

PRINCE MAHIDOL
AWARD CONFERENCE

2020



PMAC 2020 | UHC FORUM 2020
ACCELERATING PROGRESS TOWARDS UHC

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PMAC 2020 | UHC FORUM 2020

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THE COMPANION BOOK FOR FIELD TRIPS



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PMAC 2020 | UHC FORUM 2020

ACCELERATING PROGRESS TOWARDS UHC

*THE COMPANION BOOK
FOR FIELD TRIPS*

PMAC 2020 | UHC Forum 2020: Accelerating Progress Towards UHC

The companion book for field trips in PMAC 2020 | UHC Forum 2020

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OVERVIEW OF FIELD TRIPS

PMAC 2020 | UHC forum 2020

Accelerating Progress towards UHC

30 January 2020

Thailand has achieved Universal Health Coverage (UHC) since 2002 with the main objectives of reducing the service needs gaps, providing more access to healthcare services, and protecting people from financial hardship due to health expenditure. Throughout 17 years of UHC implementation efforts, accessibility to necessary health services have been improved with quality of health care and financial protection to families. Evidences of these efforts include financial and non-financial interventions to promote the health status of vulnerable groups, such as prisoners, the elderly, disabled people, women and children, chronic disease patients, people living in rural areas and other risk groups.

The Prince Mahidol Award Conference in 2020 (PMAC 2020) is planned to organize under the main theme “Accelerating Progress Towards UHC.” The 7 PMAC 2020 field trips are arranged to share experiences in implementing UHC initiatives to reduce barriers and to enhance social inclusion of vulnerable populations in different settings and groups. They are planned under the 3 subthemes:

Subtheme 1 Implementation Challenges and Innovative Solutions for UHC 2030

Site 1 UHC for high cost treatments: Interdisciplinary care for kidney disease

Site 2 Quality of Life of Prisoners: Samutprakan Central Prison

Subtheme 2 Sustainable Financing for Expanding and Deepening UHC

Site 3 Primary Care Cluster to Promote Universal Health Coverage:

Site 4 Matching Funds for Better Rehabilitation and Intermediate Care, Saraburi Province

Subtheme 3 Adapting to the Changing Global Landscape: Fostering UHC-Based Solidarity to Drive towards SDGs

Site 5 Primary Care Trusts, e-Referral, and Mobile Health Application in Capital City Fostering UHC-Based Solidarity to Drive towards SDGs

Site 6 UHC for Innovative Cost-Effective Service: One Day Surgery

Site 7 UHC Investment and Management to Access Orphan Antidotes

The preambles of the 7 site visits are described below:

Site 1 UHC for high cost treatments: Interdisciplinary care for kidney disease

Kidney disease, resulting in a high fatality rate, is one of the most important health issues in Thailand. Furthermore, financial barriers due to high cost of treatment and after-care as well as a limitation of suitable service facilities have affected patient care need. The National Health Security Office (NHSO), therefore, has taken initiatives to address this issue not only through its healthcare packages, but also by supporting related healthcare system developments. One of them is the co-operation with the Faculty of Medicine, Srinakharinwirot University to set up Regional Renal Replacement Therapy Technology and Training Center (RRRT-TTC) to provide model of care to slow progression of worsening kidney function in patients with chronic kidney disease (CKD). The continuous ambulatory peritoneal dialysis (CAPD), kidney transplantation (KT), and vascular access clinics have been set up to help patients with end stage renal disease (ESRD) to access renal replacement therapy (RRT) in accordance with PD First Policy. RRRT-TTC has also supported other hospitals to build up networks including academic activities to improve clinical outcomes. The success of its operation has been achieved through interdisciplinary collaboration of such personnel as specialists, nurses, pharmacists, social workers, etc. from a super-tertiary hospital, primary care facilities and community in NHSO Region 4 Saraburi, and members of the Thai Kidney Club.

Upon the site visit, participants will learn how NHSO' benefit packages for such high-cost treatments are deployed to be implemented and achieved and how system management based on holistic and interdisciplinary care for patients with kidney disease is highlighted.

Site 2 Quality of Life of Prisoners: Samutprakan Central Prison

According to the prisons survey, it was found that there are very few prisoners who could access to health-care services due to many reasons such as various obstacles to access, personal security of the prisoners, and not enough health workforce. Therefore, an MOU in January 2019 set up Samutprakan Central Prison as a contracting unit in the NHSO system. The aim is to assure the international community that Thailand takes care of prisoners in line with human right principles. A primary care unit in prison is supported by Bangbo Hospital as a contracting unit for primary care (CUP). The primary care unit in Samutprakan Central Prison is undertaking registrations and links with Bangbo Hospital as referral hospital for further healthcare services.

This site visit will present how it is implemented to support the development of access to healthcare services, healthy environment, and social assistance in prisons. The participants will learn the real life of prisoners, and see how multi-sectors both government and non-government organizations working together to improve quality of life of prisoners.

Site 3 Primary Care Cluster to Promote Universal Health Coverage:

In 2016, the Ministry of Public Health launched the 12th National Health Development Plan 2017-2021 to establish primary care clusters, the primary care system with an adequate number of family doctors and multidisciplinary teams. The primary care policy aims to improve primary care services to ensure a proactive health system that provides comprehensive health care to achieve a goal of quality of life for all age groups. It also aims to strengthen networks and partner collaboration in communities and change the way that health and social services are organized, funded, and delivered. In order to sustain the progress of UHC, the National Health Security Office (NHSO) has launched the on top payment for Primary Care Cluster in 2018 to accelerate coverage of family doctors and multidisciplinary teams for primary health care services.

The Pakchong primary care cluster was established in October 2016. It comprises three primary care units with three family doctors and multidisciplinary teams, covering a population of around 30,000. It collaborates with networks and partners to provide comprehensive health care for all age groups, especially chronic disease patients, disabilities, and dependent patients.

This site visit will show an insightful story of Pakchong primary care cluster and how they move forward the primary care clusters policy to accelerate coverage of primary health care services to sustain the progress of UHC.

Site 4 Matching Funds for Better Rehabilitation and Intermediate Care, Saraburi Province

Saraburi Provincial Rehabilitation Funds are matching funds set to be contributed in equal amount from the National Health Security Office and Saraburi Provincial Administrative Organization. The funds were launched in accordance with Section 47 of the National Health Security Act and aimed to serve health care needs of the local community by including the local community in decision making and co-funding of health-related programs. The funds were set up to provide health access for disabled, elderly, dependent or palliative care patients; which include intermediate care, rehabilitation services, medical products, assistive devices, to develop their quality of life. Patients receive necessary health care services by the multidisciplinary care team during a golden period of recovery such as health care services in an intermediate ward, outpatient rehabilitation services, home visits and home modifications. By receiving these services, the abilities to care for themselves of patients and their families increased and various complications decreased.

The study visits will present how they provide and support activities of intermediate care and rehabilitation services to disabled patients, and the activities of related local community networks.

Site 5 Primary Care Trusts, e-Referral, and Mobile Health Application in Capital City Fostering UHC-Based Solidarity to Drive towards SDGs

A collaboration of big public hospitals with

private clinics to primary care services close to home before referring to the hospital, in order to solve over-crowding problems in public hospitals. The primary care units and the hospitals have been strengthened by the system called “Primary Care Trust” (PCT). This trust means believability between public and private medical centers in the standard medical treatment with the quality and continuous healthcare for the referral patients. NHSO Bangkok has been providing the capacity and developing the e-Referral system to share patients’ medical records to physicians in hospitals and clinics. This electronic medical data transferring system ensures that patients will get the same standard treatments from different level of healthcare providers.

In Bhumibol Hospital, the e-Referral system has been developed by the cooperation of the hospital with NHSO, network partners, and the National Electronics & Computer Technology Center (NECTEC), bringing information and communication technology to forward patient care data to community clinics and the hospital network. Working together with BHA CONNECT, the application system that enables people to know their own treatment information, the innovation will be developed to be a home health care system soon.

This site visit will show the strong and close collaboration between government units, private organizations and NGOs to promote access to health care service and how to use the electronic medical data system.

Site 6 UHC for Innovative Cost-Effective Service: One Day Surgery

The Ministry of Public Health has been setting the 5-year-goal for One Day Surgery system to cover at least one health unit in each regional health area within 2021. This system does not only decrease the admission rate and lower the budget, but also saves money for patients, decreases waiting-list of surgery and over-crowding problems in hospitals.

Pahonpolpayuhasena Hospital, Kanchanaburi has been providing One Day Surgery for hernia surgery for more than 10 years since 1999. And since 2017, it has been developed to be a One Day Surgery center, which is being planned to be a training center in the future.

This site visit will show the innovation of service to decrease waiting-list of surgery and over-crowding problems in hospitals and this innovation is developed to be the national benefit package.

Site 7 UHC Investment and Management to Access Orphan Antidotes

UHC scheme of Thailand has paid attention to the orphan drugs since this scheme was initiated in 2002. More than 10 years of implementation, concrete solutions have been used to save many patients' lives. Queen Saovabha Memorial Institute and Ramathibodi Poison Center are the examples of very good cooperation to solve this problem.

Queen Saovabha Memorial Institute has produced 4 orphan antidotes and all anti-venoms used in Thailand as well as exported these products to save lives of patients who are bit by venomous snakes in other countries under coordination with WHO.

Ramathibodi Poison Center provides accurately up-to-date information and counsel from professionals or hospitals for diagnosis 24 hours by hotline-1367. Ramathibodi Poison Center is a center of antidote database for the treatment of poisonings and can provide fast treatment for people who are poisoned. It also has a laboratory to check the poison level.

In January 2018, Ramathibodi Poison Center was able to save 2 Nigerians from Botulism by providing Botulinum Antitoxin from Thailand to the Federal Republic of Nigeria in a short period of time after receiving request from Nigeria WHO Country Office, with coordination among Ramathibodi Poison Center, the National Health Security Office (NHSO, the Government Pharmaceutical Organization (GPO), and WHO Thailand Office. Since October 2018, Ramathibodi Poison Center has been a WHO Collaborative Center for the Prevention and Control of Poisoning.

This site visit will show how strong collaborative network among governmental organizations to secure orphan antidote access under UHC, a simulation case of poisoning management, and anti-venom/antidote production. You will also be excited by venomous snake handling and diverse poisonous animals in Thailand.

1

UHC for high cost treatments: Interdisciplinary care for kidney disease

Panarut Wisawatapnimit
Kamolrat Turner

UHC for high cost treatments: Interdisciplinary care for kidney disease

Panarut Wisawatapnimit
Kamolrat Turner

Save kidney save life, give kidney give new life



ESRD patients with peritoneal dialysis at CKD clinic



ESRD patients with peritoneal dialysis at their houses

Chronic Kidney Disease (CKD) leads to a poor quality of life, financial difficulties, and has a high risk of fatality. It is one of Thailand's most important health issues. The National Health Security Office (NHSO), therefore, has undertaken to address this issue not only through their benefit packages, but also by supporting related health system developments. For example, the NHSO will cooperate with the Faculty of Medicine, Srinakharinwirot University, to set up a network to transform policies into action. The following statements given by one of the patients with CKD can demonstrate the positive outcomes of package implementation.

"I was scared when I firstly discussed with a physician that I had to have peritoneal dialysis. I did not want to do it. ... But after I was trained by a health care team and started to perform peritoneal dialysis at

home, my life was so much better that I was able to work again. Peritoneal dialysis was very convenient, which is opposite to my old thought,” said by a male patient with end-stage renal disease (ESRD) and being treated at HRH Princess Maha Chakri Sirindhorn Medical Center (often called Srinakharinwirot University Hospital). His health problem began with hypertension but he did not look after himself well until his health condition became worse. He came to the hospital and he was diagnosed with ESRD. He had taken medication for 2 years, but his kidney condition deteriorated. He was very weak, lost weight, and had edema. Having discussed with a doctor, he decided to start performing peritoneal dialysis (PD), and very soon after that, his condition was much better.

The patient performed PD at home for about 2 years before having a kidney transplant. Having a kidney transplant is like having a new life. “I got a new life”, said the patient. He further addressed that “if I did not have a health coverage package, I would be surely be bankrupt.” This is an example of a life story of many ESRD patients who are faced with difficulties in living with CKD which require complex and high-cost treatment modalities. Their lives would be shortened and involve suffering without accessing to kidney treatments or replacement. High cost is the major barrier to treatment accessibility. The quality of life of these patients, especially the poor, might not be improved without the recently introduced policies of the NHSO covering PD first and receiving renal replacement therapy (RRT) under the Universal Health Coverage (UHC) scheme. The PD First Policy including other RRT coverage especially kidney transplantation introduced in 2008 have saved and given new lives to many poor patients.

From policy to initiation and innovation

Thailand introduced UHC in 2002 but it did not cover costly treatments such as RRT until 2008, when continuous ambulatory peritoneal dialysis (CAPD) for ESRD called “PD First Policy” was included in the UHC scheme. The “PD First Policy” was selected because it could be managed under the Thai contexts where human and financial resources were limited. With strong leadership of the leader of the NHSO, Dr. Sanguan Nittayarumpong, MD, the late founder and former General Secretary of NHSO, and with evidence supported from the Nephrology Society of Thailand, the NHSO had started to approve additional fund for RRT under UHC.



Dr. Sanguan Nittayarumpong, the late founder and former General Secretary of NHSO

Hemodialysis (HD) was not set as the first choice because of limited health facilities and it costs about three times of the CAPD but it is performed to some cases when CAPD does not work. Kidney transplant (KT) is the final choice to save the patients' lives. In such conditions, HD and KT will also be covered by the UHC scheme (Figure 1).

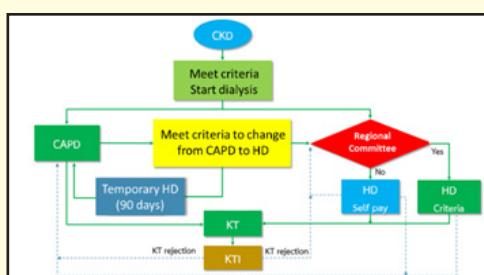


Figure 1 Scope of RRT under UHC packages

To implement this new policy, a CKD network or interprofessional care team was developed because there had to be many sectors involved in providing care for CKD patients since being first diagnosed, during treatment, and after treatment. CKD network had become a system innovation driving this policy.

Following policy implementation, the number of CKD patients using CAPD increased from 1,198 cases in 2008 to 30,024 cases in 2018 (Figure 2). Based on the NHSO data in 2018, this policy also improved RRT accessibility (87.11 %), increased survival rate after initial CAPD to 12 months (87.10 %), improved quality of life, reduced hospital stay and fatality rate of the patients (less than 9.2% annually).

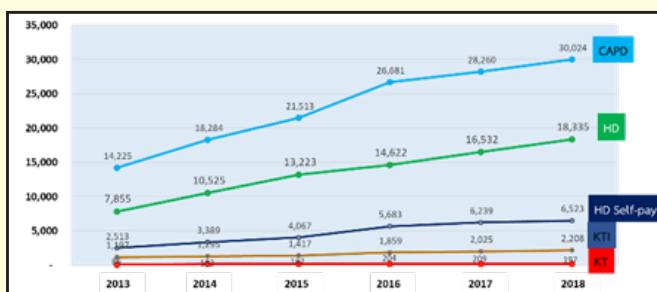


Figure 2 Number of CKD patients receiving renal replacement therapy

Accessibility and sustainability by an efficient network and good collaboration

The “PD First Policy” has been strategically and successfully implemented since 2008 under the UHC scheme, with strong collaboration and support from various stakeholders, has proved to overcome major challenges. Key stakeholders in this policy development and implementation included the Nephrology Society

of Thailand, the Ministry of Public Health (MOPH), Thai Nephrology Nurses Society, Thai Pediatric Nephrology Association, Thai Dietetic Association, and the NHSO.

The network of the health facilities in NHSO Region 4 Saraburi is one of the good examples of strong interdisciplinary collaboration to provide RRT for patients with CKD. Building a strong network, the NHSO signed the Memorandum of Understanding (MOU) with HRH Princess Maha Chakri Sirindhorn Medical Center, Faculty of Medicine, Srinakharinwirot University on 8 June 2011 to set up the Regional Renal Replacement Therapy Technology and Training Center (RRRT-TTC) for providing a prototype model of interdisciplinary care to slow down the progression of worsening kidney function in patients with CKD in accordance with PD First Policy. The CAPD, KT, and Vascular Access clinics had also been set up to help patients with ESRD to access RRT.

Assoc. Prof. Siribha Changsirikulchai, MD, Head of Division of Nephrology, Department of Medicine, Faculty of Medicine, Srinakharinwirot University, stated that “the aims of this project are to increase the quality of care in patients on CAPD, develop a prototype of care to improve quality of life of the patients by using an interdisciplinary team approach with community participation, and to extend the CKD network as large as possible”. Currently, the CKD network is extended to cover all health facilities of 8 provinces in central areas under the NHSO Region 4 (Figure 3). The network has also been extended to NHSO Regions 6 and 9.



NHSO signed the MOU with HRH Princess Maha Chakri Sirindhorn Medical Center.



Figure 3 CKD network of NHSO Region 4 and Collaboration of all sectors

A CKD interdisciplinary team of the NHSO Region 4, including nephrologists, peritoneal dialysis nurses, hemodialysis nurses, pharmacists, dietitians, health educators, etc., was set to provide care for CKD patients

in all trajectory phases from diagnosis to the end of their lives. The CKD guidelines covering continuing care, long-term care, and palliative care were developed by nephrologists of all 8 provinces. This approach has helped increase accessibility and quality of life of the CKD patients as a patient with ESRD of the HRH Princess Maha Chakri Sirindhorn Medical Center mentioned, “After receiving peritoneal dialysis, my condition improved. I could return to work. Peritoneal dialysis was very convenient to perform. The packages of peritoneal dialysis fluid were transported to my house directly. I received knowledge about how to manage peritoneal dialysis at home and how to modify my behaviors to prevent worsening my kidney disease. After I had conducted peritoneal dialysis for about 2 - 3 years, I received a kidney transplant. I thank NHSO and Thai government very much for providing treatments with free of charge otherwise I had to spend a lot of money. Currently, I feel like I've been given a new life.”

An interdisciplinary team provided care for ESRD patients not only in hospitals, but also in their houses and communities. The patients are referred to their primary care unit to ensure that they receive continuing care. The Buengyitho Medical and Rehabilitation Center is an example of a primary care unit in the CKD network of NHSO Region 4 that provides a chronic kidney clinic every Thursday and home visits by interdisciplinary team. This center has connection with Pathumthani Hospital and the HRH Princess Maha Chakri Sirindhorn Medical Center.



*CKD network in NHSO
Region 4 Saraburi*

Like all health facilities in NHSO region 4, the Buengyitho Medical and Rehabilitation Center manages various activities for patients with CKD using "four principle steps to prevent kidney disease," including 1) individual health education for behaviour modification, such as a suitable diet and performing peritoneal dialysis; 2) group activities such as exercise and other physical activities for rehabilitation, health promotion and CKD prevention; 3) medication monitoring by physicians and pharmacists; and 4) laboratory test and physical examination to screen and monitor kidney function.



*Physical activity in Buengyitho
community*



*Buengyitho Medical and
Rehabilitation Center*

Buengyitho Medical and Rehabilitation Center also collaborates with other health care facilities of NHSO Region 4. The ESRD patients with stages 4 and 5 are referred to internists at a secondary level hospital such as Thunyaburi Hospital for advanced treatment. A consultant and referral system is set at a tertiary level hospital such as Pathumthani Hospital. The NHSO Region 4 and HRH Princess Maha Chakri Sirindhorn Medical Center also act as mentors to help set up the CAPD corner at the Buengyitho Elderly Recreation and Rehabilitation Center to provide day care services for ESRD patients.

With the PD First Policy and strong CKD network of the interdisciplinary team, the health outcomes in terms of accessibility to renal replacement therapy, quality of care, and quality of life of Thai patients with ESRD are achieved.

Key success factors

Networking and collaboration among all involved stakeholders are the major factors that yield good health outcomes. Chalor Santiwarangkana, MD, Director of NHSO Region 4 Saraburi stated that “NHSO Region 4 has a good system to support CKD management. The NHSO



*Chalor Santiwarangkana,
MD, Director of NHSO
Region 4 Saraburi*

Region 4 has provided financial support for CAPD training and helped link with Associate Professor Siribha Changsirikulchai and other interdisciplinary teams of health care facilities in the region to ensure the accessibility and quality of care for CKD patients”.

Administrative support from health care facilities is also important to sustain the CKD network. Assoc. Prof. Pairoj Chongbanyatcharoen, Dean of Faculty of Medicine, Srinakharinwirot University, stated that “Policy of our organization focuses on the care of patients, people and society. The main mission is to strive for academic excellence for advising any healthcare facility. Therefore, the Faculty of Medicine supports the Division of Nephrology to provide excellent care for CKD patients and other group of patients”. In addition, support from the local authority is essential for continuing care in the community. Mr. Rungsarn Nuntakawong, Mayor of Buengyitho Municipality, stated that “the Municipality has worked hard to take care of our people and provided service centers for our community. The most important thing is that we help take care of each other. At least, we should take care of our family members; not deserting them or leave them to live alone and should bring happiness to them with the power to live on”.



*Assoc. Prof. Pairoj
Chongbanyatcharoen,
Dean of Faculty of
Medicine,
Srinakharinwirot
University*



*Mr. Rungsarn
Nuntakawong, Mayor of
Buengyitho Municipality*

Leadership and strong effort of the team leader is crucial to sustain the CKD network. Assoc. Prof. Siribha Changsirikulchai is a pioneer and good role model to provide care of CKD network of NHSO Region 4 Saraburi. Nurses of the CKD network confirmed that she has inspired them to care for CKD patients with their heart and always be a good consultant for them not only in caring for the patients, but also for improving standard of care for the patients. The patients also illustrated that “Assoc. Prof. Siribha Changsirikulchai and other members of her staff provide care to us as their relatives. We are comfortable to be treated here”.



Assoc. Prof. Siribha Changsirikulchai



Assoc. Prof. Siribha Changsirikulchai and CKD interdisciplinary team

Strong collaboration between interdisciplinary teams and the community is important because CKD is a chronic disease that needs continual and long-term care. The interdisciplinary team and participation of patients, family members, and community are important to help patients to be able to manage themselves for the journey of this disease during their lives. As Assoc. Prof. Siribha Changsirikulchai said, “To go fast go alone; To go far go together.”

Challenges

The payment system for CKD patients is still a challenge; even the patients under the UHC scheme can be referred to receive RRT from the tertiary hospitals or university hospitals that are always outside their living areas with the reimbursement from the NHO, but they have to pay for their transportation to the hospitals. After they received the treatment, there is a limitation of the health system because the interdisciplinary team from the hospitals cannot visit the patients outside the catchment area. The accessibility to hemodialysis and kidney transplants are also limited due to the hospital capacity. Knowledge and attitudes of CKD patients are also a major obstacle. Most CKD patients lack knowledge of renal replacement therapy and have difficulty modifying their behavior. It causes complications and worsens the condition of the kidneys. The attitudes of Thai people toward kidney donation is also a challenge for the acceptance of kidney transplant.

Further development: never stop dreaming

The automated peritoneal dialysis (APD) at home is recently introduced as a trial. Using this procedure,

patients can perform peritoneal dialysis more conveniently at bed time. “We believe that the CKD patients will be happier with APD than hemodialysis and quality of life of the patients will be better improved”, Chalor Santiwarangkana, MD, stated.



To provide better service and increase accessibility of ESRD patients in the community, Thitinan Nakphu, MD, Head of Primary Care Cluster, Buengyitho Medical and Rehabilitation Center mentioned that “CAPD corner will be set up at the Buengyitho Elderly Recreation and Rehabilitation Center to provide the daycare service in the near future, while the number of caregivers for CKD patients will be hired and the number of home visits of interdisciplinary team will be increased to cover the stage 3 ESRD patients”.

Assoc. Prof. Siribha Changsirikulchai illustrated that “my dream is to extend the body of knowledge of CKD management and CKD network both at both the national and international levels. An interdisciplinary conference will be organised. I also would like to support peritoneal dialysis nurses to disseminate their knowledge at the international level”.

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1. Dr. Chalor Santiwarangkana, MD, Director of NHSO Region 4;
2. Staff of Srinakharinwirot University:
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- Asst. Thitinut Dilokhuttakarn, MD, Deputy Director in Administration,
- Ms. Amporn Boonbutra, Deputy Director in Services,
- Assoc. Prof. Siribha Changsirikulchai, MD, Head of Division of Nephrology, Department of Medicine, Faculty of Medicine;
- 3. Mr. Rungsarn Nuntakawong, Mayor of Buengyitho Municipality;
- 4. Staff of Buengyitho Medical and Rehabilitation Center:
 - Mr. Bundit Tungcharoendee, Director,
 - Ms. Thitinan Nakphu, MD, Head of Primary Care Cluster, and
 - Mrs. Kwanjai Jamtim, Director of the division of public health and environment.

We also really appreciate many helps from several members of NHSO Region 4; HRH Princess Maha Chakri Sirindhorn Medical Center; Buengyitho Municipality; Buengyitho Medical and Rehabilitation Center; CKD interdisciplinary team of NHSO Region 4; and CKD patients. Finally, we would like to thank Dr. Paul Turner for English language editing.

2

Quality of Life of Prisoners: Samutprakan Prison

Sukjai Charoensuk
Boontuan Wattanakul

Quality of Life of Prisoners: Samutprakan Prison

Sukjai Charoensuk
Boontuan Wattanakul

"Yet, a diametrical controversial viewpoint considers both health and healthcare as a human right, not a business, any human being deserves a comprehensive care and government is the responsible one providing care. Random this approach is broadly known as an egalitarian approach."

Frankfurt & Harry (1987)

Life Behind the Bars

An imprisonment is generally recognized as punishment for a crime committed. Stories telling of Thai jails like myths whispered about many problems such as overcrowding, poor sanitation and hidden self-governing system.

Life Behind Bars



Samutprakan Central Prison is one of 34 central prisons in Thailand where incarcerated offenders are imprisoned 15 years and limit to 30 years. Approximately 8,000 inmates are currently under the supervision of Samutprakan Central Prison, 3 times the number the prison is designed to house. Due to limited resources, Samutprakan Central Prison confronts the challenge to accomplish the mission of the Department of Corrections to, “Professionally provide inmate custody and effective rehabilitation”.

“In the past, there were many prisoners who died in prison...it was very difficult to take sick prisoners to be treated in a hospital.” Mr. Kwanchai Santiparapop, a Chainat prison warden and former director of Prisoner Rehabilitation Division of Samutprakan Prison, recalled about his 20 years of working in the system. Prisoners were viewed as bad men and deserving of punishment. They seemed to have no right to call for mercy; therefore, their health and welfare were commonly abandoned.

*Mr. Kwanchai Santiparapop,
Prison Warden of Chainat Prison
and Ex-Director of Prisoner
Rehabilitation Division of
Samutprakan Prison, his
background is a nurse.*



A 60-year old male inmate called Uncle Ray has been in Samutprakan prison over 6 years. Now, he has been admitted for cellulitis treatment in the prison unit at Bangbo Hospital. He said, *"It began with a scratching abrasion on the skin of the left dorsal hand, it just took a few days to become swollen from the hand to the elbow, that was very hurtful"*. He asked the Prison Wing Chief to see the doctor in the morning and waited for permission to be treated. He was permitted in the same evening to leave for Bangbo Hospital with the warden to receive treatment. Uncle Ray is one example showing that prisoners are currently able to access primary medical care in accordance with basic human rights.

Universal Health Coverage in a Prison

Thailand has established Universal Health Coverage (UHC) in 2002 aiming to create equal access to health for all Thais. This reflects the Thai government's view that health insurance is a right of citizenship. There are three main public schemes of health insurance: The Civil Servant Medical Benefit Scheme; the Social Security Scheme; and the Universal Coverage Scheme. Using the 13-digit numbers to identify Thai nationality in order to receive benefit, Thailand is able to claim that all Thais citizens are covered by one form of government health insurance. However, it is not easy to do in a forbidden zone like a prison.

Uncle Ray, a male inmate, is getting treatment for cellulitis at prisoner unit in Bangbo Hospital, Samutprakan.



“Some offenders don’t have 13 digit-numbers... or they use false names, so an authentication is needed and verification consumes time...”, Mrs. Jitjuta Supairin, a head of UHC department at Bangbo Hospital said.



*Healthcare Team from Bangbo hospital, Samutprakan
(From Left) Sumalee Pongpeng, Psychiatric Nurse; Sukjai
Prachakorn, a Nurse and Coordinator; Alisa Ruangthai,
Maternal and Child Nurse; Jongkol Srili, a Head of Emergency
Room; Tanya Kanjanarachata, Head of Male Ward and
Prison Unit; Tiwa Rungprateepaiboon, Chief Nurse; Anuwat
Direksunthorn, MD, Deputy Director; Vee Rojnasiraprapa,
MD, Director of Bangbo Hospital, Nipa Rungprateepaiboon,
Assistant Chief Nurse; Rungtip Boonlumsun, Head of Dental
Unit; Pornsarin Tovisitchai, Dentist; Jitjuta Supairin, Head of
UHC Department; Natcha Khamkruea, HIV and AIDS Nurse;
and Ketsara Yammeng, nurse of the TB Clinic*

Offenders sentenced to imprisonment are immediately sent to jail without any personal belongings, including their identification (ID) card, therefore, it is difficult to complete UHC registration for prisoners. Prisoners are not allowed to obtain treatment outside the prison facility for any reason. The Department of Corrections has established a health care unit for taking care of prisoners' health in every prison. There are only 5 nurses in Samutprakan Central Prison taking care of thousands of prisoners for 24 hours a day, 7 days a week. With limited medical supplies and medicines, it is very difficult to deliver adequate health care services for prisoners.

Criminal Procedure Code section 148 states that an autopsy is required if there is a death in a prison. Mrs. Jongkol Srili, head nurse of the Bangbo Hospital emergency room stated, "*It is very crowded and dirty in the prison...we perform more than 2 autopsies a month in Samutprakan Prison.....most of them died of AIDS.*"

Thailand has committed to improving the UHC scheme to ensure greater equitable health service access for all, particularly for the vulnerable and marginalized populations. After the announcement of the UHC policy in 2002, the Head Nurse of Samutprakan Central Prison tried to contact Bangbo Hospital asking for help. Some nurses from Bangbo Hospital have been allocated to work with the prison's nurses in the health care unit. The most common severe health problems were HIV and TB at that time. Since Her Royal Highness Princess Soamsavali Krom Muen Sudhanarinatha, UN Goodwill Ambassador in the AIDS Project is concerned about HIV infection in mothers and children, the health of HIV prisoners, especially female prisoners have been improved. Anti-retroviral drugs for HIV were very expensive and only a few HIV prisoners can afford them.

Fortunately, the Thailand UHC fringe benefit has covered HIV treatment since 2005 by increasing access to anti-retroviral drugs resulting in a dramatic decline of new HIV-infected people. Thailand will expand its UHC benefit package to include the provision of pre-exposure prophylaxis or PrEP to those with high risk of HIV infection in 2019.



*Her Royal Highness Princess
Soamsavali Krom Muen Sudhanarinatha,
UN Goodwill Ambassador in AIDS project*

The National Health Security Office (NHSO) has found an innovative way to reach people forgotten by society like prisoners. A Memorandum of Understanding (MOU) between Samutprakan Central Prison and the NHSO Region 6 was signed in 2018 as a pilot project to accelerate progress towards UHC coverage for prisoners. The prison and the NHSO Region 6 strongly committed to work together with other government and non-government partners, through building and expanding equitable, resilient and sustainable health systems for the vulnerable prison population. The primary care

services have been established inside the prison. For a primary care procedure, in order to be granted budget, the provider has to be organized as a Contracting Unit for Primary Care (CUP). Bangbo Hospital is both a CUP and primary care unit (PCU) in its area and another PCU of this CUP was set up at Samutprakan Central Prison. Bangbo Hospital has organized healthcare services for all prisoners in this prison. The prisoners will get permission to be treated at Bangbo Hospital through a referral system. Comprehensive healthcare services including early screening for TB and HIV, diseases prevention activities, and health promotion activities are also available for all prisoners.

Multi-sectoral Collaboration: Moving Together to Promote Prisoner Quality of Life

Imprisonment has always been perceived as a penalty in Thailand. However, the Thailand prison system has been more recently redesigned to reform offenders to become productive citizens by using humanized rehabilitation process.

In 2008, *Her Royal Highness Princess Bajrakitiyabha Mahidol* of Thailand had inauguration of “Kamlangjai Project”, and the *Princess Bajrakitiyabha* explained, “*Kamlangjai is a concept very close to my heart; everybody needs it, particularly those in desperation.*” The Kamlangjai project might be translated from Thai as ‘inspire’, the project provides assistances and support to female and pregnant inmates, and their children, and fosters their reintegration into society. The ‘Kamlangjai Project’ originated from the leadership of *Her Royal Highness* who is interested in human rights, in particular the rehabilitation of offenders. The ‘Kamlangjai Project’ offers women prisoners counselling as well as specific

healthcare and hygiene service for women, pregnant women and children which is not common in prison. Vocational and employment programs also train the women prisoners to gain skills to find jobs once released.



Princess Bajrakitiyabha Narendira Debyavati, the Princess Rajasarinisiribajra brings change to the prison with Bangkok Rules that leads to changes in health care system. As a lawyer, the Princess Rajasarinisiribajra has leadership to improve prisoners' quality of life.

In 2010, Bangkok Rules have been declared by the United Nations, protecting the human rights of women prisoners and non-custodial measures for women offenders. Bangkok Rules is a set of 70 rules based on the principle of non-discrimination for women prisoners and

non-custodial measures for women offenders. Therefore, implementation of the Bangkok Rules can ensure that treatment of women prisoners and non-custodial measures for women offenders is carried out with dignity and preserves their human rights.



*Health care services for
prisoners and pregnant
inmates and children*

Prior to the adoption of the Bangkok Rules, Mr. Kwanchai Santiparapop was concerned for prisoners as they were prohibited to go outside the prison for treatment even for severe health conditions. In the past, prisoners with TB or AIDS have died because of their limited right to access treatment. Once the princess changed it by creating Bangkok Rules, the female prisoners and pregnant women can better access primary care. Mr. Kwanchai affirms that pregnant women are able to access delivery service at hospital. This basic right to access healthcare is also extending to male prisoners. Samutprakan Prison had to confront medical staff shortages more severe than Bangbo Hospital. So, they discussed this problem together with all stakeholders and

agreed to create a prison unit at Bangbo Hospital. Currently, there are two prison units that are available for male and female prisoners.

In consequence of Royal Family considerations, multi-sectoral collaboration has moved the offenders far more to the values of humanity. With target goal to bring happiness to offenders, the prison and NHSO had signed MOU in order to extend primary care services and system into prisons. This makes UHC coverage expanded to offenders, a group of vulnerable population.



Prison unit in Bangbo Hospital, Samutprakan



National Health Security Office (NHSO) and Department of Corrections has signed MOU in 2019 to accelerate progress towards UHC coverage for prisoners.

After the MOU was signed, Bangbo Hospital has launched primary care services in Samutprakan prison. Prisoners from Samutprakan Central Prison have not only been taken to Bangbo hospital for treatment, but Bangbo hospital also has in-patient unites to provide care for the prisoners. Since the launch, Bangbo Hospital has improved primary care services for Non-Communicable Disease (NCD) treatment, mental health care, TB, HIV and AIDS care, dental and oral care, and a referral system to the hospital. Provision of primary care services is only a first step and health promotion and disease prevention are still needed for offenders. Being funded by the NHSO scheme, UHC registration requires data imputation with Thailand personal identification of 13-digit number, like SSN number of US citizens. The NHSO provides funds to CUP to offer health promotion and disease prevention programs for the offenders. Now almost 100 percent of offenders are covered by the UHC scheme. Thanks to reforming the court system, offenders are confined with their 13-digit personal identity number before sending them to prison, so that the prison can correctly use a 13-digit number for UHC registration. The Ratchathun Punsuk Project has helped to streamline this process.

Due to the Bangkok Rules, the health system in prison is redesigned in an innovative way, health volunteers are assigned to all wings for female and male offenders in Samutprakan Prison. The health volunteers are trained by nurses from Bangbo Hospital. They stay with other offenders in the same wing to convey messages about health education and they will ask for help from the warden if a prisoner becomes sick. This helps offenders receive healthcare and treatment sooner.



Multi-stakeholders engagement to improve quality of life of prisoners in Samutprakan Central Prison

Mental health is very important for prisoners. Bangbo Hospital provides mental health services even in prison where offenders with mental problems can visit a mental health nurse at a clinic in the prison. The mental health nurse provides counselling for offenders with stress and mental distress.

“It is dramatically changed from inaccessible to accessible standard UHC primary care. With nursing spirit, we are pleased to give the offenders healthcare services but it is not really physical health problems ... unable to cure with drugs. So, they just need to admit to calm down.” Mr. Sumran Muangkote stated about experience in healthcare in prisons over 23 years.

“Prisoners generally develop mental distress when becoming a prisoner and everything in their surroundings are totally changed, everyday life is also changed,” pointed out by Mr. Sumran, a nurse in prison. These changes

trigger stress for offenders. With stress conditions, the prisoner does not get well with any medication. Mental health support is important to overcome challenges for all prisoners. The mental health nurse is able to control and prevent severe mental health problems for those prisoners. The coach team provides continuous activities for social transformation for offenders in Samutprakan Prison. These activities encourage offenders to cope with difficult situations in life and to lead a better life with new friends in prison.

*Mr. Sumran Muangkote, an APN
Nurse of Samutprakan Prison*



Reform to a New Life, Return to a Good Person in Normal Society

“The quality of justice has nothing to do with imprisoning, but has everything to do with making offenders a better and more responsible people.”, a statement of Princess Bajrakitiyabha Narendira Debyavati.

With the leadership of Princess Bajrakitiyabha, prisoners can have opportunities to preparing themselves to be released as fair qualified persons in the future. Offenders are transformed in many ways under projects from Prisoner Rehabilitation Division of

Samutprakan Prison. To reform offenders to productive citizens, the volunteer coaches re-educate offenders to proper social and life skills. Offenders are coached in rules of social etiquette, religious practice, prison rules, mindset changes as well as vocational training, and literacy. The open opportunity allows the coach team to change the prisoner to renew their mindset and reform their social behaviors. Banjawan Wongklang, the coach, proclaimed, *"I have volunteered to work with the prisoners to help them release their stress and learn social skills to live together with other prisoners in harmony and friendliness. Once they succeed in releasing their stress symptoms, they replied, "You have changed my life!"*

Thanks to awareness and the campaign of Her Royal Highness Princess Maha Chakri Sirindhorn, “Let’s join in working to a literate world”, released in 2017, the Prompanya Library was opened in Samutprakan Prison to promote offender literacy. Literacy is key to invest more in offender rehabilitation to have a better life after being discharged from a prison. Writing groups gather every month to improve writing and reading. The offenders are also allowed to read books and participate in a writing group within the library. In addition, offenders are able to take distance education programs from some institutes which promote their education.



ร่วมกันทำให้ชุมชนโลกเป็นอ่านเขียนได้
Let's join in making a literate world

Her Royal Highness Princess Maha Chakri Sirindhorn opened the Prompanya Library at Samutprakan Prison on 27 December 2017. And HRH Princess's handwritten on the wall of Prompanya Library, "Let's join in working to a literate world."

Within Prompanya Library at the Samutprakan Prison, it has been equipped with an automated library system, advanced technology, touch screen LCD computers, digital books with photo application, and a mobile library. The books are distributed to various sections of the prison.

For social transformation, the coach team led by Benjawan Wongklang, carries out offender retreat and development by coaching offenders to live with others in prison, and provide lessons in public speaking, hospitality, manners, writing and reading club. Social

etiquette is important for prisoners. “*Prisoners sometimes are not secure, having no friend, and eyeing other prisoners*”, Benjawan Wonklang mentioned her perceptions about the offenders. They ought to change their mindset and build relationships among them with proper etiquette. The coach team arranges programs for changing their mindset and inspiration. In her view, prison is a school for offenders to learn to reform into a new life and to be ready to return to their family and their community. Offenders can change their thoughts to live better in prison and in the future. “*I do programs with wardens as they have stress in working with offenders as well.*” the coach said.



Ms. Benjawan Wongklang, The Coach for Speaking. She is professional MC and she had been working as volunteer over 10 years in regard to social transformation for the prisoners.

Ratchathun Pun-Suk Project, Project of Sharing Happiness

Early in 2019, after the success of implementing Bangkok Rules, *His Majesty King Maha Vajiralongkorn Bodindradebayavarankun* and *Her Majesty Queen Suthida Bajrasudhabimalalakshana* were highly pleased to support the healthcare and well-being of the offenders in prison with the project called “*Ratchathun Punsuk*” or Sharing Happiness by the Department of Corrections. The Rachathun Punsuk Project highly pleased offenders to access primary care and prepare for their release. The Department of Corrections provides opportunities for changes in the management of the health care system. Under Royal family support, offenders receive more access to health and welfare activities in line with the human rights standard.

On November 11, 2019, King RAMA X declared to the Royal Thai Government Gazette, the Correction Hospital is the only healthcare setting under the Ministry of Justice, it is an inadequate response to healthcare services for prisoners since health personnel, medical equipment and drugs are in shortage. King RAMA X has challenged the prison and assigned the Department of Correction to improve more for the prisoners, the most marginalized and hard-to-reach population in Thailand, to receive suitable care in accordance with the human right principles. King RAMA X and the Queen serve as Chairs of the project. Princess *Bajrakitiyabha* serves as Chairperson of the committee.



*Mr. Sitthi Suthiwong
Prison Warden of Samutprakan Prison*

Mr. Sitthi Suthiwong added the situation before starting Rachathun Punsuk Project, “*Nearly all of the prisoners needed to have dental and oral health care but we had only two dental chairs.*” “*With cooperation with Bangbo Hospital, a dentist has been available for 3 days a week, including scaling, filling, and tooth extraction.*” Miss Pornsarin Tovisitchai, a dentist from Bangbo Hospital, also pointed out “*In the past, a group of dentists from all hospitals in Samutprakan had visited this prison once a year, they could perform tooth extraction only because time was limited. Now it is much better.*”



Ratchathun Punsuk Project, Do Good Deeds by Heart. Bangbo Hospital arranges prenatal clinic and medical clinic in prison one day a week. Screening is performed once a year for NCD, breast and cervix cancer, and mental health problems, and twice a year for HIV.

Summary

Achieving Sustainable Development Goals # 3 (SDG3) targets is universal access to and uptake of quality, affordable health services, the primary care delivered *close to where people live and work*. The primary care in the Universal Health Coverage (UHC) is to reduce service need gaps and increase access to health services. However, prisoners across the country had limited health care in the past. After coronation to the throne, King Rama X is pleased to promote the quality of life of prisoners through a campaign called, Rachathun Pun-Suk, We Do Good Deeds by Heart Project that multi-stakeholders share resources together to expand access to primary care in prison. Several years earlier, *Princess Bajrakitiyabha Narendira Debyavati*, the Princess Rajasarinisiribajra has created the project according to the Bangkok Rules to promote female prisoners' health. After the success of the Bangkok Rules, the King paid attention to supporting healthcare as a human right for prisoners. The Thailand Royal Family are eager to reduce inequity in the health care services system, and leave no one behind, especially vulnerable groups such as prisoners. UHC is primarily the responsibility of governments that is possible for inclusive development and prosperity of fairness. The Ratchathun Punsuk, We Do Good Deeds by Heart Project seeks to pursue equity in access to qualified healthcare services for prisoners.

Key Success and Way forward

The reasons of life improvement in prisoners of Samutprakan Central Prison can be explained in two levels; country level and institution level. At the country level, UHC in Thailand has been well known for its effectiveness. Since its introduction in 2002, it has provided health care access to over 48.5 million Thai people, reduced infant mortality rate about 13 to 30 percent and reduced out-of-pocket expenditure by 28 percent on average. Through the leadership of the Thai Royal Family, prisoners and families need to express their gratitude. At the institution level, leadership and networking of Samutprakan Central Prison and Bangbo Hospital team play a significant role to fulfil the achievement. However, different rules and regulations among players, social attitude toward prisoners, and limited budget are still challenging.

Acknowledgement

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Ms. Ketsara Yammeng, a nurse of TB clinic; Ms. Sumalee Pongpeng, Psychiatric Nurse; Mrs. Alisa Ruangthai, Maternal and Child Care; Mrs. Sukjai Prachakorn, nurse who is principle coordinator in prison; Nurses and staffs of Bangbo Hospital; and coordinators of Samutprakan Prison, respectively, for their cooperation and information. We would like to extend deepest gratitude to Dr. Peeramon Ningsanond, M.D., Director of National Health Security Office Region 6; Udomlak Sumpaopun, Deputy Director of National Health Security Office Region 6, for coordination and other contributions on this field trip program.

Primary Care Cluster to Promote Universal Health Coverage: Pakchong District Health System, Nakhon Ratchasima

Pornrueedee Nitirat
Vilaiporn Rungkawat

Primary Care Cluster to Promote Universal Health Coverage: Pakchong District Health System, Nakhon Ratchasima

Pornrueedee Nitirat
Vilaiporn Rungkawat

Getting diabetes seems familiar in today's world. Most people believe that modern treatment can prevent patients from an early death. Like most of the diabetic patients, Mrs. Saijai Wannaging or aunty Saijai, a middle-aged woman with a diabetic foot, could not control her blood sugar well. She needed 5-unit insulin injection in the morning to heal her diabetes-related conditions. However, her disease was uncontrollable during that time. In 2015, seven years later, her doctor decided to give more insulin twice a day—18 units in the morning and 24 units in the afternoon. Health providers asked her to join a health education group conducted once a week at the primary care unit (PCU). Although she intended to take more care of herself, everything did not go as thought because her husband was suddenly in an emergency heart operation. Due to a heavy duty as a caregiver of her husband, aunty Saijai ignored her medical adherence for years. Her life went worse day by day. Finally, at the beginning of the year 2019, she started to have a renal failure that requires Continuous Ambulatory Peritoneal Dialysis (CAPD) four times a day. Her health need was informed to the Primary Care Cluster (PCC) team of the Nongsari community for suitable assistance. For not so long, the health team with a doctor came to her house as health supporters. Other than providing

CAPD training for aunty Saijai and her husband, a small room with essential equipment for dialysis was set up in her house as well. After training provided, a picture showing steps of peritoneal dialysis was placed on the wall to remind the couple about an exact way of peritoneal dialysis practice. Every day, aunty Saijai has CAPD at home with assistance from her husband, who is now her caregiver.

"I've never expected to have a doctor visiting me at home. She often comes with her team to teach me to control my blood sugar and check whether my husband correctly gives me dialysis. They bring me a free-of-charge dialysis solution as well. It does cheer me up to fight with my diseases. They become members of my family now. We can call them at any time when we need their help." Said aunty Saijai

Aunty Saijai has CAPD at home with assistance from her husband.



Another case which is beneficial from the PCC team is uncle Anan, the rich farm-tools maker in the community. Unluckily, in late June of this year, he had become paralyzed due to a severe car accident. After a

ventilator was off, he was discharged from a hospital. Presently, he is bedridden and needs total care at home. The PCC team takes its action as supporters. They help family members to set up a homeward with an adjustable bed, an oxygen tank, and a suction machine. Also, Miss Pu, uncle Anan's daughter, was trained as a caregiver.

"My dad can't move his body at all. He sometimes has coughs with fever and asthma. It might be hard to take him to the hospital for treatment. Luckily, two health teams regularly visit my dad at home. One group is from Nongsarai PCC, Doctor Ratana's team, and the other is the nurse practitioner from Chalermpakiat PCU. They visit us every week and give me useful suggestions to provide the best care to my dad. I hope that my dad will get better soon." Said Mr. Anan's daughter



A home visit at uncle Anan's house

These two patients mentioned above live in Pakchong district, Nakhon Ratchasima province, a gateway to northeastern Thailand. Pakchong is a big district with 189,000 population. Most residents are farmers. With beautiful geographic landscape and pleasant weather, Pakchong district opens its door to welcome tourists all year long, leading to economic growth in this area. In terms of health, chronic diseases are a common health problem the same as other parts of Thailand. Importantly, there is the outstanding PCC with a multidisciplinary care team, providing proactive health care services for more than 30,000 population in the district.

Pakchong-city Primary Care Cluster in Pakchong District Health System

A piece of evidence obviously shows that the health care system of Thailand has placed importance on primary care and community involvement since the Ottawa charter for health promotion was declared in 1986. Village Health Volunteers (VHVs), as a result of that policy, have been a valuable asset of the Thailand health care system since then. However, in the early period, health promotion and disease prevention were not a prominent health mission. Hospitalized care was far more preferred than that in primary care units. A changing point appeared in 1997 when the ‘Health-care Reform’ policy was introduced to Thailand based on the concept of ‘All for Health.’ In that circumstance, health providers were encouraged to turn their heads to fight for illness prevention by strengthening frontline services in communities.

Five years later, in 2002, a legend of health care reform was recorded once again when Thailand has initially launched the policy on universal health coverage (UHC) to ensure health coverage to the whole Thai population. The 30-baht gold card (30-baht co-payment per visit) was a health innovation to serve the UHC policy. With the 30-baht scheme, health promotion has become a key strategy to reduce the financial burden of health treatment. PCUs in communities have been continuously reinforced to become capable frontline units where local people can access with trust and convenience.

Different from a majority of Thai doctors, Dr. Ratana Yodarnont, a medical doctor in Pakchong-nana Hospital, was interested in community way of life and eager to learn the role of a family doctor with a firm intention to promote community health. After Dr. Yodarnont achieved a qualifying exam as a family doctor, she formed a small multidisciplinary team and started to provide health care in the Nongsarai community. A home visit was a significant activity to gain a community's trust and participation. At the same time, Dr. Yodarnont looked for community support to improve services of the PCU in the Nongsarai community. Lastly, in 2002, in line with the national health care reform, Nongsarai PCU was established from the contribution of Dr. Yodarnont and her team, Nongsarai local government, and community members.

"I was born in Pakchong, so I want to take care of people in my homeland. I am a medical doctor in Pakchongnana Hospital. Many years ago, I had a chance to join the project to understand a community's way of life, and the Nongsarai community was my case. I found that Nongsarai PCU was not so helpful—giving only simple treatments, no proactive service, and a lack of efficient staff. There were a few patients each day. It looked so empty. As a family doctor, I brought 'near home near heart' services by visiting my patients at home. My team and I devoted our 'hearts & soul' to the community, and they gave us full support in return. Finally, we had the first proud PCU in Nongsarai." Said Dr. Yodarnont, MD.



Dr. Ratana Yodarnont, a family doctor in Nongsarai PCU

Nongsarai PCU has provided health services, including activities of health promotion, disease prevention, illness curation, and rehabilitation. Although Dr. Yodarnont schedules her time to work at the PCU once a week, she shows up as often as possible. A home visit by a multidiscipline team is still the critical approach to bond a PCU to its community. Community meetings have been conducted occasionally to hear the voices of local people regarding PCU management and improvement. For example, the community had agreed that in the afternoon, PCU would serve for emergency cases only because afternoon time is a time for home visits, and there will be only one staff left in PCU. Nongsarai PCU staff heartily provides holistic care from birth to death for people at all age groups and focuses on community participation. VHV in the community have been trained about the first line of care, mainly in the area of health promotion and disease prevention.

In terms of resource support, financial support mainly comes from the government via the UHC scheme, local government through the community health security fund, and community donation. As mentioned above, Pakchong District is a tourist attraction leading to its excellent economic condition. Local people own properties and are willing to donate money and land to support PCU missions. Pakchongnana Hospital is also an essential resource of health care staff, equipment, and a portion of the budget.

"I am the president of this community and have worked with Doctor Ratana since Nongsarai PCU was started to reform. The local government has supported

us with almost everything we requested. Moreover, most Pakchong people are not poor, while some are very rich. We sometimes campaign for PCU donations. They are generous and willing to help us because they have seen what we have done for the community. Some of them even donated their land for PCU space.”

Said Mr. Sirin Kangwanratanakun.

*Mr. Sirin Kangwanratanakun,
the president of Nongsarai
community*



In need of frontline services, two new PCUs were established in the Prapa community (in 2012) and the Nongkaja community (in 2013). In 2016, the Thai government launched a project titled “Primary Care Cluster” (PCC) for inclusive health promotion, with teams of multi health disciplines to deliver proactive health services to people in their houses and their communities. PCC policy is a reformation of the primary health service system by providing one family care team per 10,000

residents, under the concept ‘service everyone everything everywhere and every time with technology.’ The policy required one PCC per general /community hospital. Three PCUs in Pakchong District—Nongsarai, Prapa, and Nongkaja were included to form one PCC so-called Pakchong-city PCC, which is a part of the Pakchong District Health System (DHS).



Pakchong-city PCC team



Maternal and Child Care by the Pakchong-city PCC team

We can say that Pakchong-city PCC was mostly formed before the national policy was launched. Thus, Pakchong-city PCC can perform its duties right after policy enforcement. Prominently, all PCUs have their family care team with one family doctor per team; whereas, many PCCs in Thailand have faced a limitation of that workforce. Indeed, Pakchong-city PCC became one of the best PCC models in Thailand. The evolution of Pakchong-city PCC is presented below.

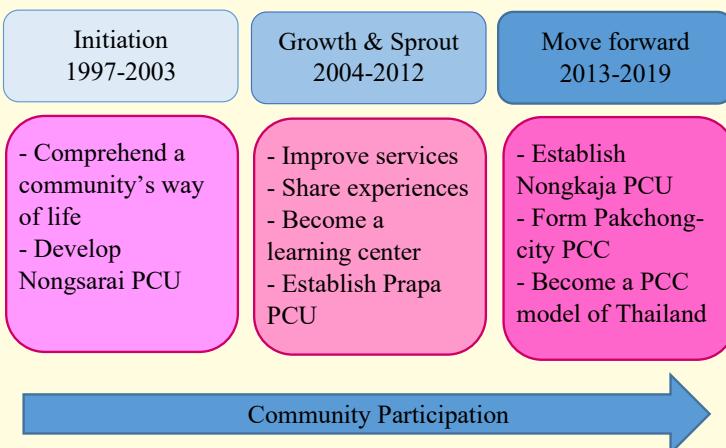


Figure 1: Evolution of Pakchong-city Primary Care Cluster

Typically, Nongsarai, Prapa, and Nongkaja PCUs serve approximately 151, 78, and 54 patients per day, respectively. Home visits are conducted with different frequencies depending on the health condition. A once-a-month home visit is for those who must remain at home but able to help themselves at a particular level, including dementia and Alzheimer persons. A bedridden group is visited once a week; whereas, end-stage patients are visited twice a week.

PCUs particularly respond to the UHC scheme. Yet, the national health coverage system in Thailand is composed of three kinds of schemes—1) the civil servant medical benefit scheme for government employees, 2) the social security scheme for formal workers, and 3) UHC (a gold card) for the rest. Due to the different schemes, if government employees and formal workers seek services from PCUs, they need to advance money for any service payment and get reimbursement from their employers later. This inconvenience is because of the differences in privilege and administrative management among the three schemes.

Primary Care Cluster: a UHC Booster

UHC aims to ensure the accessibility to standard and essential health care and any health privilege among Thai people. PCC work can fulfill the UHC goal because: 1) it provides proactive services that cover all dimensions of holistic care; 2) proper care is delivered to patients' homes by multidisciplinary staff including a family medical doctor and VHV; 3) PCC management underscores strong community participation. Thus, it is certain that PCC helps mobilize the sustainability of UHC.

"UHC system helps people to reach health services easily when needed. PCC can well respond to this point because it shortens the distance between patients and doctors by giving 'knock-the-door' services. That means health care accessibility is much more convenient. Like UHC, PCC also promotes community involve-

ment. All in the community are mutually own and beneficial from their PCC.” Said Dr. Lalitaya Kongkam, Director of National Health Security Office (Health Region 9)



*Dr. Lalitaya Kongkam,
Director of National Health
Security Office (Health
Region 9)*

Moreover, PCC is a cornerstone of a sustainable health system for UHC and health-related Sustainable Development Goals (SDG). It powerfully includes effective and efficient approaches to strengthen the competencies of individuals, families, and communities to promote their self-care/self-independence in the future.

Key Achievement of Pakchong-city PCC

Pakchong District is now renowned as a district model of the elderly's long-term care. Pakchong-city PCC becomes an asset of the community where insiders are willing to give support. Once, community members donated approximately 1.5 million USD for PCC missions.

With its successes, Pakchong-city PCC has the opportunity to be a training setting for family medical doctors and a learning center for health providers from every corner of Thailand.

Key Success Factors of Pakchong-city PCC

Although the Thai government has launched the PCC policy for two years, it is still in a driving period. Nonetheless, Pakchong-city PCC is one of a few leading PCCs in Thailand. Some lessons learned revealed that a successful PCC requires:

- Great support from executive administrators at national and local levels—especially financial support from the local government.
- High-competency multidisciplinary team and their devotion.
- Community participation with a sense of ownership.
- Endless continuation.
- Previous relevant experiences especially successful PCU work.
- Monitoring and coaching from the National Health Security Office (Health Region 9).

From Good to Great

Even though successful, Pakchong-city PCC still has rooms of improvement as follows:

- To increase health care accessibility for reaching an ultimate goal, the insightful management to assign a doctor to a PCU every day should be taken into consideration. Having a doctor at a PCU might be an effective way to drain patients from the workload of hospitals as well.
- Infrastructures of Nongkaja and Prapa PCUs should be improved to increase their ability to service their clients and, in turn, raise health care accessibility.
- Government employees and formal workers are not quite convenient to seek services from PCUs because they have to pay in advance and be reimbursed by their employers later. In contrast, advanced cash is not necessary for those who take a gold card (under the UHC scheme). Therefore, a payment system should be improved to reduce the difficulty of in-advance payment.

In summary, PCC is one of the strategies to speed up the success of the UHC scheme in Thailand. Pakchong-city PCC is an example of an active collaboration among multidisciplinary health providers, community members, and the local government to deliver health services from health settings to households. Health delivery by PCC ensures that all Thai people can access essential qualified health services with convenience, continuation, and fairness.

Acknowledgement

The authors wish to thank Dr. Narongsak Bamrunghin, Director of Pakchongnana Hospital, and the executive administrators of Pakchongnana Hospital for the great support. Besides, we would like to thank Mr. Komkrit Limpungyalert, Mayor of Pakchong town municipality, for his cooperation. Moreover, we sincerely gave the special thanks to Dr. Ratana Yodarnont, a family doctor of Pakchong-city PCC and her team for the valuable information about Pakchong-city PCC. Finally, we would also like to kindly thank three community leaders: Mr. Sirin Kangwanratanakun, the president of Nongsarai Community; Mr. Suwan Pengkhaw, the president of Prapa Community; and Mr. Kangwan Bannaphum, the leader of Nongkaja Community for their support to Pakchong-city PCC.

4

Matching Funds for Better Rehabilitation and Intermediate Care, Saraburi Province

Wilaiporn Khamwong
Wannaporn Boonpleng

Matching Funds for Better Rehabilitation and Intermediate Care, Saraburi Province

Wilaiporn Khamwong
Wannaporn Boonpleng

"Each person has duty but it does not mean doing only that duty; because if anyone does a specific role without looking at other people, work cannot proceed. Because all work must be related to each other and must be connected, thus, each person must have knowledge of other people's work and help each other." By His Majesty King Bhumibol Adulyadej The Great

Current demographic trends and changing health are placing new demands on the health care system, and as such the need for rehabilitation is rapidly growing worldwide. Rehabilitation is a set of interventions needed when a person is experiencing or living with limitations in daily functioning due to ageing or health conditions including non-communicable diseases (NCDs), injuries or traumas. Longer life expectancies and increasing survival rates for those with severe disability, coupled with the rising prevalence of NCDs especially stroke means that globally there will be an increase in health burden associated with limitations in functioning. Rehabilitation can reduce the impact of a broad range of health conditions, therefore, it is an essential component of universal health coverage along with promotion, prevention and treatment to maintain optimal functioning of individuals. However, the demand for rehabilitation services is going largely unmet due to a number of factors including lack of

funding, lack of available rehabilitation services outside urban areas, lack of trained rehabilitation professionals, lack of resources and assistive devices, and ineffective referral pathways to rehabilitation.

Similarly, Saraburi Province was one of the eight provinces in the catchment area of the National Health Security Office (NHSO) Region 4 that has to bear burden to provide care for the people suffered from post-stroke and injuries especially during intermediate phase and the golden period (after vital signs stable 48 hours - 6 months) because of limited resources, both budget and well-trained rehabilitation professionals. The prevalence of NCDs and people living with disability have been gradually increasing in Saraburi Province. In 2016, there were 13,927 disabled persons, and over 7,000 of them had suffered from limited mobility and physical impairments. Despite the improvement of health care system, the prevalence and mortality rate of stroke is still increasing during the past 5 years. Saraburi Provincial Health Office reported that the mortality rates increased from 27.9 in 2007 to 61.1 per 100,000 population in 2017, higher than the rate of the country (29.9 and 23.3 per 100,000 population, respectively). This reflected the double increased incidence of stroke in Saraburi Province during the past decade.

The growing incidence of stroke and motor vehicle collision in Saraburi Province lead to life changing injuries such as traumatic brain injury and spinal cord injury which are leading cause of serious complications, severe disability, reduced mobility, and lost patient autonomy. Many patients are not fully recovered or ready to care for themselves. They have to be discharged

to stay at home without proper support and become care burden for their families and communities. They struggle in managing their conditions resulting from unnecessary worse disabilities due to inappropriate care. To provide effective care for these patients, there are needs of health care improvement in various areas, particularly intermediate care and rehabilitation services. With the national policies for decentralization, several responsibilities are allocated from central agencies to local government units. The decentralized budget has been allocated to provide social services and health access for the elderly and the persons with disabilities (PWDs) by local government. Thus, the collaboration of local government with other sectors could enhance financial support for better health care services during transition period that could respond to the people and community needs.

Improving rehabilitation services and patients' quality of life through local community funds and intermediate care services

The Universal Coverage Scheme (UCS) is the public health security schemes providing health care coverage to all Thai citizens who are not covered by any other scheme. The UCS is administered by the NHSO to provide comprehensive benefit package including health promotion, diseases prevention, curative and rehabilitation services. According to rehabilitation services, the NHO provides funding support about 16.13 Thai Baht per capita to increase the access to rehabilitation services for PWDs and also cover system development. Funding allocation is operated in two levels: the NHO central

office about 1.60 Thai Baht/capita and the NHSO branch office about 14.53 Thai Baht/capita. Some budgets from the NHO branch are allocated for provincial rehabilitation funds. The financial structure of these funds seeks to build linkages with local community funds to increase the ability of providing medical and welfare benefits complying to community people's needs.

Saraburi Provincial Rehabilitation Funds are matching funds set to be contributed in equal amount from the NHO and Saraburi Provincial Administrative Organization. The funds were launched in 2012 in accordance with Section 47 of the National Health Security Act and aimed to serve health care needs of the local community by including the local community participation in decision making and co-funding of health-related programs. The funds were set up to provide health access for the PWDs, the elderly, the dependent and the palliative care patients; which include intermediate care, rehabilitation services, medical products, and assistive devices, for developing their quality of life. *"In Saraburi Province, each organization wants to improve quality of care for people. With effective collaboration from them, willing to work with each other, made this initiative possible"* said Mr. Suchin Boonmalert, Deputy Chief Administrator of Saraburi Provincial Administrative Organization.

The Funding Board consists of representatives from several sectors including Saraburi Provincial Administrative Organization, Sub-district Administrative Organization, Municipality, the Ministry of Public Health, the Ministry of Interior, the Ministry of Social

Development and Human Security, health care providers, professional organizations, and some non-governmental organizations (NGOs). Funding modalities are project grants and grants for medical equipment. Requesting for support can be made by patients, health care providers or local government. The funding request will be sent for officially approving an allotment by the Funding Board. Funds have been provided for supporting rehabilitation services in different areas. Some examples of projects which be supported are as following:

First, the projects to improve intermediate care services and accessibility in community, the coordinating centers for rehabilitation have been launched at Saraburi and Phra Phutthabat hospitals to provide rehabilitation management during sub-acute phase. The matching funds support salary for physiotherapists to manage care for patients in intermediate phase and they also work as coordinators connecting with other providers while Saraburi Provincial Rehabilitation Funds provides assistance in supporting medical equipment and home modifications for patients. After receiving necessary aid, patients could improve their physical function, and prevent permanent disabilities. Their health conditions are monitored and evaluated by the rehabilitation services for sub-acute and non-acute patient (SNAP) project. Under this project, multidisciplinary care team visits patients with health care providers in all levels; the patient care information, goal setting and care plan are exchanged among health care providers and other agencies by the multidisciplinary team meeting.

*Multidisciplinary
approaches to
support the patient
at home*



This useful information can be utilized for improving accessibility of patients to rehabilitation services and increasing effectiveness of rehabilitation process. In addition, the matching funds increase the convenient level of services for patients through the Happy-Together Center. This center was set up to provide rehabilitation equipment and services in community. It is also a collaborating center for information exchange among health care providers to improve quality of care.



*Make an assessment and
train how to use assistive
devices at the Happy-
Together Center*



*Some examples of assistive
devices at the Happy-Together
Center*

Second, the project relating to equipment aid, equipment repair and home modification, the Equipment Demonstration Center for Rehabilitation and Equipment Storage was set up to provide rehabilitation equipment, and medical devices for the patients in sub-acute phase, the PWDs and the dependent elderly. Several devices have been provided for patients such as oxygen generator, suction machine, nebulizer, bed, air mattress, walker, cane, wheel chair, arm sling, etc.

Some examples of providing medical and assistive devices at the Equipment Demonstration Center for Rehabilitation and Equipment Storage



Wheel Chair



Bed



Tricycle

The Equipment Repair Service Center for Disabled Persons was set up by Association of the Physically Handicapped of Saraburi Province, aims to repair and keep wheelchair and tricycle in proper working. The center also increases the abilities of PWDs to fix broken and malfunction equipment. In addition, home modification was initiated to provide assistance for home improvement or modification and repair for the patients in sub-acute phase, the PWDs and the elderly. This helps them able to enhance and maintain their independence with low risk of accidents.

Home modification services



Before

In progress

After

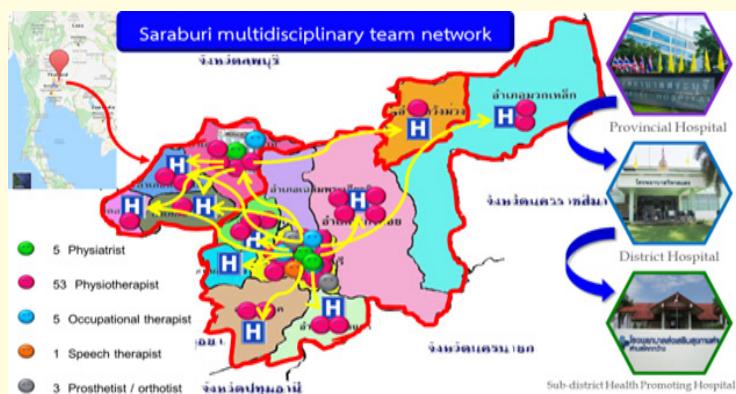
Third, the projects for improving competencies of health care staff and caregivers, several training programs have been developed and launched by the provincial hospital, community hospitals and local community organizations. The 72- hour training course is provided for community rehabilitators to foster their knowledge and skills for delivering more effective rehabilitation services to the PWDs, the patients in sub-acute phase and the elderly in their communities. In addition, there are supporting funds for fall prevention programs for the elderly, to increase their knowledge and skills for preventing fall and its complications.

It can be concluded that Saraburi Provincial Rehabilitation Funds are local community matching funds which have been provided financial support for several projects including the development of intermediate care services to address health care needs of people in community in order to decrease care burden for their families and improve the quality of life for the local people, especially venerable population. As one of the post-stroke patients' relatives stated "*without the support from the provincial rehabilitation funds and*

“intermediate care, my wife’s symptoms might get worse than what you see. Because we really don’t know how to take care of her after discharged” (Mr.Somchai Suealai, the husband of a post-stroke survivor).

Intermediate care services in Saraburi Province

According to the rising prevalence of stroke and severe injuries, and health burden for the survivors, it is clear that the sub-acute rehabilitation and intermediate care system should be developed in Saraburi Province to tackle these problems, especially to meet the needs of the survivors, families and communities. This system has got involvement from all relevant organizations such as the provincial hospital, the district or community hospital, and the health promoting hospital, to collaborate with the community in order to continuously provide intermediate care and rehabilitation services.



Moreover, all administrators absolutely agreed that it is impossible to offer IPD rehabilitation at the provincial hospital because it is already overcrowded with acute care patients. Therefore, after the acute stage, most patients are discharged and referred back for further intermediate care and rehabilitation services at district hospitals, where there are available beds. And after discharging from the district hospitals, the nurses from the sub-district health promoting hospitals and multidisciplinary community team will continuously take care of the patients in their communities. One of the physiatrists said “*to make sure that every patient will receive proper continuous care, we set up a good multidisciplinary teamwork involving every key professionals from all tiers of the hospitals. The key success factor of this teamwork is well - coordination and effective utilization of shared resources*” (Suppasil Jampanak, MD, PMR, Head of Rehabilitation Medicine Department, Saraburi Hospital).

The intermediate care system has been established since April 2017 by the support of the local community matching funds. The main purpose was to increase health access for the patients to be screened and included in rehabilitation process in the golden period. The intermediate care services were divided into 3 formats: 1) 2 district hospitals provided 2 intermediate wards, 2) other 8 district hospitals and 1 general hospital provided at least 2 intermediate beds, and 3) every hospital used the same IPD care protocol for intermediate care. The refer back system was also set for the patients with post-stroke, traumatic brain injury and spinal cord injury to receive IPD rehabilitation in the intermediate

bed/ward of district hospitals for 2 weeks. Lastly, the patients were discharged and continuously received OPD rehabilitation services and home visits from the multidisciplinary care team for 6 months.



Intermediate ward at the community hospital

In 2018, the Ministry of Public Health announced that the intermediate care is officially considered as one of the key services. The workflow of it that Saraburi intermediate care team developed has become part of a newly proposed national practice standard. As one of the project management team addressed “*we are very proud to say that our model has become one of the best practice model which is being replicated in many other areas in Thailand*” (Mrs. Supaporn Teppanich, Physiotherapist, Rehabilitation Medicine Department, Saraburi Hospital).



Intermediate care workflow

More than 150 patients had been referred back from the provincial hospital to the intermediate wards or intermediate beds at district hospitals in Saraburi each year. The network had provided rehabilitation services for each patient continually, more than 80% of them were followed up for longer than 6 months. More than 70% of them had Barthel Index (BI) increased during the period. Intermediate care services help to prepare the patients and their caregivers to be ready for rehabilitation in the community and re-admitted for further rehabilitation care could be an option. The most important activity here is multidisciplinary team meeting, this can be carried out anywhere, in the hospital or even at the patient's home.



Multidisciplinary team meeting

The team meeting focuses on cases with complicated problems. The team has learned valuable things that they can apply in taking care of other cases. The physiatrists from Saraburi Hospital also visit the patients at district hospitals every week. Recently, they have developed a “short stay” IPD rehabilitation protocol, and also made a simplified guideline for assessment and management of common rehabilitation problems and complications. These are now being adopted widely in Thailand.

IPD rehabilitation protocol

In conclusion, the intermediate care system of Saraburi Province has provided proper intermediate care services based on the individual needs in both hospital and community based settings in a universal health coverage system. The system focuses on increasing health access and continuity of care by seamless network, along with improving the quality of health care services. Patients receive necessary intermediate care services from the multidisciplinary care team during the golden period of recovery such as health care services in an intermediate bed/ward, outpatient rehabilitation services and home visits. By receiving these proper services, the abilities to care for themselves of patients and their families increased while various complications decreased. Chalor Santiwarangkana, MD, Director of NHSO Region 4 stated that "*providing proper care during the first 2-3 months or the golden period can definitely reduce severe disabilities. Some patients may have only little disability left or have no disability. Many patients can even go back*

to work. The patients' quality of life can also be improved. It is the responsibility of the Ministry Of Public Health to take good care of the patients, and the NHSO to provide the budget."

Limitations

There are some disadvantage groups might have limitation of access to funding support due to complicated paperwork and lack of grant-writing skills. Moreover, there still be limited choices to access to medical devices that are lighter, more comfortable and perform better for the patients because government regulations limit design for costly equipment. Nevertheless, if the patients need to use high-cost medical equipment, they can receive further support from Sirindhorn National Medical Rehabilitation Institute. In addition, the misconceptions about rehabilitation of health care staff, patients and family members can lead to inappropriate care, severe complications and disabilities. Rehabilitation is not a disability-specific service only for those with long-term impairments or people with physical impairments. Rather, rehabilitation is an essential part of effective health care for anyone with health conditions that limit functioning, and as such should be available for anyone who needs it. Additionally, rehabilitation can be highly effective when it is integrated in wider health programs. Therefore, positive attitudes toward continuity of care and rehabilitation should be promoted in health care staff, patients, family members and people in the community.

Keys to success

Saraburi Provincial Rehabilitation Funds helped to bridge the gaps of social inequalities by improving availability and affordability of health care and rehabilitation services for people outside urban areas in the rural communities. Increasing patients' awareness and community participation in the health care system were important factors. Full support and cooperation from leaders and multi-sector partnerships at the provincial levels to the local community levels were another important factors. Multidisciplinary collaboration, network building and resource sharing helped to provide continuity of care as well as to improve quality of rehabilitation services responding to the patients and community needs. Furthermore, proper health workforce and well trained rehabilitation professionals with clear job description were also parts of the keys to success. Lastly, adequate financial support with specific budget allocation and reimbursement was one of the most important factors in providing effective and sustainable intermediate care and rehabilitation services.

Ways forward

Although Saraburi Provincial Rehabilitation Funds have been provided financial support for several projects to address health care needs and improve the quality of life of the local people, some organizations or areas of Saraburi Province do not aware of the funds' existence. Thus, publicizing the funds through various methods are important to increase public awareness about funding support for PWDs, elderly, dependent patients, and patients in sub-acute phase. The Equipment Demonstration Center for Rehabilitation and Equipment Storage need to improve the equipment management system in order to increase the availability of necessary devices for people in need. In addition, the manual for funding operation need to be developed in order to increase effective funding management. In addition, the intermediate care system is needed to be continuously strengthened the quality of both services and personnel competencies to meet needs of demographic trends and changing health of the patients, families and communities. Some issues such as developing information referral system, assistive devices with advanced technologies and transportation for patients from their communities to receive rehabilitation services should be addressed. *"The network and collaboration from all parties, especially at the local community levels, are essential for developing the seamless and sustainable intermediate care system"* said by Suppasil Jampanak, MD, PMR, Head of Rehabilitation Medicine Department, Saraburi Hospital.

Acknowledgement

We would like to extend our sincere gratitude to the staff of the NHSO Region 4, especially Chalor Santiwarangkana, MD, Director, Mrs. Phanit Manokarn, Deputy Director, and Mrs. Suwannee Sriprach, Officer Level 3; Saraburi Provincial Administrative Organization, especially Mr. Suchin Boonmalert, Deputy Chief Administrator, and Mrs. Pojjanee Thongsem, Public Health Technical Officer; Rehabilitation Medicine Department, Saraburi Hospital, especially Suppasil Jampanak, MD, PMR, Head, and Mrs. Supaporn Teppanich, Physiotherapist; and Saohai Hospital, especially Somchart Sujaritrungsri MD, Director, physiotherapists and the intermediate care team.

5

Primary Care Trusts, e-Referral,

and Mobile Health Application in Capital City

Fostering UHC-Based Solidarity
to Drive towards
SDGs

Kanokwan Wetasin
Thongsouy Sitanon

Primary Care Trusts, e-Referral, and Mobile Health Application in Capital City Fostering UHC-Based Solidarity to Drive towards SDGs

Kanokwan Wetasin
Thongsouy Sitanon

Bhumibol Adulyadej Hospital (BAH), a large-scale hospital, has been having capacity to continuously and effectively provide primary health care to Thai people in Bangkok and its perimeter. Several policies have been developed and implemented to scale up primary health care system in the catchment areas leading to UHC achievement. The outstanding policies that strongly promote primary health care include Primary Care Trust (PCT), e-referral, and Mobile Health Application in Capital City. Having been modifying and implementing these policies for several years, BAH has been successfully providing primary care service to foster UHC-Based Solidarity to Drive towards SDGs.



Bhumibol Adulyadej Hospital (BAH)

Bhumibol Adulyadej Hospital at a Glance

Bhumibol Adulyadej Hospital, a military hospital, has been operated since 1949 by the Directorate of Medical Services, Royal Thai Air Force (RTAF). Not only does the hospital provide the super-tertiary care services, the hospital has also developed excellence service centers with high capacity to provide health care services to clients with complicated health problems, by using qualified health care team work, high medical technologies, and advanced referral systems. The hospital is selected by Ministry of Public Health to be one of the seven excellence service centers. Because of its excellence in cancers, heart diseases, kidney diseases, and traumas, it has been well known with several awards to guarantee the hospital reputation. For instance, in terms of providing care for patients with complicated accidents, a higher standard criterion has been currently set to $\geq 97\%$ survival rate of the patients with TRISS Score > 0.5 . Rather than offering excellence service centers as address above, providing effective primary care services has long been well-known as of its very easy access to receive care and its efficient qualified service.

Implementation of Primary Care Trust

BAH is located in high population density and hidden population areas. The hospital provides care not only to military personnel but also the population around it. Because of the hospital reputation and small numbers of health facilities in the areas due to the mal-distributions of the service providers, overcrowded patients and complaints about the access to care have always been observed. However, these problems have been gradually decreasing as a result of the effectiveness of partnerships that has been well developed, implemented and maintained. The partnerships between BAH and other health care settings are similar to Primary Care Trust that illustrates co-working among service providers in providing health care at all levels to the public in Bangkok. National Health Security Office (NHSO) plays an important role in initiating the network development to improve the health care for people by inviting private service providers to join BAH and networks under UHC. There were about 57 private clinics applying to participate in the NHSO project at the beginning. The PCT network in 2018 consisted of 273 service providers, 117 of which were the private clinics. The NHSO, as the service purchaser, supervises, monitors, and evaluates the quality of care provided by the service providers.

After the network implementation, four main outputs have been presented. Promoting convenience is the first output the clients have said. The private clinics are close to home, resulting in making it convenient to each visit, while the standard of care has been also delivered to the patients. Next, travelling and waiting time has been clearly decreasing. Patients do not have to wait for too long period of time to receive care like in the past. Moreover, the cost of care has been decreasing as well. Finally, the access to care has been increasing, especially the hidden population.



Comprehensive Primary Care Services provided by Primary Care Units under BAH Primary Care Trust

Policy Driven Development of Primary Care Trusts (PCTs), e-Referral, and Mobile Health Application in Capital City

A stable policy vision and a comprehensible growth roadmap of eHealth stemmed from top-down (e.g. eHealth Strategy of Ministry of Public Health and NHSO) and bottom-up local/organizational policies are both crucial for making eHealth initiatives attractive for public-private stakeholders, main purchaser and auditor of UHC (NHSO) as well as to ensure sustainability of the project with public engagement.



Minister of Public Health and High-Level Executive Visit at BAH



Building Trust: Laying the solid foundation for change

“To pursue our mission of seamlessly providing optimal healthcare services for people we have served, we must first “establish trust” among us, our PCT networks.” Said Air Vice Marshal, Thaweepong Pajareya, the Director of BAH and a Nephrologist.



*Air Vice Marshal, Thaweepong Pajareya, MD.
Director of Bhumibol Adulyadej Hospital (BAH)*

Unlike Primary Care Clusters (PCC) located in provinces, BAH Primary Care Trust (BAH PCT) is unique given its diversity in terms of public-private mixed Primary Care Units. However, one thing that the BAH PCT has in common with its Primary Care Units is providing quality health care to enhance quality of life of people in its catchment area. Thus, when patient-centered care is taken into account, no one is defeated and everyone thrives. As depicted in Figure 1, PCT transformation can be categorized into four phases as follows:

Initial Phase (2001): When Thailand introduced the Universal Coverage Scheme (UCS) to the world in 2001, BAH was also the pioneer to adopt the UCS policy. Hence, the Primary Care Unit (PCU) of BAH was first established to provide health promotion and disease prevention to BAH clients.

Second Phrase (2005): Primary Care Trust: BAH primary care distribution project, the so-called Public-Private Partnership launched in partnership with 27 private clinics.

Third Phrase (2013-2016): e-Referral Healthcare System had been developed with the co-creation of National Health Security Office-Bangkok Branch Region 13 (NHSO-Bangkok Branch Region 13), the National Electronics and Computer Technology Center (NECTEC), Strategy and Planning Division of Ministry of Public Health (MoPH), Public Health system Development Division of Department of Health, Thai Health Information Standards

Development Center (THIS), some tertiary hospitals, some university hospitals, some public health service centers, and some private clinics in Bangkok. In May, 2016, e-Referral Healthcare System started to be implemented in full range throughout BAH PCT.

Fourth Phrase (2017-2019): Development of Mobile Health Application called “BAH CONNECT”

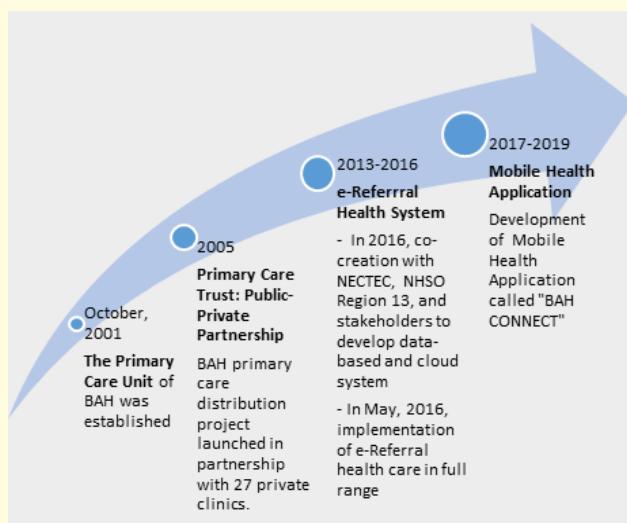


Figure 1: Timeline for streamlining Primary Care Cluster of BAH

e-Referral Healthcare System: A-multi pronged approach to streamline healthcare management

How did the e-Referral Healthcare System start?

"Actually, the idea of e-Referral healthcare system had initially started when we (as a healthcare provider) had observed the struggles of our clients in access to optimal-and-preferable care, especially those who suffered from chronic illnesses. Previously, the UHC patients had to get a refer paper from their primary care units every time to be eligible for the claim reimbursement. So we thought that information and communication technology could be the key to solve the problem"

Said Air Vice Marshal, Thaweepong Pajareya, a Nephrologist and Director of BAH.



BAH Director and Steering Team

This e-Referral strategy is intended to facilitate referrals by simplifying the referral process and improving quality of referral data by using digital technology.

The National Health Security Office, Bangkok Branch, Region 13 has not only been allocating the financial support but also taking part in developing the e-Referral system to share patients' medical records to physicians in hospitals and network of primary care clinics. This electronic medical data transferring system ensures that patients will get the same standard treatment from different level of healthcare providers.

During 2013-2016, the e-Referral Healthcare system of BAH had been developed by the cooperation of some hospitals, NHSO Bangkok Branch Region 13, the National Electronics and Computer Technology Center (NECTEC) and other network partners, utilizing information and communication technology to forward patient care data to community clinics and the hospital network.

Adoption of e-referral initiative: challenges faced and solutions

Like many other adoption of technology initiatives, diffusion of technology can be challenged. BAH had encountered the difficulties in the beginning such as unfamiliarity of digital technology and acceptance of the electronic referral versus paper-form. Strategies to solve the adoption issues included capacity building and trust building to promote understanding of e-Referral.

Capacity building:

Hospital Staff and private clinic staff needed to be prepared to operate the e-Referral healthcare system. Therefore, several training sessions have been provided.

Trust building:

Surprisingly, in the beginning, even when the staff were already well equipped to operate the e-Referral, BAH clients were unsure about the electronic way of referring and trust only the care provided by BAH. To increase the acceptability of the e-Referral, healthcare providers spent time convincing their clients about how the e-Referral works to enable access to care at a timely manner. Whilst, BAH and private primary care units collaboratively developed essential clinical practice guidelines (CPGs) (e.g. Hypertension, Diabetes Mellitus, Antenatal Care, Old Cerebrovascular Accident, Parkinson, Asthma, Chronic Obstructive Pulmonary Disease, *Warfarin Patients with Anemia*, early-stage Chronic Kidney Disease, etc.) to standardize practice across continuum of care, from primary care to specialized care.



Quality Improvement: BAH and Primary Care Units jointly developed CPGs for disease management

Infrastructure investment:

BAH and its parties also conducted Research and Development (R & D) study using Delphi technique to develop standardized Electronic Health Record (EHR) for e-Referral system including Outpatient Department (OPD), Inpatient Departments (IPD), Acute Exacerbation/ Emergency Room (AE/ER). The EHR comprises 13 sections including patient identification, contact person, patient allergy, referral information, diagnosis, vital signs, patient visit, procedure, observation lab result, observation X-Ray result, pharmacy/treatment order, provider data, and appointment information. However, the issues related to digital technology per se also emerged occasionally. Fortunately, NECTEC has been extensively contributing to provide the solutions to such obstacles. For instance, unstable network connectivity in the morning rush hour has been solved by starting NECTEC consultations in the early morning (at 6:30 a.m.). Security of data is safeguard through Government Cloud (G-Cloud), developed by the Digital Government Development Agency (DGA) while mega data is stored via “Cloud storage”. And

finally, standard and interoperability of data and computer system has been attained by developing adaptive software to link between different operating systems (*OS*). In addition, “Help desk call” was established to provide consultation regarding e-Referral troubleshooting.

From eHealth to mHealth: A Mobile Health Application to connect healthcare providers and people

After two decades of implementing primary care services under UHC, BAH and its network of private clinics have come a long way enough to make health care lean. BAH health care has illustrated service efficiency by simplifying work flow process through e-Referral Healthcare System. Moreover, through real time electronic data transfer, the transparency of services provided and health data are enhanced. Primary providers and specialized providers can simultaneously access and retrieve the same sources of electronic health data-based, thus reducing waiting time and enhancing communications.

Furthermore, the shift toward patient-centered care and shared decision-making among providers-providers and providers-clients has transformed health-care operation to be more efficient and responsive to individuals and collective health needs. The clients are more contented in seeking information through their smart phones prior to making their decisions about anything, including health services. Thus, during 2017-2019, given the widespread of mobile technologies, the advancement of mobile health application, and imposed Thailand 4.0 policy regarding P&P excellence (health

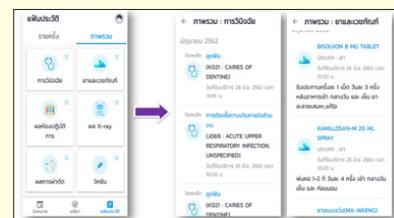
promotion and disease prevention) and governance excellence (data management), BAH has embraced this inevitable trend by furthering the multi-collaboration with NHSO and NECTEC to develop the so-called BAH CONNECT, a mobile health application to serve as appointment reminders to promote treatment compliance and medication adherence. The mobile patient record comprised diagnosis, medications, operations, vaccination, drug allergies/ adverse drug reaction (ADR), X-Ray, and laboratory tests, that not only reduces unnecessary repeated medical tests, but also enables portability of data, data sharing, as well as enhances self-awareness of individuals leading to life style and health behavior modifications.



Login Screen



Client Folder: Diagnosis, Medications, and Medical Supplies



Development of BAH CONNECT

How disruptive digital technology can impact and accelerate UHC?

By creating a system for primary care–specialty communication, e-Referral is designed to eliminate inappropriate referrals, whilst identify and speed up urgent/emergency cases by completing primary care assessment and procedures if need be prior to scheduling an appointment with a specialty clinic at BAH, thus improving quality of healthcare service. The BAH survey after implementing e-Referral revealed positive outcomes; satisfied clients including reduced patient travelling cost to clinic 70,000 visit/year which could save around 7 million Thai Baht (THB), elimination waiting time for verification of health insurance and registration which could save 77 min./per visit (around 10 years), and decrease registration congestion 42 %.

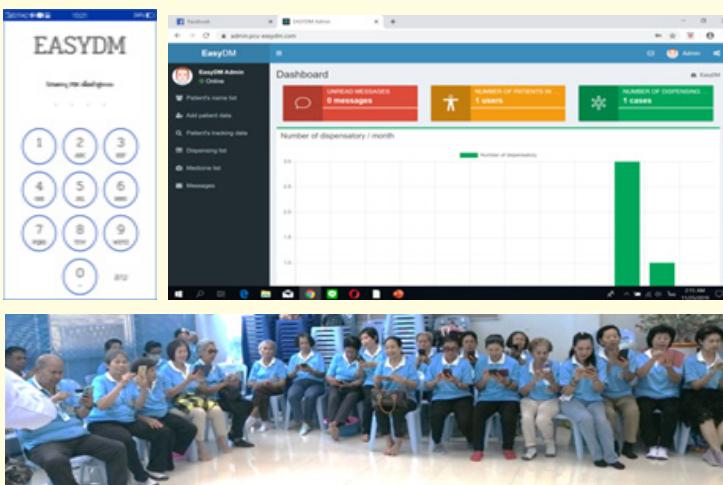


Primary care providers still have had positive attitudes despite a number of challenges including unfamiliarity with information technology tools, unstable connectivity, and inefficient software. System acceptance was driven by perceptions of improved access to specialty care, better appointment tracking, and improved communication between primary and specialty care

providers at BAH. Synergy among development processes, implementation practices, and technical factors, including human-centered design, iterative development, a phased rollout, and an intuitive user interface, also fostered utilization of the e-Referral Healthcare System.

As mentioned earlier, BAH has recently launched a new patient care system called BAH CONNECT in December, 2019. The mobile health application will enable the patients to know their basic health information such as history of illness, treatment data, appointment date, etc. This application will be developed to use as a part of home health care system in the near future.

Moreover, by joining with the BAH PCT, the Primary Care Units (PCUs) have become a productive learning organization. For example, Siripath PCU under BAH PCT has developed a mobile application for communication with patients called “EASYDM” to enhance diabetic patients medical adherence, resulting in lowering their blood glucose level.



Bright Future Ahead

If “sustainability” can be considered by years of engagement and productive outputs occurred from the project, then the implementation of a public-private primary care trust-based through development of service quality using Information and Communication Technology (ICT) initiatives can uphold the sustainable development of healthy lives and well-being for all at all ages (SDG 3).

Without a doubt, BAH and its cooperated network will continuously work towards healthcare quality improvement at a steady pace using advanced information communication technology. As the BAH director has envisioned the upcoming information technology facet that promising initiatives will be emerged from “Big data” leveraging from electronic health records, particularly e-Referral as well as mobile health application, a BAH CONNECT. Since protection of citizen health data breached is always the top priority when developing data-driven technology, BAH will co-create with NECTEC to put the data protection measures in place prior to exploiting its Big data. According to the World Health Organization (2016), growing new analytical methods and information technological capabilities will allow all health-related parties from individuals, healthcare providers, healthcare industries, purchasers to policy makers to link and utilize various data such as health services, public health, research, environmental, geospatial, life style and behavioral data which in turn, promoting health equity of people.

In a nutshell, the model of Bhumibol Adulyadej Hospital Connection (BAH CONNECT) has proved that the

implementation of smart healthcare is suitable for capital city. Along with continuously building the legitimate and authentic trust among the Primary Care Cluster (PCC) of BAH, the deployment of disruptive technologies, particularly e-Referral and mHealth (BAH CONNECT) can impact and accelerate UHC. Coordination of care across level of provision can be improved by virtue of a multi-pronged approach to streamline healthcare management.

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References

1. Tangwonglert, F. (2016). **e-Referral Healthcare System.** TQM-Best Practices Paper presented at 17th Thailand Quality Conference.
2. Witoolkollachit, P. (Ed.) (2017). **eHealth Strategy, Ministry of Public Health (2017-2026).** Information and Communication Technology Center, Office of Permanent Secretary, Ministry of Public Health, Nonthaburi.
3. World Health Organization (2016). **The Health Data Ecosystem and Big Data.** Retrieved from <https://www.who.int/ehealth/resources/ecosystem/en/>

6

UHC for Innovative Cost-Effective Service: One Day Surgery

Sirikul Karuncharernpanit
Duangkaew Kleebthong

UHC for Innovative Cost-Effective Service: One Day Surgery

Sirikul Karuncharernpanit
Duangkaew Kleebthong

**“Public benefits should be the first priority and private
benefits should be the second”**

(Prince Mahidol’s words)

The above motto of Prince Mahidol is applied as a guidance of working life by Dr. Wibun Phanthaboreekorn, MD, the head of One Day Surgery Unit at Phaholpolpayuhasaena Hospital. He started his earlier career as a teacher in a medical school, where he was nurtured the principle of thinking of the patients as the first priority. Later, he needed to work as a surgeon in Phaholpolpayuhasaena Hospital because of his family reason; he also continued to apply this principle to his new work.



Dr. Wibun Phanthaboreekorn, MD.

An origin of One Day Surgery at Phaholpholpayuhasena Hospital

Phaholpholpayuhasaena Hospital is located in Kanchanaburi Province, in the western part of Thailand, near the border to Myanmar. So, service users of this hospital are not only be the Thai population, but also be the other minority groups migrated from Myanmar.

In each day, various surgical works at Out Patient Department (OPD) of this hospital usually overcrowded, some elective surgery such as hernia repair or herniorrhaphy will not be noted as the first priority, then the patients required to come back on another day for surgery after the doctor could find an available bed for them, which the waiting list usually be 3-6 months. However, for some patients, the doctor decided to perform surgery, they would be admitted in a surgical ward at least one day before and after surgery for safety reasons, some patients felt frustrated and could not sleep or required family caregivers to look after during their admissions.



Phaholpolpayuhasaena Hospital and an Overcrowded OPD

In 2009, Dr. Wibun decided to start the One Day Surgery (ODS) service to reduce the overcrowded and waiting time of the patients. At the beginning period, there were many challenges such as inconvenience, loss of cases from no turning up of the appointed patients, feeling stressed before operation.

For the inconvenient issues, most ODS cases depended on the surgeon's assessment and decision making. They needed to meet many personnel in the different places such as moving from OPD located on the 1st floor to meet the anesthetist on the 4th floor for advice regards preoperative preparation, and back to OPD on the first floor again.

For the loss of cases issue, nurses from OPD usually confirm with patients about the appointment and preoperative preparation by calling but it depended on their workload, therefore, some patients may not be confirmed in advance.

For feeling stressed before operation, patients required to wait for the operation time, some patients had high blood pressure. In the previous system, nurses required to work on ODS cases' document as the admitted patient (approximately 0.5-1 hour per case).

The ODS team had attempted to improve their service continuously. Later, Dr. Somjet Laoluekiat, MD, the Director of Phaholpolpayuhasaena Hospital, had realized its importance and had provided a strong support to establish the ODS Unit on the fifth floor.



Dr. Somjet Laoluekiat, MD.



THE NEW ODS UNIT

Development of One Day Surgery Unit: One Stop Service

In 2017, a big movement of comprehensive ODS unit in Phaholpolpayuhasaena Hospital occurred in terms of location & atmosphere, ODS team and care system.

Location & atmosphere: the One Day Surgery Unit located on the fifth floor including pre-anesthetic clinic, nurse management zone and ODS operating room. Therefore, a patient will visit only one spot to prevent confusion and increase patient comfort. Furthermore, the relaxed atmosphere of the new ODS unit such as comfortable coaches, television and good scenery believed to reduce patients' stress and anxiety.

ODS team: increasing ODS staff and well-organized team guaranteed its efficiency. Importantly, there is a nurse manager who manages the whole journey of patient.

Care system: the evidence based comprehensive ODS care system, provided pre, peri and post-operative care, is also implemented. In particular, providing knowledge or information in face to face and telephone call formats for patients and caregivers is promoted significantly to prevent complications and promote patients' safety.

Consequently, ODS unit at Phaholpolpayuhasaena Hospital can enhance patients' safety, convenience and satisfaction. Fortunately, in 2018, the ODS projects in Thailand started to be financial supported under the Universal Health Coverage scheme.



*One Day Surgery Unit:
One Stop Service*

Universal Health Coverage can enhance accessibility and reduce overload of health workforce in hospitals

In 2018, the National Health Security Office (NHSO) realized the ODS significance and cost effectiveness, therefore, it started to grant approximately 9,000 Thai baht (100 US dollars) per capita to the hospital for this service after case reporting. As a results, more patients who meet the criteria for ODS has been encouraged to be operated under this project. Therefore, an accessibility of the ODS has been increasing and people with Universal Coverage scheme can be treated with ODS without any payment.

Not only the financial support but NHSO also reduced process for admission document. Therefore, nurses' workload especially time consumed for the documentation are reduced. Consequently, nurses can pay more attention on their roles, for example, observing post-operative complications or giving information about post-operative care for patients and caregivers.

Outcomes of ODS: from 3 perspectives

ODS in UHC at Phaholpolpayuhasaena Hospital could be reflected benefits in 3 perspectives: benefit for patients, for health care providers and for NHSO as follows:

First, benefits for patients were prioritized. The well organized ODS care system promotes safety and satisfaction for patients and family members. There was no evidence of complications such as infection, bleeding, or edema after surgery. All patients can recover within two months. Several patients experienced that they felt comfortable and satisfied the service from ODS units as Mr. Kitti Jaorungkrit said '*There is a specific area for patient services waiting for an operation. I thought that I was sitting in the living room, watching the television in my house.*'

Second, benefit for health care providers when NHSO reduced workloads on documentation. The ODS nurse manager reflected that '*I feel better because they require document less than the traditional one, so I can have time more to provide care for patients.*'

Third, benefit for NHSO because the overall cost of care for patients is lower than the old system. NHSO officer mentioned that

"After the UHC scheme supported ODS, patients in Kanchanaburi Province and surrounding areas can access to the qualified ODS service without advanced payment. Furthermore, ODS care cost is also lower than the traditional one because of spending shorter time in hospital and nosocomial infection decreasing."

Valuable benefits of ODS lead to its expansion to other health care providers and may be throughout Thailand in the future.

*Mr. Kitti Jaorungkrit,
a patient of ODS*



Key success factors:

There were four main success factors as shown in the following picture.



Key Success Factors of Phaholpolpayuhasaena ODS. Units

First, continuous dedicated work of all relevant personnel on ODS service and well-organized multidisciplinary team contribute a lot to the achievement.

Second, supportive policy from both the central and the agency levels are very important. The director of Phaholpolpayuhasaena Hospital has strongly supported this ODS system in every way.

Third, effective care management systems, designed by the Phaholpolpayuhasaena multidisciplinary team, provided care with concerning patients' safety and satisfaction as the first priority.

Fourth, UHC which is an effective financial support system from NHSO can enhance patients' accessibility to the cost-effective ODS service.



Way forward

Even the ODS system of Phaholpolpayusaena Hospital is successful at this stage, an expansion to other surgical types which meet the ODS criteria will be tried more too. Furthermore, the ODS training center will be the further step for this unit.

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7

UHC Investment and Management to Access Orphan Antidotes

Orarat Wangpradit
Chalalai Chokdeesrijun

UHC Investment and Management to Access Orphan Antidotes

Orarat Wangpradit
Chalalai Chokdeesrijun

Antidotes: Essential life-saving drugs

Being poisoned can be life-threatening. Specific treatment and antidotes are essential to save these patients lives and minimized disabilities. In 2012, almost 200,000 people died from unintentional poisoning worldwide. However, comparing to other leading health problems, such as cardiovascular diseases, or cancers, poisoning has much lower incidence rate. Consequently, most pharmaceutical industries are unwilling to invest in antidote productions due to unpredictable demand and little incentive to develop these drugs, resulting in scarcity and expensiveness of many antidotes.

In 2006, there was a big unexpected poisoning accident when villagers in Nan Province consumed bamboo shoot kept in closed metallic cans that contaminated with *Clostridium botulinum* bacteria. One hundred and sixty three patients were admitted in ICU and 39 patients were on ventilators. At that time, there was no botulinum antitoxin available in Thailand. Ministry of Public Health then asked for botulinum antitoxin by donation from USA and Japan, as well as purchased from Canada and UK. It took more than 3 days for procuring, packing, and delivering this antitoxin to Thailand. Although it was in time for saving lives, but the expenses

of this event was approximately US\$ 1 million. In 2009, a new year countdown fire at Santika Pub led to dozens of deaths from cyanide poisoning due to a shortage of cyanide antidotes, sodium nitrite and sodium thiosulfate in hospital stocks.

Even though antidotes used for treatment of poisoning were not a priority burden on hospital budgets, to purchase and stock expensive antidotes which may not be used until they expired was wasteful. On the other hand, if poisoning happened, there should be antidotes readily available for saving lives. Therefore, the National Health Security Office (NHSO) under close collaboration with several governmental agencies has initiated a cost-effective national antidote program to ensure promptly access to antidotes for the whole population.

National antidote program: A worthwhile investment

The National Health Security Office (NHSO) has been established since 2002 in order to manage the Universal Health Coverage (UHC) Scheme that covers 75% of Thai Population. The health benefit package of this scheme covers essential drugs, vaccines, and others in the National Lists of Essential Medicines (NLEM), which are necessary for disease prevention, health promotion, curative treatment and sufficient for controlling of major health problems in Thailand. However, there are a number of scarce drugs that are rarely used but crucial for prevention, diagnosis and treatment of rare diseases or life threatening condition, namely

“Orphan drugs”. In 2010, Thai Food and Drug Administration (Thai FDA) reported that Thailand faced a severe shortage of 6 orphan drugs in antidote category, which were cyanide antidotes (sodium nitrite, sodium thiosulfate), chelating agents for heavy metal poisoning [dimercaprol (BAL) and succimer (DMSA)], antidote for calcium channel and beta-blocker poisoning (glucagon) and methylene blue for treating methemoglobinemia.

To ensure equitable access to orphan antidotes for both members and non-member of UHC Scheme throughout the country, NHSO has set up a National Antidote Program in 2010 beginning with these 6 orphan antidotes. So far, there are 16 orphan antidotes and antivenoms included in the National Antidote Program. In the past, although antivenoms in Thailand could be produced and supplied by Queen Saovabha Memorial Institute at a low price, but the antivenom stock was still not efficiently managed. Under this program, orphan antidotes and antivenoms are stocked at regional hubs for supplies based on three criteria; (1) demand in local area and nearby, (2) urgency of the antidote, and (3) the costs of the antidotes. Nowadays, when there are poisoning cases, hospitals can request antidotes through web-based system which includes real-time inventory data of all hubs as well as expiry dates of antidotes.

After implementing the National Antidote Program in 2011, more than 1,800 poisoned patients were benefited from this program. By using severe cyanide poisoning as a model to evaluate its efficacy, the mortality rate of severe cyanide poisoning reduced from 52% to 28.3% after 5 years of implementation. In addition, more than 25,000 patients bitten by venomous snakes

were rescued by appropriate antivenoms that matched with prevalence of snakebite cases in each area. The average annual procurement budget for antivenoms also decreased from US\$ 2.23 million in 2012 when all hospitals purchased their own antivenoms to US\$ 1.2 million between 2013-2017.

Strong collaborative network: The road to antidote program achievement

Prior to today's success, many governmental agencies have cooperated in their fields of expertise. Before antidote program implementation, although a great number of poisoning case consultations by Ramathibodi Poison Center reached the goal of patient's life-saving, many poisoning cases were unfortunate due to antidote scarcity. Hence, in 2010, NHSO acted as the host to gather all stakeholders, which were Ramathibodi and Siriraj Poison Centers, Queen Saovabha Memorial Institute, the Government Pharmaceutical Organization (GPO), Rajavithi Hospital, Thai FDA, regional and general hospitals, to develop a cost-effective antidote management to reduce mortality rate from the shortage of orphan antidotes.

At first, epidemiological data from Ramathibodi Poison Center were used for analyzing antidote and antivenom usage throughout Thailand in the past 10 years, especially the antidotes in high demand and scarce. Orphan antidote management strategies were then developed under cooperation of the mentioned agencies. The Government Pharmaceutical Organization (GPO)

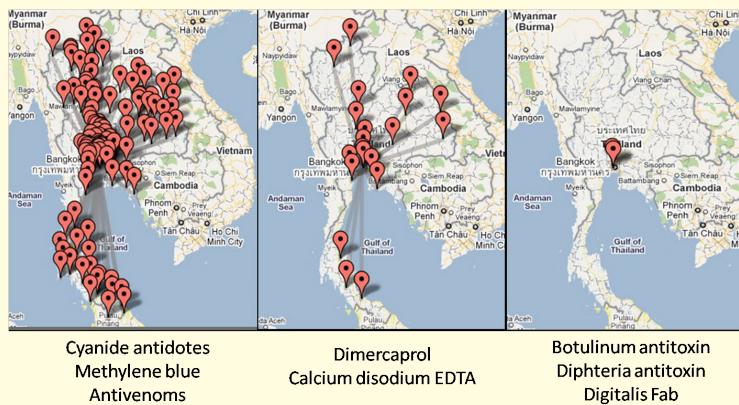
outsourced orphan antidotes which cannot be produced in Thailand, such as succimer, dimercaprol and glucagon, from private sectors. Queen Saovabha Memorial Institute (QSMI) played a vital role in producing antivenoms, and 4 orphan antidotes: methylene blue, sodium nitrite, sodium thiosulfate, and diphenhydramine at a price per vial much lower than imported equivalents.

NHSO invited general and regional hospitals to serve as subnational centers for orphan antidote stocking. Stocking nodes were considered based on demand, urgency, and cost of the orphan antidotes as previously described to avoid redundant antidote stockpile in all hospitals. The association between poison severity and antidote travel time was collected and analyzed by Ramathibodi Poison Center who has performed poisoning case consultations and monitored treatment outcomes since 1996, 24 hours a day via hotline 1367.



*Poisoning case consultation via hotline 1367
by Ramathibodi Poison Center*

The geographic information system (GIS) was designed by NHSO, together with Ramathibodi Poison Center to monitor and manage antidote accessibility. The GIS not only defined antidote stockpile spots but also the quantity as well as contact persons at each stocking hospital. When there is a poisoning case, the GIS can locate the nearest antidote stockpile for delivery. The orphan antidotes can be delivered to the patients in 3 possible ways; 1) delivery the antidote directly to the patient, 2) refer the patient to an antidote stocking hospital, and 3) both the patient and antidote are half-way delivered to a hospital in the middle of GIS map. In fact, the standard operating procedure (SOP) of antidote delivery has not yet applied. The stocking nodes can choose their most cost-effective way of antidote delivery to save both patients and resources.



GIS map of antidote stocking nodes in Thailand

Queen Saovabha Memorial Institute: An unforgettable lifesaver

One of the most significant factors for the success in National Antidote Program is a great contribution from Queen Saovabha Memorial Institute (QSMI), the first and only one antivenom manufacturer in Thailand which also produces certain orphan antidotes. QSMI has an intriguing history. It was established under the name “Pastura Sabha” in 1913 and was later changed to “Sathan Pasteur”. It was originally aimed to be a center of vaccine production and vaccination against rabies after the death of HRH Prince DamrongRajanubharb’s daughter caused by rabies in 1911. A building on the royal property of HM King Rama VI was used as the first center with medical equipment and facilities purchased by a fund donated from HM Queen Saovabha, the King’s mother. In 1917, HM King Rama VI decided to transfer all activities of Sathan Pasteur to Thai Red Cross Society.



Queen Saovabha Memorial Institute (QSMI)

The serum production including diphtheria antitoxin, tetanus antitoxin, and 6 snake antivenoms was started in 1917. The Snake Farm at QSMI was found in 1923 in order to raise venomous snakes for the production of antivenoms. After venom extraction, the venom was injected for immunization in horses raised at the Horse Farm in Hua-Hin and Cha-am. Antivenoms and vaccines produced by QSMI have been widely used all over the country since then. The QSMI production facilities are the first biological production plants that have received GMP certificate from Thai FDA since 2003. The QSMI laboratory has also received certificate of ISO/IEC 17025 accredited from ILAC-MRA, Department of Medical Sciences, Ministry of Public Health in 2005. The potential of this Institute in biological research and production, especially antivenoms and rabies vaccines, has been acknowledged as WHO Collaborating Center for Research on Rabies Pathogenesis and Prevention as well as WHO Collaborating Center for Venomous Snake Toxicology and Research.



Venom extraction and horse immunization for antivenom production



Antidote manufacturing at Queen Saovabha Memorial Institute

In 2010, QSMI started the production of 3 antidotes for national use as requested by NHSO for collaboration in local production of orphan antidotes. The productions of sodium nitrite and sodium thiosulfate as well as other products require stability studies and certain parameters as indicated in the requirements prior to distributing the products whereas the production of methylene blue needs special precaution of cleaning and cross contamination prevention. Production costs for these antidotes are quite high because of small batch size. Therefore, no company in Thailand wanted to invest in their productions.

“We spent more than 2 years to develop the effective and stable antidotes on our own budget and still work on it to provide the best quality antidotes for the patients” said Prof.Dr.Sumana Khomvilai, the deputy director in administrative and technical affairs, QSMI. The vending prices of antidotes produced

by QSMI are at manufacturing costs without any profit. “*We are a non-profit organization, we serve the nation according to the resolution of HM King Rama VI; For Patria, For Scientia, For Humanitate*” said Prof.Dr.Visith Sitprija, the director of QSMI.



*Prof.Dr.Visith Sitprija, the
director of Queen Saovabha
Memorial Institute*

*Prof.Dr.Sumana Khomvilai,
the deputy director in
administrative and technical
affairs, Queen Saovabha
Memorial Institute*



The 4th antidote produced by QSMI, diphenhydramine injection, was started in 2015. Production of antidotes at QSMI has been made to order of NHSO. One lot of production yielded approximately 2,000-5,000 units of an antidote. NHSO has purchased all of these units, although it was estimated that only 200 units were used each year. Prices per unit of methylene blue, sodium nitrite, and sodium thiosulfate manufactured by QSMI are 30 times lower than imported equivalents. Hence, it is worth to buy a whole lot from QSMI to replenish the stock for instant use than to import the same but more expensive antidote and have to wait for its delivery.



Monovalent and polyvalent antivenoms, and orphan antidotes produced by Queen Saovabha Memorial Institute

Ramathibodi Poison Center: An Excellent Center in Poisoning Management

Ramathibodi Poison Center is the first Poison Center in Thailand. It was established in 1996 by Prof. Dr.Sming Kaojarern under the Faculty of Medicine Ramathibodi Hospital, Mahidol University. At that time, there were a few toxicologists in Thailand, and only a short course of toxicology was offered in the Faculty of Medicine. In the beginning, Ramathibodi Poison Center paid US\$ 12,500 for an access code to commercial toxicological database and used it as a reference for poisoning case consultation. However, poisons, pesticides, household products, and venoms in Thailand were locally specific, thus the center has developed local databases to serve the country's need.

Ramathibodi Poison Center, therefore, provided consultation services for poisoning diagnosis and management plan throughout Thailand via hotline 1367 as well as collected poison information at the same time for reference. The hotline consultants are well trained clinical toxicologists, poison information specialists, pharmacists, and nurses who alternatively provided consultation over the phone 24 hours a day, 7 days a week. Steps for consultation service begin with the diagnosis of poisoning symptoms by inquiring from the patients or health personnel in charge. When a treatment is requested, Ramathibodi Poison Center will provide specific treatment protocol for the frontline physicians. If the antidote is not available at the hospital, Ramathibodi Poison Center will coordinate with antidote stocking node based on GIS database for antidote delivery or preparation for the patient to be referred. The center

also follows up poisoning cases with the frontline physicians for treatment confirmation and record as poisoning management protocol for future use.

Ramathibodi Poison Center is not only a poison information center, it also provides toxicological laboratory and treatment services as well as training courses to develop capacity building in clinical toxicology for health personnel. Several training courses have been designed for health personnel to serve their needs such as pesticide poisoning, and substances of abuse. The center has also established 2-year-training curriculum for internal medicine and emergency medicine physicians as diploma of the Thai board of Medical Pharmacology and Toxicology. *"The goal of Ramathibodi Poison Center is to support and empower frontline health personnel to provide patients proper management of poisoning upon their capability"* said Prof. Dr. Winai Wanrukul, the director of Ramathibodi Poison Center.



*Prof.Dr.Winai Wanrukul,
the director of Ramathibodi
Poison Center*



*Ms. Charuwan Sriapha,
a poison information
specialist at Ramathibodi
Poison Center*

The success of Ramathibodi Poison Center as a holistic poison center in both information and treatment services is rooted in the expertise and dedication of all staffs as well as a good support from executive members of the Faculty of Medicine Ramathibodi Hospital. “*We never know when a poisoning case would happen, so we are always ready and stand by to provide a support in time*” said Ms. Charuwan Sriapha, a poison information specialist at Ramathibodi Poison Center. Currently, all 16 orphan antidotes are also stocked at the center for emergency. It is estimated that Ramathibodi Poison Center provided online consultation service more than 15,000 cases each year. In 2019, total poisoning case consultations via hotline 1367 were approximately 25,000 cases. Ramathibodi Poison Center also assesses and evaluates overall outcomes of the National Antidote Program for NHSO.



*Orphan antidote stockpile at
Ramathibodi Poison Center*

International collaboration and way forward

The first international collaboration was in 2011 when methylene blue was out of stock in Taiwan due to discontinuity of their suppliers. With assistance of Prof. Dr. Winai Wanankul, methylene blue injection was delivered to Taiwan National Poison Center without charge. *"In addition to help the patients save their lives, we also gain a network which can also help each other"* said Prof. Dr. Wanankul.

Lead encephalopathy in Burmese children was another case of antidote sharing internationally. The Burmese physician contacted to Ramathibodi Poison Center for consultation and assistance in sharing dimercaprol and calcium EDTA to save the boys lives. Diphtheria antitoxin was also given for the treatment of patients in Laos and Myanmar.

Recently, there was a botulism outbreak that killed one patient and the other two patients were critically ill in Nigeria in 2018. Ramathibodi Poison Center was contacted from World Health Organization (WHO) country office in Thailand to confirm diagnosis and indication for treating with botulinum antitoxin. *"It was on Sunday when we got a call, I still remember that event until now"* said Ms.Sriapha with her smiley face. Botulinum antitoxin was sent to Nigeria Center for Disease Control by plane with the cooperation of NHSO and WHO. The 2 Nigerian patients were saved just in time.

These situations clearly elucidate the development of antidote management in Thailand. *"The National Antidote Program is our pride that changes us from a*

receiver to a giver. It also improves antidote accessibility and treatment efficacy in poisoned patients" said Prof. Dr. Wananukul. Since 2017, Thailand has joined the Regional Collaboration on Antidote Procurement for South-East Asia Region for emergency response and joint annual procurement. The participating countries in this collaboration can access to Thailand Antidote Program anytime through the coordination by WHO representatives in their countries. Ramathibodi Poison Center and NHSO will work together to verify the need and subsequently send the antidote to the country in need.

NHSO has also planned to add more antidotes to the National List of Essential Medicines and increase a number of antidotes which can be stocked at the regional hospitals. Besides, the logistics management will also be systematically developed to facilitate accessibility to antidotes for the patients.

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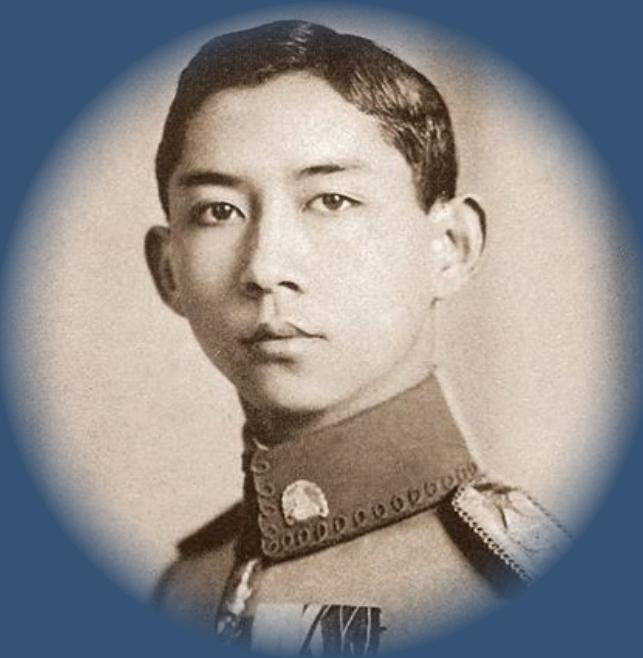
Boromarajonani College of Nursing, Chonburi

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“True Success is not in the learning, but in its application to the benefit of mankind.”

HRH PRINCE MAHIDOL OF SONGKLA



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