

The Thai Experience of Implementing Universal Health Coverage and Managing Antimicrobial Resistance

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1. Achievement of Universal Health Coverage in Thailand

Thailand has been very successful in achieving all health related Millennium Development Goals (MDGs) among middle-income countries and has an excellent record in lowering under-5 and maternal mortality, malnutrition, tackling HIV, TB and malaria. Thailand was the most successful country in achieving MDG 4 (Reduce Child Mortality) reducing under-5 mortality rate with by 8.5% every year between 1990–2006¹.

Thailand is also among the few countries in the South East Asia region or among middle income countries worldwide, that boasts of a Universal Health Care (UHC) system, which allows access to publicly-funded healthcare without any co-payments and covers 98% of the population. Thailand achieved UHC in 2002, when the country's GDP per capita was US\$ 1,900 and just four years after the 1997 economic crisis that had led to widespread joblessness and loss of income for millions of Thais. Since then public expenditure on health significantly increased from 63% in 2002 to 77% of the total health expenditure in 2011, while out-of-pocket expenditure was reduced from 27.2% to 12.4%². UHC costs are financed through general taxation.

Since the introduction of UHC, Thailand has seen a reduction in infant and child mortality, HIV infections, the effects of diabetes, and workers' sick days, as well as many other health benefits³. The expansion of UHC has also helped Thais access better treatment for HIV and specialised treatment like kidney dialysis, which was not possible before. Free access to health care has also reduced out-of-pocket expenditure, enabling households to avoid catastrophic health spending and hence indirectly reduced economic vulnerability of low-income households.

Extensive geographical coverage of health care delivery, a comprehensive benefit package free at point of service, and increased capacity of the Ministry of Public Health facilities are the main factors that have contributed to improved pro-poor utilization, low level of unmet health needs and pro-poor benefit incidence.

It is important to note that Thailand's UHC program was not achieved in a short time but was the culmination of a long history of concerted work by health bureaucrats, health professionals and civil society groups to make health and related issues a top national

¹ Rohde *et al.*, 2008, Lancet 2008; 372: 950–61.

<http://www.ihppthaigov.net/DB/publication/attachinter/131/Abstract.pdf>

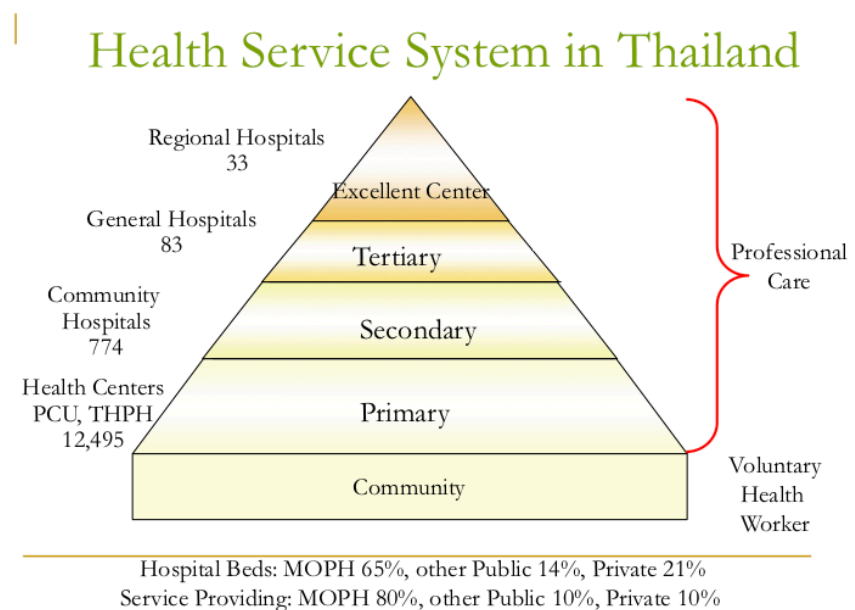
² The Kingdom of Thailand Health System Review. 2015. Asia Pacific Observatory on Health Systems and Policies. http://apps.searo.who.int/PDS_DOCS/B5410.pdf (accessed on 7 April 2019)

³ Tangcharoensathien V, Limwattananon S, Patcharanarumol W, Thammatacharee J. Monitoring and evaluating progress towards Universal Health Coverage in Thailand. PLoS Med. 2014; 11: e1001726

priority⁴. The welfare of underserved rural populations and low income groups was promoted as an important political issue, by various social actors, leading to appropriate policy measures.

From the mid-seventies itself there was also considerable government investment in health service infrastructure in district health systems, with an emphasis on primary health care facilities and ensuring functioning of health service through mandatory rural services by health professional graduates. Faced with a shortage of resources, the Thai government froze all new capital investment in urban hospitals from 1982 to 1986 and invested these funds instead in building rural district hospitals and health centres as well as mass training and employment of doctors and community health workers⁵.

Thailand has also chosen a policy path where the government takes clear responsibility for healthcare delivery and public health. In 2015 public hospitals in Thailand accounted for 75% and 79% of total hospitals and beds⁶. Most private hospitals are small, with 69% having fewer than 100 beds. Large private hospitals are located in Bangkok and offer services to mostly international patients. Private non-profit charity-run hospitals account for a negligible share of beds.



The extensive geographical coverage of Ministry of Public Health primary health care (PHC) and public hospital services are the foundation for successful implementation of UHC; especially pro-poor health service utilization and public subsidies⁷.

Thailand has also invested consistently in developing a health-care workforce production with high quality standards; the health-care workforce density per 1000 population is slightly above the 2.28 indicative WHO benchmark of doctors, nurses and midwives. To ensure adequate health-care workforce serving rural populations, continued efforts of multiple

⁴ Interview with Dr Suwit Wibulpolprasert. *Bulletin of the World Health Organization*. 2014;92:472-473. doi: <http://dx.doi.org/10.2471/BLT.14.030714>

⁵ Interview with Dr Suwit Wibulpolprasert. *Bulletin of the World Health Organization*. 2014;92:472-473. doi: <http://dx.doi.org/10.2471/BLT.14.030714>

⁶ The Kingdom of Thailand Health System Review. 2015. Asia Pacific Observatory on Health Systems and Policies. http://apps.searo.who.int/PDS_DOCS/B5410.pdf (accessed on 7 April 2019)

⁷ Politics and Power in Global Health: The Constituting Role. Viroj Tangcharoensathien, Walaiporn Patcharanarumol, Warisa Panichkriangkrai, Angkana Sommanustweechai *Int J Health Policy Manag* 2017, 6(2), 107–110. <http://ijhpm.com>

interventions were applied, such as education strategy by recruiting students from rural background, curriculum reflecting rural health problems, mandatory rural services by all doctors, nurses, pharmacists and dentists graduated since 1972, and financial and non-financial incentives such as social recognition.

2. The Management of Antimicrobial Resistance in Thailand

Despite its achievements in improving overall health status of its population Thailand has been witnessing new problems, in particular rising rates of antimicrobial resistance (AMR), which places a high burden on the country's health and economy. The burden of AMR in Thailand has been estimated in 2010 to result in 3.24 million days of hospitalization and 38 481 deaths per year, and to cost 0.6% of national GDP.⁸

AMR is also emerging as an important concern in the food-animal farming sector. Like other countries in the region, Thailand too has developed intensive farming systems, leading to the rising consumption of fertilizers, antibiotics, and pesticides, of which many farmers have limited technical knowledge. The lack of effective regulations, appropriate policies, and poor implementation of standards for antibiotic use, together with low levels of biosecurity, hygiene, and sanitation, have accelerated the emergence and dissemination of antibiotic resistance.⁹

While Thailand's health authorities have worked on AMR-sensitive factors such as nutrition, lowering burden of infectious diseases, WASH etc., since the seventies there was no mention of antibiotic or AMR as a public health issue until the 2000s. Thailand's National Drug Policies of 1981 and 1993 did not mention AMR, while an AMR policy draft prepared by academia in 1987 did not make any impact¹⁰.

In 1998 the National AMR Surveillance Centre (NAARST) was established within the Ministry of Public Health to collect resistance-related data from a network of hospitals around Thailand. NAARST has been a WHO Collaborating Centre for AMR Surveillance for the South-East Asia region since 2005. There were other measures that impacted AMR such as infection prevention and control (IPC), a national policy on medicine, regulation of antibiotics used in animal feeds and food production, but there was no national policy on AMR or clear recognition of the significance of the problem.

The Antibiotic Smart Use (ASU) project, started in 2006, by a network of researchers from Thailand's Ministry of Public Health and pharmacists and doctors from top Thai universities, was the first major initiative in Thailand that caught the attention of policy makers, health professionals and the general public alike¹¹. Its aim was to reduce unnecessary prescriptions

⁸ World Health Organization, SEARO. <http://www.searo.who.int/thailand/areas/antimicrobial-resistance/en/> (accessed on 17 February 2018).

⁹ Antimicrobial policy interventions in food animal production in South East Asia Flavie Goutard; BMJ. 2017;358:j3544 <http://dx.doi.org/10.1136/bmj.j3544> (accessed on 2 February 2018).

¹⁰ Dr. Nithima Sumpradit Food and Drug Administration Ministry of Public Health, Thailand. Presentation made at Regional Workshop on AMR in South-East Asia Penang, Malaysia | 26-28 March 2018

¹¹ Antibiotic Smart Use, Thailand. <https://www.reactgroup.org/toolbox/rational-use/examples-from-the-field/antibiotics-smart-use-thailand/>

of antibiotics for common self-limiting conditions, including upper respiratory tract infections, acute diarrhoea, and simple wounds. Using a combination of community mobilisation, and policy level initiatives to tackle the problem the ASU project, using simple but effective strategies to highlight the problem of AMR, succeeded in putting the issue firmly on the national health agenda.

Key reasons for the success of ASU, according to project managers, was the championing of the concept at different levels, from community to the national health system. For example, in 2009, ASU was first adopted into the Thai UHC system's Pay-for-Performance (P4P policy), a major achievement as there was stiff competition from other health priorities competing for the same status. An AMR research program, from Bangkok's Siriraj Hospital provided significant, domestic evidence for Thailand that the rate of antibiotic use for Upper Respiratory Infection URI, acute diarrhoea and simple wounds should not exceed 20%. This figure was adopted by the P4P policy for ASU implementation¹².

The ASU program also became part of the overall Antimicrobial Resistance Containment Program 2012-2016 in Thailand and in 2016, the Thai Ministry of Public Health integrated the ASU concept and its key messages as part of its Rational Drug Use policy package, making it a nation-wide program.

ASU concepts and messages were included in the country's National Strategic Plan on Antimicrobial Resistance (NSP-AMR) (2017-2021)^{13,14}. The plan sets targets for a 50% reduction in AMR morbidity; 20% and 30% reductions in antimicrobial use in human and animal health respectively, and a 20% increase in public knowledge about AMR, including awareness of appropriate use of antimicrobials.

The National Strategic Plan has come up with several strategies in particular to tackle the problem of antibiotic use in the food-animal sector. These include strengthening the surveillance of AMR in livestock and crop production, better regulation of distribution of antimicrobials used in food-animal farming, reduction of use of antimicrobials and introduction of stewardship programmes in veterinary hospitals and clinics.

Thailand has also set up a National Policy Committee on AMR, chaired by the Thai Deputy Prime Minister, which is expected to work on overall AMR strategy nationally; develop AMR surveillance using an One Health approach; reduce AMR impact in the hospital setting; prevent AMR and control antibiotic use in agriculture; and develop means to promote greater public awareness on AMR.

¹² Effectiveness of multifaceted interventions on rational use of antibiotics for patients with upper respiratory tract infections and acute diarrhoea. Boonyasiri A et al. *J Med Assoc Thai*. 2014 Mar;97 Suppl 3:S13-9. <https://www.ncbi.nlm.nih.gov/pubmed/24772576> (accessed on 9 January 2018)

¹³ Antimicrobial resistance: from global agenda to national strategic plan, Thailand. *Bulletin of the World Health Organization*. <http://www.who.int/bulletin/volumes/95/8/16-179648/en/> (accessed on 10 January 2018)

¹⁴ Tangcharoensathien V, Sattayawutthipong W, Kanjanapimai S, Kanpravidh W, Brown R, Sommanustweechai A. Antimicrobial resistance: from global agenda to national strategic plan, Thailand. *Bulletin of the World Health Organization*. 2017;95(8):599-603. doi:10.2471/BLT.16.179648.

3. Interaction between Universal Health Coverage and Antimicrobial Resistance in Thailand

According to a recent study¹⁵ on the anthropological and socioeconomic factors contributing to AMR, reduction of antibiotic consumption will not be sufficient to control AMR because contagion—the spread of resistant strains and resistance genes—seems to be the dominant contributing factor. Therefore, the study says, addressing various drivers of contagion is necessary, for example through improving sanitation, increasing access to clean water, and ensuring good governance, as well as increasing public health-care expenditure and better regulating the private health sector for lowering global AMR.

In the LMIC context, Thailand has an excellent record in tackling the drivers of contagion over the decades. Starting in the seventies, it successfully tackled the problem of malnutrition, ensured provision of clean drinking water and access to sanitation facilities while creating a strong primary health care network in the rural areas. For example, between 1982 and 1991, combined mild, moderate and severe malnutrition by weight-for-age in Thailand declined consistently from approximately 50.8% to 17.1%. For moderate and severe malnutrition combined, the decline went from about 15.13% to 0.77% in the same period¹⁶.

Thailand has also established efficient vaccination programs covering bulk of the country's population. In 1977 the National Expanded Programme on Immunization (EPI), focusing on diphtheria, pertussis, tetanus, poliomyelitis, measles, and tuberculosis, was initiated on a nationwide basis¹⁷. Data indicates that the program has reduced morbidity and mortality from most vaccine-preventable diseases in Thailand¹⁸.

Investments in literacy and adopting a participatory approach to solving problems at the community level have also created widespread public awareness about government schemes and initiatives. Very uniquely Thailand has, over the years, created a network of over a million trained health volunteers who play a critical role in many public health initiatives like vaccination drives and institutional deliveries, a key intervention to reduce maternal and neonatal mortality.¹⁹

All these efforts have had considerable impact on lowering burden of infectious diseases in the country. In 1958, infectious diseases such as TB and pneumonia were the main cause of

¹⁵ Anthropological and socioeconomic factors contributing to global antimicrobial resistance: a univariate and multivariable analysis. Peter Collignon et al. *The Lancet Planetary Health*. Volume 2, Issue 9, 2018. Pages e398-e405. <http://www.sciencedirect.com/science/article/pii/S2542519618301864>

¹⁶ Tontisirin K, Kachondham Y, Winichagoon P. Trends in the development of Thailand's nutrition and health plans and programs. Institute of Nutrition, Mahidol University; *Asia Pacific Journal of Clinical Nutrition*. 1992 1; 231–238.

¹⁷ Expanded Programme on Immunization in Thailand. Bhunbu T. *Rev Infect Dis*. 1989 May-Jun;11 Suppl 3:S514-7.

¹⁸ Thailand Expanded Program on Immunization Suchada Jiamsiri, MD, MPH Division of Vaccine Preventable Diseases Ministry of Public Health, Thailand. <https://www.fondation-merieux.org/wp-content/uploads/2017/10/vaccinology-2017-suchada-jiamsiri.pdf>

¹⁹ Thailand's health ambitions pay off. *Bulletin of the World Health Organization*. <http://www.who.int/bulletin/volumes/92/7/14-030714/en/> (accessed on 9 February 2017).

death in Thailand; fewer deaths were caused by non-infectious diseases²⁰. From 1958 through the late 1990s, the infectious disease mortality rate in Thailand declined 5-fold, from 163.4 deaths/100,000 population in 1958 to 29.5/100,000 in 1997. This decline paralleled the decline in overall deaths from 1958 to the late 1990s.

As far as more explicit integration of AMR concerns into the UHC system, Thailand has already instituted a broad rational use of medicine policy within the UHC in recent years and carried out awareness programs amidst both health professionals and the patient community groups. It is now moving towards laying a firmer foundation for long-term AMR-related work in the national health system.

Some of these initiatives include improved data collection and surveillance, greater regulation of the way the UHC system uses antibiotics, prevention of healthcare associated infections and more appropriate classification of antibiotics. Among these initiatives are:

- **Integrated AMR Management (IAM):** Introduced in 2018, the IAM is a set of protocols to be followed by hospitals in order to reduce healthcare associated infections (HAI) and lower AMR in the hospital setting. While Thai hospitals have a long history of Drug Use Evaluation committees that, in coordination with Pharmacy Therapeutic Committees, help control overuse of medicines the concept of antibiotic stewardship itself is still in its early stages. Under the IAM program detailed guidelines are planned to be issued for surveillance and stewardship of AMR. Thai policy makers believe hospital administrators will adopt IAM because doing so will help them reduce overall costs by controlling AMR.
- **National Point Prevalence Survey:** Currently Thailand does not have nationwide healthcare-associated infections (HAI) and healthcare-associated antimicrobial resistance (AMR) data as it is not mandatory for hospitals to collect such information, except for accreditation purposes²¹. There is however a voluntary network, with around 600 hospitals that send information to a centralized database giving the number of patients affected by HAI and AMR. In order to improve such data collection the Thai Ministry of Public Health is now working on a national point prevalence survey (PPS) of HAIs and AMR.
- **Thai Surveillance of Antimicrobial Consumption (Thai-SAC):** In late 2018, the Thailand Working Group on Development on Thailand Surveillance of Antimicrobial Consumption (Thailand SAC) released its first report on the surveillance of antimicrobial consumption in both humans and animals in Thailand, providing baseline data about the consumption of antimicrobials in humans and animals in 2017²². As per the first report, consumption of human antimicrobials in Thailand in

²⁰ Aungkulanon S, McCarron M, Lertiendumrong J, Olsen SJ, Bundhamcharoen K. Infectious disease mortality rates, Thailand, 1958-2009. *Emerg Infect Dis*. 2012;18(11):1794–1801. doi:10.3201/eid1811.120637

²¹ Personal interview, Dr Nithima Sumpradit, Food and Drug Administration, Ministry of Public Health, Thailand.

²² Consumption of antimicrobial agents in Thailand in 2017. First Report. Food and Drug Administration, and International Health Policy Program, Ministry of Public Health, Thailand
<http://ihppthaigov.net/DB/publication/attachresearch/421/chapter1.pdf>

2017 was 75.68 DDD/1,000 inhabitants/day. Of these, the antibacterials group was the highest consumption (69.98% of total), followed by antivirals (17.20%) and antifungals (6.58%). The report cautions that its findings on antimicrobial consumption in humans and animals should be interpreted with care, given the number of limitations of the database. For example, the mandatory reports by importers and manufacturers are not fully validated for accuracy through on-site verification and mandatory reporting does not provide export volume.

- **Control of antibiotic distribution:** In Thailand, by law, all medicines for human and veterinary use must be registered with the Thai FDA before production and importation. The Drug Act (1987) classifies most antibiotics as “dangerous drugs” which need to be dispensed by licensed pharmacists or veterinarians but which legally do not require prescription at licensed pharmacies. Only a few antibiotics, e.g. betalactamase inhibitors, carbapenems and fosfomycin, are classified as special-control drugs because of the high prevalence of resistance to them. Such drugs cannot be obtained, legally, without a prescription and are reserved for hospital use²³. The Thai Food and Drug Administration is currently working on a reclassification of antibiotics in which a larger proportion of the drugs will be categorized as special-control/prescription-only, in line with the recommendations made by the World Health Organization in its 20th Model List of Essential Medicines²⁴.

4. Conclusion

Though initiatives in the UHC and AMR sectors intersect and even aid each other in many ways they have not been explicitly linked in policy making, allocation of budgets or health programming so far. There are several reasons for this.

Firstly, though Thailand’s UHC was formally launched in 2002, its roots are much older, going back to the seventies, when the first free healthcare program for poorer sections of the population was established. In contrast AMR-related initiatives, are relatively new to Thailand, having caught the attention of policy-makers just over a decade ago.

In terms of scale of resources involved and the size of the population benefited also UHC is a far bigger priority for both policy makers and health activists in Thailand, than AMR, which is seen as an important but relatively smaller concern in the larger framework of health challenges facing the country.

Further, the demand for implementation of a UHC system in Thailand has been driven by not just civil society groups working on health or health professionals but also by social and political organisations, who worked as its ‘champions’. Like in other countries, in Thailand

(accessed on 8 April 2019)

²³ Sommanustweechai A, Chanvatik S, Sermsinsiri V, et al. Antibiotic distribution channels in Thailand: results of key-informant interviews, reviews of drug regulations and database searches. *Bull World Health Organ*. 2018;96(2):101–109. doi:10.2471/BLT.17.199679

²⁴ WHO Model List of Essential Medicines. 20th list. Geneva: World Health Organization; 2017. http://www.who.int/medicines/publications/essentialmedicines/20th_EML2017_FINAL_amendedAug2017.pdf?ua=1 (accessed on 8 April 2019)

too widespread access to low-cost or free healthcare is seen a direct reflection of the state of national governance and a subject of intense lobbying by organisations seeking public welfare or in the context of competitive electoral politics – public approval and attention also.

While potentially lowering use of antimicrobials within UHC could result in cost savings, the current state of surveillance and data availability in Thailand does not allow tracking of morbidity and mortality due to AMR or calculate the economic costs of AMR in any accurate way. Besides, with the major costs within the Thai UHC program related to treatment of non-communicable diseases, cost-savings on reduction of antimicrobial consumption would by itself not be significant to draw attention of policy makers²⁵.

However, AMR is likely to become a priority issue within the Thai UHC system as the focus shifts from access to quality of care and to cater to needs of specific disease groups or sections of the population, such as the elderly or those requiring surgery and longer-term hospitalisation. Also, with AMR gaining a higher profile globally and also within Thailand there is likely to be greater coordination of AMR-related work that overlaps with or is complementary to functioning of the UHC system.

²⁵ Interview with Dr Viroj Tangcharoensathien²⁵, Senior Adviser, International Health Policy Program, Ministry of Public Health, Thailand. 13 March 2019