HW per 1,000 populations in urban	Rural %
Medical practitioners	26,244 ¹	82.07	0.99	17.93	N/A	N/A	N/A	N/A
Dentists	9,926 ¹	80.51	0.37	19.49	N/A	N/A	N/A	N/A
Pharmacists	8,700 ¹	62.08	0.25	37.92	N/A	N/A	N/A	N/A
Nursing-Midwifery Professionals	N/A	N/A	N/A	N/A	146,534 ²	94.20	6.19	5.80

Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand, 2010, Page 20
2. Thailand Nursing and Midwifery Council 2015

Note:

- By definition
- **Urban health workforce** = All health workers working in cities, municipalities, and district centres/head offices (including those health workers in other sectors outside the Ministry of Public Health).
- **Rural health workforce** = All health workers working outside cities, municipalities, and district centres/head offices (including those health workers in other sectors outside the Ministry of Public Health).
- Density of health workforce per 1,000 populations of each professional in 2010 is calculated by using the total number of urban and rural populations. In 2015, due to the unavailability of data on urban and rural population classifications, the total number of urban and rural population in 2014 is used instead.
- The number of population divided by urban and rural areas in 2010 and 2014 is based on data from the National statistical Office of Thailand



We note data limitation on urban/ rural distribution of the four cadres of health professionals. In 2010, the percentage distribution of pharmacists in rural area was better than that of doctors and dentists, registering at almost 40%. Compared to other professionals, the population density of nurses in rural area was the highest in 2015, with 0.20 nurses per 1,000 populations [8]. The population density of dentists in rural area was the lowest at 0.05 dentists per 1,000 populations in 2010 [8]. However, data is unavailable for continual monitoring of the trends in the equitability of urban/rural distribution.

Box B: Percentage distribution and density of health professionals by urban and rural areas

Sub-category	2010				2015			
	% urban	Density urban	% rural	Density rural	% urban	Density urban	% rural	Density rural
Medical practitioners	82.07	0.99	17.93	0.11	-	-	-	-
Dentists	80.51	0.37	19.49	0.05	-	-	-	-
Pharmacists	62.08	0.25	37.92	0.08	-	-	-	-
Nursing-Midwifery Professionals	-	-	-	-	94.20	6.19	5.80	0.20

Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand, 2010, Page 20
2. Thailand Nursing and Midwifery Council 2015

It should be noted that district hospitals are located in municipality areas, hence they are categorized as urban areas, despite the fact that district hospitals are the major providers of health services to the rural population. Therefore the urban/ rural dichotomy is not valid in the Thai health systems context.



Table 6 Distribution of health workforce category by public and private sectors in 2010 and 2015

Sub-Category	2010						2014 / 2015 (see sub category for data year)					
	Total Number	Public sector		Private sector for profit		Private sector non-profit	Total Number	Public sector		Private sector for profit		Private sector non-profit
		Number	%	Number	%			Number	%	Number	%	
Medical practitioners 2010 ¹	26,244	21,550	82.11	4,694	17.89	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dentists 2010/2014 ²	10,515	4,927	46.86	5,588	53.14	N/A	N/A	6,384	50.67	6,216	49.33	N/A
Dental nurses 2010/2014 ²	4,664	4,664	100.0	0	0.0	N/A	N/A	6,613	100.0	0	0.0	N/A
Dental technicians 2010/2014 ²	98	81	82.65	17	17.35	N/A	N/A	72	78.26	20	21.74	N/A
Pharmacists 2010 ¹	8,700	7,173	82.45	1,527	17.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nursing-Midwifery Professionals ³	119,966	105,930	88.30	14,036	11.70	N/A	N/A	117,594	80.25	28,940	19.75	N/A

Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand 2010, page 21
2. Dental Health Personnel Reports, 2010 and 2014, Bureau of Dental Health, Department of Health, Ministry of Public Health
3. Thailand Nursing and Midwifery Council 2012 and 2015



Box C: Distribution of health professionals by public and private for profit sectors in 2010 and 2015

	2010			2015		
	Total number	Pub %	Priv. for profit %	Total number	Pub %	Priv. for profit %
Medical practitioners 2010 ¹	26,244	82.11	17.89	N/A	N/A	N/A
Dentists 2010/2014 ²	10,515	46.86	53.14	12,600	50.67	49.33
Dental nurses 2010/2014 ²	4,664	100.0	0.0	6,613	100.0	0.0
Dental technicians 2010/2014 ²	98	82.65	17.35	92	78.26	21.74
Pharmacists 2010 ¹	8,700	82.45	17.55	N/A	N/A	N/A
Nursing-Midwifery Professionals 2010/2015 ³	119,966	88.30	11.70	146,534	80.25	19.75

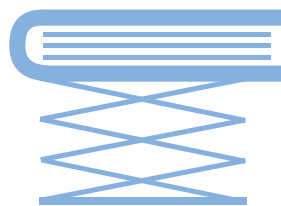
Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand, 2010, page 21
2. Dental Health Personnel Reports, 2010 and 2014, Bureau of Dental Health, Department of Health, Ministry of Public Health
3. Thailand Nursing and Midwifery Council 2015

Based on available information in 2010 and 2015, the proportion of all categories of health professionals, physicians, pharmacists, nurses and midwives, dental technicians and dental nurses working in the public sector was higher than the private for profit-sector. Dentist was the only professional category in which 53.14% worked in the private for profit sector in 2010 though the proportion reduced to 49.33% in 2015. Less than 20% of doctors, pharmacists and dental technicians served in the private for profit sector. While less than 12% of nurses worked in the private for profit sector, dental nurses solely served in the public sector.



Part 2



Part 2: Health workforce overall governance and regulation

2.1 HRH governance and leadership

The Thai health system is publicly dominated whereby approximately 70% of health workforce is working for the Ministry of Public Health (MOPH) health facilities. Therefore, MOPH is mandated as the national health authority to oversee HRH policy and implementation. In addition to MOPH, there are two key HRH governance and leadership bodies for the development of the National HRH strategic plan in Thailand.

1) The National HRH Commission

In 2007, the National Health Assembly adopted the resolution: the National Strategy on Human Resources for Health Development. Consequently, the National HRH commission was established with Dr. Mongkol Na Songkhla serving as Chairperson as appointed by the Cabinet. The joint secretariat team includes representatives from the Health System Research Institute (HSRI), the Bureau of Policy and Strategy (BPS), and the Health Resources for Health Research and Development (HRDO) of the International Health Policy Program (IHPP), Ministry of Public Health. The committee members comprise key stakeholders from public and private health sectors and non-health sectors, professional councils (regulators), and the civil society.



A ten-year National HRH Strategic Plan (2007-2016) was developed under support of this commission, and was approved by the cabinet. The strategic plan aims at achieving sufficient number and quality of HRH, equitable distribution of health workforce, and improved performance as well as well-being of health workforce. A subcommittee of the National HRH Commission was later tasked to development the second phase of the National HRH Strategic Plan (2017-2021). The process was convened by the National Health Commission Office (NHCO).

The National HRH commission plays an integral role in addressing the challenge in increasing rural distribution of health workforce by supporting an increase in production of medical doctors in Thailand under the Collaborative Project to Increase Rural Doctor (CPIRD) and the One District, One Doctor (ODOD) project. These two projects apply rural recruitment and hometown placement strategies, which correspond to the WHO's recommendations, as effective strategies for rural retention [1]. These two programs, CPIRD and ODOD, have not only been successful in raising the number of rural doctors, but also in improving the equitability in distribution of doctors.

2) The Health Professional Education Reform for the 21st Century (HPER)

In 2012, the 5th National Health Assembly passed another resolution in relation to HRH for the establishment of the Strategic Movement on the Development of Health Workforce Education for the 21st Century (2014-2018). Then, another HRH commission was established to implement education reform agenda entitled Professional Education Reform for the 21st Century (HPER). Prof. Vicharn Panich acts as the Chairperson of the commission while the secretariat team includes Prof. Wanicha Chuenkongkaew, Siriraj Hospital, and International Health Policy Program (IHPP) of the Ministry of Public Health. The committee members consist of professional consortium and councils, health allied network, MOPH, and other related sectors, including both public and private institutes. The movements of this commission are in line with the WHO's guidelines on transforming and scaling up health professionals' education and training[2], thereby helping to strengthen HRH in Thailand through transformative education activities.

In terms of progress and outcome of the National HRH Strategic Plan, an evaluation of the first 5-year period of the National strategic plan (2007-2016) was conducted. The results of the evaluation revealed two limitations: 1) there were no concrete priorities of HRH issues provided in the plan; and 2) there was a lack of mutual ownership of all concerned stakeholders. Overall, there was still a gap between national mechanisms and local mechanisms which makes it difficult for the commission to implement and monitor progress of recommended strategies [9]. Regarding HPER, given that it was established quite recently, no evaluation of its progress has been conducted at present, though active annual activities have been convened across health professional councils and consortium to conduct knowledge synthesis and strengthen collaboration on health professional education reforms.

In brief, while there is a need for some improvements of the National HRH Commission and the assessment of both platforms in order to monitor their progress, there is a positive sign for Thailand in terms of HRH strengthening. The two commissions have been working more closely for HRH development, thereby minimizing HRH problems and gaps in the country more effectively.



2.2 Health professional councils or other equivalent regulatory bodies

In Thailand, there are eight professional councils that oversee its related health workforce who are their members, namely the Medical council, the Dental council, the Pharmacy council, the Nursing and Midwifery council, the Physical Therapy council, the Medical Technology council, the Veterinary council and the Council of Community-Public Health. The main objectives of these health professional councils are more or less similar, covering the followings mandates [10-17]:

1. To ensure that practices are conducted professionally in compliance with the professional ethics
 2. To promote studies, research, and the professional practice
 3. To promote unity and maintain the dignity of the members
 4. To assist, advise, disseminate and educate the public and other organizations
 5. To give advice or recommendations to the government on the issue of national health problems
 6. To act as representative of each profession in Thailand
- Authorities and responsibilities
 1. Register and issue licenses to applicants.
 2. Suspend or revoke the licenses.
 3. Approve the degree, certificate or the professional diploma of various institutions.
 4. Approve the various curricula of institutes.
 5. Approve the academic standard of the training program.
 6. Approve the degree, certificate equivalent to the degree.
 7. Issue a certificate of specialization or other forms of certification.

- Registration & professional Licensing

The registration and licensing of most professionals are mandatory, except for community-public health, which is still voluntary because the council is still under the process of establishment. At present, every professional needs to pass the licensing examination. In most cases, they are life-long licenses, except the following three professional categories: veterinary, nursing and midwifery, and pharmacy. These three professions require veterinarians, nurses, and pharmacists to renew their licenses every five years. However, in order to be re-licensed, veterinarians and nurses are required to attend a short-course for a certain number of credits on continued professional development courses, or pass an examination convened by the council to fulfill their minimal skills and knowledge requirements. However, currently, there is no requirement on credit collection for the re-licensing of pharmacists. In this connection, roles, governance, and regulations of the Nursing and Midwifery Council are shown as an example in Box D below.

- Governance and funding structure

In general, the committee of each professional council consists of two types of members. The first group is members elected by professional members of each council while the second group is members appointed by the government. To operate activities, each council may receive funding from different sources as follows.

1. Budget subsidized by the government.
2. Registration fee, subscription and other types of fees from members.
3. Return on investment and other activities generated by the council
4. Properties donated by other organizations.



Box D: Roles, governance, and regulations of Thailand Nursing and Midwifery Council [11]

Thailand Nursing and Midwifery Council was established under the Royal Decree of Professional Nursing and Midwifery Act B.E.2528, dated September 5, 1985. The effort to establish the Council was initiated by the Nurses' Association of Thailand. The Act was approved and published in the Royal Gazette, Special Issue, Vol.102, 1985. The revised Act was approved by Parliament and published in the Royal Gazette, dated December 23, 1997, and became known as "the Professional Nursing and Midwifery Act B.E.2540." There are two types of membership; honorary membership (invitation only) and individual membership (meeting a criteria of qualifications).

Governance

The Committee shall select two of its members to be the First and Second Vice-President respectively. The President of the Nursing and Midwifery Council, with the approval of the Committee, shall select an ordinary member whose qualifications meet the requirements to serve as Secretary General. Deputy Secretary-General, Public Relations Officer and Treasurer shall be selected from the committee members.

Nursing and Midwifery Council Committee

The Nursing and Midwifery Council Committee consisted of 32 members. One-half of the members are appointed by the government and the other half are elected from members. The appointed and elected committee members shall serve a term of four years and may be re-elected or re-appointed for not more than two consecutive terms.

The appointed Council Committee comprises representatives from several related sectors. The members include five representatives from the Ministry of Public health, three representatives from the Ministry of Defense, one representative from the Ministry of Interior, four representatives from the Ministry of Education, one representative from Bangkok Metropolitan, one representative from the Thai Red Cross Society, the President of Thai Nurses Association and 16 members who are elected by ordinary members of the Nursing and Midwifery Council. The Secretary-General of the Nursing and Midwifery Council shall serve as member and Secretary of this Committee.

The Committee's decisions on the following matters shall be approved by the Special President of the Council before they are implemented: (1) issuance of regulations; (2) the Council's budget; (3) termination of membership; (4) final decision making on matters such as putting the offender on probation, suspending the license for a certain period not exceeding two years and revoking of the license.

Funding Structure

The Nursing and Midwifery Council may receive, take and disburse the following kinds of income and funds:

1. Registration fees and membership fees from ordinary members or any other kinds of fees.
2. Benefits derived from other activities of the Council according to the objectives.
3. Cash and other assets donated to the Council.
4. Interest accrued to cash or other assets in (1), (2), and (3) above.

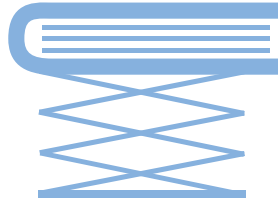
Registration & Licensing

Two levels of licenses are available for the licensing examination. First class licenses are issued to professional nurses who graduate from a 4-year program while second class licenses are issued to technical nurses who graduate from a 2-year program. However, the technical nurse curriculum was terminated in 2000, resulting in the second class licenses being discontinued though there might be some technical nurses who still practise and do not continue studying to become a registered nurse.

All graduate nurse-midwives or nurses from accredited nursing schools who pass the national licensing examination will be registered and given a license to practise from the Nursing and Midwifery Council. The Nursing and Midwifery Council requires renewal of the license every five years subject to completion of 50 unit-hours of continuing education. All licenses will be signed by the Secretary-General and President of the Council.



Part 3

A blue icon featuring a stylized book with horizontal lines representing pages, resting on a coiled spring mechanism.

Part 3: Health workforce education and training policy, regulation and trends

3.1 Pre-service training

3.1.1 Government investment in health workforce education systems for pre-service training

Basically, the government provides budget subsidies for nurse training and education in public institutions which has been consistently increasing every year. For instance, since 2005, the financial incentive for nursing faculty has been increased. In general, public nursing institutions have a combined total annual production capacities of 3,400 nurses per year [18, 7, 19]. Then, the government increased the subsidy from 80,000 baht/student enrollment/year to 110,000 baht/enrollment/year in order to produce approximately 2,500-2,700 additional graduates per year (total production is raised to approximately 6,000 nurses/year). However, there are no budget subsidies for private institutions, which constitute about one fourth of the total annual nurse production in the country, implying that private nursing students shoulder all the cost of education.



For the production of doctors, generally, the government also subsidizes the production cost of medical doctors at 300,000 baht/student enrollment/year-equivalent to approximately 10,000 USD [20]. The budget is allocated directly to the university. However, for the ODOD program, the government provides additional budget to medical students of around 6,000 baht (200 USD)/month/student enrollment. This additional budget is specifically for living allowance. Regarding the special selection from district pool and additional living allowance, medical graduates from ODOD program have to work in their community for 12 years as compulsory requirement, while CPIRD works only 3 years.

3.1.2 Situation of pre-service training

This section elaborates the current situation of pre-service training which includes the number of relevant health educational institutions i.e. medical faculties, dental faculties, pharmacy faculties and nursing and midwifery faculties in Thailand. It has long been known that these health professional faculties are the key element of the health systems and responsible for the production of health workforce in responding to overall health of the population. The total number of four professional faculties categorized into public and private sectors (with profit and non-profit-oriented), geographical region, and urban/rural areas in 2015 or the most recent year are presented in the Tables 7, 8, and 9, respectively [8, 21-23, 6, 7].

Moreover, the number of annual enrollment, graduates and attrition by health professional category in 2015 or the most recent year is presented in Tables 10 [8, 4, 23, 6, 7]. It should be noted that, subject to data availability, interpretation and use of this information should be made with caution.



Table 7 Number of medical, nursing, and other health professional faculties/schools by sector in 2011 and 2015

Type of faculties/schools	2011 ¹					2015				
	Public	Private for profit	Private non-profit	(Other type if any: please specify)	Total	Public	Private for profit	Private non-profit	(Other type if any: please specify)	Total
Medical faculties/schools	19	1			20 ¹	19	2			21 ¹
Dental faculties/schools	8	2			10 ¹	11	2			13 ²
Pharmacy faculties/schools	13	5			18 ¹	14	4	1		19 ³
Nursing and midwifery faculties/schools	56	15	3		74 ⁴	62	20	3		85 ⁴

Source:

1. Wikipedia Thailand available at [https://th.wikipedia.org/wiki/ListOf_medical_faculties_and_schools_in_Thailand_\(in_Thai\)](https://th.wikipedia.org/wiki/ListOf_medical_faculties_and_schools_in_Thailand_(in_Thai))
2. Thailand Dental Council
3. Pharmacy Education Consortium of Thailand
4. Thailand Nursing and Midwifery Council



Overall, the number of four professional schools has gradually increased over the past five years between 2010 and 2015, both in public and private for profit faculties. Nonetheless, the public sector continues to have the lion share among these four professional education schools.

However, the growth rate of private nursing schools was higher than public schools, at 27.80% compared to 10.70%. In this regard, the number of nursing schools increased from 74 to 85, reflecting the establishment of five new private for profit nursing colleges.

In 2015, there were four for profit and one not for profit private pharmacy schools in Thailand.

From the analysis, it can be said that private sector health professional training institutes has been playing a greater role in producing health workforce for the systems with a certain unknown proportion of training for international students from outside Thailand.

Table 8 Number of medical, nursing, and other health professional faculties/schools by region/state/province in 2015

Region/State/ Province	2015			
	Medical faculties/schools ¹	Nursing and midwifery faculties/schools ²	Dental faculties/schools ³	Pharmacy faculties/schools ⁴
Bangkok	7	20	3	3
Central	3	24	3	7
North	4	12	4	4
South	3	10	1	2
North-East	4	19	2	3
Total	21	85	13	19

Source:

1. Wikipedia Thailand available at https://th.wikipedia.org/wiki/ลิสต์_of_medical_faculties_and_schools_in_Thailand
2. Thailand Nursing and Midwifery Council
3. Thailand Dental Council
4. Pharmacy Education Consortium of Thailand

In Thailand, the geographical classification between Bangkok and Central is quite difficult and deemed to be the same region as the Central. Therefore, up to half of 138 four professional schools were concentrated in the Central region compared to other regions. The percent distribution of these 138 faculties in Central (including Bangkok), North-East, North and South regions registered at 50.72%, 20.29%, 17.39%, and 11.59%, respectively.



The pattern of medical faculties distribution was similar to those of nursing and midwifery faculties, being mostly concentrated in the Central region (including Bangkok), followed by the North-East, North, and South at 47.62%, 19.05%, 19.05% and 14.29%, respectively. The proportion was 51.76%, 22.35%, 14.12% and 11.76%, respectively, for nursing and midwifery faculties.

It should be noted that the geographical location of professional education faculties is an arbitrary classification as they serve students from inside and outside the region. It is the systems of student recruitment in favour of rural background, as well as the curriculum and the instructional dimensions of these faculties that are geared towards supporting exposure to rural health services that have impacts on rural retention of health workforce.

Table 9 Number of medical, nursing, and other health professional faculties/schools by urban/rural areas in 2015

Type of faculties/schools	2015				
	Total number	Urban		Rural	
		Number	%	Number	%
Medical faculties/schools ¹	21	21	100	0	0
Dental faculties/schools ²	13	13	100	0	0
Pharmacy faculties/schools ³	19	19	100	0	0
Nursing and midwifery faculties/schools ⁴	85	85	100	0	0

Source:

1. Wikipedia Thailand available at https://th.wikipedia.org/wiki/ลิสต์_of_medical_faculties_and_schools_in_Thailand
2. Thailand Dental Council
3. Pharmacy Education Consortium of Thailand
4. Thailand Nursing and Midwifery Council

In Thailand, it is clearly that in 2015, all medical faculties (21), dental faculties (13), pharmacy faculties (19) and nursing and midwifery faculties were located in urban area. In other words, there was no faculty situated in the rural or remote area of the country. In this connection, the classification of health professional training institutes by their location in urban and rural areas is not appropriate due to the absence of the latter given no infrastructure to support faculties.



Table 10 The total number of annual enrollment/graduates/attrition by category in 2015

Sub-category	2010			2015		
	Annual enrollment	Annual graduate	Annual attrition	Annual enrollment	Annual graduate	Annual attrition
Medical practitioners ¹	2,485	1,690	N/A	N/A	N/A	N/A
Dentists ²	848	475	N/A	N/A	N/A	N/A
Dental nurses ²	350	N/A	N/A	N/A	N/A	N/A
Pharmacists	2,107 ¹	1,731 ¹	N/A	1,900 ³	1,000 ³	180 ³
Pharmaceutical technicians/assistants ¹	300	308	N/A	N/A	N/A	N/A
Nursing-Midwifery Professionals ⁴	7,810	5,885	390	9,200	7,900	450

Source:

1. Human Resources for Health Country Profile Thailand, Ministry of Public Health, Thailand, 2010, Page 24
2. Dental Health Personnel Report, 2010, Bureau of Dental Health, Department of Health, Ministry of Public Health
3. Pharmacy Education Consortium of Thailand
4. Thailand Nursing and Midwifery Council 2015

Data is incomplete especially the attrition rate, as these are institutional level statistics and have yet to be incorporated in the national dataset. Despite this, the data shows that in 2010 academic year, annual enrollments totaled at 7,810 nursing and midwifery students, 2,485 medical students, 2,107 pharmacy students, 848 dental students and 350 dental nurse students. In the same academic year, the number of annual graduate was 5,885 nurses, 1,731 pharmacists, 1,690 physicians, 754 dentists and 308 pharmaceutical technicians/assistants. Given the lack of cohesive data, the number of graduates in this academic year referred to students recruited four or six years ago, depending on the curriculum. Nonetheless, attrition statistics are available for nursing, amounting to 390 nurses in 2010 academic year.

In 2015, data is only available for pharmacy and nursing and midwifery practitioners. In this regard, pharmacy student enrollment reduced from 2,107 students in 2010 to 1,900 students in 2015; while nursing and midwifery student enrollment increased from 7,810 to 9,200 in the same period.



3.2 In-service and post-service training

3.2.1 Government investment in health workforce education systems for in-and post-service training

The government has a policy for training public health workers for at least approximately 10 days/ person/ year and indicates that the funding for the training should account for about 2% of total salary expenditure on health workforce.

For nursing professionals, the in-service training of at least 10 day/year/person is related to the continued professional development (CPD) minimum requirement by TNMC, which is in addition to other trainings organized by each health care unit. There are two categories of in-service training: 1) in-house training, organized by all health care units to strengthen nursing competency as required by individual organizational needs; and 2) post-graduate training, which is provided for specific purposes.

Furthermore, there are 2 types of post-graduate training for nurses, namely the specialized short-course training and the Masters' and Doctoral degree courses. The specialized short-course training is standardized by Thailand Nurse and Midwifery Council (TNMC), which allows nurses to be trained for specific specializations needed, such as hemodialysis nurse, emergency nurse, pediatric nurse, gerontological nurse etc. For the Masters' and doctoral degree courses, hospitals will provide funding corresponding to their own needs, which would account for about < 1% of total in-service nurses in their hospitals. However, nurses who do not get this funding can still attend their higher education by self-funding.

To date, there are a total 6,000 nurses awarded with Master of Nursing Science and 500 nurses awarded with Doctoral degree in Nursing Science in Thailand [7]. In addition, to improve the quality of health care services, Thailand has implemented a 3-year training course in Advance Practice Nurse (APN), adapted from the doctoral degree of nursing, which is similar to residency training among physicians. To date, there are approximately 1000 APNs. In addition, there is a short-course training for specialized nurses, which is normally based on demand of individual hospital. In this connection, the MOPH has emphasized nursing capacities to manage chronic illness, long-term care, palliative care and primary prevention of chronic non-communicable diseases.

3.2.2 Plan or regulation related to in-service training: please specify

TNMC requires at least 50 Credits of continued nursing education, or 50 training days in the 5 years period as minimum requirement for renewing nursing licensing for all professional nurses who need to practice in Thailand [7]. Hospital Accreditation (HA) Institute mandates every hospital to comply with the Hospital Accreditation standard, hence each hospital has to provide training courses for all staff in order to achieve essential competencies to be accredited or re-accredited accordingly.



3.3 Education accreditation system

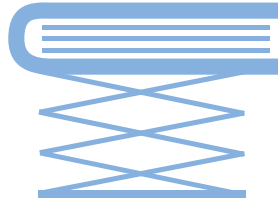
In Thailand, all health professional schools have to be assessed on the quality of training process to ascertain qualified health workforce is well trained to serve the society. The Office of National Education Standard and Quality Assessment (ONESQA) is an independent body responsible for quality assurance and accreditation of education institutes. Meanwhile, professional councils have a role in curriculum accreditation to ensure that educational institutes comply with professional standard.

ONESQA was established with the aim of developing criteria and methods for external quality assessment and conducting quality assessment of educational institutions against ONESQA standards. External quality assessment of all educational institutions is conducted at least once every five years. The assessment outcomes are duly submitted to the institutes and published for the general public. The missions of ONESQA as stipulated in the Royal Decree Establishing the Office include [24]:

- Development of the external assessment system; setting of the framework, direction and methods for efficient external assessment attuned to the quality assurance system of the educational institutions and the departments to which these institutions are attached;
- Development of standards and criteria for external quality assessment;
- Certification of external assessors;
- Supervision and setting of standards for external assessment carried out by external assessors as well as certification of the standards. In case of necessity or for the benefit of study and research for development of the external assessment system, the Office may carry out an external assessment itself;
- Development and training of external assessors; preparation of the training course content; and encouraging private, professional or academic bodies to participate in the training of external assessors for greater efficiency;
- Submission of an annual report on the educational quality and standard assessment to the Council of Ministers, the Minister and the agencies concerned for consideration in policy formulation and budgetary allocation for education; as well as dissemination of the report to other agencies involved and the general public.



Part 4



Part 4: Progress with 2015-2016 action plan on transformative education and rural retention

4.1 National priorities in the two year action plan (2015-2016) on transformative education for health professionals for doctors and nurses

4.1.1 General progress on transformative health professional education

After the meeting in Bhutan, major progress on transformative health professional education in Thailand was by many key stakeholders as described below;

- Ministry of Public health, Thailand (MOPH)
 - On 20 Feb 2015, a meeting among stakeholders was held by the Bureau of Policy and Strategy, Ministry of Public Health, to finalize and assign different action plans to responsible organizations. Praborommarajchanok Institute for health workforce development (PBRI) is the key actor to drive this policy within MOPH.
- National Commission on Health Professional Education Reform (NHPERC)
 - NHPERC was appointed by the National Health Commission chaired by the Prime Minister to develop and implement the national strategies on Transformative Health Professional Education for the 21st century (2014-2019). This commission is the only key platform in driving agendas on transformative health professional education in Thailand.



- The Annual National Health Professional Education Reform Forum (ANHPERF) is an important regular activity convened by the NHPERC. The first forum conducted in 2014 focused on institutional reform while the second forum in 2015 focused on instructional reform. The third forum, to be held in November 2016, will focus on inter-professional education (IPE). The forum is fully and actively participated by all health professional training institutes both public and private through, for example, professional consortium or dean consortium.

- Thailand Nursing and Midwifery Council
 - Thailand Nursing and Midwifery Council established the National Nursing Education Committee (NNEC) to be responsible for conducting transformative nursing education and nursing production plan.
 - On 6 April 2015, NNEC organized the 1st Knowledge sharing forum for 300 nursing faculty members to create better understanding of the contents and Thailand's transformation of the nursing professional education systems.
 - On 29 July 2015, NNEC organized the 2nd Knowledge sharing forum for 120 nursing administrators to discuss about future nursing scenarios.

- Consortium of Thai Medical Schools (CTMS)
 - CTMS is the network of all medical schools in Thailand. It was established in 1989. The main objective is to improve medical education relevant to national health system and health needs of citizens. The National Medical Education Conference which is held every six years is a critical activity convened by the CTMS. The Ninth Conference was held between 14 and 16 September 2015. Key recommendations from that conference are;
 1. To achieve the most efficient health service management, medical education should produce medical doctors from multiple disciplines to respond to different contexts in practicing. in primary secondary and tertiary care settings
 2. Medical education should be responsive to various factors including international standards, Thai health systems contexts and visions of each medical school.
 3. Internship period for medical students should be part of the medical education. Setting targets and outcomes, and good evaluation system under quality assurance are important to improve the internship program.
 4. Each institute should support staffs in medical education area.



4.1.2 Specific progress on the 2015-2016 action plan on transformative education

	Prioritized strategies	Implementing partners	Progress
Doctors	1. Targeted admission policies to increase the socio-economic, ethnic and geographical diversity of students	<ul style="list-style-type: none"> o Medical schools o Federation of Health Profession Council o Medical graduates 	<ul style="list-style-type: none"> ● Both CPIRD and ODOD have special targeted admission policies which are different from regular medical student admission in Thailand. CPIRD aims at students who stay in up country areas and study continually in a provincial educational institution while ODOD aims specifically at increasing student selections from the rural area, focusing at high school students who stay and study in small districts. This policy can very well improve educational equity and inclusiveness as greater consideration is given to the socioeconomic status of students. Thus, both the CPIRD/ODOD programmes select high school students from all over Thailand except Bangkok and nearby provinces, resulting in high geographical diversity of students. ● MOPH aims to produce more doctors from the targeted ODOD programme in the future.
	2. Adapt curricula to the evolving healthcare needs of the communities	<ul style="list-style-type: none"> o Consortium of Thai Medical Schools o Thai Medical Council o Medical schools 	<ul style="list-style-type: none"> ● CPIRD programme is a collaboration of 14 medical schools under the Ministry of Education (MOE) and 37 regional hospitals under the Ministry of Public Health (MOPH), serving as additional training institutes during the three clinical years. Therefore, CPIRD does not have its own common study programme as curricula are developed by the Faculty of Medicine of each institution with varied participation from teaching staff of 37 Medical Education Center (MEC). At present, CPIRD is acting as a change agent of Thai medical education. It tries to promote education with greater involvement in healthcare service system and community engagement. CPIRD tries to stimulate its MEC to actively negotiate curriculum reform with its collaborated universities. For now, a few have demonstrate promising results.



	Prioritized strategies	Implementing partners	Progress
	<p>3. Inter-professional education (IPE) in both undergraduate and postgraduate programmes</p>	<p>o Federation of Health Professional Council</p>	<ul style="list-style-type: none"> ● There are currently several good practices developed at various medical faculties, for example, at Khonkaen University, Mahidol University and Maharakarm University. Apart from medical faculties, IPE has also been deployed at the Public Health Faculty of Khonkaen University and the Physical Therapy Faculty of Rangsit University. However, further programme evaluation is needed. ● National Commission on Health Professional Education Reform (NHPERC) conducted IPE workshop between 24 and 25 November 2015 in Kanchanaburi province. Participants included educators who were interested in IPE from many professions. This workshop invited Professor Hideomi Watanabe from Gunma University Graduate School of Health Sciences to share the Japanese experience on IPE implementation. ● At the national level, NHPERC will conduct the third national conference on health professional education focusing on IPE in November 2016. This will be considered the key progress on IPE for Thailand. ● NHPERC has also proceeded to develop a national IPE framework and tools in terms of general education based on the existing health modules, rational drug use, some aspects of patient safety and possibly ethical issues.



	Prioritized strategies	Implementing partners	Progress
Nurses	1. Adapt curricula to the evolving health care needs of the communities	<ul style="list-style-type: none"> o Consortium of Thai Nursing Schools o Thai Nursing and Midwifery Council o Nursing schools 	<ul style="list-style-type: none"> ● Thailand Nursing and Midwifery Council revised the standard curriculum to a competency-based approach in response to a study based on users' requirements as well as the dynamism of healthcare system. ● MOPH conducted a workshop on District Health Management Leader for faculty members, which was aimed to increase community understanding and enhance the capacity of faculty members in working with multi-stakeholders in the community as well as to enable staffs to transfer such skills to health students. ● The National Nursing Education Committee and TNMC conducted a public hearing for health education administrators, faculty members and users between 25-26 August 2015.
	2. Targeted admission policies to increase the socio-economic, ethnic and geographical diversity of students	<ul style="list-style-type: none"> o Nursing schools o Federation of Health Profession Council o Office of Civil Service Commission 	<ul style="list-style-type: none"> ● The Consortium of Thai Nursing Schools revised the nursing recruitment system and found that all public nursing schools have targeted admission policy. In particular, for MOPH nursing schools, 70% of enrollment was from the rural admission quota. ● The Consortium of Thai Nursing Schools increased the quota of nursing students, specifically students from underserved and remote areas, by approximately 50 persons per year for 10 years (2013 to 2023)
	3. Inter-professional education (IPE) in both undergraduate and postgraduate programmes	<ul style="list-style-type: none"> o Federation of Health Professional Council o Thailand Nursing and Midwifery Council 	<ul style="list-style-type: none"> ● The Thailand Nursing and Midwifery Council is now exploring a possibility in developing an IPE curriculum. ● Other activities are mentioned above.



4.2 National priorities in the two-year action plan (2015-2016) on rural retention for doctors and nurses

4.2.1 General progress on rural retention

After the meeting in Bhutan, key progress on rural retention in Thailand was made by many key stakeholders as described below;

- On 20 Feb 2015, a meeting among stakeholders was held by the Bureau of Policy and Strategy (BPS), Ministry of Public Health, to finalize and deploy the country's action plan to responsible organizations. The BPS is the key actor on rural retention issues.

- Thailand Nursing and Midwifery Council
 - Allocated budget for conducting research and revised regulations on specialized nursing education programme. The first batch of Advance Practice Nurse (APN) residency training programme started in November 2014.
 - Cooperated with the Bureau of Nursing, of the MOPH and the Office of Civil Service Commission to revise career path for nurses in rural hospitals and health posts.
 - Organized synthesis workshop for career planning. Presently, chief nurses in rural hospitals have the opportunity to advance their careers to the Senior Nurse level.

- Thai Medical Council (TMC) and Thai Dentistry Council (TDC)
 - In Thailand, new medical and dentistry graduates have to pass the national licensing examination to be able to provide professional practice in Thailand. However, in the past years, both were life-time licenses. In 2016, the TMC and TDC made a radical policy change on re-licensing, prospectively requiring new medical and dentistry graduates to be re-licensed every five years. This new regulation, requiring amendment of the two professional Acts, are in the process of being considered by the National Legislative Assembly.



4.2.2 Specific actions conducted on the 2015-2016 action plan on rural retention

	Prioritized strategies	Implementing partner	Progress
Doctors	1. Curriculum that reflects health needs of the population	<ul style="list-style-type: none"> o Consortium of Thai Medical Schools o Thai Medical Council o Medical schools 	<ul style="list-style-type: none"> o As mentioned above in 4.1.2
	2. Continuous Professional Development(CPD)	<ul style="list-style-type: none"> o Thai Medical Council 	<ul style="list-style-type: none"> o The Thai Medical Council implemented the policy on re-licensing which enforces new medical and dentistry graduates to be re-licensed every five years. The regulations are in the process of being considered by the National Legislative Assembly. To support re-licensing requirement, both councils are currently developing a systematic management of mandatory CPD. o Similar to other tracks, CPIRD and ODOD graduates also value having opportunity for specialty and subspecialty practice. Several MEC has infused the family medicine concept and practice into their undergraduate training, in particular, the three clinical years under the MED jurisdiction. MEC hopes this will more or less induce their graduates to have continuous professional development (CPD) into the field of family medicine. CPIRD office is also the focal point for management of family medicine in service training, so called "Track 3" course. In 2016, there were 115 new medical graduates joining this 3-year programme to become specialists in family medicine. Among these, 76.5% were CPIRD/ODOD graduates. In the future, we hope that the MOPH and the Royal College of Family Physician will initiate more innovative CPD schemes in Thailand to promote family medicine study and practice.



	Prioritized strategies	Implementing partner	Progress
	3. Compulsory service	<ul style="list-style-type: none"> o MOPH o Consortium of Thai Medical Schools o Private hospitals o Ministry of Education 	<ul style="list-style-type: none"> o The MOPH has been evaluating the policy on compulsory public service in three professions; doctor, dentist and pharmacist, and assess the possibility in revising the criteria in recruiting new graduates to work in the public sector, especially for MOPH, for example, the annual recruitment quota and employment measures to improve the distribution and retention in hardship areas.
Nurses	1. Enhanced scope of practice	<ul style="list-style-type: none"> o Thailand Nursing and Midwifery Council o Nursing schools o University hospitals o MOPH o Office of Civil Service Commission 	<ul style="list-style-type: none"> o The Thailand Nursing and Midwifery Council (TNMC) developed the scope of practice for Nurse Practitioner (NP), including General NP, Ophthalmological NP, Gerontological NP, Emergency NP, Family NP and Advance Practice Nurse. o Moreover, TNMC endorsed the scope of practice regulation and also promoted collaboration among nursing institutes and hospitals to increase residency training capacity in response to the demand for human resource development.
	2. Appropriate financial incentive	<ul style="list-style-type: none"> o Thai Nurse Association o Nursing schools o MOPH o private sector 	<ul style="list-style-type: none"> o The MOPH has been revising retention policies, including finance and non-financial incentives. o The MOPH, through the Bureau of Policy and Strategy, and Naresuan University conducted a research on evaluation of financial incentive strategy and appropriate schemes to increase performance and retention of health staff in the rural area. The final result will be released soon.



Prioritized strategies	Implementing partner	Progress
3. Career development program	<ul style="list-style-type: none"> o Thailand and Midwifery council o Bureau of Nursing, MOPH o Division of Personnel, MOPH o Office of Civil Service Commission(OCSC) 	<ul style="list-style-type: none"> o The MOPH revised the job description and promoted nurses who had worked in the rural area to higher level positions such as Directors of sub district health promotion hospital (formerly the sub-district health centers). o The TNCM and the Hospital Accreditation Institute encouraged all nursing organizations to establish a roadmap for in-service training for nurses. o The MOPH designed a program to train nurse administrators with a target of 100 participants per year. o The MOPH is working with all stakeholders to revise regulations to promote nurses who have experience and post-graduate education and training to higher levels.

4.3 Other national priorities of HRH in the two-year action plan (2015-2016) and progress of implementation: actions and outcomes

Currently, Thailand is focusing on health workforce planning which includes forecasts of the number of different health professionals required according to the future health system, and competencies which are needed to respond to the population's changing health needs. The plan also includes measures on equitable distribution and retention of these health workforces (HWF).

In this regard, the National Health Workforce Commission (NHWC) has established a sub-committee on health workforce planning for the next decade. This sub-committee conducts studies in 5 areas, including 1) types of profession; 2) workforce number; 3) competencies; 4) distribution criteria; and 5) retention measures. Sixteen working groups have established, comprising nine professions and seven specific settings such as primary, secondary, tertiary, disease control etc. Each committee includes many stakeholders from users, producers, the private sector and profession councils. Many approaches are used to project how many HWF are required in the future based on, for example, demand for health services, health needs of the citizens, service target and system dynamic method. This study is still in progress.

The second phase of health workforce planning is under the MOPH's purview and focuses on area-based planning. In 2015, the MOPH established National HWF committee, which mostly consists of all departments of MOPH. There is no other stakeholder outside the MOPH in this committee. Three sub-committees were then established under this committee, namely the sub-committees on HWF planning, management



and development. The main objective of these three sub-committees are to study and recommend the appropriate number of staffs for each of the 12 public health regions along with management and development of staffs to maintain their capacity and retention. All sub-committees are still in working process. It should be noted that the National HWF committee's mandate only concerns the MOPH's health workforce and does not include other public and private sector employment.

4.4 Mechanisms for communicating with and involving other key stakeholders in planning, implementation and monitoring of the two-year action plan (2015-2016)

There are three key policy platforms on HWF in Thailand, namely the MOPH via the National HWF Committee, the National HWF Commission (NHWC) and the National Health Professional Education Reform Commission (NHPERC). The MOPH is the key implementer in its capacity as the national health authority while the other two commissions mainly provide advice and technical support. Meanwhile, rural retention strategies are mostly under the mandates of the BPS and the Deputy Permanent Secretary of the MOPH (DPS, MOPH) responsible for HWF affairs. To ensure linkage, the Director of BPS and the assigned DPS are members of the NHWC.

However, for transformative health education, the NHPERC and the Consortium of Health Professions Education Institutes, under the Ministry of Education, are key players. Praborommarajchanok Institute (PBRI) under the MOPH is a member of NHPERC and serves as a key linkage between the MOPH and transformative health education issue.

It is evident that the planning, implementing and monitoring of HWF issues in Thailand integrates both the authorities by power, through MOPH and MOE, and the authorities by network, through the multi-stakeholder participation by the two platforms: the NHWC and the NHPERC.

4.5 Status of HRH Implementation beyond the two-year action plan: progress of implementation beyond the two-year action plan

4.5.1 Rural retention:

The number of doctors in rural district hospitals has gradually increased. Two key reasons are the increase in production of medical doctors from 800 in 1987 to 2500 and to almost 3,000 in 2015 [25] and the increase in proportion of medical students in CPIRD and ODOD programmes to 25% of total national production capacity. The study by Pagaiya et al found that doctors graduating from CPIRD programme tend to stay in the rural area longer than doctors graduating from the normal national entrance examination track [26]. These two factors have contributed to the increase in the number of doctors in rural areas along with longer retention in district hospitals.

On the contrary, the situation for nurses is different as Thailand has been facing an increase in nurse shortage, particularly in the public sector. Meanwhile, the accomplishment of Universal Health Coverage in Thailand has resulted in significant increase number of service utilization. Moreover, the increase in the number of elderlies and non-communicable disease patients has



led to an upsurge in requirement for nurses. Data analysis from The Thai Nurse Cohort Study Project found that the average working life span of nurses decreased from 22 years in 2005 to 19 years in 2015, indicating an increase in the annual loss rate from 4.5% to 5.2%, equivalent to about 6,000 nurses leaving their professional career each year [19]. In addition, Thailand Nursing and Midwifery Council estimated that the country will need additional 50,000 nurses in 2020.

4.5.2 Transformative education:

As mentioned above, NHPERC and consortium of health professions are the key implementers of transformative education in Thailand.

Since the third Resolution of the 5th National Health Assembly (December 20, 2012) on the Health workforce Education Reform Relevant to the Health Needs in the Thai Contexts, and the appointment of an ad hoc sub-committee by the National Health Manpower,ⁱ a draft Strategic Plan for the Development of Health Workforce Education in the 21st Century (2014-2018) was formulated with a vision to reform health workforce education based on close collaboration between education and the health systems, equity in access to education, quality development, continuous linkage to the health system via knowledge management, creativity, and innovation for continuous life-long learning.

Such effort was to ensure that team-based, equity-based and compassion-based services are provided by the health workforce, thereby leading to an education reform that is in line with the policy on quality of health services at all levels. The Strategic Plan for the Development of Health Workforce Education in the 21st Century (2014-2018) was approved by the National Health Assembly or topic based health assembly and is now used as the framework and guideline for the implementation of health workforce education reform at relevant organizations. Specifically, the Strategic Plan is associated with recruitment, preparation, planning and development of processes for health workforce, leading to an education reform that is in line with the policy in quality of health services at all levels.

Six strategies were set to achieve transformative learning for health equity, namely education policy reform, fostering better collaboration, management and administration reform, curricula and learning process reform, knowledge management and networking. In this connection, four sub-committees were appointed to drive these national strategies at the local level and to strengthen the linkage between regional and global health workforce education. To enhance transformative learning in the country, a series of annual inter-professional transformative education conference will be convened during 2014-2019. The first conference was held for 'institutional reform' in 2014 under a joint effort of the Thai National Commission and China Medical Board. The second conference was then held for 'instructional reform' in 2015 under a joint effort with the WHO/SEARO. This forum aims at promoting advocacy and momentum building, implementation of the strategic plan, knowledge generation, management and sharing and capacity building, including networking.



4.5.3 The WHO Global Code of Practice on International Recruitment of Health Personnel: new interventions

In 2014, the Thai Nurse Association developed a guideline for promoting ethical practices in professional recruitment of nurses among recruiting agencies in the country. The guideline for nurses who intend to work abroad was also published. All nurses were well-informed about their rights and the appropriate self-preparation for working abroad. This guideline is in line with Article 4 of the Code.

4.6 Enabling factors and challenges in implementing HRH strengthening at national level

4.6.1 Key enabling factors for the successful implementation of the action plans are as follows.

1. Two new multi-stakeholder policy platforms to support the network approach among key institutions responsible for HWF, namely the NHWC and the NHPERC
2. More evidence-based policy formulation
3. Long-term HWF investment in the past decades, and gradual improvement of geographical inequity gaps in health workforce distribution, though inequity still remains in the north-eastern region
4. The quality and standard of health professional education, mandatory national license examinations, professional licensing and mandatory re-licensing of nurse (to extend coverage to doctors and dentists in near future), all contribute to high quality of care provided to the citizens.

4.6.2 Three key challenges and recommendations to overcome these challenges

Key challenges	Possible recommendations
1. Stakeholder coalitions: there are a few gaps in inter-sectoral collaboration/actions	o Establish effective mechanisms to support and stimulate collaboration among stakeholders. Gradual trust building is critical.
2. Dynamism of healthcare labour market. Demand for nurses in private hospitals increase dramatically. Nurse shortage still remains in rural areas while public hospitals experience public management constraints and lack of ability to hire and retain young generation and skilled nurses. Given the establishment of the ASEAN Economic Community which facilitates free flow of international patients and thus, stimulates demand for private hospitals, a large increase in internal migration of well-trained and high calibre nurses from public to private hospitals is foreseen. The emergence of younger nurses who prefer part-time employment with better management of leisure time is also a new trend.	o Establish new employment policy and new health personnel management strategies.
3. Aging health workforce	o Effective replacement of new generation o Increase retirement age for specific careers/professions



Case study 1: Health Professional Education Reform Commission

The National Health Commission of Thailand is to appoint a committee to drive forward the Strategic Plan on the Development of Health Workforce Education in the 21st Century based on the population's health needs [2]. The appointed committee will include different organizations and other relevant stakeholders to include expertise on health workforce education with an appropriate number and proportion in the composition of the committee. The committee consists of Chairperson, Co-chairperson, members, secretary and assistant secretary.

Vision

“Education, quality, and equity for competencies and humanistic health care”

This vision, which underlies the Strategic Plan for the Development of Health Workforce Education in the 21st Century (2014-2018), is aimed at establishing education for the health workforce via a collaborated effort by the national education and the health care systems. Achievement in health workforce education reform depends on equity in accessibility, sufficient connection with and relevance to the social and health systems dynamics as well as appropriate competencies. Appropriate assessment will be continuously developed in line with the health care system by means of achievable and credible quality assurance linked with regulation for health workforce, knowledge management, and creativity and innovation in education for continuous life-long learning to ensure team-based competency with humanistic health care.

Commission Responsibilities:

1. Build up a network to fully support and guide a systematic and sustainable implementation of the Strategic Plan for the Development of Health Workforce Education in the 21st century (2014-2018) as well as the issue-based Health Assembly Resolution on the development of health workforce education through concrete action plans.
2. Oversee the implementation of the Strategic Plan for the Development of Health Workforce Education by ensuring the delivery of key success indicators and promoting public awareness through the operational channel of each network or organization.
3. Encourage the National Health Commission to develop and propose policy on Health Workforce Education Reform Relevant to the Health Needs in the Thai Contexts, and submit it to the Cabinet for consideration.
4. Submit the report on the development of Health Workforce Education annually, through the National Health Commission for consideration by National Health Assembly.
5. Appoint technical working groups, where appropriate.

Sub-committees

Since the third Resolution of the 5th National Health Assembly (December 20, 2012) on the Health workforce Education Reform Relevant to the Health Needs in the Thai Contexts, and the appointment of an ad hoc sub-committee by the National Health Manpower, a draft Strategic Plan for the Development



of Health Workforce Education in the 21st Century (2014-2018) was formulated with a vision to reform health workforce education based on close collaboration between educational and the health systems, equity in access to education, quality development, continuous linkage to the health system via knowledge management, creativity, and innovation for continuous life-long learning. Such effort was to ensure that team-based, equity-based and compassion-based services are provided by the health workforce, thereby leading to an education reform that is in line with the policy on quality of health services at all levels. Through mobilization of intellects, experiences, and innovations from a wide scope of participation and use of evidence, the reform is to be completed within 1 year.

Furthermore, five sub-committees were appointed as follows:

1. Sub-committee on policy formulation of professional education by using evidence based and knowledge management
2. Sub-committee on faculty development and institutional management and support
3. Sub-committee on legal instrument/measurement
4. Sub-committee on better collaboration between education and health systems and public-private mix
5. Sub-committee on national and international meeting of organizing sub-committees.

Health Professional Education Reform Strategic Plan

Objectives of the Strategic Plan

1. Equity: Impartiality in access to education and education management
2. Integration: Collaboration between education and health systems
3. Innovation: Innovations in research into education management and services
4. Responsiveness and Relevancy: Information resources and access to necessary data associated with the population's health needs
5. Humanistic health care: Health services provided with ethics and humanity

Scopes and Definitions

Health workforce	Personnel having undergone the present programmes in health sciences, namely medicine, nursing, dentistry, pharmaceutical science, physical therapy, associated medical sciences, sports sciences, radiation technology, public health science, traditional medical science, alternative medicine, clinical psychiatry, psychology, communication sciences, medical social work and other degree and non-degree programmes of health workforce
Competency	The characteristics, skills, knowledge and abilities, thinking process, and attitudes of health workforce including communication, and professional knowledge and skills, team-working, acceptance of other health workers in the team, professional ethics and goodness, which will ensure that their services are provided with moral ethics, and professional standards
Transformative learning	Learning process that induces more far-reaching change in the learner than other kinds of learning, especially learning experiences which shape the learner and produce a significant impact, or paradigm shift, which affects the learner's subsequent experiences and leads to creating new awareness and global visions. This enables the learner to understand oneself, the world, and social relationship; to become alert to learn, to possess a balance of life experiences and skills to search, analyze, synthesize, critical reflect on their experiences, which in turn leads to a perspective



Indicators for Success of Strategic Plan

1. Proportion of student enrollment from urban and rural areas
2. Appropriate per head cost for an education programme
3. The number of researchers of innovations applicable to health workforce education reform
4. The health workforce has the competency relevant to the needs of the health system and higher education standard
5. Attitude and commitment of graduates to work in rural setting
6. Proportion of graduates starting their careers in the rural area and their retention
7. Patient satisfaction and ethical and compassion-based services
8. Collaboration between producers and users of health workforce with other partners

Strategies and Important Measures

To achieve the objectives, the following six strategies must be implemented:

1. Develop an evidence-based policy on health workforce education reform

The overall concept has been adapted for this strategy to develop a correlation between policies and implementation of health workforce education reform that is responsive to the population's health needs, health care services and the health workforce, by taking into account environmental factors, including socio-economic factors and global changes. The curricula, learning processes and assessment of new concepts have been modified based on the competency-based education model.

2. Ensure close collaboration between producers and users of health workforce education

Close collaboration between producers and users of the health workforce, both public and private sectors, leads to good connections between the learning processes and curriculum design that truly takes into account the population's health needs. This collaboration includes selection of students in respective areas, budgeting, and planning of employment and career path.

3. Formulate an institutional reform

Institutional reform is composed of two major areas, institutional design in terms of administration and management and instructional design. The aim is to achieve an education system based on collaboration and connection, the active participation of which is geared towards relationship among different professionals. The major principle is modification, moving from fragmented healthcare delivery to inter-professional education system, from a single institution to a network, and from an internal institution to dynamic external changes.

4. Reform curricula and learning process

Curriculum design and learning process development are aimed towards transformative learning, including competency-based learning, inter-and trans-professional learning and team building, flexible and modular designs of curriculum, experiential and community-based learning with community and student engagement.

5. Use knowledge management

The implementation of knowledge management policy in the health sector is the heart of education, aimed at improving the population's health by imparting benefits of health programmes to the targeted communities. Improvement in the quality of education and research will lead to evidence-based policy. Knowledge management will produce health workers with appropriate competencies. Its objective is to enhance the analytical skills of health workers, enabling them to provide high quality, equitable patient-centered health services under professional ethics, including knowledge sharing and an innovative synthesis of the health system.



6. Empower partnership on health workforce education reform

This strategy entails linking together through networks from different health and non-health sectors, alliances, and consortia between educational institutions and across to allied actors such as government, civil society organizations, business, and media collaborates to reform health workforce education. Knowledge, social, and political movements are used as driving mechanisms for all sectors and all professionals through knowledge generation, management and synthesis from case stories for lessons learnt and sharing, practicum in real situations, and community-based learning.

Case study 2: Collaborative Project to Increase Rural Doctors (CPIRD)

Concept of CPIRD model

In 1994, the Ministry of Public Health collaborated with the Ministry of Education to start a project to increase the production of rural doctors[20]. CPIRD was initiated due to the lack of rural physicians, poor distribution and increasing “brain drain” from the MOPH to the private sector in the 1990s. CPIRD is not a medical school per se. It is an administrative office of the MOPH. It is an agent to stimulate collaboration between faculties of medicine in the Ministry of Education with service hospitals in the Ministry of Public Health. It has been performing this function for the past 20 years. In addition to regulating financial and regulatory interactions between MOE and MOPH hospitals; CPIRD also strengthens the MOPH’s faculty development system. Medical students of CPIRD are selected from their rural domiciles. Pre-clinical programmes are taught in 14 collaborated universities. Moreover, clinical subjects are taught in 37 Medical Education Centers (MEC), which are regional or provincial hospitals of MOPH, nationwide. Moreover, in 2005, the “One District One Doctor”(ODOD) programme was started by selecting students from a greater number of targeted rural areas. Together, CPIRD graduates are obliged to work in rural hospitals for 3 years and ODOD graduates for 12 years. This network of 14 universities and 37 MECs covers all 12 healthcare regions of Thailand.

Nowadays, Thailand has 21 faculties of medicine. Seven of these entirely base their clinical year teachings at MOPH hospitals. Currently, all faculties of medicine can produce 956 medical students per year on their own, with a project to secure additional production of 914 medical students per year. Moreover, they have another set of extra production with MOPH of 1,116 medical students per year. In total, Thailand can produce 2,966 medical doctors per year from all medical schools both in universities and at MOPH. With this capability and collaboration, Thailand plans to increase production amount to 3,121 medical students per year, of which 1,131 will be produced from CPIRD.

Lessons learnt from 20 years of implementation

CPIRD has been running many collaborative projects in the past 20 years, achieving 85.0% of its goals for student admission. Up until 2014, CPIRD has helped produce 5,927 doctors for the country. With eight student graduates as the first batch in the year 2000, the number increased to 904 graduates in 2014. Graduation results of classes 2000 to 2013 were quite impressive at a rate of 95.6% which is comparable



to regular university students. Passing rate of national license testing part 1-3 was 99.6%. In addition, 8.5% of all graduates received the honour degrees. These graduates definitely contributed to an increase in the amount of doctors in the rural area. Currently, CPIRD graduates comprise 39.0% of all doctors entering community hospitals each year. Moreover, the ratio of CPIRD graduate physicians to regular physicians is in the range of 13%-62% among 12 healthcare regions of Thailand.

A study by Pakaiya N. in 2012 found that regular graduates resign from the MOPH before three obligatory years 1.5 times more than CPIRD graduates (HR 0.66, $p < 0.001$) [27]. This same research also showed that CPIRD graduates continue working in the rural areas after 3 years 1.14 times more than regular graduates (HR 0.14, $p < 0.001$). Furthermore, recent data from CPIRD showed that from data of 5,828 graduates, 83.6% continued to work for the MOPH. The retention rate of CPIRD graduates in MOPH hospitals was about 56.7%-99.9% according to the year of graduation. In addition, most CPIRD graduates (82.8%) worked in community hospitals, either as general practitioners or specialists, while 94.9% worked in the regions of their domicile. Nevertheless, further studies are needed to follow the exact career path of these graduates.

Another study by Pakaiya N. and CPIRD program revealed that CPIRD graduates were required to return to their home town and work at MOPH facilities, particularly in rural hospitals [28]. In this regard, the MOPH has a policy of compulsory rural service for three years after graduation through contract bonding. If graduates break of contract, they must pay a fine of 12,500 USD.

These impressive results came partly from pervious CPIRD administrators who emphasized a lot of efforts in faculty development. Fully aware of its weakness as service-based hospitals, CPIRD started many short courses in faculty development since 2005. The programmes covered many themes from teaching and learning to assessment and quality assurance. In 2013, CPIRD launched its flagship faculty development course called Essential Course for Medial Educator (ECME). This is a certificate awarded course and one of a few proper Health Profession Education courses in Thailand. This course leverages the close collaboration among medical educators from various universities and CPIRD. In addition, CPIRD's success came partly also from the support of international educators, particular Kyoto University and Jichi Medical University in Japan.

It can be said with pride that CPIRD helps solve the problem of doctor shortage in Thailand. With the success on the quantity side, CPIRD is pursuing improvement on the quality side of rural doctor production. Now, one can say that CPIRD graduates are similar to regular graduates. However, considering the philosophy and more ambitious goal of CPIRD project, in the next phase, CPIRD is trying to act as a change agent for Thai medical education. It will try to help create real rural clinical education in Thailand. While the envisioned attributes of their future products are clear, the processes must involve the curricula of 14 universities. This includes goal setting, selection criteria, curriculum planning and implementation, competency-based assessment and finally career path and postgraduate training of a CPIRD doctor.



In conclusion, CPIRD was established as a partnership model to increase the number of doctors in Thailand. The country has already achieved this with less investment by using co-existing resources. This should confirm that a collaborative model of doctor production can be done. Nevertheless, challenges still exist to overcome the mal-distribution of doctors as well as to produce rural physicians with the right attributes. Such challenges will have to be overcome through strong partnership between CPIRD and collaborated universities.

Case study 3: Community nurses at Nampong Hospital, Khonkaen Province

Background

Community health nursing is one mechanism to support community empowerment. The objective aims to provide full coverage of services from birth to death, treatments designed for ease of access, health promotion, rehabilitation and disease prevention through community participation. The past situation in health services has pushed health workers to review the rationale, method and results of this mechanism to see whether problems have been solved and met with the population's health needs.

Nampong hospital is a community hospital. It has a total of 90 beds. The vision is "to be a quality hospital with the best health promotion, leveraging community participation to attain social wellbeing". In addition, working with the community is the guideline for health development. Serving also as a primary healthcare unit, at the centre of Nampong hospital's operation are community health nurses [29]. For the provision of community healthcare, community health nurses definitely act as triggers for service development. Meanwhile, there are also other policies that focus on developing human resources in community, for example, strengthening collaboration of local administrative organizations and producing local nurses from private universities.

One of the key strategies of Nampong hospital is the workforce of "community health nurse" who are the drivers of healthcare development system, whereby there are seven key issues to be addressed, including 1) dependent community; 2) sufficiency economy community; 3) caring for recurring diseases; 4) diabetes and hypertension control; 5) elderly care; 6) disease control; and 7) health promotion.

However, a health workforce crisis has been gradually developing since 2001 at the hospital. At that time, Thailand started to implement the Universal Health Coverage (UHC) and initiated several policies such as provincial integration of administration policies through the function of the provincial chief executive officer (CEO), the Village Fund and the Urban Community Funds. Moreover, in 1999, the Decentralization Act was adopted by parliament in order to transfer various activities previously conducted by central administration, including education and health services, to local government organizations (LGOs). This decentralization affected the operation of all hospitals, including Nampong hospital.



As a result, Nampong hospital provided nurses to the community by transferring voluntary professional nurses from the health promotion unit, the emergency care unit and the inpatient unit to be responsible for diagnosis, prevention, health promotion and rehabilitation. One year later, the hospital achieved UHC. Under the UHC scheme, focus is on primary care units. At that time, there was a shortage of human resources for such units, especially qualified nurses in Nampong District. Voluntary professional nurses were, therefore, provided mainly in shortage areas, including networks of health centres.

To cope with the shortage of nurses in the community, since 2001, the hospital has been supporting scholarships to students in their area to study in the nursing faculties. In the earlier phase, the hospital had to collaborate with the local government and the nursing faculty of Khonkaen University to select students from their domiciles. The objective was to retain human resources in their hometown. In 2007, the hospital allocated professional nurses who had at least one year experience to work in the community. Their skills were then further developed, helping them to serve as supervisors. This effort resulted in greater collaboration between the hospital and community. Meanwhile, continuity of financial support from the local government was ensured while there was also additional support from private companies in granting ten nursing scholarships. In this regard, a memorandum of understanding with Praboromrajchanok Institute for Health Workforce Development (PBRI) was signed for PBRI to serve as the education institute. Based on operating results, in 2010, it was concluded that health workforce management in the hospital was possible and suitable for only some parts. Meanwhile, the workload increased and there was passive operation of the units, including discontinued linkage between health services networks and understanding of the management system. In this period, Nampong hospital collaborated with both PBRI and private nursing schools to increase nurse production in order to serve the increasing demand for human resources.

From a policy perspective, Nampong hospital was able to expand treatment to all people and was successful in collaborating with health centres for resources and data management. Moreover, it was able to design evidence-based work plan and health services. The community health nurse development was funded by the local government, community, private organization and Nampong hospital, and was supported by three institutions, namely Khonkaen University, Sirindhorn College of Public Health Khonkaen, and College of Asian Scholars. However, while the collaboration has successfully delivered its aim in producing more community health nurses, no civil servant position is available for the nurses at the Nampong hospital.

The procedure of community health nurse development

1. Pre study (Selection)

The hospital aims at supporting upper secondary school students in the community, who volunteer to take care of patients in the hospital, to become a nurse. The Educational Service Area Office was also involved and supported the initiative. The process focuses on transparency and community participation. All key stakeholders have to collaborate with community hospitals and institutes (Boromrajonani College of Nursing Khonkaen and College of Asian Scholars). The selection criteria are as follows:



- Age: between 16-35 years
- Height: at least 145 cm.
- Hometown: in quota districts
- GPAX: At least 2.75 in math-science programmes
- O-net score: 5 for main subjects
- GAT and PAT2 score
- Be healthy with no congenital disease

A steering committee was established, composing of representatives from institutes, educational service area offices, executives of local government, leaders of community and the hospital committee. Selection was done through a 10-15 minute individual interview. Overall, the selection criteria for eligible students consist of three parts; 1) interview, 2) school record, and 3) scoring of voluntary activities.

2. Study Period

When nursing students take classes at both Boromrajonani College of Nursing Khonkaen and College of Asian Scholars, each nursing school has its own process of nurse production and funding. When nursing students graduate, they have a complete set of skills and are able to work with the community. Nursing students have to exchange knowledge among institutes, grantors and students at least every month during the four years and the content is developed by nursing students who operate in their community. Every semester and holidays, nursing students are supposed to train and apply their skills in the community.

3. After graduation

Graduate nurses come back to their hometown where they are hired and financed by two financial resources. The first is the local government. For local clients, nursing students work as part of the public health system and link with the community hospital or health centres. Nursing students can further strengthen their professional skills by working overtime at the hospital. In the regard, the hospital will manage its manpower under the department of nursing.

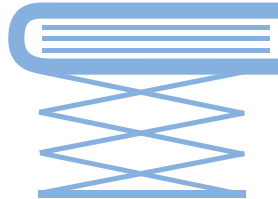
The operating system with network of health services can be divided into three parts: 1) to provide services; every village is responsible for all community healthcare; 2) To design health services around health promotion, group activities and networking of services; and 3) To link data system with primary care units.

4. Monitor and Evaluation

Every month, both Boromrajonani College of Nursing Khonkaen and College of Asian Scholars switch their roles to evaluate students. Both institutes hold discussions with Khonkaen community hospital, Director of Khonkaen hospital, Nampong hospital and Ubonrat hospital on issues of teaching progress, testing preparation, preparation of filed works, application of sufficiency economy in ways of life and voluntary training in financial resources management.



Part 5

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Part 5: HRH information system

Thailand collects HRH information from all sectors. However, the data is collected for individual use only and is not shared as national statistics [30]. There are two types of database: 1) health professional data collected by health professional councils; and 2) health workforce data collected by health service units. There is neither a connection between the two datasets nor a centre of HRH information at any unit levels. In the future, it is possible for Thailand to generate HRH data centre by compiling all individual health personnel data via electronic database system. Presently, there is no authorized responsible unit in charge of this endeavour.

HRH information is available in both public and private sectors. However, information is fragmented as each sector collects its own information without connection. For example, the MOPH collects some HRH information from the private sector but this data does not cover all private health service providers nationwide, rendering the dataset incomplete. We could possibly use registration data from each professional council's licensing dataset to ascertain some individual data of the private sector based on information available at the MOPH, but not all.

Parameters in the licensing dataset include demographic data, licensing document, and qualification of all health professionals, but there is no information on individual specialty. There are problems about data duplications, outdated data and incomplete records. Some members who are inactive or have withdrawn from clinical practice are not checked out.



The in-migration of health workforce is captured quite adequately from the professional council as it is a compulsory requirement for all immigrated professionals who work in the country to be registered and have a practice license. However, there is no unit that records the out-migration of Thai health professionals. Thus, individuals can migrate out of Thailand to work overseas without informing the council. In terms of internal migration between public and private sectors and geographic regions, these are captured by the MOPH's database but data from other public health agencies are inadequate.

Regarding the policy on health workforce information system, the technical team at the MOPH tries to make the best use of all available databases and ones that they can access or request for in order to generate HRH evidence to inform policy makers. However, there is still a need to improve HRH data to see a clearer picture of all health professionals in Thailand.

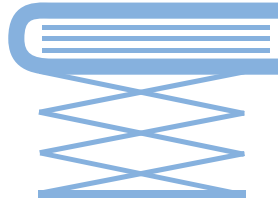
Compared to other professions, the information on nurses is most complete and so the technical team at the MOPH can generate sufficient evidence to inform policy makers e.g. the ageing nurse workforce requires action on recruitment and retention package that is relevant to the needs and problems of nurses. In particular, age cohort including at least three strategies: 1) to attract and retain young nurse, the MOPH should convince the cabinet to allow an increase in civil servant positions available for them; 2) to decrease attrition of skilled workforce, measures for career advancement should be implemented to retain middle age skilled nurse; and 3) change job design and management to increase productivity of senior nurses by assigning them to work in primary care instead of shift work in acute care facilities.

The evidence to support policy options for nursing workforce management as mention above is based on information on nurse workforce transition and intention to leave or stay in nursing service from the Thai Nurse Cohort Study.

Another database on health resources, including HRH, has been established through a collaboration between the Health Information System Development Office (HISO) and the Bureau of Policy Strategy, MOPH. This database aims to demonstrate a distribution of health resources, e.g. health facilities, CT scan and health personal, around the country to help policy makers in allocating resources. HISO is conducting a national health resource survey on its website. Though data is incomplete, there is high potential for scaling up to the national HRH information systems [24].



Part 6



Part 6: Research on HRH

6.1 International publications on HRH between 2014 and 2016

2014

- Confidence in dental care and public health competency during rural practice among new dental graduates in Thailand.
- Comparison of self-reported professional competency across pharmacy education programs: a survey of Thai pharmacy graduates enrolled in the public service program
- Inter-professional education and lessons learned from its implementation in developed countries and their application to developing countries: a systematic review

2015

- Rural retention of doctors graduating from the rural medical education project to increase rural doctors in Thailand: a cohort study.
- Confidence in dental care and public health competency during rural practice among new dental graduates in Thailand.

2016

- Medical tourism in Thailand: a cross-sectional study.
- Thai nurse cohort study: cohort profiles and key findings



6.2 Critical research questions regarding transformative education and rural retention issues

Transformative education

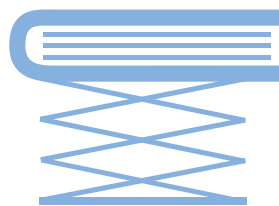
- What are the appropriate curricula and effective learning system to produce qualified health workforce in respond to country health need and dynamic health system?
- What are the competencies of faculty members in response to the country's health needs and dynamic health system?
- What are the innovative learning systems to produce humanized health workers?

Rural retention

- What are the appropriate non-financial incentives for health workforce to increase rural retention?
- What are the appropriate financial incentives for health workforce to increase rural retention?



Part 7

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Part 7: The way forward

Having reviewed the trend of health workforce to population between 2006 and 2015, the number of doctors, nurses and midwives per 1,000 populations increased from 1.92 in 2006 to 2.96 in 2015; well above the WHO benchmark of 2.28 per 1,000 populations. The scale up in production of doctors during this period was tripled with the total pool of doctors increasing from 18,918 in 2006 to 52,448 in 2015. However, the scale up in production of nurses and midwives was much lower than doctors with the total pool of professional nurses increasing from 101,797 in 2006 to 146,534 in 2015, given that there was no significant loss from international migration. The ratio of nurses to doctors reduced from 5.38 nurses to one doctor in 2006, to 4.85 in 2009, 4.57 in 2010 and 2.93 in 2015, respectively.

In the context of potential international out-migration of young professional nurses, the increase in the number of international patients to Thailand which has resulted in an increase in demand for nursing personnel in the private sector, lack of civil servant positions and other fringe benefits to work in the public sector; shortage and mal-distribution of nursing personnel between urban and rural areas and between public and private sectors, would pose critical challenges requiring effective policy interventions. The migration from the public sector would be further exacerbated by the ageing nurse population while the replenishment of new cohort of nurses is inadequate to change the trend.



The strengths of health professional education systems in Thailand lie on its quality and standard, the instructional dimensions, and the national licensing examination of all four professional categories, to ensure quality and standard across different public and private training institutes. The internationalization of medical education through the accreditation of medical curriculum by the World Federation on Medical Education can be a double edged sword as ensuring international standard may not be responsive to the changing health needs of the Thai population and will trigger international migration of physicians.

Dentistry stood out as more than half (53%) of the total number of dentists were found to be practising in the private for profit sector in 2010 though the share reduced to 49.3% in 2015. The shortage can be solved by contracting services to the private sector though this requires strong purchasing capacities of the MOPH and/or the insurance purchasing organizations.

Three out of four major professionals were female dominant. In 2010, 64.3% of dentists were female and 67% of pharmacists were female. Meanwhile, in 2015, 95.2% of professional nurses were female. Doctors are losing their male dominance with a decline in the proportion of male doctors from 59.5% in 2010 to 57.2% in 2015 while that of female doctors increased from 40.52% to 42.8% in the five-year periods. The gender biases have major implications on professional careers as female professionals have reproductive and family role. Better gender understanding and research are important to guide effective policies.

Thailand has the capacity to strengthen its health workforce in line with the commitment on the two year action plans. The emergence of platforms such as the MOPH, the National Health Workforce Commission and the National Health Professional Education Reform Commission play a critical role in ensuring synergistic integration and collaborations across different sectors.



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ANNEX: Thailand Mid-Year Population

Table 1 Thailand mid-year population by region

	Selected year					
	2006 ¹	2009 ¹	2010 ¹	2011 ¹	2014 ¹	2015 ²
Total mid-year population	62,828,706	63,525,062	63,878,267	64,076,033	65,124,716	67,236,000
▪ Bangkok			5,701,394		5,692,284	N/A
▪ Central region			15,922,094		16,532,023	N/A
▪ Northern region			11,788,411		11,846,651	N/A
▪ Southern region			8,893,050		9,208,504	N/A
▪ North-Eastern region			21,573,318		21,845,254	N/A

Sources:

1. The total number of mid-year population, including the number of population classified by region is derived from the National statistical Office of Thailand
2. Estimated number of 2015 mid-year population as forecasted by the National Economic and Social

Table 2 Thailand mid-year population by municipal and non-municipal areas

	Selected year					
	2006 ¹	2009 ¹	2010 ¹	2011 ¹	2014 ¹	2015 ²
Total mid-year population	62,828,706	63,525,062	63,878,267	64,076,033	65,124,716	67,236,000
▪ Municipal area			21,626,189		22,297,154	N/A
▪ Non-municipal area			42,252,078		42,827,562	N/A

Source:

1. The total number of mid-year population, including the number of population classified by municipal and non-municipal areas is derived from the National statistical Office of Thailand
2. Estimated number of 2015 mid-year population as forecasted by the National Economic and Social

Note:

Table 5: Density of health workforce per 1,000 populations of each professional in 2010 is calculated using the total number of urban and rural population. In 2015, due to unavailability of urban and rural population classifications, the number of urban and rural population in 2014 is used instead.





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