

## Executive summary

- The Royal Thai Government has long been prioritising maternal and child health (MCH) based on the concept of continuum of care.
- In an early period, the MCH policy focused on the reduction of mortality and morbidity rates of both mother and child. Recent policies have focused on improving quality of life of mother and child.
- Since the introduction of Universal Health Coverage (UHC), the fifth Multiple Indicator Cluster Survey (MICS) conducted by the Thai National Statistical Office and UNICEF Thailand in 2015 revealed good MCH outcomes in terms of antenatal care (ANC) visits, vaccination, and mortality rates.
- Lessons learned on the development of benefit packages for maternal and child health over the past decade regarding the UHC scheme would be useful for other countries.

### 1. Background, context or scope of problem

Maternal and child health is one of the most prioritized issue for Thai policymakers. Various policies and programmes have been implemented by the Royal Thai Government based on the concept of continuum of care to improve the health of women and children.

According to the World Health Organization 2015–2016, the Thai under-5 mortality rate dropped from 37 per 1,000 live births to 12.3 per 1,000 live births during 1990–2015 and maternal mortality ratio also showed decreasing trends to 20 per 100,000 live births in 2015.

The Universal Health Coverage (UHC) scheme has been implemented since 2002 with the aim to increase the accessibility and quality of health services. For example, UHC provides free access to vaccinations for children according to the national vaccine programme. Pregnant women also have free access to continuum of care including antenatal care (ANC), delivery, postpartum care, and other key health interventions at public hospitals. UHC has changed the way the policy was implemented from policymakers through practitioners and frontline workers in local areas.

### 2. Approaches and results achieved

The benefit package for maternal and child health is implemented since pre-conception until children grow up to 5 years. Health services include the preconception period and the ante-partum, intra-partum and post-partum period, described further below.

#### Pre-conception period:

- Condom distribution at health facilities, youth-friendly clinics, and outreach clinics.
- Promotion for Fero-Folic supplements for expectant mothers
- Family planning and health check-up for couples

#### Ante-partum, intra-partum, post-partum period:

- *Ante-partum*: screening (e.g. Thalassemia, HIV); treatment (Folate, iron, iodine, dental care); health education (parental school MCH book).
- *Intra-partum*: delivery by skilled birth attendance; health facility with obstetric emergencies equipment; congenital hypothyroid and PKU screening for new born.
- *Post-partum*: early and follow-up health check-up; standard “well child clinic”; free EPI vaccination; child development check-up and counselling; breastfeeding and nutrition counselling.

Pregnant women receive the MCH book or “pink book” when they access antenatal clinic for the first time.

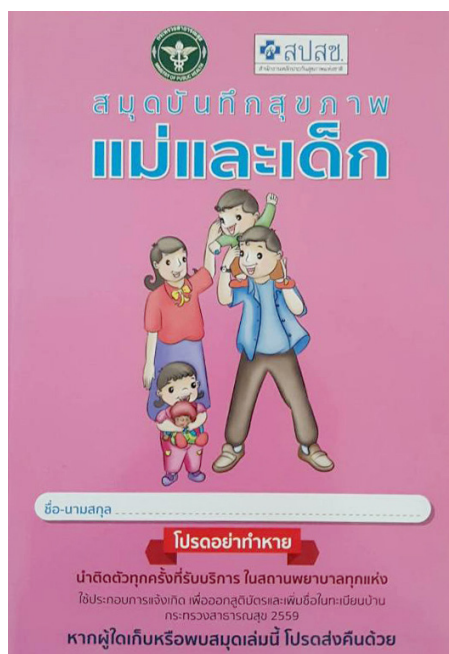
Each child receives regular check-ups according to National Developmental Screening Programme Manual (DSPM) from health personnel at 9, 18, 30, and 42 months of age at well child clinic and for parents to promote their child’s development at home.

#### Key milestones before and after the UHC:

In 1985 the Department of Health developed the MCH handbook.

In 1992 Thailand integrated the WHO and UNICEF recommendation on “the Baby Friendly Hospital Initiatives” into MCH practices of public hospitals. All public hospitals have been certified as BFHI hospitals 6 years later.

In 1994, according to high prevalence of Thalassemia cases,



the Department of Health has developed theThalassemia screening system by integrating screening and diagnostic tests into health service during antenatal clinics. Thalassemia screening tests is one of routine services in antenatal clinics of all hospitals across the country.

In 1998, Thailand implemented the Safe Motherhood projects according to WHO recommendation with the aim to improve the quality of MCH care and service delivery. The Department of Health has also developed mortality case conference to investigate and prevent avoidable maternal and child premature death. Department of Health provided extensive training for health professionals on maternal death diagnosis.

In 2005, the department of Health has developed a new comprehensive MCH policy and programmes by integrating all existing guidelines and adjusting it to be more context specific as a Family Love Bonding Hospital Policy with an objective to reduce infant mortality, birth asphyxia by focusing more on quality of ANC.

In 2010–2012, Thailand conducted the cluster randomized controlled trial research to study the feasibility of implementing the new ANC guideline for low risk pregnancy. The outcome of this research led to the implementation of new guidelines which recommended five ANC visits for low risk pregnancy.

**Results:** According the fifth Multiple Indicator Cluster Survey (MICS) conducted by the Thai National Statistical Office and UNICEFThailand in 2015 revealed that almost 98% of pregnant women have at least one ANC visit and 91% of them have four ANC visits. Moreover, 99% of pregnant women delivered by support from skilled-birth attendants. For children health, almost 98% of children aged 12–23 months received BCG vaccines and the number of children who received all eight recommended vaccines reached to 75% for the whole country.

### 3. Lessons learned and recommendations for other countries

Strong commitment of the Department of Health under the Thai Ministry of Public Health as the national focal point for MCH policy has been the key to the success in designing the comprehensive health services based on national evidences and international standards.

The National Health Security Office (NHSO) allocates funding through the UHC, manages and prioritizes resources for services. Subsequently, any new intervention or services to be included in MCH benefit packages has to be assessed and selected by the committee set by the NHSO. Each proposed intervention needs to be studied on either feasibility, efficacy, efficiency, or other aspects. Once any intervention was included as benefit package, the NHSO will provide budgets for the hospitals so that mothers and child could receive the service for free. With this mechanism, the benefit packages are usually updated, deleted, and added on to be more

appropriate for the situation of the country. Regional MCH board policy has been established as a mechanism for monitoring the programme implementation such as Safe Motherhood Project. The MCH board composed of health professional representatives from all hospitals in the region. The MCH boards have worked effectively in supervision service delivery, monitoring the health outcomes, exchanging information of MCH status, and providing recommendations for policymakers in planning for further action. Information and recommendations from MCH board are useful for the Department of Health administration to advocate for new MCH policy to the Thai Ministry of Public Health.

Furthermore, the good collaboration between the government sector and international organization such as WHO and UNICEF has led to up-to-date maternal and child health data and information for policymakers to review and revise the national benefit packages for maternal and child health in the country.

Despite substantial improvement in MCH outcomes in the past few decades, Thailand is still struggling to cope with some MCH challenges such as exclusive breastfeeding outcome, child development and teenage pregnancy. The Department of Health continues to put more effort to engage stakeholders especially non-health sectors to contribute for MCH policy and programmes. Furthermore, the Department of Health also expand the collaboration to community through community health volunteers in order to create supportive environment for mothers and children in sustainable way.

### Recommendations

**Policy implementation** should be introduced step-by-step. Having a pilot study helps the policymaker to design the most appropriate policy option for the national level.

**Participation from stakeholders and community** would facilitate the policy implementation.

**Monitoring and evaluation** is the critical process for accessing to information about policy implementation, especially key success and failure.

**Capacity building for health personnel:** professional requires training or in responding need assessment.

**Global and International support:** The MCH policy in Thailand has aligned with various guidelines and recommendation from international organizations.

### Resources

Thai National Health Security Office (<https://www.nhso.go.th>)

Multiple Indicator Cluster Survey – Thailand (<https://www.unicef.org/thailand/topics/multiple-indicator-cluster-survey>)

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- Thailand has achieved significant improvement of Elimination of Mother-to-Child Transmission (EMCT) of HIV in Thailand with rate declined from 10.3% in 2000-2003 to 1.9% in 2015.
- Thailand in 2015 reaffirmed its commitment to WHO to be on track for EMCT of HIV. The country has established a national committee and task force on this issue, and convenes periodic meetings to review progress towards the dual elimination goal.
- In 2015, 96% of HIV-positive pregnant women and nearly all infants born to HIV-positive mothers received antiretroviral (ARV) medicines. Coverage rates were similar for Thai and non-Thai clients.
- Key success factors are strengthening the ownership of the programme from the sub-national level down to the community level; empowering individuals to know their HIV status and to engage in a timely manner; and active case management at the community level with relevant support to impacted families.

### 1. Background, context or scope of problem

The first case of HIV/AIDS in Thailand was detected in 1984 among men who have sex with men (MSM); and since then HIV transmission started to involve some other groups very rapidly, including family unit. The first case of HIV infection among pregnant women in Thailand was reported in 1988, which triggered the national awareness that if the situation of the epidemic is aggravated, the country would face the problem both in the immediate and in a long run.

### 2. Approaches and results achieved

The Prevention of Mother-to-Child Transmission (PMTCT) programme is implemented with a 4-prong model:

**Prong 1:** Primary prevention of HIV and sexually transmitted infections in women of reproductive age through HIV/AIDS and sexuality education, youth friendly health service clinics, promotion and support of condom use for target populations and promotion of HIV testing and access to the health service system.

**Prong 2:** Prevention of unplanned pregnancy/ planning safe pregnancy through a training manual and capacity building to provide reproductive health and family planning services for people living with HIV as well as clinical and health staff. Promoting access to reproductive health and family planning for people living with HIV (as shown in diagram).

**Prong 3:** PMTCT of HIV: all pregnant women at their first antenatal care (ANC) visit at a hospital or clinic receive pre- and post-test counselling for HIV as an integral part of the ANC blood screening service, HIV Voluntary Counselling and Testing (VCT) for pregnant women and their partners in the general population, services for HIV-positive pregnant women.

**Prong 4:** Continuum of care for post-partum HIV-positive women, their infants and families. HIV-positive women receive standard care at the hospital and HIV monitoring during the post-partum period to detect adverse reactions to ARV. A post-partum check-up is scheduled at 4-6 weeks. Mental health support and counselling are also available.

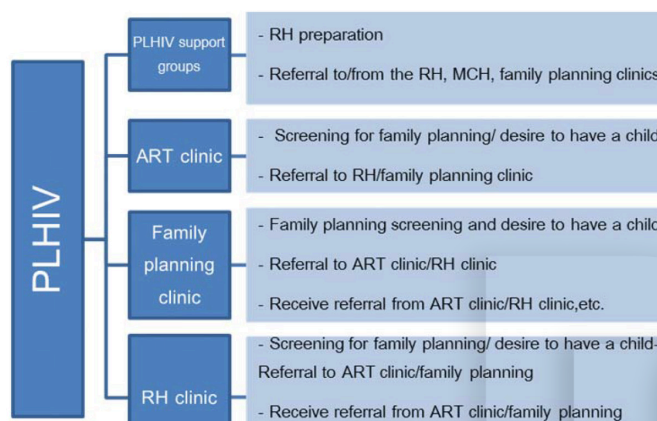
### Key milestones

After the first case of a pregnant woman with HIV was reported in the late 1980s, the Ministry of Public Health (MOPH) initiated a program of providing infant formula for infants born to HIV-positive mothers to reduce the risk of MTCT of HIV. Thailand has implemented HIV VCT for pregnant women since 1993.

In mid-1996, Her Royal Highness Princess Soamsawali gave one million baht (equivalent to 50,000 USD) to the Thai Red Cross Society to start up the 'Princess Soamsawali PMTCT Fund'. Any hospital in Thailand can request the PMTCT medications for their patients but is required to report back the outcome of the treatment in terms of HIV transmission and side effects.

During 1997-1999, the MOPH implemented pilot PMTCT of HIV projects in the North and Northeastern regions of Thailand in collaboration with the United States Centers for Disease Control and Prevention Thailand/Southeast Asia Regional Office to provide HIV VCT for pregnant women, treatment for PMTCT to HIV-positive women and to pilot a PMTCT monitoring system.

In 2000, with the successful implementation of the pilot projects, MOPH announced a national PMTCT policy and guidelines for all government hospitals to integrate PMTCT of HIV into the routine



MCH service, including VCT for HIV, screening for syphilis and hepatitis B infection among pregnant women, provision of ARV prophylaxis for HIV-positive pregnant women and infant formula for infants born to HIV-positive mothers. ARV regimens have been changed periodically according to the latest prevention of transmission science.

**Results:** As part of the comprehensive ANC programme, all pregnant women receive screening for hepatitis B, HIV, syphilis, thalassemia and other conditions according to standard protocol. MOPH data showed that in 2014 more than 98% had at least one ANC visit and despite differences in geography and context, the rate of ANC coverage is similar across regions (ranging from 95.8% to 99.3% in 2014).

According to the Public Health Information Management System (PHIMS), HIV prevalence among pregnant women in 2015 was 0.6%, a decline from 2.3% in 1995 and 0.7% in 2008. The global AIDS response progress report showed the rate of MTCT of HIV declined from 10.3% during 2000–2003 to 4.6% in 2008, 2.3% in 2013 and 2.1% in 2014. Data from the Bureau of Epidemiology, Department of Disease Control, MOPH showed that new under-5 AIDS cases declined from 1,104 in 2000 to 194 in 2007 and 1.9% in 2015.

### 3. Lessons learned and recommendations for other countries

**Multi-sector approach:** PMTCT policy is formulated by a multi-sectoral committee including representatives from MOPH, other government agencies, universities, international organizations and civil society. The committee adjusts standards as needed to remain current with technical advances, and these adjustments are approved by the National AIDS Committee.

The translation of policy into action for PMTCT of HIV starts with the collaborative efforts of the Department of Health, Department of Disease Control and Department of Mental Health, with strong support from senior management at the national and regional levels. This collaboration has helped to maximize coverage and deliver a defined package of services nationwide.

Thailand has recognized the importance of participation by people living with HIV in HIV/AIDS programme activities involving collaboration among service providers and women living with HIV in the implementation of PMTCT.

**Financial commitment:** The Thai government provides most of the budget for PMTCT of HIV. From 2003 which National Health Security Office (NHSO) has been established, cost-effectiveness studies of different ARV regimens have been undertaken to inform policy and budget requests for the NHSO.

PMTCT services, including HIV treatment, are included in the benefits package of the Universal Health Coverage (UHC) scheme. This enables HIV-positive pregnant women to have access to diagnosis, ARV and infant formula for PMTCT of HIV. Non-Thai citizens' service can be covered via the health insurance for migrants policy. Additional funding is contributed by international organizations, research organizations and civil society, and this goes to support system strengthening, research, monitoring and evaluation.

The establishment of UHC scheme has contributed to a higher level of perceived services and accessibility to services among people living with HIV/AIDs. As a result, the EMTCT (Getting to Zero) project was able to achieve its target sooner and in a more efficient manner.

**Monitoring and surveillance system:** Thailand has concrete indicators for PMTCT of HIV, which are consistent with Department of Health's directions and the National AIDS Plan. There are mechanisms for field monitoring and verification of relevant data sets and reports. The surveillance, monitoring and evaluation system for PMTCT of HIV consists of the following core components: 1) Routine service monitoring system (all electronic data); 2) Surveillance system implemented in some provinces and/or reports from clinical outlets; 3) Ad hoc surveys based on the situation and need for data, such as surveys of data from private clinical facilities. This has contributed to a better understanding of and continuous improvements in PMTCT services.

### Recommendations

A combination of factors contributed to EMTCT of HIV, including national ownership and leadership; sustained political commitment; a favorable legal and policy environment; a well-developed national health system and the consistent strengthening of its building blocks; enhancement of community systems; and the strengthening of community interface with health systems.

Networks consisting of government agencies, civil society, the private sector, international organizations and research organizations must closely coordinate on the preparation and updating of PMTCT guidelines based on the latest information /technology.

PMTCT of HIV and syphilis must respond to the needs of people living with HIV and be undertaken on the basis of respect and participation of civil society, especially for the networks of women living with HIV.

Ongoing support for high coverage of PHIMS and use of data for programme improvement will ensure that PMTCT services are continuously monitored and updated based on major changes in national PMTCT policy.

Strengthening the comprehensive reproductive health programme and promoting access to reproductive health and family planning for people living with HIV are important strategies for the sustainable HIV elimination and maintain of EMTCT.

## Executive summary

- *Thalassemia is a major public health concern and the Government of Thailand has introduced prevention and treatment programmes to reduce the incidents of severe Thalassemia among newborns.*
- *A national policy to implement a comprehensive and voluntary programme for Thalassemia prevention and control in Thailand is free of charge. Screening for Thalassemia has been included in the Universal Health Coverage package.*
- *The service uptake by pregnant women and their husbands had increased over time; and there was a decreasing trend for the incidence of new cases of Thalassemia.*

### 1. Background and scope of problem

Thalassemia is a chronic anemic disorder inherited through heredity caused by the abnormality of the gene resulting in an imbalance of globin chains and lower-than-normal amounts of hemoglobin's components. Generally, people can be a carrier or actually ill with the disease. Severe cases of Thalassemia may result in fetuses dying in utero or soon after delivery.

The prevalence of Thalassemia carriers among Thais is 36.90%. For example, out of 17,012 couples per 700,000 births are at risk of giving birth to offspring with severe thalassemia. Among these at-risk couples, 4,253 would have a chance to deliver a baby that suffers a severe type of Thalassemia each year.

### 2. Approaches and results achieved

In 1994, the Thai Ministry of Public Health designated the Department of Health to be the focal point in setting goals for the prevention and control of Thalassemia.

On 9 February 2005, the Ministry of Public Health announced a national policy promoting the prevention and control of Thalassemia through genetic counseling and screening for pregnant women. If initial blood test results were abnormal, the woman's husband would be notified to come for a screening test.

All pregnant women who are diagnosed as being in an "at-risk" couple are given a prenatal diagnostic examination of the fetus. Patients requiring services beyond the capacity of a health facility are connected to referral networks.

As part of health promotion programmes, public health workers, women of reproductive age, and married couples are provided with information about Thalassemia.

To enhance coordination on a budget, capacity building of staff, and accuracy of laboratory testing, in 2013, an agreement was reached across main organizations:

1. Budget administration for the costs of diagnostic examination (including screening and confirmatory tests of at-risk couples and the prenatal diagnosis of the fetus) under the National Health Security Office (NHSO). Screening tests for Thalassemia has been included in Universal Health Coverage.
2. Capacity building for health personnel under the responsibility of the Department of Health, Ministry of Education (medical schools), and Thalassemia Foundation of Thailand.
3. Quality control for laboratory investigation under the responsibility of the Department of Medical Sciences, Ministry of Public Health.

Between 2012 and 2017, the service uptake by pregnant women and their husbands had increased over time; and there was a decreasing trend for the incidence of new cases of Thalassemia.

### 3. Lessons learned and recommendations for other countries

Lessons learned from the prevention and control of Thalassemia in Thailand reflected commitments from leaders in this field. The Department of Health has been the main focal point within and outside the Ministry

of Public Health (e.g. Department of Medical Services, Department of Medical Sciences, Faculties of Medicine in various universities, Thalassemia Foundation of Thailand, NHSO and pharmaceutical organizations).

Working together as a multidisciplinary team is important and there is a need for capability-building and development for medical and public health personnel on a continual basis.

Supporting the development of servicing systems and strengthening referral networks are essential– these include genetic counselling and laboratory investigations connecting to sub-district health promotion hospitals, community hospitals, provincial hospitals, as well as specialty and university hospitals.

## Recommendations

### **Awareness raising to the population:**

To successfully implement national Thalassemia prevention and control programmes, raising awareness and health education about the condition is important for the general population and health personnel. Understanding the differences between a carrier and a person actually ill with the disease and to prevent stigma against the persons diagnosed as being a carrier would be important for the screening process.

**Guidelines for prevention and control:** Practical guidelines for Thalassemia prevention and control should reach a set standard that is practical for health-care facilities.

**Monitoring and evaluation:** Monitoring and evaluation should be carried out continuously to ensure that reliable data are gathered and available for inputs to decision making. Quantitative and qualitative indicators such as number of at-risk patients (or newborns) suffering severe Thalassemia compared to the previous year and number of at-risk couples who receive prenatal diagnosis are essential for the evaluation of problems and barriers to screening and services.



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- *Iodine deficiency disorders (IDD) have been recognized as a public health problem in Thailand for more than 60 years. Iodization of salt has been set as the main strategy and a salt iodization program was first launched in 1965, and since then the Government has implemented many initiatives to reduce IDD.*
- *Since 2000, a system has been put in place to monitor iodine levels in pregnant women and the system was later expanded to include preschool children and older people.*
- *The Department of Health, as the main responsible agency, coordinates with other ministries on programmes, including the Iodine Village Project, the Sustainable Iodized Salt Project, the Iodized Salt Produces Association and the potassium iodate fund.*

### 1. Background, context or scope of problem

Iodine deficiency disorders (IDD) are the most common cause of preventable brain damage and intellectual disability among children worldwide. In Thailand, IDD were recognized as a public health concern more than 60 years ago. Several epidemiological studies conducted in 1950s and 1960s clearly indicated the magnitude of the problem, particularly in five northern provinces, which led to the first national action against IDD, specifically the production and distribution of iodized salt in late 1960s. The initiative had an insignificant impact, however, due to inconsistency in following up and monitoring the operation. A survey of IDD prevalence among primary school students of 14 northern provinces in 1987 showed a very high rate (43.1%) and the result served as a wake-up call to establish the first National IDD Elimination Programme in 1989 and a National IDD Control Committee in 1991.

### 2. Approaches and results achieved

The Ministry of Public Health together with collaborating agencies developed strategies with a focus on universal salt iodization (USI), and other preventive and promotive measures. Through the implementation of the programme, tracking and regular monitoring the progress towards IDD elimination has been reinforced, which includes measuring iodine levels in iodized salt at the point of production and distribution, and in the household. The main approaches that Thailand implemented are described below.

**Stakeholder collaboration at the policy level:** The combined efforts of all involved parties, including the Ministries of Public Health, Industry, Commerce, Interior, Education, Social Development and Human Services led to the programme's sustainable success. This includes all levels of government, as the Decentralization Act of 1999

defines the local administration as responsible for the people's welfare in every aspect including health care. The Department of Health provides technical support, situation analyses and problem-solving strategies, and the local administrations can utilize the tools according to epidemiological situation in each area.

**Establishment of legislative frameworks:** In 1994, the first ministerial mandate specified that iodine should be added to edible salt at a minimum of 30 mg/kg. In 2011, it was revised to specify an iodization range to 20–40 mg/kg. To broaden the reach of the iodization programme, in 2010 additional regulations were issued for seasoning products made from soy beans and fish sauce (one of the most widely-used sauces in both rural and urban areas).

**Integrating IDD in the benefit packages of Universal Health Coverage and maternal health care:** The National Health Security Office listed the control and prevention of IDD as one of its priorities and has funded the distribution of iodine tablets to all pregnant women – totaling more than 700,000 cases per year – to prevent iodine deficiency in infants. An oral capsule supplement (Triferdine®) containing 150 µg of iodine, 400 µg of folic acid and 60 mg of iron is produced by Government Pharmaceutical Organizations (GPOs) and it is provided through the antenatal care services, which cover 800,000 newborns each year.

**National Iodine Day:** The cabinet declared June 25 as the National Iodine Day. Each year since 2003, the Department of Health has celebrated June 25 with activities such as “Salt Inspection by Junior FDA Agents” in schools nationwide to remind citizens of the importance of iodine.

**Partnership with the private sector:** In 1996, government agencies and private enterprises worked together in

adding iodine, vitamin A and iron to instant noodle products, based on results of the food safety and sensory assessment study by the Institute of Nutrition, Mahidol University. This programme was very well received by instant noodle producers and up to the present day it is still running effectively.

**Innovations:** The Department of Biochemistry, Mahidol University, invented a point-of-consumption iodized salt test kit (I-Kit) to monitor the iodine level in iodized salt at the community and household level. It also invented simplified colour measurement kits to test the iodine level in salt at the factory level.

**Key results achieved:** The risk of low intellectual quotient (IQ) from iodine deficiency is still prevalent. The report from Thailand's Ministry of Public Health in 2011 revealed that 6.5% of Thai students 6–15 years old were classified in the extremely low IQ range (69 and below). This rate should not be more than 2%. Iodine deficiency is not the only factor determining a child's IQ, nevertheless it is significant. Research showed that more than half of pregnant women were not getting adequate amount of iodine, which can affect brain cell development in fetuses.

In 2014, the median urinary iodine concentration (UIC) was 155.7 µg/L in pregnant women, 234.6 µg/L in children aged 3–5 years, and 111.3 µg/L in older people, which shows that all three population groups had adequate iodine intake, and that the success of the IDD programme has been maintained. A Department of Health survey in January 2015 reported that the proportion of pregnant women taking iodine supplements was 94.6%, and 83.6% of the women reported taking the supplement regularly.<sup>1</sup>

### 3. Lessons learned and recommendations for other countries

**Monitoring:** An effective system for the assessment of the situation and monitoring of the program is necessary to ensure sustainable elimination of IDD.

**Royal support:** His late Majesty King Bhumibol Adulyadej gave advice on the iodine deficiency disorder prevention project on 25 June 1997. The National IDD Control Committee has been presided over by Her Royal Highness Princess Maha Chakri Sirindhorn. High level commitment and support was key to sustaining progress over time.

**Vigorous community engagement:** The Department of Health collaborated with provincial health offices and provincial/area networks to support community efforts to control and prevent IDD. Volunteers act as iodine ambassadors. It is critical to have the support of front-line health workers at the grass-roots level to put national policies into practice.

**Coherent master plan:** The first National Iodine Deficiency Disorders Control and Prevention Plan was established in 1994 to coordinate efforts from related agencies both public and private. Many Master Plans were produced subsequently. The current 2017–2021 Master Plan was approved by the National Iodine Deficiency Disorders Control Committee. These plans helped to sustain the commitment to eliminate IDD over time.

#### Reference

1. [http://www.ign.org/cm\\_data/IDD\\_aug15\\_mail\\_1.pdf](http://www.ign.org/cm_data/IDD_aug15_mail_1.pdf)





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- *In Thailand, birth defects contribute to 22.3% of neonatal deaths and around 24,000 to 40,000 of congenital anomalies occur every year.*
- *Prevalence rates and other important statistics about birth defects are still not well-established due to the lack of systematic birth defect surveillance and registry.*
- *Thailand Birth Defects Registry was established in 2012, and it was rolled out to all hospitals nationwide in 2016.*
- *The Birth Defects Registry integrates multiple sources of data, and it is essential to planning for effective and timely intervention programmes for birth defects.*

### 1. Background and scope of problem

Birth defects or congenital anomalies are structural or functional abnormalities, including metabolic disorders, which are present from birth. They are a diverse group of disorders of prenatal origin, which can be caused by single gene defects, chromosomal disorders, multifactorial inheritance, environmental teratogens or micronutrient malnutrition.

The actual burden and the mortality attributable to birth defects in many of the countries is of considerable uncertainty, due to the lack of adequate official registration of births and deaths. Latest data in Thailand reported around 24,000 to 40,000 of congenital anomalies occurring every year and birth defects contribute to 22.3% of neonatal deaths.

However, the prevalence rates and other important statistics about birth defects are not well-established due to lack of systematic birth defect surveillance and registry.

Furthermore, the poor prevention and lack of specialists and information sharing among referral networks, requires that many parents from remote areas especially from poor families will continue to experience hurdles in accessing quality health care in time.

Early detection and prevention of birth defects is necessary to reduce neonatal morbidity and mortality. However, a lack of continuity between maternal and child health programs has meant that care of the newborn has fallen through the cracks between care of the mother and care of the older child.

### 2. Approaches and results achieved

In 2010, the National Health Security Office (NHSO), Ministry of Interior (MOI), Queen Sirikit National Institute of Child Health and Birth Defects Association (Thailand), under the support provided by UNICEF, collaborated to initiate a project to extend the online birth registration system to include an online birth defects registry for Thailand. This decision came in response to World Health Assembly Resolution WHA 63.17, calling for prevention of birth defects in the WHO South-East Asia Region. The Thai Birth Defects Registry was established in October 2012.

#### Processes

The Thai Birth Defects Registry was established by developing a web portal to integrate multiple sources of birth defect data with the online birth registration system from the Ministry of Interior (MOI). Each infant is assigned a unique national identification number which functions as a

primary key to retrieve birth defect records at key points as described below:

- *At birth:* When a baby is born, the birth is recorded in the MOI online birth registration system. The system was expanded to include a drop-down menu of birth defects. When an infant is born with a birth defect, it is recorded along with other vital data.
- *Reimbursement medical records:* The aggregation of 1) birth defect data from MOI 2) claim data from NHSO with the relevant individual medical service records by International Classification of Diseases (icd-10) codes and 3) related health problem for 2010 of congenital deformities by using the national identification number.
- *Late diagnosis data:* health professionals can insert a new case via the online birth defect web portal which can verify and avoid the redundant input from the other two sources.

All the relevant birth defects data from multiple source data have been consolidated in a single window website and issue the reports for each facility to set the care plans. A recent example for scaling up includes: when the Zika occurred, the NHSO and Ministry of Public Health have collaborated with MOI to insert an additional field named “head circumference” into the online birth registry and inform all public hospitals to input the data.

### Achievements

The Thai Birth Defects Registry expanded from 20 to 49 hospitals between 2013 and 2015. By 2016, the birth defect registry was rolled out to all hospitals nationwide. In 2015, the data collected from 41 provinces throughout the 4-year period (covering a total of 171,401 live births were registered 23.3% of total live births in Thailand). A total of 4,679 infants were diagnosed as having congenital anomalies. The prevalence of congenital anomalies was 27.3 per 1,000 live births.

The 5 most common birth defects, in order of prevalence, were congenital heart defects, limb anomalies, cleft lip/cleft palate, Down syndrome and congenital hydrocephalus.

### 3. Lessons learned and recommendations for other countries

Under the Thai Universal Health Coverage (UHC) policy, involvement of the NHSO and the Ministry of Public Health is vital to establish the care plan and referral system for defected neonatal and sustainable reimbursement of birth defect health services. Such data integration initiatives take into concern the continuous care plans that is the ultimate goal for UHC.

#### Recommendations

Birth defects registries or surveillance systems to identifying the causes and magnitudes of birth defects can be established and the data generated by the system can then be used for planning and follow-up treatment and rehabilitation. It is suggested this multiple data source registry programme should be integrated in existing public health systems to ensure sustainability.

Capacity-building training must be provided to health-care professionals on how to input data properly. In Thailand, this was arranged in collaboration with all involved organizations.

Strengthening the collaboration among key stakeholders, the primary and secondary prevention plan such as education and supplement intake can be provided effectively with a well-designed referral system or care plan in the future.



## Executive summary

- *Although Thailand is a signatory to the Convention on the Rights of the Child (1990), and Thai law entitles every child born in Thailand to be registered and to obtain a birth certificate, birth registration among non-Thai residents were low at 79.2%*
- *An online birth registration system was designed, piloted and scaled up to the national level from 2011 to 2013, which resulted in a sharp decrease in the rate of non-registered newborns in Thailand.*
- *Positive spillover effects from the online registration system include increased enrollment in the Universal Health Coverage scheme and better data collection on birth defects and congenital conditions.*

### 1. Background, context or scope of problem

Birth registration is the official recording of the birth of a child by the government. A birth certificate is the first legal recognition of a child's identity, and it states a child's name, date and place of birth, as well as the parents' details, such as names and nationalities. A birth certificate helps to secure the right to subsidized health care and other social welfare services, as well as access to justice and child protection.

Birth registration is prioritized in the Convention on the Rights of the Child (1990), to which Thailand became a signatory in 1992. Yet Thailand made little progress on birth registration until the Universal Security Act (2002) was enacted. Since then, birth registration has remained on the national agenda and all stakeholder organizations have been engaged to register every birth in Thailand.

Thai law entitles every child born in Thailand to be registered and to obtain a birth certificate, even children whose parents are non-Thai or lack legal status. Yet, the 2012 Multiple Indicator Cluster Survey (MICS) found only 79.2% birth registration among non-Thai residents.<sup>1</sup>

### 2. Approaches and results achieved

In 2011, with the collaboration of the Ministry of Interior (MOI) and the Ministry of Public Health (MOPH), UNICEF and National Health Security Office (NHSO) began developing an online birth registration system that links information on each birth in the every hospital delivery room to the civil registration system.

Under the previous system, the parents had to bring the delivery certificate from the hospital and inform the local registration offices within 15 days of the birth, otherwise they incurred a 200 baht (\$7) penalty. But the penalty was not effective to achieve universal birth registration, so the online birth registration system was developed. Back-up systems are in place if the parent neglects to apply the delivery certificate at the local authority as planned. Hospital staffs can check on the progress of parents from the online birth registration report and follow up with those who have not informed the local authority or have not received the birth certificate for their child, using the up-to-date contacts data in hospital records.

Initially, 40 hospitals were selected to pilot the online birth registration system. After one year it was scaled up to 538 hospitals, and then it was put into use nationwide in 2013. Training on the online system was provided to every stakeholder: hospital staff, department and provincial administration, MOI, MOPH and NHSO. All stakeholders helped to identify barriers to birth registration and they worked with parents to overcome those challenges with support from UNICEF.

The online birth registration system also enables the hospital staff to access a copy of the child's birth certificate to enroll the child in the Universal Health Coverage (UHC) scheme. The system is also integrated with other/previous national health insurance schemes, to enable a seamless transition from one national health insurance scheme to another and to decrease redundancy.

Thailand also needed a database for children age 0–7 years with birth defects. The lack of such a database was an obstacle to the reduction and prevention of neonatal congenital conditions. With support from MOI in 2012, the online birth registration system was extended to include new functions to record input for congenital birth defect data. With these data, MOPH can be more proactive in planning care and the Ministry can effectively develop the referral system for this vulnerable group.

**Results:** After implementing the online birth registration system, the overall rate of non-registered newborns has decreased from 7% in 2011 to 3.03% in 2016. This system has also increased the enrollment in the UHC scheme in Thailand, which has reached 99.82%.

To protect the rights of newborns, the National Health Security Board has now decided to automatically register all non-enrolled newborns within 30 days of birth by using the home town address information of their mothers provided by the MOI mother at the birth. This solution enables parents to access hospital-based health care, prevention and wellness services for their newborn without any financial hardship.

### 3. Lessons learned and recommendations for other countries

1. Collaboration between MOI, MOPH, UNICEF and NHSO was critical to design a computerized data management system that was useful to all stakeholders and supported data sharing and dissemination.
2. Strengthening the system to register every birth in Thailand led to gains in other areas, specifically enrollment in UHC and the expansion of the system to record birth defects and congenital conditions.
3. Training on the online system enabled every stakeholder to understand and use the online birth registration system. Stakeholders were important partners in identifying barriers to birth registration and helping parents to overcome those challenges. Stakeholders championed the system and were key to monitoring and evaluation.

### Recommendations

Many low and middle income countries are taking steps to move closer to universal health coverage. Countries that have more effective systems for Civil Registration and Vital Statistics (CRVS) will be able to plan and carry out UHC initiatives and they will be better able to support social and economic development.

The collection of data, beginning at birth, has become a critical issue for every country, not only for establishing UHC schemes, but for initiatives in many other areas. If vital statistics are continuously collected from a civil registration system that covers all life-course events, they can provide a reliable basis for the design and implementation of policies on public health, maternal and child care, family planning, social security, education, housing and economic development.

Because there are strong linkages between CRVS and human rights, a strong birth registration system helps to secure the rights of the child and his or her access to other benefits in the legal and governance systems.

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## Executive summary

- *Drug shortages such as antidotes lead to delayed treatment, suboptimal alternative management options, increased complications, and increased mortality.*
- *The Thai National Antidote Programme was established in 2010 to manage the national antidote stockpile, educate the health-care providers on appropriate antidote use, and evaluate antidote usage.*
- *Under the Universal Health Coverage policy, the National Antidote Programme has included antidotes in the benefit package for life saving.*
- *In 2013, the National Anti-Venom Programme was proposed to the National Health Security Board (NHSO) and successfully implemented nationwide that same year.*

### 1. Background and scope of problem

Antidote shortages have become a global problem in poison management with no effective systems in their delivery especially in low and middle-income countries. The antidote shortage problem comes from the lack of interest from pharmaceutical industry to supply due to low and inconsistent demand, short shelf life and hence low profit.

Moreover, the shortage of capacity especially of toxicologists has become a critical problem. The situation is that the number of toxicologists at the beginning of the project in Thailand (six in Bangkok and one in the North-eastern part of Thailand).

### 2. Approaches and results achieved

In 2010, National Health Security Board (NHSB) had made a solution to establish National Antidote Programme to manage the national antidote stockpile, educate health-care providers on appropriate antidote use, and evaluate antidote usage.

#### National collaboration

The project was a collaboration among the National Health Security Office (NHSO), Queen Saovabha Memorial Institute, Thai Red Cross Society, Thai Society of Clinical Toxicology, Government Pharmaceutical Organization, Thailand Food and Drug Administration (Thai FDA), and poison centers of Ramathibodi and Siriraj Hospital.

The Thai National Antidote Programme has operated to create the start-up list of the 6 antidote stockpiles composed of Methylene Blue injection, Sodium nitrite injection, Sodium thiosulfate injection, Dimercaprol injection, Succimer capsule and Glucagon injection.

Sodium nitrite and Sodium thiosulfate are the most widely distributed antidotes in the project according to the urgency and short period of life-saving time. These items are manufactured by the Thai Red Cross Society with the price 30 times lower than the originator. They are stocked in every community and provincial hospital, university hospital, poison center, and also in general hospitals with distances greater than a one-hour drive from the nearest stockpile site. The maximum allowable time between initial contact stockpile management to antidote administration is 90 minutes.

#### Geographic Information System (GIS)

Besides the central management system, the Government Pharmaceutical Organization has to monitor the supplies and manages antidote sharing among stockpile hospitals. Antidote distribution is based on urgency of the poisoning and the cost of each antidote of concern. GIS is used for real-time monitoring of types and numbers of antidotes in each stockpile hospital. The same programme is also used for locating the nearest stockpile hospital from the hospital requesting the antidote.

## Results

As of mid-2017, the programme has saved approximately 24,558 patients. Nearly 10% of those patients who were exposed to poison or toxic substances and others bitten by venomous snakes, medicines were successfully transferred and treated at hospitals with near 100% survival rates. After treatment, the efficacy rate for patients recovered without complications with 87.5% for antidote cases and 94.3% for antivenom cases. Success stories include saving the lives of school children from lead poisoning in Northern Thailand.

### 3. Lessons learned and recommendations for other countries

At the national level, collaborating with central management and public commitment from national health insurance systems is required. Collaboration among key stakeholders in the operation and management of a national programme should be addressed as a national agenda which should include the monitoring and evaluation of improvement over time.

In response to the shortage of toxicologists, the establishment of expert consultation, monitoring and evaluation supported by the poison centers of Ramathibodi and Siriraj hospital have become one of the key success factors to ensure the rational treatment of antidotes. Moreover, it is imperative that training is provided to graduates and health professionals for

updating the new antidotes included in the benefit package and technical reviews for the rational treatment.

The use of information technology is required in system development to enable information resource sharing and reduce the wastage rate of the antidotes: 1) Health-care units and Poison centers can search for stock locations in real time; 2) Compensate for stock, drugs used, administration and transportation costs; 3) Easy access of technical information and support from the Poison Centers.

Despite a national coordination effort, each year the Government has to destroy a number of antidote stockpiles due to their short shelf life and the unpredictable number of patients who could require this specific category of medicines. The majority of the countries in the same region, especially in low and middle-income countries, can jointly cooperate to create an alliance network in order to leverage this programme.

Implementing a National Antidote Programme will be beneficial for any country as budgets, resources and medicine production do not have to be handled separately. Additionally, it will help to rectify the problem of counselling experts and medical supply shortages in the region all together.

Examples of successful cooperation stories include Methylene Blue for Taiwan, Diphtheria antitoxin for the children in Laos and Myanmar as well as Botulinum antitoxin for Nigeria.

## Executive summary

- *Refractive error is the main cause of visual impairment and blindness among young school children, but access to refractive error screening and treatment was limited in Thailand because health care professionals lack training and children and their caregivers lack awareness.*
- *In 2016, Thailand enacted a national policy of refractive error screening for school children which gave priority to children's eyesight in the universal health coverage benefit package.*
- *The integration of eye health care into the school health programme exemplifies coordination across all health care levels and between education and health care sectors to address refractive error in children.*

### 1. Background, context or scope of problem

The control of blindness in children is the priority within the VISION 2020 programme of the World Health Organization. The first six years of life are critical for development of the visual portion of the brain and it is dependent on good visual input. When one or both eyes send a blurred image to the brain during the early years of a child's life, amblyopia or lazy eye will develop as the brain does not learn to see clearly. Hence, refractive error in childhood is the major cause of amblyopia and if this condition is not treated in a timely fashion, visual impairment may extend into adulthood. Visual screening and appropriate treatment in children is therefore helpful in saving their sight.

Refractive error has been a hidden problem of Thai children because most of them did not receive a vision examination nor proper treatment, especially children from low income families who are unable to afford proper eyeglasses. In the past, the health benefit package did not cover spectacles. Some parents bought spectacles for their children from supermarkets and elsewhere without an accurate prescription.

An epidemiologic study of Blindness, Low Vision and Eye Diseases in Thai Children 2006–2007, published in 2011, found the prevalence of blindness was 0.11% and low vision was 0.21%<sup>1</sup>. For comparison, the prevalence of global childhood blindness estimated by WHO in 2002 that was 0.07%. Furthermore, retinopathy of prematurity was the major cause of blindness (66% of blindness). Uncorrected refractive error was the major cause of visual impairment (33% of blindness and 28% of children with low vision).

### 2. Approaches and results achieved

To solve the problem of untreated childhood refractive disorder, Thailand established clear objectives as follows.

1. To decrease avoidable visual impairment due to uncorrected refractive error in school children.
2. To strengthen refraction services in every provincial hospital, secondary eye care level.
3. To provide custom-made, good quality and acceptable eyeglasses for school children who need them.
4. To improve eye health education of involved teachers and primary care personnel.
5. To improve public awareness and generate demand for services through community-based initiatives, primary eye care and school eye-health programmes.
6. To decrease the prevalence of childhood blindness in Thai children from 0.11% to 0.04% in the year 2020 as the target of Vision 2020.

In 2014–2015, a methodology research study was conducted to find out if pre-primary and primary school teachers could provide accurate refractive error screening.<sup>2</sup> A screening manual for teachers was developed from this study. The National Health Security Office (NHSO), in collaboration with the Queen Sirikit National Institute of Child Health (QSNICH) introduced a pilot project in 10 provinces,<sup>3</sup> for the screening of refractive error by school teachers. This pilot enabled decision-makers to assess the feasibility of implementing a system and it was a valuable input in formulating the national policy.

In 2016, the Thai Government relied on this evidence to make decisions about the allocation of health-care

resources, to set priorities and make best use of limited resources. Using evidence from research and pilot project, the Government decided to implement the national policy of refractive error screening in children.

Results: After the first year of implementation, the results of the national policy are as follows:

1. 41,000 first-grade teachers and 10,600 primary care personnel completed the course on school eye health education. 179 ophthalmologists and other professionals completed a 2-week refraction course through QSNICH.
2. 89 provincial hospitals joined the programme, which strengthened their refraction clinics and provided essential equipment through the government budget.
3. 53.5% of first grade primary school children were screened by their teacher (401,307 children), and 2.4% (9,620 children) were referred to the eye clinic in the provincial hospital for diagnosis and treatment. Subsequently, 3,161 children received cycloplegic drugs and eyeglasses free of charge, 5,442 children accessed the eye clinic in the provincial hospital, but 4,178 children were referred to the hospital were unable to access the eye clinic there.

### 3. Lessons learned and recommendations for other countries

A key to the success of the policy was strong cooperation between the educational sector and the health sector across all levels from primary through tertiary. This approach had three key features:

1. Integrate primary eye care into school health care for effective and sustainable vision screening in schools.
2. Strengthening secondary eye care in provincial hospitals to provide good quality refraction and optical services.
3. Provision of tertiary eye care in regional hospitals to cope the referred children who need the higher level of eye care.

### Further lessons learned are as follows:

- Planning and resource allocation must be based on good-quality population-based data on the various aspects of refractive error blindness, including epidemiology, magnitude of the problem, barriers to access the qualified refraction and optical services.
- Integration of eye health care into the school health programme is one of the most effective investments to simultaneously improve education and health. Coordination between education and health care sectors includes effective referral system from schools to health providers.
- Implement a strong national public health policy to address refractive error in children. This action is very important to unite stakeholders and ensure adequate budget resources to maintain the sustainability of the program and ensure the availability and accessibility of refraction and optical services, carried out by trained personnel.
- Responsibility was shared between teacher, parent and eye health personnel. Recording the child's eye examinations in the book of Personal Child Health Record (PCHR) enables long-term follow up and evaluation of the programme.

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## Executive summary

- *Much innovative effort has been made to expand the neonatal screening and response programme for combating congenital hypothyroidism in Thailand. This includes strategic linkages with civil registration and unique identification, the development on an online portal to monitor and manage the neonatal screening and response programme, and the establishment of the Congenital Hypothyroidism Monitoring Center.*
- *Even though the recent national coverage of neonatal screening has reached approximately 95%, there are still cases of congenital hypothyroidism with delayed development. These cases may be caused by the delay in medication or the lack of medication adherence, and it requires much effective collaboration to ensure timely and continuous follow up and treatment.*
- *This paper highlights the paradigmatic shift to more decentralized operational models that resulted in increasing timely treatment and decreasing delayed development through enhanced collaboration among the key stakeholders by using information technology.*

### 1. Background, context or scope of problem

Congenital hypothyroidism (CHT) is one of the most common causes of preventable mental retardation. Early detection (elevated thyroid stimulating hormone (TSH) level from newborn screening), early treatment (within 14 days after birth) and good compliance to treatment can lead to a favourable outcome. In Thailand, the Neonatal Screening Program for CHT together with phenylketonuria (PKU) commenced in 1996. Although neonatal screening has been widely implemented, there are still reported cases of clinical CHT, which are caused mainly by the delay in medication or the lack of medication adherence. According to a recent study (2017), only 37% of total new CHT cases received on-time treatment. In addition, the treatment outcomes of CHT had been neither reported nor adequately analysed until the national project started in 2008, even though the National Health Security Office (NHSO), which is responsible for Universal Health Coverage (UHC), had spent around 120 million baht per year for CHT screening.

### 2. Approaches and results achieved

**Strengthening the Universal Neonatal Registry by working with the National Unique Identifier Programme:** Universal neonatal registry would be key to success for combating congenital hypothyroidism. In 2011, with the collaboration of the Ministry of Interior (MOI) and the Ministry of Public Health (MOPH), UNICEF and National Health Security office (NHSO) began

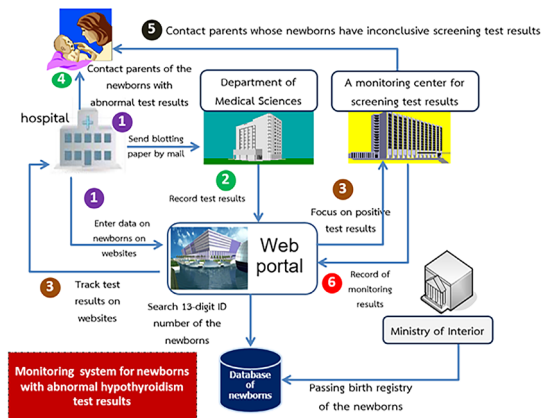
developing a birth registration system that links information on each birth in the every hospital delivery to the civil registration system. Eligible newborns are assigned a lifetime unique 13-digit Personal Identification Number (PID) by the District Register at the time of birth registration. Parents or household members must register the newborn within 15 days of birth. In case of delayed registration, NHSO uses mother's PID and hospital identification number to query the newborn's identification from the online birth registration system that is synchronized in real time with data of MOI.

**Enhancing neonatal screening processes:** In 2016, the committee of newborn screening (with membership representing many organizations, including the Department of Medical Sciences [DMSC], Department of Medical services and NHSO) redefined the standard operating procedures of the neonatal screening, which include: 1) to transfer each sample from the birth hospital to DMSC within four days; 2) to analyse receiving samples within three days; 3) to notify the hospital of abnormal screening results within one day; 4) to have parents bring the child back for a confirmatory test within three days; and 5) to start treatment before the first 14 days after birth based on the Thai guideline for diagnosis of CHT from newborn screening.

**Development of an online portal:** To integrate the fragmented modules from various organizations, a

web-based portal was operationalized in 2014. The interactive web system automatically links the laboratory test results from DMSC and provides various real-time information to track each process for caring for newborns with abnormal hypothyroid test results. The strength of the system exists in its ability to enable all relevant parties to access the same management information. The system shows the performance of operations by displaying colour-coded scales.

**Establishment of the National Hypothyroidism Monitoring Center:** In 2014, the Health System Research Institute, in close collaboration with DMSC, Queen Sirikit National Institute of Child Health, NHSO and the Thai Society for Pediatric Endocrinology, established the National Hypothyroidism Monitoring Center. The Center is responsible to ensure all public hospitals can regularly follow up with all newborns with abnormal screening results and provide appropriate treatment in a timely manner. It is implemented through frequent follow-up calls to responsible hospitals. For example, the center monitors every abnormal screening result through the online portal, notifies a responsible hospital of the results and asks the hospital to contact parents of newborns with abnormal results to offer guidance to the parents for immediate treatment or to prompt the parents to have a secondary screening for confirmation. The center is also monitoring treatment outcomes by measuring the development among newborns diagnosed CHT. The data are used to improve the effectiveness and efficiency of the programme.



**Results:** In the previous national action plan (2014–2017), the number of newborns with CHT who were followed by the national Hypothyroidism Monitoring Center increased every year from 72% in the first year to 99% in the third year.

### 3. Lessons learned and recommendations for other countries

- **Collaboration:** Enhanced collaboration among all key stakeholders is an indispensable prerequisite for successful CHT monitoring programmes and to boost the National Neonatal Screening Programme as a top national priority.
- **Count every neonate:** The use of civil registry makes every newborn count with the unique identification number that is easier and more effective for monitoring and evaluation of the programme outcomes.
- **Regular and real-time monitoring:** The use of an effective regular and real-time monitoring system through the on-line portal is necessary to effectively control CHT.
- **Leadership:** The National Hypothyroidism Monitoring Center played a strong leadership role to coordinate, effectively execute and improve the national plans, policies, technical guidelines and treatment protocols.
- **Integration with Universal Health Coverage:** While neonatal screening needs to raise more political interest, it has been included as a part of UHC and it is one of the most useful applications of the UHC preventative interventions.

#### Thyroid-Stimulating Hormone.

#### รจนติดตามผลการให้ยาไทรอยด์สำหรับเด็กแรกเกิด

ชื่อ-สกุล : พระนาง ชะราณี  
 หน่วยงาน : กองพัฒนาระบบบริการปฐมภูมิ และกองบริหารการพัฒนาระบบการแพทย์แม่และเด็ก (Role : A)

ปีงบประมาณ : 2561

ค้นหา Ref No. หรือชื่อผู้ดูแลรักษา

ลำดับ	วันที่รับยา	วันที่ติดตามผล	ชื่อผู้ดูแลรักษา	ชื่อผู้ป่วย	ชื่อสถานพยาบาล	ผลการติดตามผล	หมายเหตุ
14	01/11/2561	13/11/2561	คุณฉวีรัตน์	คุณฉวีรัตน์	กรมวิทย์	ปกติ	
13	02/11/2561	13/11/2561	ศิริสมพร	คุณชาย	กรมวิทย์	ปกติ	
13	02/11/2561	13/11/2561	คุณธรรมาชาติ	สรวิชัยดิษฐ์ประสงค์	กรมวิทย์	ปกติ	
10	05/11/2561	13/11/2561	คุณเทพา	ปารัชชาอรุณี	กรมวิทย์	ปกติ	
9	08/11/2561	13/11/2561	คุณเทพา	สถาปนาศุภมาสกุลแห่งสถาบันราชภัฏ	กรมวิทย์	ปกติ	
85	22/08/2561	31/08/2561	คุณเทพา	สินทรัพย์	กรมวิทย์	ปกติ	
1797	14/12/2558	09/01/2557	เชิงฉวีใหม่	สง	กรมวิทย์	ปกติ	
1797	14/12/2558	04/01/2557	พัชรพรณิ	สาธิตา	กรมวิทย์	ปกติ	
1796	15/12/2556	15/01/2557	สมพรสาธิต	รัชชชเรณิณธอสถ์ เบนินแดน สมทรงสาธิต	กรมวิทย์	ปกติ	
1795	16/12/2556	04/01/2557	เชิงฉวีใหม่	จางนเรณิณธอสถ์	กรมวิทย์	ปกติ	