กรมอนามัย
Department of Health

Maintenance for Thailand
The Validation of the Elimination of Mother -to-Child Transmission of HIV and Syphilis, 2018- 2019

JANUARY 2021

Ministry of Public Health
The Royal Thai Government

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Preface

Thailand's Ministry of Public Health has worked consistently since 2000 to prevent and eliminate mother-to-child transmission (MTCT) of HIV and syphilis. Services in public health facilities across Thailand to support the elimination of mother-to-child transmission (EMTCT) have been standardized for the quality and equity of health service access. Over the past two decades of ongoing implementation, the national guideline has been revised and updated several times to be responsive to fast-changing situations and to reflect learning from domestic and international technical advancements. To date, Thailand's EMTCT package has been standardized to cover couples' HIV counseling and testing, the provision of highly active anti-retroviral therapy (HAART) to all pregnant women who are HIV positive and newborns, early infant diagnosis for HIV, and comprehensive and continuous family care. For syphilis, pregnant women will receive free testing twice a year, and treatment can be provided immediately for those with a positive test result the according to the standards. The partners of syphilis-positive pregnant women will also receive free testing and treatment according to the universal health coverage. Babies born to syphilis-positive mothers will receive both testing and treatment according to the national guidelines. These efforts culminated in validation in 2016 from the World Health Organization (WHO) that Thailand had achieved EMTCT of HIV and syphilis, and the achievement was revalidated in 2018.

This validation, however, does not signify that the job is finished. There are still several factors as described in this report that could potentially disrupt the achievement of zero MTCT of HIV and syphilis, which is a key element of the Thailand National Strategy to End AIDS 2017–2030.[1] This report demonstrates the unified and relentless commitment from multisectoral players in Thailand and strategic responses, including health service and health data improvement during 2018–2019 for EMTCT of HIV and syphilis. All these endeavors are strongly expected to sustain and accelerate the achievement of EMTCT of HIV and syphilis in Thailand in the near future and will lead Thailand soon to achieve triple elimination of MTCT of HIV, syphilis and hepatitis B.

Mr. Anutin Charnvirakul
Minister of Public Health
27 January 2021

[1] The National Strategy is available at https://hivhub.ddc.moph.go.th/Download/Strategy/EN_3Thailand%20National%20Strategy%20to%20End%20AIDS.pdf.

Executive summary

Thailand has achieved the targets for the elimination of mother-to-child transmission (EMTCT) of HIV and syphilis, set by the World Health Organization (WHO). This achievement was validated initially in June 2016, and the validation maintained in 2018. Thailand maintained the EMTCT of HIV and syphilis by achieving the WHO targets for both impact and process indicators in 2018 and 2019. The rate of mother-to-child transmission (MTCT) of HIV estimated by Spectrum was maintained between 1.74% and 1.97% in 2018–2019. The number of new pediatric HIV-infections was 9.7 per 100,000 in 2017, followed by 7.8 per 100,000 in 2018 and 10.5 per 100,000 in 2019. While the rate of congenital syphilis has been maintained below the elimination target of 50 cases per 100,000 live births, Thailand recognizes the increase from 14.6 cases per 100,000 live births in 2017 to 25.06 per 100,000 in 2018 and 45.62 cases per 100,000 in 2019 and has been implementing measures to address the situation. The stillbirth rate among general live births was 4.28 per 100,000 live births in 2018 and 4.47 per 100,000 live births in 2019.

In 2018 and 2019, all process indicators were maintained above the WHO targets of 95% including coverage of antenatal care (ANC) (>98%), HIV and syphilis testing (>99%), antiretroviral treatment among HIV-positive pregnant women (>97%) and syphilis treatment among pregnant women (>97%). All pregnant women in Thailand can access free ANC at every health-care facility regardless of their health insurance scheme. The coverage of at least one ANC visit for all pregnant women climbed to 98.5% in 2019. Data from the health data center of the Ministry of Public Health showed that 74.5% of pregnant women in 2018 and 80.6% of pregnant women in 2019 had their first ANC visit before the twelfth week of gestation, and 62.9% of pregnant women in 2018 and 70.2% in 2019 had more than five quality ANC visits. More than 98% of newborns were delivered in health-care facilities.

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

Beyond HIV-specific policies, Thailand has also strengthened its other policies, such as those around migrant health, quality birth, sexual and reproductive health and adolescent pregnancy and gender-based violence. Through an integrated approach, these policies aim to increase access to information and services to prevent the transmission of HIV and syphilis, which help further reduce MTCT of HIV and syphilis. These policies set out inclusive and non-discrimination measures, including having access to early ANC and perinatal-HIV prevention prophylaxis; reducing the adolescent pregnancy rate; and the provision of full ANC services to all.

Thailand commits to continue to monitor the situation of MTCT of HIV and syphilis and assess the quality of services for the prevention and treatment of HIV and syphilis for pregnant women, mothers and children. Thailand will take associated measures to close the gaps or further improve access, coverage and quality of services and processes to ensure EMTCT of HIV and syphilis is maintained, and Thailand will extend the framework to cover hepatitis B in the near future.

Abbreviations and acronyms

ANC	**Antenatal care**
ART	**Antiretroviral therapy**
CI	**case investigation**
CS	**congenital syphilis**
DAS	**Division of AIDS and Sexually Transmitted Infections, DDC, MOPH**
DDC	**Department of Disease Control**
DOH	**Department of Health**
EMTCT	**elimination of mother-to-child transmission**
GVAC	**Global Validation Advisory Committee**
HARRT	**highly active anti-retroviral therapy**
MOPH	**Ministry of Public Health**
MTCT	**mother-to-child transmission**
NHSO	**National Health Security Office**
PCR	**polymerase chain reaction**
PHIMS	**Perinatal HIV Intervention Monitoring System**
PrEP	**Pre-Exposure Prophylaxis**
RPR	**Rapid Plasma Reagin**
STI	**sexually transmitted infection**
TNP+	**Thai Network of People Living with HIV/AIDS**
UHC	**Universal Health Coverage (health-care benefits)**
VDRL	**Venereal Disease Research Laboratory**
VL	**viral load**
WHO	**World Health Organization**

Contents

Introduction

Thailand has achieved the targets for the elimination of mother-to-child transmission (EMTCT) of HIV and syphilis set by the World Health Organization (WHO), which was validated in June 2016 and maintenance of validation reviewed in June 2018 by the Global Validation Advisory Committee (GVAC) in Geneva, Switzerland. The Committee also provided recommendations to further strengthen the programme for EMTCT of HIV and syphilis. Throughout this period, Thailand continued its efforts to maintain the standards of EMTCT of HIV and syphilis, improve the programme and ensure that it remains effective and responsive to new situations.

This report documents efforts to maintain EMTCT in Thailand for 2018–2019. The four main parts of the report are as follows: 1) summary of EMTCT of HIV and syphilis indicators 2018–2019; 2) key changes in the health system and policies; 3) key changes in EMTCT programme and guidance; 4) responses to GVAC recommendations; and 5) successes and challenges for the sustainability of EMTCT in Thailand.

1. Key changes in the health system and health policies since the validation

1. The National Health Security Office (NHSO) allocated additional THB 200 million to HIV/AIDS intervention programmes in response to the national HIV/AIDS Prevention Scheme. This led to the total of THB 3.046315 billion budget that NHSO allocated for HIV/AIDS prevention and response scheme which will not only benefit the prevention of MTCT for Thai and non-Thai populations, but it will also increase the national capacity to respond to HIV/AIDS among all populations. The budget is divided into three categories:
    - 1.1 Prevention of HIV/AIDS (THB 200 million)
        - 1.1.1 HIV infection prevention programme (RRTTR: Reach, Recruit, Test, Treat, Retain)
        - 1.1.2 EMTCT of HIV (central budget)
    - 1.2 Treatment and other related services (THB 2.8 billion)
    - 1.3 Quality of services improvement (THB 38 million)

    The THB 200 million prevention plan aims to ensure that people with a high risk of HIV infection recognize and self-assess their risk, participate in HIV prevention programmes and access rapid HIV testing. This can reduce the risk of HIV transmission, new cases of infection and the overall cost of treatment. Currently, a research is conducted on HIV self-testing among key populations. The result of the research may influence access to HIV self-testing among the general at-risk population in the future.

2. Pre-exposure prophylaxis (PrEP) is available at 51 health facilities in 21 provinces and it is covered for all Thai populations especially those who are at risk, such as men who have sex with men, transgender females, sex workers (male/female), intravenous drug users, and serodiscordant couples.

3. To progress towards an integrated framework for the triple elimination of MTCT of HIV, hepatitis B and syphilis, Department of Disease Control (DDC) aims to reduce hepatitis B new infection by 90% by 2026 including EMTCT of hepatitis B. The following indicators were set in the plan:

Indicators	Target by 2021
1. Percentage of pregnant women with high hepatitis B viral load or with positive HBeAg received TDF for treatment	95%
2. Percentage of children whose mothers are hepatitis B positive received treatment according to the standards	95%

4. Awareness training of stigma and discrimination among medical personnel and health-care providers has expanded through e-learning, and a rights protection protocol has been implemented in collaboration with the Ministry of Justice and the public sector.

5. To ensure that violation of rights due to HIV and AIDS are addressed in a timely manner, Thailand also developed a complaints management system and a human rights violation protocol for AIDS. A Crisis Response System web application was developed as a complaint mechanism for a quick and easy reporting and timely response.

6. In 2017, the Government endorsed the 20-Year Master Plan for Integration of Health Insurance Systems Development (2018–2037), developed by the Committee for Consideration of Strategic Integration of Budget Planning chaired by the Deputy Prime Minister. The Plan aims to harmonize the three main public health insurance systems to promote equity, quality, efficiency and sustainability; and to ensure that everyone living in Thailand has access to universal health coverage (UHC). The Plan also includes a roadmap for a compulsory health insurance system for migrants and stateless people to be achieved by 2021. Implementing the Plan will provide an opportunity for the Ministry of Public Health (MOPH) to involve other ministries in fully addressing the health needs of migrants.

7. Thailand started its implementation of the National Strategies on Reproductive Health (2017–2026). A multi-sectoral national committee was established to collaborate under this strategy to ensure quality family planning and quality birth. The strategies address improvement and promotion of comprehensive sexuality education, improved access to family planning and antenatal care (ANC) services, and support for mothers and children for a good quality of life. These will directly and indirectly benefit the prevention of MTCT in Thailand and will lead to reduction of stillbirth especially among adolescents.

8. As part of the implementation of the Prevention and Response to Adolescent Pregnancy Act (2016), in 2019 MOPH conducted a review of youth-friendly health services in Thailand to understand the implementation of the policy and gather direct feedback from adolescents about the services. The findings led to the revision of the national guidelines to be aligned with WHO global standards and to take into consideration the needs of adolescents. The guidelines aim for comprehensive adolescent health care package which covers sexual and reproductive health related to pregnancy, screening and prevention for HIV and sexually transmitted infections (STIs), and other wraparound services such as adolescent counseling.

2. Key changes in the programme for achieving EMTCT of HIV and syphilis

2.1 Key changes in the policy for EMTCT of HIV and syphilis

1. The Government endorsed the Thailand National Strategy to End AIDS 2017–2030, including the aim of no new perinatal infections by 2030. The Government also aims to reduce the congenital syphilis case rate to <0.05 per 1,000 live births by 2030.
2. Thailand National Guidelines on HIV/AIDS Treatment and Prevention, 2017 remains a key framework for the prevention and treatment of MTCT during 2018–2019. The guidelines were disseminated widely among service providers (Appendix 1).

During 2018–2019, MOPH and the experts in the country reviewed its implementation of HIV prevention and treatment services including to prevent MTCT and identified areas of improvement, leading to revision

of Thailand National Guidelines on HIV/AIDS Diagnosis, Treatment and Prevention, issued in 2020. These guidelines have addressed the interventions during ANC, in the case of no or late ANC and emergency delivery and after delivery. Detailed information related to the new guidelines will be described in the next section.

Guidance for HIV treatment and surveillance in Thailand 2017:

- Recommended antiretroviral therapy (ART).
- Any gestational age i.e., TDF/TAF+XTC+Dolutegravir (DTG), prescribing a combined formula tablet (TDF or TAF/XTC/DTG) or an alternative formula (TDF or TAF/XTC+DTG).
- For women of childbearing age, a recommended regimen is TDF+XTC+EFV or an alternative regimen TDF+XTC+DTG. When DTG is used, medical personnel should explain the possible risk of NTD and benefits of DTG, and pregnant women can make their own decisions.

3. If DTG is not available (before July 2021), it is recommended to use Raltegravir 400 mg when there is a high risk of HIV transmission at 32 weeks of gestational age for those women who have not taken ART during the pregnancy and also for women who have taken ART, and have a plasma viral load (VL) >1,000 copies/ml during the first 32 weeks of gestational age.

4. Baseline laboratory tests for pregnant women and infants born to HIV-positive mothers included in the benefit package:

- Early infant diagnosis by HIV polymerase chain reaction (PCR) at birth (for high-risk babies only), at age 1, 2 and 4 months.
- VL testing in pregnant women who present in labor for delivery management.

5. Giving PrEP to a pregnant woman's husband/partner with serodiscordant HIV blood result (discordance).

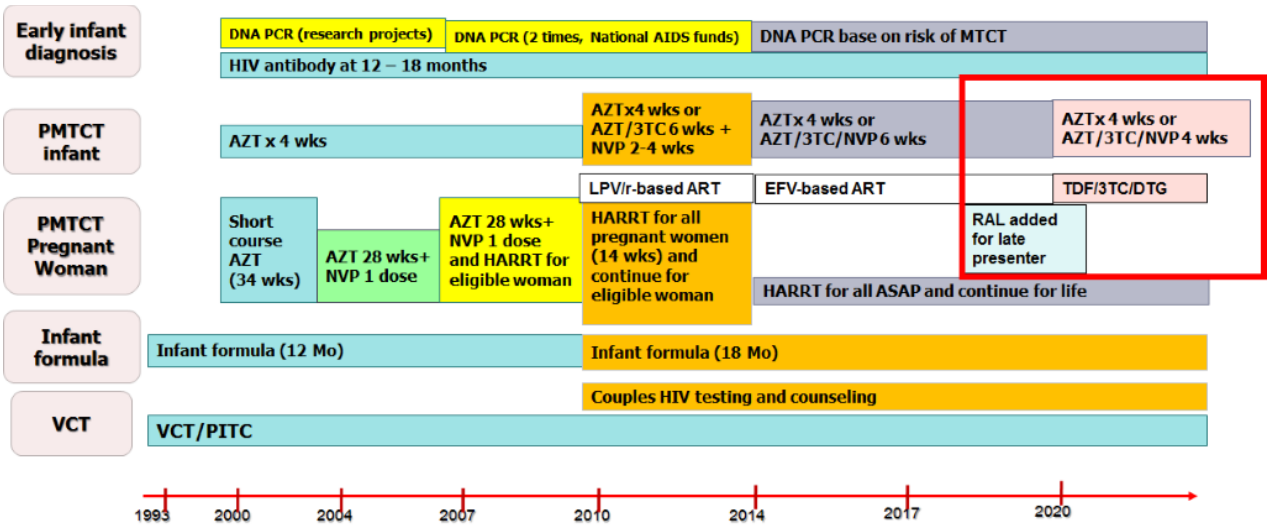
6. To address the increase in congenital syphilis, in 2018 and 2019 DAS alerted all provinces about the situation and requested for collaboration from all Provincial Health Offices to monitor the situation and to investigate cases closely. DAS also requested all hospitals to conduct self-service assessment to ensure that the level of quality of services is within the standards. The guidelines on congenital syphilis screening and treatment for pregnant women were revised accordingly and will be adopted in 2021 (Appendix 2).

7. Currently, when the pregnant women are screened and found syphilis positive, their partners will receive free testing and treatment accordingly. The same services are provided to non-Thais under the health coverage. However, Thailand is in the process to ensure that testing for syphilis can be provided to both at ANC regardless of the pregnant women's syphilis status. This policy is expected to be made effective in 2022 as a part of UHC.

2.2 Changes in the benefit package and guidelines for the prevention of MTCT of HIV

The guidelines for the prevention of MTCT are depicted in figure 1.

Figure 1. Changes in 2019 guidelines for the prevention of MTCT of HIV

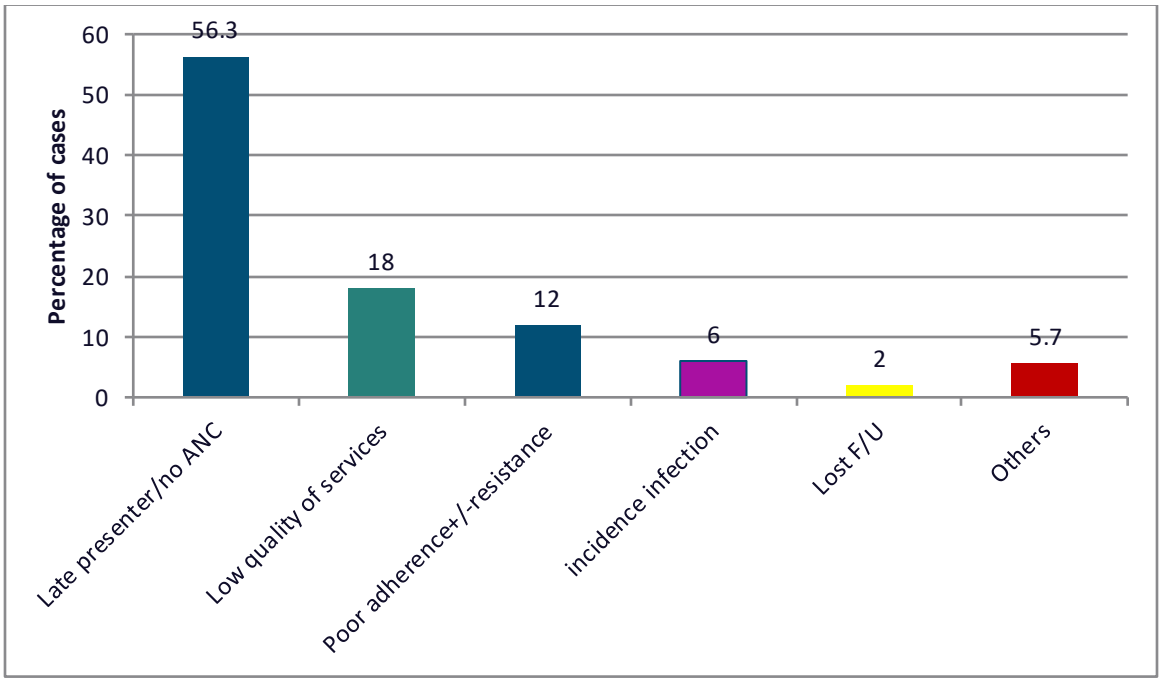


Features of the policy change include the following:

1. DNA PCR testing at birth is done for infants born to HIV-positive mothers who have high MTCT risk.
2. Identify HIV-positive pregnant women with high risks for MTCT and provide ART intensification with Raltegravir
3. Maternal VL testing is given to pregnant women near the time of delivery (34–36 weeks).
4. Recommend pre- and post-exposure prophylaxis as a part of the combination prevention package for serodiscordant couples (the pregnant woman is uninfected and living with HIV-positive partner).

The Department of Health (DOH), MOPH has investigated the causes of 103 new HIV infections among infants below age 18 months in 2017 and 2018 using HIV monitoring report forms. Figure 2 indicates the major factors of HIV transmission, which include: 1) late ANC and no ANC accounting for 56.3%; 2) low quality of services (pregnant women received no treatment during pregnancy/counseling on safe sex or the treatment provided was not according to the national guidelines accounting for 18%; 3) poor adherence or resistance to treatment accounting for 12%; and 4) incidence infection accounting for 5.7%.

Figure 2. Causes of MTCT of HIV in Thailand, 2017 and 2018



Source: DOH, 2020, Report on new HIV infection/death from HIV among babies under age 18 months.

When investigating further in details, it was found that the main reason for the pregnant women, 90.3%Thai, not visiting ANC was economic reason. Out of this group, 35% of them had HIV before pregnancy.

DOH plans to use the results from this investigation to inform and strengthen their mentoring and coaching programme provided to the hospitals each year to focus more on these findings. An emphasis will be given to the collaboration between ART clinic and ANC clinic to provide integrated care such as to inform ART clients of reproductive age on how to prepare for pregnancy. At the same time, both clinics can collaborate to ensure closer following up with the cases who need psychosocial support. This will help them to have regular visit to ANC and to have better adherence. Regarding the quality of services, the refresher trainings and feedback to the hospitals that do not follow the national guidelines will be done.

3. Key findings of HIV and syphilis during 2018–2019

With continued effort in HIV prevention and response plan, improvement of the health system and of the quality of services, Thailand has maintained EMTCT of HIV and syphilis by achieving WHO targets for both impact and process indicators during 2018–2019 (see table 1).

Table 1. Summary of indicators for EMTCT of HIV and syphilis

Indicator	Target	2018			2019		
		Numerator	Denominator	Value	Numerator	Denominator	Value
Impact							
1. Annual rate of mother-to-child transmission (MTCT) of HIV - by Spectrum*[2]	<2%	64	3659	1.74%	65	3,316	1.97%
- by ACC and PCR**		47	3,731	1.26%	35	3,126	1.12%
2. Annual rate of perinatal new HIV infections per 100,000 live births by birth cohort* **	≤50	52	666,357	7.80	65	618,193	10.51
3. Annual rate of congenital syphilis per 100,000 live births** ** - by case investigation (confirmed and probable congenital syphilis) at 100% coverage	≤50	167	666,357	25.06	282	618,193	45.62
- by WHO Congenital Syphilis Estimation Tool		109	666,357	16	172	618,193	26
Process***							
4. Antenatal care (ANC) coverage (at least one visit)	≥95%	656,796	666,357	98.57%	609,429	618,193	98.58%
5. HIV testing coverage among pregnant women	≥95%	664,474	666,357	99.72%	616,994	618,193	99.81%
6. Syphilis testing coverage among pregnant women	≥95%	663,166	666,357	99.52%	615,453	618,193	99.56%
7. Antiretroviral therapy (ART) coverage among HIV-positive pregnant women	≥95%	3,787	3,878	97.65%	3,224	3,316	97.23%
8. Syphilis treatment coverage among pregnant women	≥95%	1,714	1,747	98.14%	2,330	2,388	97.54%

Source:
* Spectrum Bureau of Epidemiology; MOPH, UNAIDS.
** National Active Case Management Network (ACC) report and national lab PCR database
*** Thailand AIDS Response Progress Report, GAM Report 2020.
**** Case investigation report (including both confirmed and probable cases based on WHO surveillance case definition).
***** Data for process indicators is from PHIMS

[2] 2018 and 2019 MTCT rates based on the latest 2020 AEM-SPECTRUM submitted for Global AIDS Monitoring (GAM) Reporting 2020.

Note:

- PHIMS report coverage was 91.3% in 2018 and 90.2% in 2019 (Updated 8 October 2020).
- ACC promotes early initiation of ART among HIV-positive infants. A collaborative project between MOPH (DDC, DOH, Department of Medical Sciences), United States Centers for Disease Control and Prevention (CDC) Thailand Office, Thai Red Cross AIDS Research Centre, Department of Medical Technology Chiang Mai University and Ramathibodi Hospital, and four regional pediatric training centers in Chiang Rai, Khonkaen, Petchaburi, and Songkhla.
- Data in Thailand AIDS Response Progress Report, GAM Report 2020 is from DDC, MOPH. Perinatal HIV Intervention Monitoring System (PHIMS V.3.1). DOH; MOPH.

All impact indicators remain below WHO targets:

- The rate of MTCT of HIV estimated by Spectrum was 1.68% in 2017, and it was maintained between 1.74% and 1.97% in 2018–2019 (see Appendix 3).
- New pediatric HIV infections per 100,000 live births were 7.8 in 2018 and 10.5 in 2019, in comparison to 9.7 in 2017.
- The congenital syphilis case rate increased from 25.06 per 100,000 live births in 2018 to 45.62 per 100,000 live births in 2019.
- The stillbirth rate increased from 3.3 per 100,000 live births in 2017 to 4.28 per 100,000 live births in 2018 and 4.47 per 100,000 live births in 2019.

All process indicators were maintained above the WHO targets of 95%, including coverage of ANC (>98%), HIV and syphilis testing (>99%), antiretroviral therapy (ART) among HIV-positive pregnant women (>97%) and syphilis treatment among pregnant women (>97%).

All pregnant women in Thailand have free access to ANC service at any public health facility regardless of their health insurance schemes, nationality and legal status. The coverage of ANC for at least one visit was high at 98.5%. Data from the health data center of MOPH showed that 74.5% of pregnant women in 2018 and 80.6% in 2019 had their first ANC visit before the twelfth week of gestational age, and 62.9% of pregnant women in 2018 and 70.2% in 2019 had more than five ANC visits. More than 98% of newboms were delivered in health-care facilities.

The Ministry of Interior reported 666,357 live births in 2018 and 618,193 live births in 2019. Of these, 75,596 deliveries (11.3%) in 2018 and 74,951 (12.1%) in 2019 occurred in private hospitals. In 2020, DOH conducted a special survey of 117 private hospitals with a response rate of 82%. The data showed a high rate of HIV testing at 98.68% in 2018 and 98.36% in 2019, and syphilis testing at 96.86% in 2018 and 94.13% in 2019, consistent with high rates of testing in public health-care facilities. The coverage of HIV treatment among pregnant women was 96.52% in 2018 and 96.64% in 2019. The coverage of syphilis treatment in pregnant women was 97.37% in 2018 and 98.20% in 2019.

Consistency of achievements across geographical areas

The national team has attempted to determine whether the criteria for achieving EMTCT indicator targets were met in lower-performing, sub-national areas. The national team has reviewed achievement across 77 provinces and examined the provinces that did not meet criteria against each indicator and undertook an analysis of the lowest-performing provinces. In addition, Chiang Rai Province was one of the provinces that was examined in the 2016 the EMTCT validation exercise. Therefore, this report includes a review of that province's progress during the past four years.

Summary of provinces that did not meet the EMTCT indicator targets in 2019

A broader perspective on the geographical distribution of the core EMTCT process and impact indicators across 77 provinces in 2019 has been conducted. Appendix 4 illustrates the findings in detail. The following is a summary of key findings:

- One province (Samut Songkhram) did not meet the target for perinatal new HIV infections (3 cases out of 885 live births).
- 17 provinces exceeded the target threshold of the congenital syphilis rate at 50 per 100,000 live births. However, ten of those provinces had small caseloads, i.e., fewer than ten cases.
- There was only one province in which ANC coverage was lower than 95%. All provinces met coverage targets for HIV and syphilis testing.
- Overall, 11 provinces did not meet the ART coverage targets among either Thai and/or non-Thai HIV-positive pregnant women. Among these, the performance of seven provinces did not meet the target threshold for Thai pregnant women. In four out of 11 provinces, ART coverage among non-Thai pregnant women was less than 95%, but the number of non-Thai pregnant women is small, ranging from two to six cases.
- Seven provinces did not meet the syphilis treatment coverage criteria. Five provinces reported less than 95% syphilis treatment coverage among Thai pregnant women. Two provinces provided syphilis treatment to all infected Thai pregnant women, but coverage was lower for non-Thai pregnant women.

The lowest-performing province in 2018–2019: Samut Songkhram

Data specific to Samut Songkhram Province were reviewed (Appendix 5). All programme coverage indicator targets were exceeded in 2018 and 2019. However, the annual rate of new pediatric HIV infections was over 50 per 100,000 live births in 2018 and 2019 as well as rate of congenital syphilis in 2018. However, it was noted on a small number of HIV infections (one to two cases). In-depth analysis indicates that HIV infection rates among pregnant women in Samut Songkhram increased from 0.5% in 2017 to 1.2% in 2018, and then started declining in 2019 (0.8%) and 2020 (0.7%).

Department of Heath acknowledges challenges at the subnational areas during 2018-2019. During the course of implementation, monitoring, feedback and mentoring provided to lower performing units and enhancing training. National response including intensified package of services will be put in place to address rising trends of MTCT rates and congenital syphilis that will be addressed in the response to GVAC's recommendations

Progress made in Chiang Rai Province during maintenance validation: 2015–2019

Chiang Rai was one of the provinces visited by the Regional Validation Team, and classified as a 'lower-performing' province in 2016. Since then, Chiang Rai has demonstrated consistent improvement of its performance during the past five years. All programme coverage indicators have been reached for almost all Thai and non-Thai pregnant women, even though there is a large caseload of non-Thai pregnant women in this province.

There was significant improvement in ART coverage, increasing from 96.5% in 2015 to 98.7% in 2019. Impact indicators for the annual rate of new pediatric HIV infections dropped dramatically, from 44.4 in

2015 to zero in 2019. The annual rate of congenital syphilis increased in 2019, but the level is still under the threshold. (See table 2)

Table 2. Achievements of lower-performing, sub-national areas in Chiang Rai Province

Impact indicator	Target	2015	2018	2019	Data source
Annual rate of mother-to-child transmission (MTCT) of HIV	**<2%**				
2. Annual rate of new, perinatal HIV infections per 100,000 live births by birth cohort* **	**≤50**	**44.4**	**9**	**0**	**Based on PCR diagnosis of pediatric HIV infections 2018: 1 case (non-Thai) of 11,158 live births 2019: 0 cases of 10,991 live births**
3. Annual rate of congenital syphilis (CS) per 100,000 live births** by CS case investigation (confirmed and probable CS) at 100% coverage**	**≤50**	**8.8**	**8.9**	**45.5**	**Source: CS case investigation (confirmed and probable CS at 100% coverage) 2018: 1 case of 11,158 live births 2019: 5 cases of 10,991 live births**
Process indicator					
4. Antenatal care (ANC) coverage (at least one visit)	**≥95%**	**98.7**	**99.2 (10,340)**	**99.3 (9,420)**	**Source: PHIMS Non-Thai 2018: 98.7 (2,276) 2019: 98.5 (2,049)**
5. HIV testing coverage among pregnant women	**≥95%**	**99.9**	**99.7 (10,340)**	**100 (9,420)**	**Source: PHIMS Non-Thai 2018: 100% 2019: 100%**
6. Syphilis testing coverage among pregnant women.	**≥95%**	**99.8**	**99.7 (10,340)**	**99.8 (9,420)**	**Source: PHIMS Non-Thai 2018: 99.9% 2019: 100%**
7. Antiretroviral therapy (ART) coverage among HIV-positive pregnant women	**≥95%**	**96.5**	**98.5 (68)**	**98.7 (75)**	**Source: PHIMS Non-Thai: 100% 2018: 7 cases 2019: 12 cases**
8. Syphilis treatment coverage among pregnant women	**≥95%**	**100**	**100 (6)**	**100 (23)**	**Source: PHIMS Non-Thai: 100% 2018: 1 case 2019: 5 cases**

Other relevant data

The adolescent birth rate has been decreasing over the past three years especially among females aged 15–19. The birth rate among females aged 10–14 years old decreased from 0.5 per 1,000 in 2017 to 0.4 in 2018 and in 2019. The birth rate among females 15–19 years old decreased significantly from 39.6 per 1,000 in 2017 to 35 in 2018 and 31.3 in 2019 (Public Health Statistics 2018–2019). The Multiple Indicator Cluster Survey (MICS) 2019 confirms a similar situation among Thai female adolescents when the adolescent birth rate decreased from 49 per 1,000 from the survey in 2015 to 22 per 1,000. However, among non-Thai speaking households, which go beyond migrants, the rate was at 47 per 1,000 from the MICS 2019 survey even though reduced from 67 per 1,000 in 2016. With this clear data to identify affected population, Thailand plans to develop specific and targeted response plan accordingly.

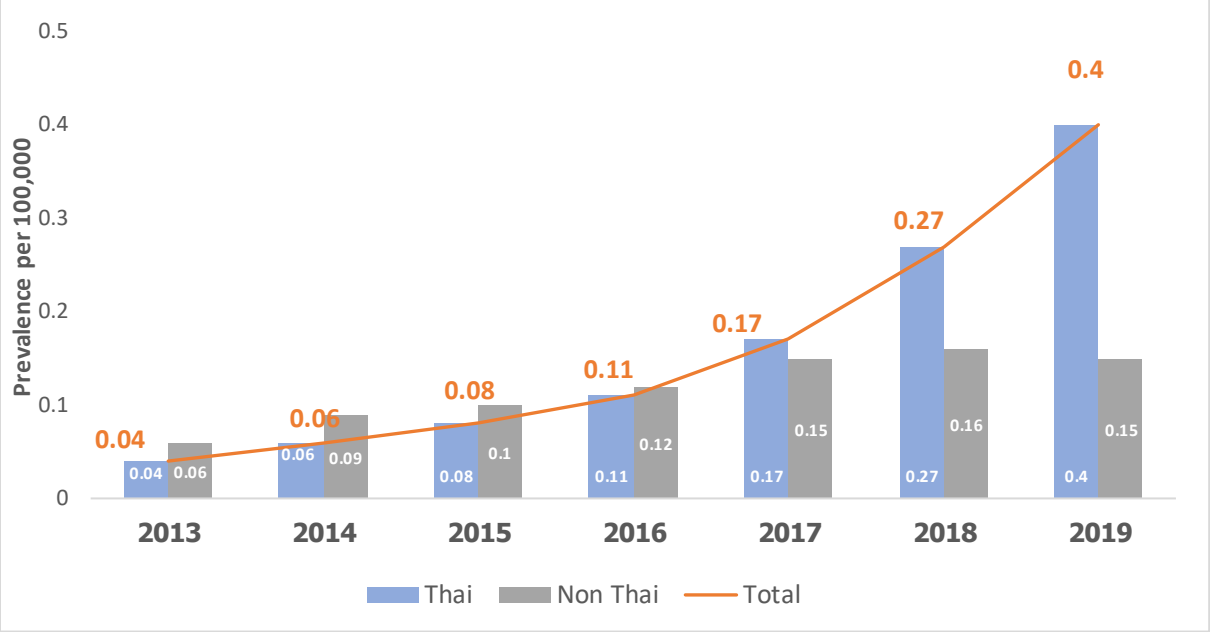
In the case of violence, including gender-based violence, Thailand has developed a specialized service for women and children called "One Stop Crisis Center" (OSCC). This service was piloted in hospitals beginning in 1999 before it became a national policy. It expanded progressively to provincial and district level hospitals. The mandate of OSCC is to screen patients if there is issue of violence involved and once identify, multidisciplinary team will provide comprehensive support to the cases. HIV prevention is a part of the services that OSCC staff need to be aware of and provide.

Lessons learned from the implementation during 2018–2019 show key factors contributing to the achievements of the implementation of the EMTCT of HIV and syphilis.

1) Community engagement at the local, district and provincial levels, and collaboration with other related organizations is a key process for sustainable HIV intervention programmes. This built awareness, encouraged behavioral change, and provided essential information to people living with HIV. With this approach, the obstacles, patterns of life, and behaviors of the target groups could be investigated. Their changes in behaviors permitted the prevention of HIV, undesired pregnancy and STIs. Changing behavior is a complex process. Therefore, they were unlikely to change their behaviors within one visit or a single use of a preventive measure.
2) Implementing self-learning management through risk assessment helped to build confidence among the target groups and enable them to protect themselves from pregnancy, HIV and other STIs. The development of the training programme among health professionals and other allied partners enhanced the effectiveness of service package management, recognition of HIV infection status, access to care, understanding of HIV/AIDS, the value of knowledge exchanges, and ensured sustainable development of community-based AIDS management.
3) Improving health-care settings in compliance with the needs of the target group helped promote and facilitate equitable access to ANC services without stigma or discrimination. Effective pre-test and post-test counseling has ensured a reduction in MTCT in the second or third pregnancy by giving pre-test and post-test counseling for ANC, and follow-up testing for patients regardless of HIV-positive or negative results. In Ubonratchathani Province, HIV-related stigma and discrimination, sexual identity, social status, illness and living with HIV were all addressed in every work situation in the selected settings. An all-around AIDS intervention programme provided a comprehensive means to prevent HIV infection, improve access to health service and reduce the stigma of STIs among females.

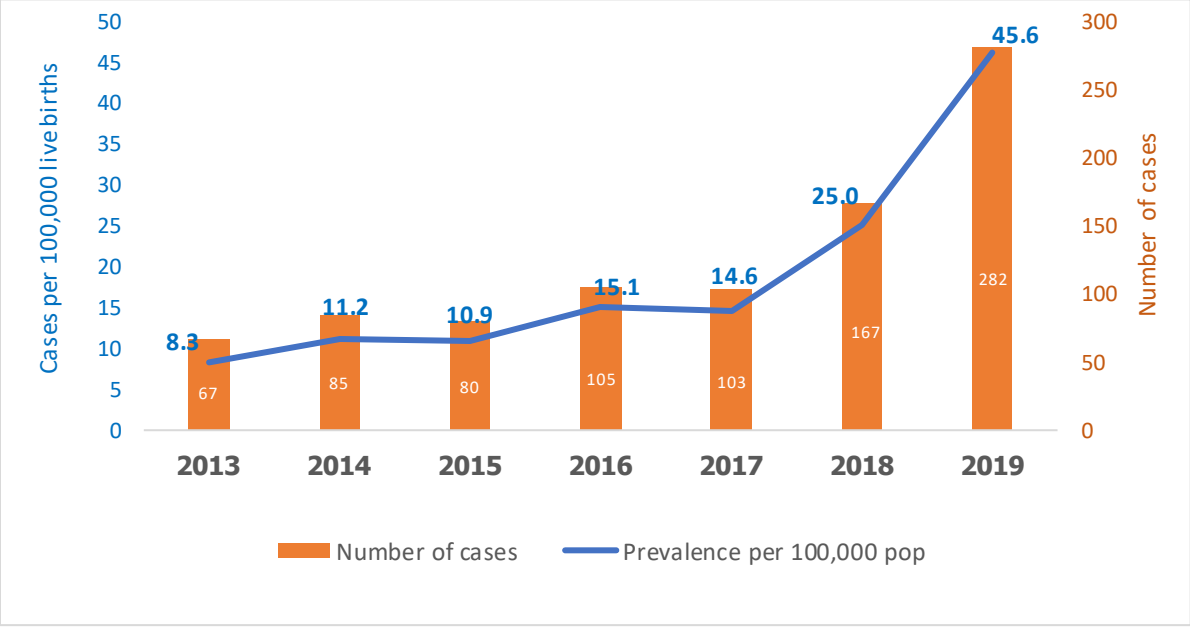
3.1 Prevalence of syphilis among pregnant women and congenital syphilis in Thailand, 2013–2019

Figure 3. Syphilis prevalence among pregnant women in Thailand 2013–2019



Source: National Notifiable Disease Surveillance System (Report 506).

Figure 4. Congenital syphilis (<2 years) case rate per 100,000 live births in Thailand, 2013–2019



Source: 2013–2017: National Notifiable Disease Surveillance System (Report 506).
2018–2019: National Syphilis Case Investigation Report.

3.2 Systems and data sources used for the EMTCT of syphilis impact and process data, 2018–2019

Data sources for congenital syphilis (CS) for 2018–2019 are different from those reported in the original national validation (2016) and maintenance (2016–2017) report.

The data source for CS 2018–2019 is derived from the national syphilis case investigation report. Prior years sourced the national disease surveillance reporting system (506 report). In addition for 2018–2019, a congenital syphilis modelling and estimation exercise using WHO Congenital Syphilis Estimation Tool (https://www.who.int/reproductivehealth/congenital-syphilis/surveillance/en) was used alongside the national data of CS passive surveillance (R506) and case investigation data.

The national disease surveillance reporting system 506 was established in Thailand in 1968 and is a system used by all public health offices, all hospitals and health centers (not all private hospitals are covered) in surveillance of diseases/disasters that are notifiable under the communicable diseases act. It contains variables that are relevant for disease prevention and control and not used as a statistical report of that disease (it does not differentiate "probable case" or "confirmed case"). In the 506 form, all notifiable diseases are numbered and listed. A diagnosis is recorded as a tick in the appropriate box. CS is reported under "Syphilis (specify) Stage ..... (box 37)". No other details are required. (Appendix 6). Data is exported electronically using ICD-10 codes. Although there are procedures to clean and perform basic analysis at data entry points and upwards, the 506 report both over and under-reports CS cases. This is largely due to the definition of "congenital syphilis" which is still unclear in practice leading to discrepancies in physicians' understanding although guidelines for lab testing and diagnosis for congenital syphilis have been issued. Another reason is the ICD-10 codes for lab testing and diagnosis is also unclear, resulting in incorrect ICD-10 code entry

The weaknesses and limitations of the 506 was acknowledged in the 2016 validation of EMTCT for syphilis in Thailand. The validation recommended improvements to the reporting system and suggested the development of appropriate tools and the conduct of routine case investigation of congenital syphilis cases reported through the 506. Since then, efforts have been made to do the following: (1) improve compliance to guidelines (see section 4 of this report, recommendation 1 on progress so far and further action); (2) fix weaknesses in the ICD-10 codes (a summary of resolutions in Appendix 7); and (3) initiate a congenital syphilis case investigation (CI) form for a more accurate diagnosis and method of reporting required for EMTCT.

The national congenital syphilis case investigation (CI) form (Appendix 8) is an official reporting form by the STI programme and is reported through the Division of Epidemiology, MOPH Thailand. It was designed by a group of pediatricians, national technical officers from the STI programme, Division of Epidemiology and Department of Health following recommendations from the WHO 2016 validation EMTCT of syphilis for improvement and standardization. The form was adapted and aligned to WHO EMTCT guidelines and CDC CI form and several revisions following a pilot introduction in 2018 with feedback from health providers, infectious disease physicians, O&G and pediatricians. With the national introduction of the CI form and reporting in 2018, however, provinces continued to report in three ways: using just the 506 reporting; a combination of 506 reporting and the CI form; and the CI form alone. All data analysis was carried out by the Bureau of Epidemiology, DDC, MOPH. The case-by-case report of infants born to mothers with syphilis with confirmed laboratory tests, and analyzed by the STI cluster, DAS, DDC. Both data sets were subsequently crosschecked and validated by a working group of STI specialists and the case investigation validation team. The case investigation validation team includes a group of pediatricians from university hospitals and BMA hospitals, obstetricians from university hospitals and STI technical offers.

The WHO Congenital Syphilis Estimation Tool was developed to estimate congenital syphilis cases and the case rate per 100,000 live births. In order to present alongside the national data of congenital syphilis passive surveillance (R506) and CI data, the national team together with the technical partners – WHO, UNAIDS and UNICEF – conducted the CS modelling and estimation exercise using the WHO Congenital Syphilis Estimation Tool, which uses the methods and approaches recommended by WHO to assess the burden of congenital syphilis in the country. The outcome of the estimation exercise provides a triangulation of the case rate per 100,000 live births and adverse birth outcomes (ABO). It uses the core indicators of elimination of congenital syphilis recommended by WHO: 1) testing of ANC attendees for syphilis at first visit; 2) positive syphilis serology in pregnant women; and 3) treatment of syphilis-seropositive pregnant women – as well as ANC coverage and total live births to estimate the total number of congenital syphilis cases and case rate per 100,000 live births for all pregnant women. Data for all key indicators in each year are thoroughly reviewed, triangulated and validated by the technical working group before inputting into the tool. Data inputs and summary of processes used in congenital syphilis estimation tool are given in Appendix 9.

Tables 3 and 4 summarize the analysis of 506 reporting, syphilis CI form and validation and WHO Congenital Syphilis Estimation Tool.

Table 3. Comparison between the 506 reporting and syphilis case investigation, 2018–19

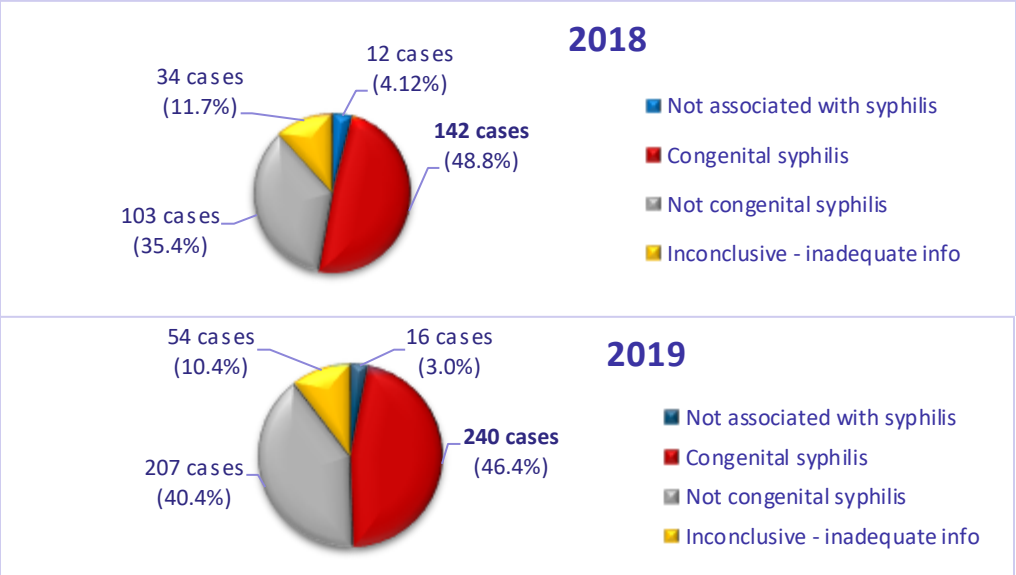
Year	506 reporting		Congenital syphilis case investigation (CI)							
			Confirmed and probable			Confirmed		Confirmed and probable		
	Cases	Prevalence	Actual coverage	Cases	Prevalence	Cases	Prevalence	Assuming @100% coverage	Cases	Prevalence
2018	273	41	85%	142	21.3	83	12.4	100%	167	25.06
2019	545	88.2	85%	240	38.8	166	26.8	100%	282	45.62

Note: Prevalence is per 100,000 live births.

The most representative data for the number of CS cases and CS prevalence is from the national syphilis CI where a coverage/ validation of 84.59% in 2018 and 85.31% in 2019 was achieved. For the purpose of calculation, the achieved coverage for each year was rounded to 85% as shown in table 3. Extrapolation of this data to 100% results in 167 cases with a prevalence of 25.06 in 2018 and 282 cases with a prevalence of 45.62 in 2019. The congenital syphilis cases include diagnostic confirmed cases and probable cases. The confirmed congenital case was 83 (case rate 12.4 per 100,000 livebirths) in 2018 and 166 (case rate 26.8 per 100,000 livebirths) in 2019. Reporting congenital syphilis case rate by including probable cases (surveillance case definition) are likely to over report the real number of true congenital syphilis cases in Thailand. Many babies in the probable cases are unlikely to develop congenital syphilis based on the justifications given in Appendix 10.

The validation through the CI for both 2018 and 2019 are summarized below.

Figure 5. Summary of the validation results from the syphilis CI, 2018 and 2019



For 2018:
Total cases reported: 344 (506 report alone: 273; CI alone: 71; both 506; and CI: 291)
Case investigation conducted: 291 cases (84.59% of total cases)
CS cases: 142 (167 cases extrapolated to 100%) (83 confirmed CS and 59 probable CS)

For 2019:
Total cases reported: 606 (506 report alone: 545; CI alone: 61; both 506; and CI: 517)
CI conducted: 517 cases (85.31% of total cases)
CS cases: 240 (282 cases extrapolated to 100%) (166 confirmed CS and 74 probable CS)

Data inputs used in the CS estimation tool are shown in table 4.

Table 4. Findings from key indicators and CS estimation tool: Thailand estimated CS rate per 100 000 live births, 2015–2019

Inidcator	2015	2016	2017	2018	2019
1. Total live births	736,352	704,058	702,755	666,357	618,193
2. Syphilis prevalence among pregnant women	0.08%	0.11%	0.17%	0.27%	0.39%
3. Antenatal care (ANC) coverage (at least one visit)	98.3%	98.5%	98.5%	98.6%	98.6%
4. Syphilis testing coverage among pregnant women	99%	99.3%	99.1%	99.5%	99.6%
5. Treatment coverage for syphilis positive pregnant women	96%	97.9%	97.6%	98.3%	97.5%
Estimated number of congenital syphilis cases (clinical and asymptomatic)*	57	59	85	109	172
Congenital syphilis case rate per 100,000 live births	8	8	12	16	26

Sources: Civil registration, Ministry of Interior and PHIMS Report of DOH.
* Non-clinical CS cases (asymptomatic) born to untreated women and treatment less than 4 weeks before delivery are also included

The results of CS estimation exercise showed the case rate per 100,000 live births was 16 in 2018 and 26 in 2019 – well below the validation benchmark of EMTCT of syphilis (i.e., ≤50 congenital syphilis cases per 100 000 live births).

A drastic increase in estimated CS cases has been observed between 2018 and 2019. The major factor in the increase in congenital syphilis is the trend of rising syphilis prevalence among pregnant women during the observed years.

Table 5. Results of congenital syphilis verification and case investigation 2018–2019

Year	506 reporting		Congenital syphilis case investigation (CI)				WHO CS estimation tool	
			Confirmed and probable		Confirmed			
	Cases	Prevalence	Cases*	Prevalence*	Cases	Prevalence	cases**	Prevalence
2018	273	41	167	25.06	83	12.4	109	16
2019	545	88.2	282	45.62	166	26.8	172	26

*Cases and prevalence at 100% case investigation coverage.
**Clinical and asymptomatic born to untreated women and treatment less than 4 weeks before delivery are also included

Conclusions

1. Despite the high level of syphilis testing and treatment coverage among pregnant women (average of 99% and 98% respectively over 2018–19), it is observed that total number and case rate of CS have been gradually increasing since 2015.

2. The increasing trend of CS is consistent within and across the national 506 surveillance reporting, syphilis CI over 2018–19 and with the WHO Congenital Syphilis Estimation Tool over 2015–2019.

3. A significant increase in estimated CS cases has been observed between 2018 and 2019.

4. The major factor of increase in congenital syphilis is due to rising trend in syphilis prevalence among pregnant women during the observed years.

5. About 40% discrepancy between confirmed reported cases and estimated cases indicates that there are possibilities of overreporting of congenital syphilis in current 506 reporting system.

6. Using a more robust case investigation system that has verified 85% of all reported CS cases in both 2018 and 2019. Of these cases, the confirmed congenital cases were 83 (case rate 12.4 per 100,000 livebirths) in 2018 and 166 (case rate 26.8 per 100,000 livebirths) in 2019. The assumption/extrapolated figures for CS is 167 cases with a prevalence of 25.06 in 2018 and 282 cases with a prevalence of 45.62 in 2019.

7. The findings also highlight the need for the following:
   (a) Focused responses in CS control as well as control of STI including syphilis in Thailand;
   (b) Better understanding of the challenges in diagnosis and reporting of CS, and to strengthen the national passive surveillance reporting system 506 and case investigation system.

4. Responses to recommendations of WHO Global Validation Advisory Committee and Regional Validation Team

Recommendation 1. Strengthen the package of services and surveillance systems for congenital syphilis

Recognizing the gradual increase of congenital syphilis, MOPH developed the national strategies of STI control and prevention, strengthened the surveillance and monitoring system, and maintained the benefit package and coverage of syphilis screening for all pregnant women during the first ANC visit and during the third trimester. MOPH also advocated for partner syphilis screening during ANC visits, and gave priority to the partners of pregnant women in provinces with high risks. Table 6 contains a summary of the actions taken and planned to address CS.

Table 6. Status of actions to address congenital syphilis in Thailand

	Actions to strengthen the package of services and surveillance for congenital syphilis	Actions to date	Immediate action to be taken
1	Adding syphilis screening into the Universal Health Coverage (UHC) benefit package	The National Health Security Office (NHSO) has recently agreed to include syphilis screening in the UHC benefit package to allow free syphilis screening for pregnant women's partner. Implementation is expected in 2022.	The Department of Health and stakeholders has also requested the NHSO to extend syphilis screening in the UHC benefit package for pre-marital couples. The EMTCT validation working group plans to present the data to the national STI/HIV working group and request for a special funding/support to implement comprehensive package of congenital syphilis prevention in high priorities provinces. See detail in #3.
2	Reporting, case investigation and standardization of data	Identified 70% of the total health facilities reporting the congenital syphilis diagnosis in the passive case surveillance system R506, with 57% accuracy. Factors for inaccuracies included: • Non-standardized and inconsistent methods of syphilis laboratory testing across settings. • Untrained and non-dedicated/assigned personnel in charge of the passive surveillance (506) report. • The ICD-10 coding system is not standardized and in use	• Improve 506 reporting (continue CS case investigation). BOE to evaluate options – (1) improve the 506 reporting for CS, (2) strengthen implementation of the case investigation form or (3) improve ICD-10. • Work on the ICD-10 has already been done and it is expected that this can be rapidly implemented with consensus from all stakeholders. • Strengthen the capacity of health care providers including staff who are involved in the reporting of CS.

3	Addressing rising trend of congenital syphilis	Identified possible causes: • Rising syphilis prevalence among pregnant women, adolescents, key populations, and general populations in Thailand • Late ANC and/or failed to show up for ANC. • Taking more than one visit to return syphilis testing result to pregnant women. Hence, syphilis treatment is delayed. • Unable to bring partners of syphilis positive pregnant women for screening and treatment, may cause reinfection after treatment • Inconsistent or incomplete syphilis treatment among mothers especially those referred cases with no medical history, or no record of medication dispensed from the transferring hospital. • Currently, syphilis screening and treatment are provided to only the couples of syphilis-positive pregnant women	• Implement same day test and treatment in addition to change algorithm for syphilis screening and use of syphilis rapid test for high-risk groups. • Ensure that the dual rapid tests (syphilis and HIV) are distributed in Thailand in June 2021. • Prioritize provinces with high syphilis prevalence among pregnant women (and other key populations) and DOH with the support of NHSO to: 1. Provide free syphilis testing along with HIV testing twice a year. 2. Intensify condom promotion programmes. 3. Provide syphilis testing for partners of pregnant women and premarital syphilis testing. 4. Refresher training for health care workers in prioritized provinces for syphilis management and treatment for syphilis positive cases including pregnant women, general populations, high risk populations and strategies to reach and treat their partners. 5. Reinvigorate comprehensive sexuality education among adolescents focusing on adolescent pregnancy and STI health literacy to increase awareness on condom use.
4	Using data for programme improvement and close monitoring of syphilis prevalence, treatment coverage and number of congenital syphilis in high priority provinces	• Working group to review PHIMS data, conducted CS modeling, and case investigation data • The working group identified high priority provinces with high syphilis prevalence among pregnant women and high case rate of CS	• Conduct an assessment within the cohort of CS, (including qualitative assessments as needed) in exploring the correlates of CS, towards addressing specific bottlenecks and challenges. (age, risk specific etc. Current efforts appear mainly targeted at geographical correlates.). • Summarize result and organize a meeting to review data. • Send a formal letter to key high-level MOPH staff, provincial health office, provincial, community and private hospitals in the provinces for the alarming results of rising CS/syphilis prevalence. • Conduct training, meetings with the team and ask each provincial health office to develop their plan including conduct supervision visit to sites with poor performance, find local resources or special projects to support syphilis screening/treatment for risk populations and partners of pregnant women while waiting for support from NHSO that will start next year. • Develop key indicators for close monitoring and conduct regular monitoring and quarterly meeting to review the result and take corrective actions in a timely manner.

Longer term actions

1. Political will and commitment to address STIs among young people and key at risk populations.
2. Strengthen syphilis (including CS) and STI reporting system with a dedicated database to allow data verification, and detailed and timely analysis to inform trends.
3. Supporting programme implementation with operational research to guide policy and service delivery options. For example, options to:
    - Deliver high-quality sexual health information and STI care (acceptable, affordable STI service, outside office hours for teenage and adolescents).
    - Address stigma and discrimination for testing and treatment services.

Recommendation 2. Monitoring and strengthening EMTCT coverage among non-Thai (migrant and stateless) pregnant women with non-institutional deliveries

Non-Thai citizens can now access the same standard of health care as Thai people if they register for the migrant health-care scheme. Also, non-registered migrants may access services by purchasing migrant health insurance (self-pay, co-pay or using hospital social welfare funds).

Health care service and health insurance for migrants[3]

Regular migrant workers are entitled to receive subsidized care from Thailand's public health system and irregular migrants are able to enroll for health insurance coverage by paying an annual fee. According to the cabinet resolution on 16 January 2018 on migrant management policy in Thailand, MOPH endorsed the policies on health check-up, health insurance and medical certificates of these migrants. Any medical fees paid by migrants will be managed as a migrant-specific fund to provide health-care services specifically to migrant populations. According to Thailand Migration Report 2019, An estimated 64 per cent of regular migrants (1.97 million) are enrolled in a public health insurance scheme and 51 per cent of irregular migrants are also included. To fill in the gaps, Thailand collaborates with the specialized NGO and United Nations service providers to provide low-cost migrant health insurance to fill in gaps and to reach migrants regardless of their legal status.

In 2017, the Government endorsed a 20-Year Master Plan for Integration of Health Insurance Systems Development (2018–2037), developed by the Committee for Consideration of Strategic Integration of Budget Planning chaired by the Deputy Prime Minister. The Plan aims to harmonize the three main public health insurance systems to promote equity, quality, efficiency and sustainability; and to ensure that everyone living on Thai soil has access to UHC. The Plan also includes a roadmap for a compulsory health insurance system for migrants and stateless people to be achieved by 2021. Implementing the Plan will provide an opportunity for MOPH to involve other Ministries in fully addressing the health needs of migrants .

In addition, Thailand has also developed three policy papers addressing the health needs of migrants, border populations and people living in special economic zones, respectively. The plans share a similar strategic focus: (1) emphasizing primary health care and community participation; (2) improving the quality of health services for border and migrant populations; (3) strengthening disease prevention and control systems; (4) improving information management and resource mobilization; (5) increasing health service coverage

[3] Thailand Migrant Report, 2019.

through improved health insurance coverage among migrants; and (6) developing coherent policies across sectors.

In 2020, a notification from MOPH on migrant health-care service and health insurance stipulated that migrants from Myanmar, the Lao People's Democratic Republic, Cambodia and Viet Nam, as well as their dependents, or as agreed by the cabinet, who are not under the national social insurance scheme are encouraged to register for the migrant health insurance scheme for the permitted duration of their stay in Thailand. They are authorized to work temporarily as mentioned in the immigration law and migrant workforce management, and automatically urged to get health-care coverage.

Progress in EMTCT coverage among non-Thai people

With Thailand progressive health care system and as ANC and HIV services are provided regardless of nationality and legal status, PHIMS data show that migrant women who gave birth at the public hospital receive the same services as those with Thai nationality. In 2018, out of 37,815 migrant women delivering at public hospitals, 96.72% had ANC visits prior to the delivery, 99.65% received HIV testing and 98.82% received syphilis testing. Treatment for HIV-positive migrant mothers was at 94.44% and treatment for migrant mothers with syphilis was 95.08%. In 2019, the data show 35,172 migrant women delivered at public hospitals, 97.11% had ANC visits prior to delivery, 99.62% received HIV testing and 98.84% received syphilis testing. For those who were HIV positive, 91.38% received HIV treatment and for those with syphilis, 96.30% received treatment.

Recommendation 3. More focused analysis of EMTCT performance data to identify problems occurring in high-priority facilities and areas to ensure equity of services across different populations

Thailand continues improving its HIV and syphilis related monitoring and evaluation data. Apart from the regular administrative data reported by the hospitals, PHIMS (Perinatal HIV inventory monitoring system) has been used in all provinces to report HIV specific cases. The data is accessed, analyzed and used by the provincial health offices and DOH to monitor the situation on HIV and syphilis testing and prevalence among pregnant women, data on ANC cases with partners, data on ART provision to pregnant women and infants. The follow up actions are taken with provinces or hospitals with low coverage of services or high prevalence of MTCT to ensure appropriate actions are taken. PHIMS data is also used to ensure that migrant pregnant women and migrant mothers and babies receive appropriate care and services. Interventions and budget will be allocated to provinces based on the analysis of data from PHIMS

In addition, DOH also conducts additional MTCT of HIV case investigation to understand the reasons for the new infection and to further improve the services. The analysis findings help further inform the development of the national guidelines on HIV/AIDS prevention and response.

To eliminate congenital syphilis among newborns, based on the review of the data, DAS informs the provinces with high prevalence of syphilis among pregnant women and newborns and collaborate with them to develop a response plan. The situation is also discussed in the district and provincial maternal and child health boards to find solutions and make plans for capacity strengthening of case investigation, such

as the use of video conferencing among obstetricians, paediatricians, nurses and health providers working in community health services, regional disease control offices, provincial hospitals and general hospitals.

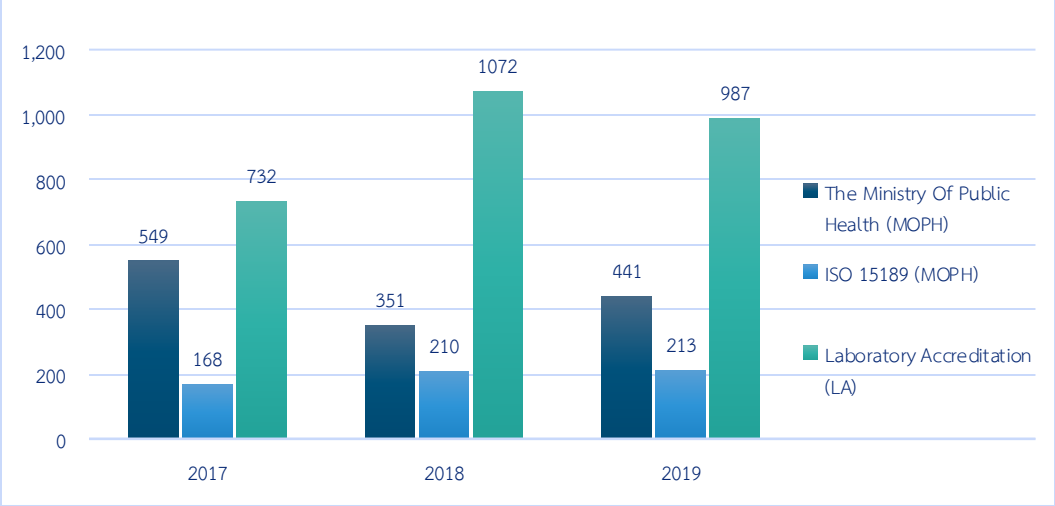
Recommendation 4. Strengthen the internal and external audit systems to ensure that laboratories comply with standards throughout the period of their accreditation

All hospital laboratories implement laboratory quality standards, and laboratory accreditation can be conducted as a part of the following programme:

1. MOPH standards: accredited by the Department of Medical Sciences.
2. Thailand Laboratory Accreditation: accredited by the Medical Technology Council.
3. ISO 15189: accredited by the Department of Medical Sciences.

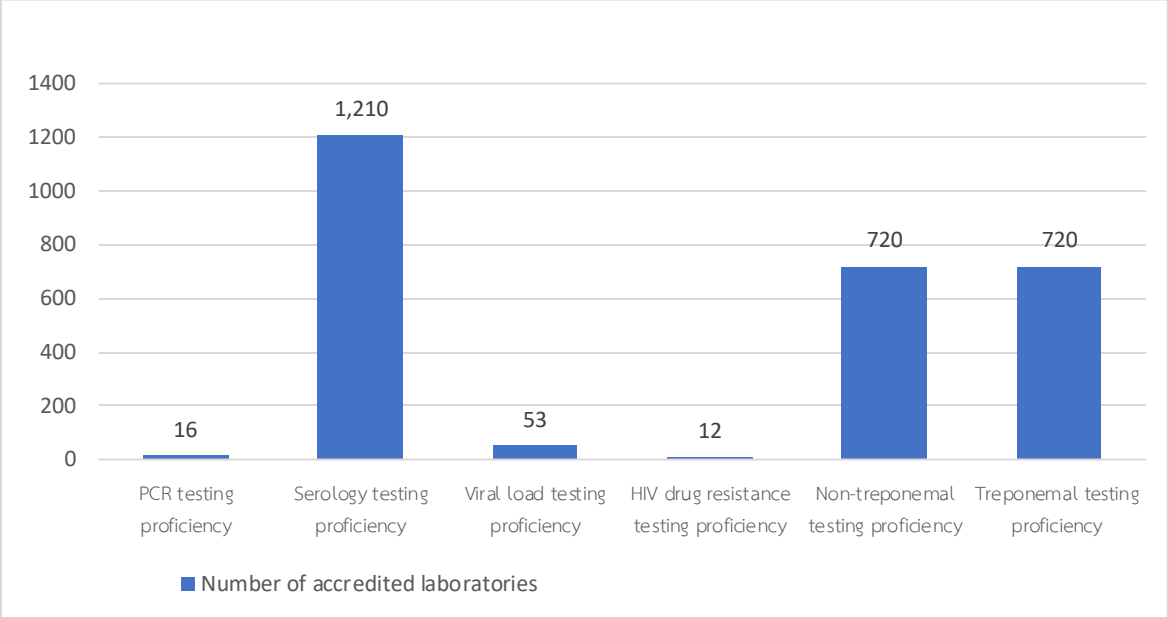
Each health facility participates voluntarily in one of these accreditation programmes according to their potential and laboratory readiness i.e., finance. As an incentive to encourage hospitals to get accreditation, financial support from NHSO will be provided to accredited hospital laboratory. A period of lab accreditation is 2 years for ISO 15189 and Thailand Laboratory Accreditation, 3 years for MOPH. A surveillance audit for external quality assurance schemes is conducted every year.

Figure 6. External: Number of accredited laboratories



The current national laboratory quality system standards and operation plan was updated in 2019 to ensure that the medical laboratory quality management system is promoted throughout the country and at all levels. The standards cover both public and private laboratories.

Figure 7. Internal quality of testing (HIV/syphilis): Assessment of laboratory proficiency



Per this level of laboratory performance, almost all syphilis cases in Thailand are confirmed and over-treated. It is them discussed and suggested among experts that Thailand should use the confirmed cases for the EMTCT of syphilis rather than the combination of probable and confirmed cases to get the most accurate rate.

Recommendation 5. Investigate ways to reduce manual transcription of patient information and test results

Since the previous report, Thailand successfully change the information system from manual transcription to computerized health information and laboratory information systems in all health facilities. The computerized system proves to minimize the workload and transcription errors. Each health facility will have its own username and password and only the assigned persons will have the authority to access the database to ensure confidentiality and data security.

Recommendation 6. Establish a national programme to evaluate syphilis test kits and publish the list of kits that meet the minimum criteria

As mentioned in the Medical device Act of 2009, the syphilis diagnostic test kit does not require any import declaration. Moreover, a manufacturing company or import company has to register as a manufacturer or importer of medical devices and obtain a permit to import the syphilis test kits into Thailand. A certificate for the licensed medical device distributor and the product catalogue are also required.

Since 2019, the monitoring system on syphilis test kits has been implemented. The syphilis test kits have been classified as medical devices which require licensing in accordance with the Common Submission Dossier Template. The template outlines the quality, standard and safety considerations for medical devices, such as the essential principles of safety and performance of medical devices and methods used to demonstrate conformity, device description and product
verification and validation documents.

The Biological Institute, Department of Medical Sciences, MOPH, performs its role in assuring the quality of diagnostics test kits as determined by the work system of Medical Sciences regulations 2009. In 2019, the verification programme of 10 rapid syphilis diagnostic test kits were conducted. The results showed that most diagnostic test kits meet standard criteria as indicated in the leaflet. These results were also reported to all alliances and were published in the Food and Drug Journal. With these data, the Division of Medical Device Control of the Food and Drug Administration of Thailand evaluated diagnostic test kit standards and in vitro diagnostic tests, and prepared a control group for specific syphilis diagnostic test kits and evaluated the post-marketing surveillance (a collaboration programme to collect data between 2021 and 2022). Currently, the standards and criteria are being drafted for syphilis kit test evaluation and in vitro diagnostic tests among other rapid syphilis diagnostic test kits. Thailand also plans to have the dual rapid tests (syphilis and HIV) distributed in Thailand in June 2021.

Recommendation 7. Increase awareness, information and coordination on human rights laws and policies that will contribute to sustaining the EMTCT response

Thailand has progressed significantly under this recommendation. Several initiatives have been systematically scaled up since the last report. Different aspects of human rights have been addressed as follow:

Reduced discrimination and improved respect for confidentiality in the health-care setting

Thailand successfully piloted the stigma and discrimination reduction intervention package in six demonstration sites and is continuing to refine it through participatory training, e-learning modules, and community linkages. The package has been scaled up to 71 out of 77 provinces to ensure that health staff provide discrimination-free health care. More than 123 public health facilities and almost 20,000 health-care staff successfully completed the E-learning module. The system-wide stigma and discrimination reduction effort is starting to produce positive change among health-care staff. Fear of HIV infection dropped from 61% in 2015 to 52% in 2019, and stigmatizing attitudes toward people living with HIV declined from 85% in 2015 to 81% in 2019.

Through the national monitoring system, a 2019 survey found that 11% of people living with HIV experienced involuntary HIV disclosure and non-confidentiality in the health-care settings in the past 12 months, or a significant decline from the level in 2015. Furthermore, the number of women living with HIV who were coerced or advised to terminate their pregnancy in the past 12 months remained low, at 2% in 2017 and 3% in 2019.

A new initiative – Thailand Partnership for Zero Discrimination

Thailand is recognized as a pioneer in Asia in reducing stigma and discrimination in health-care settings. To expand action to eliminate all forms of HIV-related stigma and discrimination, the National AIDS Committee has endorsed the Thailand Partnership for Zero Discrimination by bringing together stakeholders from multiple sectors, including health, justice, education, workplaces and communities. This new partnership is revitalizing the strategic alliance among stakeholders to implement and scale up programmes toward ending HIV-related stigma and discrimination. A multi-sectoral costed action plan is being developed, to be launched in early 2021.

National gender equality strategy and action plan

The gender equality strategy provides an effective governance framework by helping steer gender budgeting towards gender equality objectives. In response to the National Strategy, Thailand has developed a set of 20-year Master Plans related to social power, equality and social security, including gender equality issues. To support this long- and medium-term vision, the Department of Women's Affairs and Family Development under the Ministry of Social Development and Human Security has issued the Women's Development Strategy (2017–2021), the main planning instrument for gender equality in Thailand. It identifies goals, objectives and targets in the areas of equality, the elimination of discrimination, quality of life, security and safety, and the creation of a modern nation. Consequently, 11 ministries and three other government agencies formulated to the National Action Plan for Women Development Phase 1, 2020–2022, which outlines 52 projects/activities targeting preventive and corrective measures to mitigate and eliminate violence against women, domestic violence, sexual harassment, human trafficking, and discrimination on the basis of gender.

Progress made on community engagement

Using a community-led crisis response system to take action on HIV-related stigma and human rights violations

A community-led crisis response, the "Pokpong" system,[4] is an online tool for infected and affected populations, including people living with HIV, key populations, vulnerable Non-Thais and pregnant women. These individuals and participating civil society or community-based organizations can access the Pokpong system to report human rights violations or other forms of discrimination including physical violence, involuntary disclosure of HIV status, or being tested for HIV without consent, at any place and any time. Once reported, a case is immediately forwarded to the multi-disciplinary crisis response team to implement a systematic process of screening, investigation and remediation. The Pokpong system has been implemented in 14 provinces and has been proven successful. Members of vulnerable communities, including people living with HIV, fully engage with affected populations and frontline civil society or community-based organizations. The Pokpong system has a "human touch" by being able to provide rapid, in-person assistance, as well as to provide referral for longer-term support. As of June 2020, 147 cases were

[4] Pokpong is a Thai name of the Crisis Response System web application developed as a complaint mechanism for a quick and easy reporting and timely response as mentioned on page 10

reported to the Pokpong system, and 75% of victims of discrimination or human rights violation received assistance and were able to successfully resolve or address their concerns.

A new initiative -- "360 degree" community involvement at ANC clinics

The NGO Coalition on AIDS and the Foundation of Thai HIV-positive Women are leading the implementation of a new initiative funded by the Thai Health Promotion Foundation to provide comprehensive HIV and reproductive health services, and support an effective response to unwanted teen pregnancy. The services are integrated with harm reduction, psycho-social support and stigma and discrimination reduction for women attending an ANC clinic, their infant, and their male partner. The initiative also promotes human rights in relation to autonomy in decision-making, and provides more options so that pregnant women can manage their own risks and know about self-protection, while ensuring access to essential health care. The project is currently being implemented in 15 ANC clinics in eight provinces. Lessons learned and key recommendations will be generated and used to inform scale-up.

Greater involvement of TNP+ at ANC clinics

The continuum of care center (CCC) is a well-known model of multidisciplinary care for people living with HIV through a collaboration between the health facility and TNP+. In 2019, with technical support from UNAIDS, TNP+ conducted a review of the CCC strategy in order to inform a revision, and produce an M&E plan for 2020–2022. The new strategy clearly addresses the strategic objective that 20% of the 400 CCCs will focus on HIV prevention, and stigma and discrimination reduction among women receiving ANC and their male partners. As a result, funding from NHSO for CCCs managed by TNP+ increased from THB 27 million in 2019 to THB 38 million in 2020.

5. Successes and major challenges to maintain validation of EMTCT in Thailand

5.1 Successes

EMTCT of HIV and syphilis has been consistently maintained in 2018–2019, according to the WHO targets**.** Factors that contributed to this success include the consistent provision of quality laboratory testing and ART, HIV treatment protocol improvement, guidance for syphilis diagnosis and treatment, congenital syphilis prevention and treatment, perinatal HIV transmission prevention and evaluation of EMTCT at the provincial level.

As part of the emergency preparedness plan, MOPH have the protocols to ensure that pregnant women, mother and babies can have regular visits to ANC. The visit can be scheduled or rescheduled by phone and in case that actual visit cannot be made, follow up by phone can be done to ensure that pregnant women and mothers will visit ANC as per schedules and receive HIV, syphilis and other testing as per the national guidelines. If an emergency happens, for HIV-positive pregnant women who have good ART adherence, ART can be subscribed for longer period of time to ensure that no disruption happens during treatment. ART is well managed and monitored to ensure no supplies shortage.

5.2 Major challenges and planned actions for improvement

Some major challenges in maintaining EMTCT of HIV and syphilis remain. As MOPH identifies these challenges, some planned actions or recommendations are developed accordingly.

1. Policy challenges

- The country has mobilized the policy on free syphilis diagnosis and treatment for all pregnant women's partners, both marital and non-marital. However, while being in the pipeline this policy will be fully implemented in 2022.
- The rapid test for syphilis costs more than the non-treponemal test which is not included in the benefits package.
- There is an urgent need to advocate an effective STI prevention campaign along with the prevention of teen pregnancy at educational institutes
- Early ANC is not 100% coverage, and there may need to be more intensified to ensure that two syphilis tests are given during pregnancy.
- It remains a challenge to implement free syphilis treatment policy at all health-care settings.

2. Challenges in the monitoring of reports

- The report from PHIMS does not correlate with HIV surveillance report 506. Estimated causes of congenital syphilis and other factors related to ANC factors were not reported.
- The coverage of PHIMS and HIV surveillance reports from public or private hospitals, and health centres are necessary for monitoring the occurrence and treatment of HIV and syphilis.
- ICD-10 reports on negative congenital syphilis in infants born to positive mothers who receive treatment should be separated from positive syphilis cases.

3. Challenges in diagnosis and treatment

- A rapid test for syphilis should be given to people with high risk, such as pregnant adolescents especially those under age 25, those having multiple partners, and those who are likely to miss follow-up visits. Without rapid testing, they are unlikely to receive treatment.
- Condoms use should be more encouraged among people with high risk and young people since their condom access and condom use behavior are still not adequate.
- There is a need to prioritize STI screening, treatment and prevention for adolescents due to the rising trend of STI and CS among those 15–19 years old.

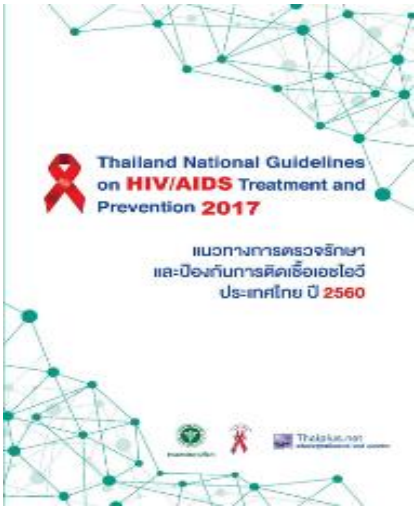
These challenges are addressed and acknowledged by the Thailand's EMTCT working groups and key stakeholders. On 18 January 2021, a stakeholder meeting was convened by the Department of Health and Division of AIDS and STIs, involving technical experts from WHO, UNAIDS, CDC Thailand, UNICEF and 27 priority provinces with high syphilis and CS rate. Apart from recommendations reported in this document, the group has arrived with a consensus on the immediate actions as followed:

1. Investigate both programme and data issues, particularly on provinces with high CS rates and high syphilis prevalence among pregnant women. Provinces with low coverage of testing and treatment will be further investigated in comparison to the PHIM database.
2. The team has suggested same-day syphilis testing and treatment among high-risk groups, in addition to the change in syphilis screening algorithm (reversed algorithm instead of RPR and TPHA screening).

3. The team will revisit the ART coverage among HIV-positive pregnant women and focus on the gap of 3.3% under-coverage and those who receive late ANC.
4. All stakeholders agree on the urgency to address STI prevention and management and health literacy among adolescent and young people. This includes the intensified interventions on teen pregnancy such as comprehensive sexuality educations, access to condoms, supports for teen mothers to get early ANC and other health services to prevent MTCT of HIV and syphilis.
5. CS case investigation and estimation will be systematized among DOH and DDC to provide feedback to provinces with high prevalence among pregnant women and other key populations. Regular stakeholder meetings should be held to discuss comprehensive and intensive service package to reduce the prevalence.
6. BOE will improve the 506 reporting system and continue CS case investigation by developing the standard case investigation forms and improving the ICD-10 system. This will align with health-care staff capacity strengthening on case reporting.
7. There is a recommendation that Thailand should use confirmed syphilis cases for EMTCT revalidation instead of the combination of probable and confirmed cases, considering the quality of laboratory services and the tendency of over-treatment of syphilis among pregnant women.

Appendix 1. Thailand National Guidelines on HIV/AIDS Treatment and Prevention, 2017

(Source: https://ddc.moph.go.th/)



Key words: **Prevention of mother-to-child HIV transmission**

1. Recommended ART regimen

- Recommended regimen for all pregnant women regardless of gestational age, i.e., TDF+XTC+DTG or 1 tablet of TDF/XTC/DTG, if these are unavailable, give TDF/XTC+DTG.
- Recommended primary regimen for reproductive women planning for pregnancy is TDF+XTC+EFV or TDF+XTC+DTG**.** If DTG is given, information of increased adverse effects of NTD should be provided, as well as benefits from taking DTG**.** All pregnant women should have the right to make their own decision**.**

2. **In case of TDF+XTC resistance, a recommended substitution is AZT+3TC**

3. **Pregnant women who receive TDF+XTC+DTG for more than 12 weeks and have VL >1,000 copies/ml at ≥32 weeks of gestational age may have high VL or poor adherence to ART. Therefore, they should be referred to ART counseling service and follow up VL.**

4. **If a pregnant woman receives ART rather than INSTI for more than 12 weeks and has VL >1,000 copies/ml at ≥32 weeks of gestational age, a recommended regimen is TDF+XTC+DTG or plus DTG as soon as possible for suppression of VL and to reduce the risk of MTCT of HIV; and it is recommended to continue the regimen of TDF+XTC+DTG after delivery.**

5. **If a pregnant woman has her first ANC visit >32 weeks of gestational age and has never received ART, a recommended regimen is TDF+XTC+DTG.**
   If DTG is not available, consider giving TDF+XTC+EFV, and add RAL to reduce VL as soon as possible which then reduces the risk of perinatal HIV transmission, and DTG or RAL can be omitted after delivery.

6. **If labor begins before the pregnant woman receives ART, a recommended regimen is TDF+XTC+DTG with a tablet of AZT 600 mg immediately and continue the same regimen after delivery.**

7. **AZT 300 mg should always be given during the onset of labor, but it can be omitted if VL <50 copies/ml at the time of delivery.**[5]

8. **Recommendations for VL test in HIV-positive pregnant women**
   - All HIV-positive pregnant women should have VL tested between 32 and 36 weeks of gestational age, and take ART for at least 12 weeks.
   - Pregnant women at 36 weeks of gestational age but insufficient uptake of ART as required in VL test, are recommended to have the VL test at 36 weeks of gestational age to determine the risk on the fetus and planning for delivery.

Use of ART for perinatal HIV prevention

Key messages:

[5] In Thai national guidelines, use of intrapartum AZT is recommended for pregnant women who receive no ART during ANC and for those with VL >50 copies/ml. This is in addition to the triple ART regimen. The reason for giving intrapartum AZT is to ensure adequate AZT levels in the infant to prevent HIV acquisition during delivery. Maternal AZT rapidly crosses the placenta to the fetus and penetrates well into the fetal central nervous system, the target organ for HIV infection. Intrapartum AZT may be omitted in pregnant women who have HIV VL <50 copies/ml at gestational age ≥36 weeks.

Thai national guidelines were developed by the working group of technical experts in Thailand. The recommendations were adapted from international guidelines e.g., DHHS, BHIVA, WHO based on the consensus of the experts.

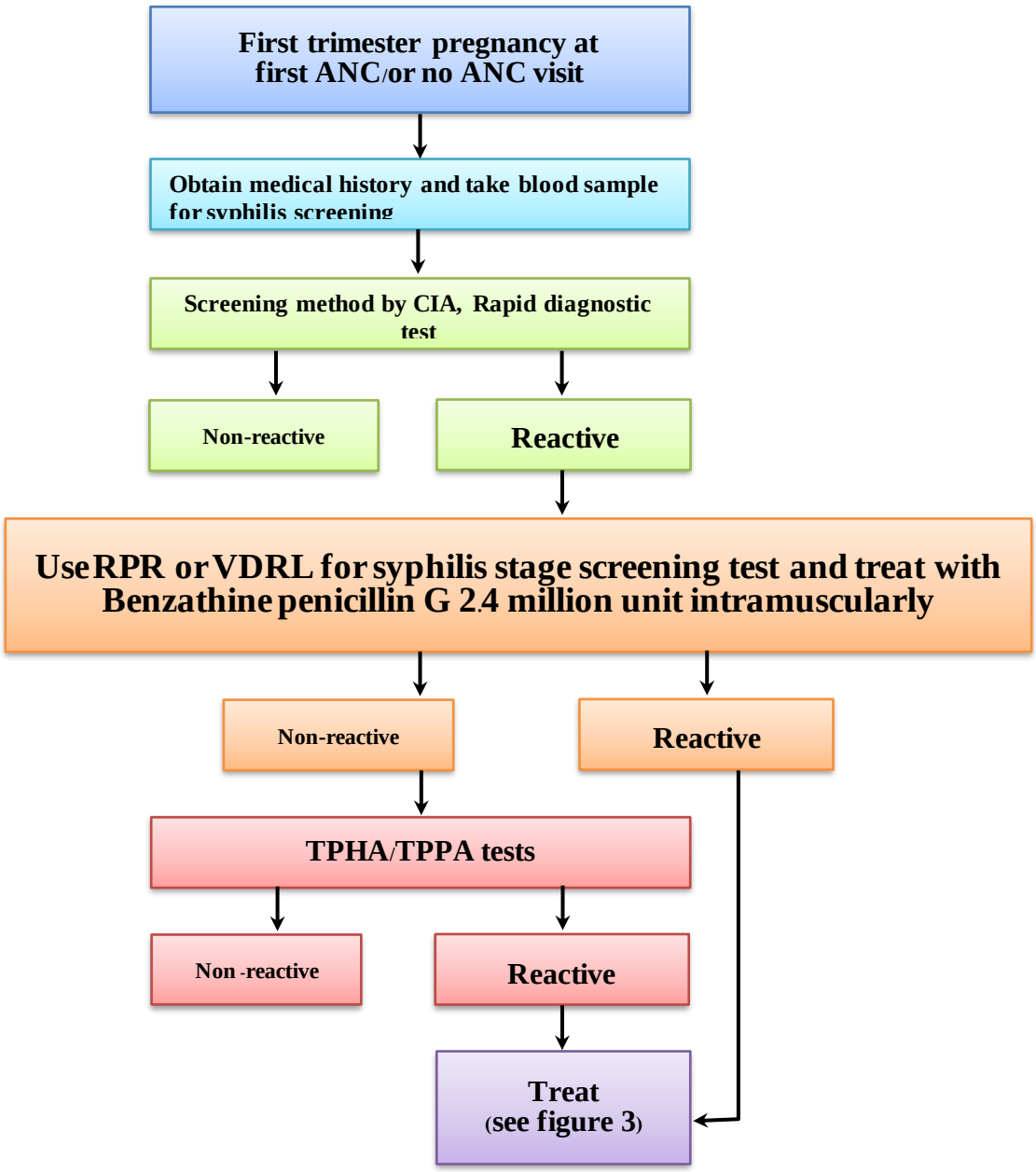
- All HIV-positive pregnant women and couples with known blood test results should be counseled of the benefits of ART, its adverse effects, and the adherence to ART.
- Starting treatment: ART can be given to pregnant women without the presence of any symptoms of opportunistic diseases regardless of CD4 counts and their gestational term.
- Recommended regimen in pregnant women:
  - For pregnant women who have never had ART, a recommended regimen is TDF+XTC+DTG (a combined tablet).
  - For pregnant women receiving ART prior to pregnancy, a recommended regimen should be VL suppression <50 copies/ml.
- In the case of any pregnant women with high risk of perinatal HIV transmission for instance a mother having their first ANC visit after 32 weeks of gestational age or never had an ANC visit nor ART, a recommended regimen is TDF+XTC+DTG.
- If DTG is not available, consider giving TDF+XTC+EFV plus DTG or RAL for an immediate VL suppression and consequently reducing the risk of perinatal HIV transmission., and stop giving DTG or RAL right after delivery.
- Continue postnatal ART in all pregnant women.
- Recommended regimen for infants based on their risks:
  - Common risk of HIV infection from mother: give AZT for four weeks.
  - High risk of mother-to-child transmission of HIV: give AZT + 3TC + NVP for four weeks.

Appendix 2. Guidelines on congenital syphilis screening and treatment for pregnant women

(Guidelines on congenital syphilis laboratory diagnosis and screening, guidelines on congenital syphilis screening and treatment)

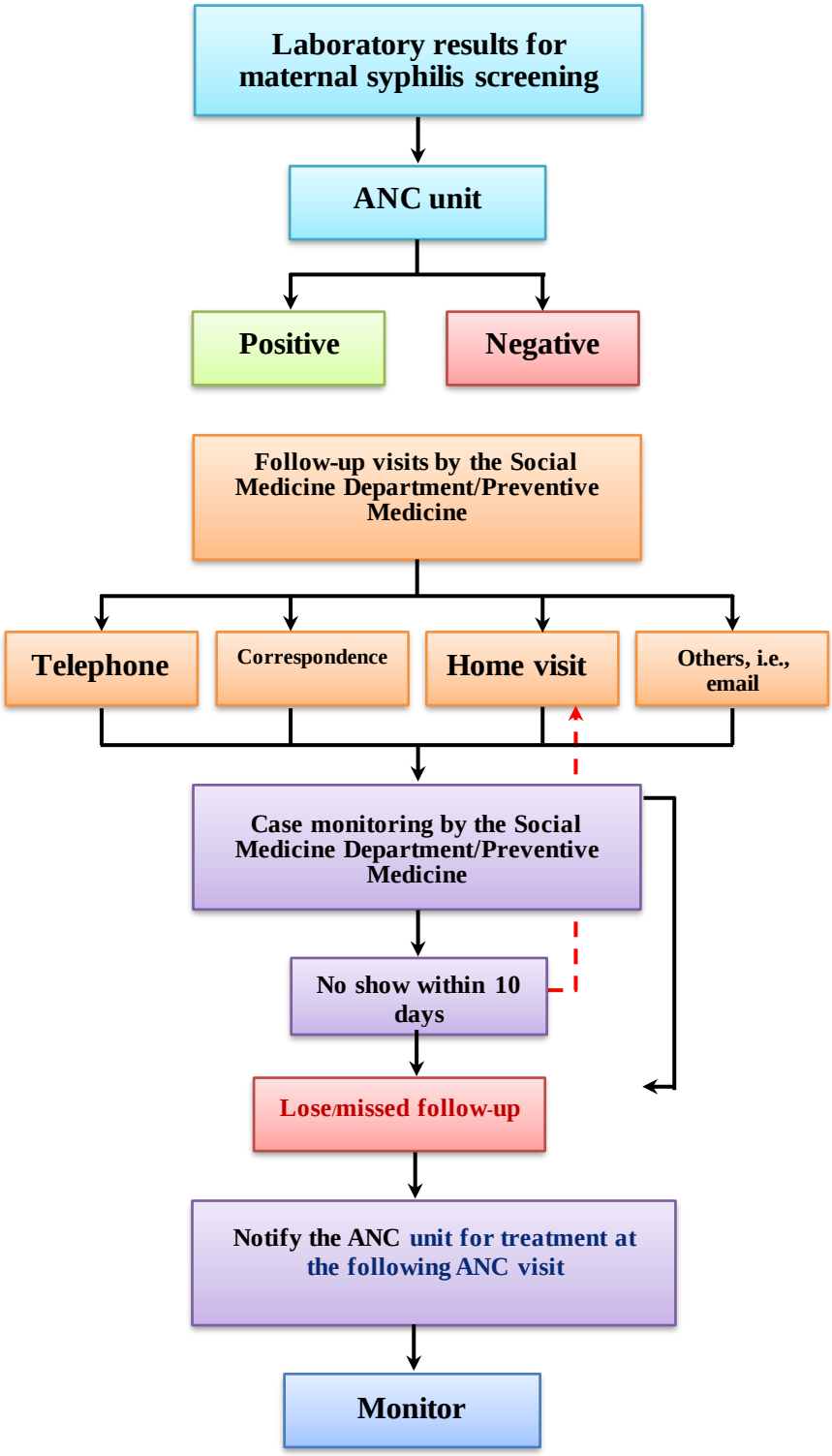
Source: https://ddc.moph.go.th/)

Figure 1 Syphilis screening for pregnant women



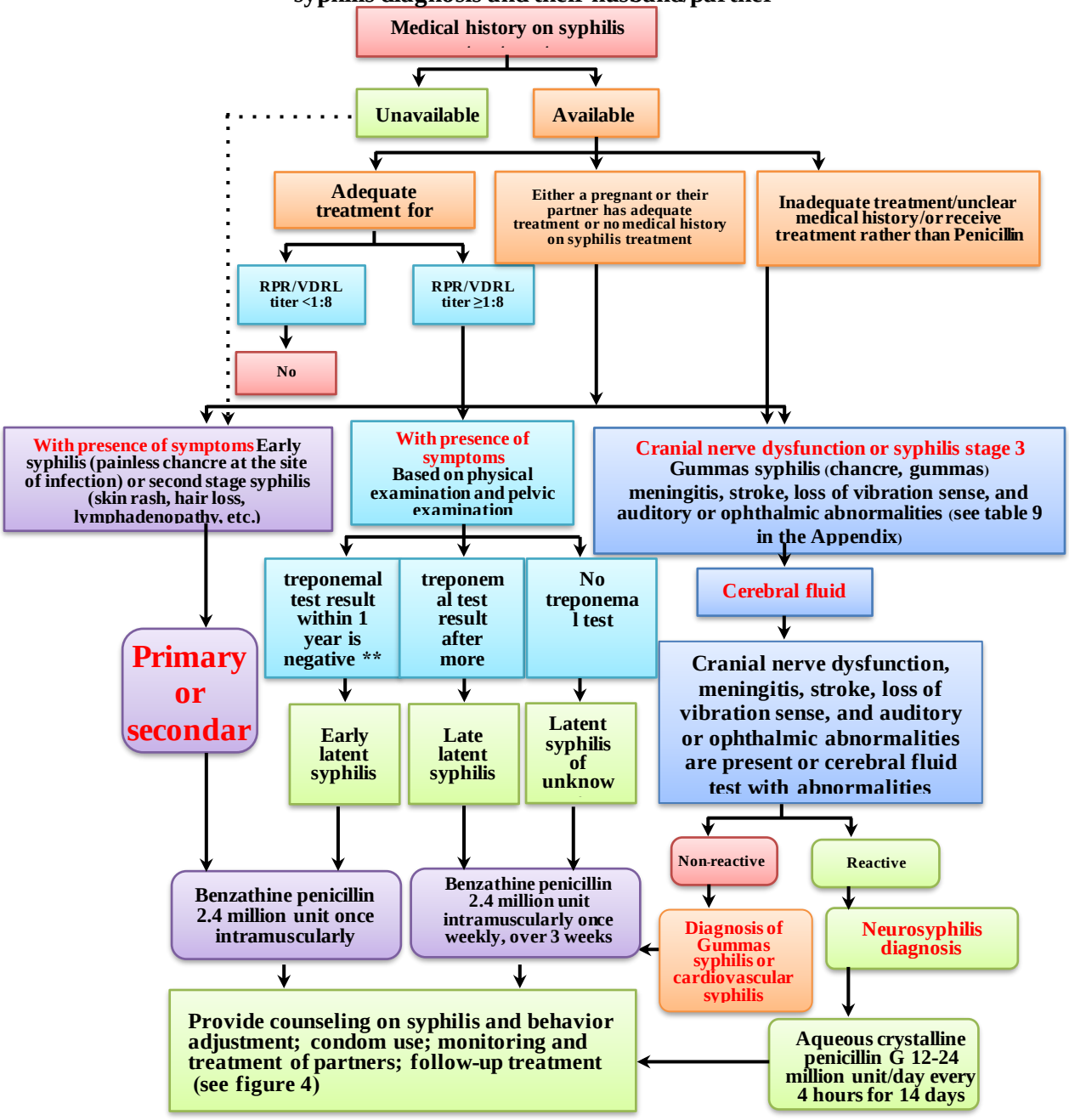
2. Monitoring of pregnant women for syphilis treatment

Figure 2. Treatment monitoring of pregnant women with syphilis



3. Syphilis stage screening and treatment

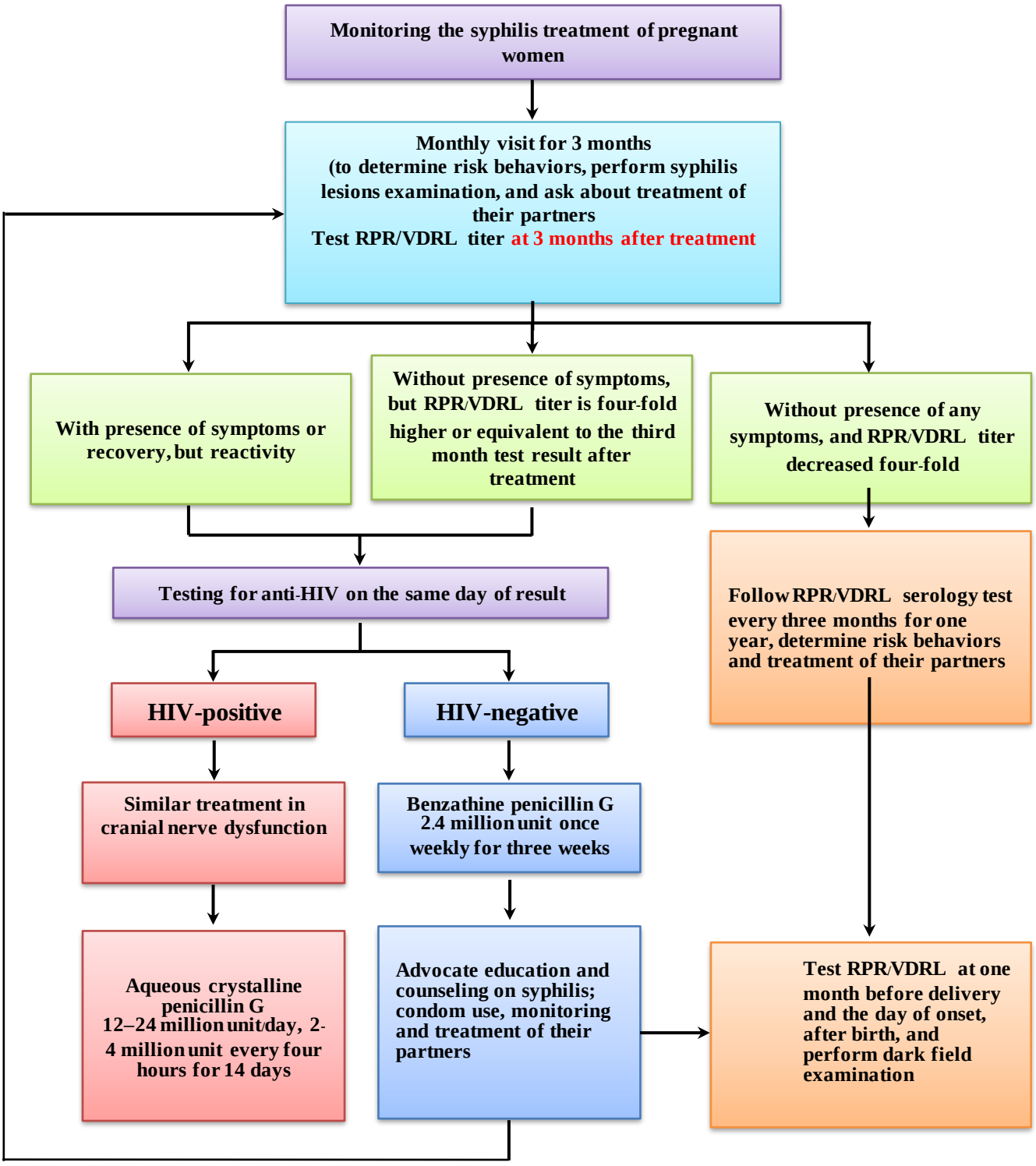
Figure 3. Syphilis stage screening and treatment for pregnant women with confirmed syphilis diagnosis and their husband/partner



** 1. RPR/VDRL shows a four-fold increase in antibody titer in blood test obtained within the past 1 year;
2. Partners being detected with syphilis stage 1 or 2, or latent syphilis;
3. A history of primary or secondary syphilis manifested by skin rash within 1 year

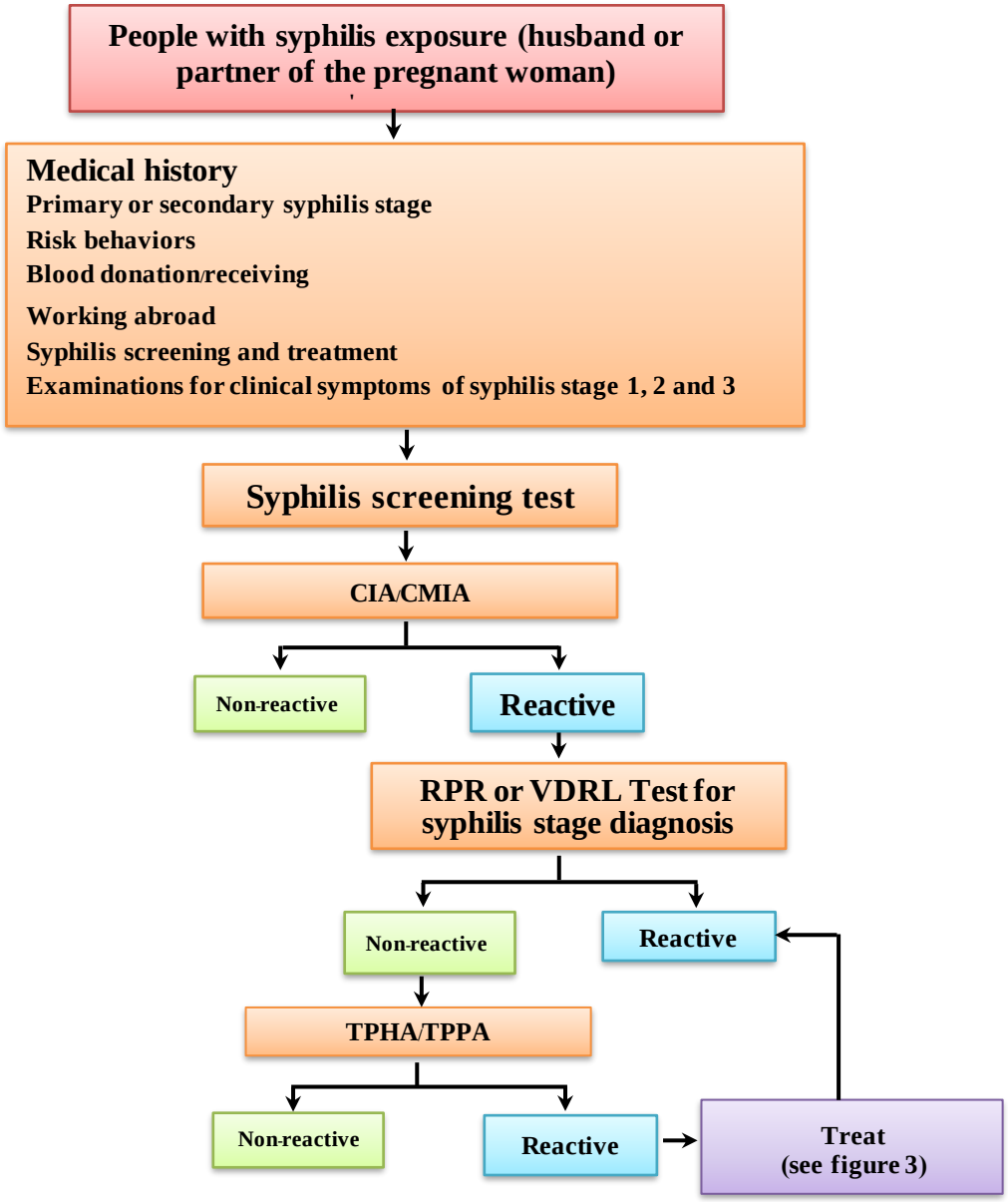
4. Monitoring the syphilis treatment of pregnant women

Figure 4. Monitoring the syphilis treatment of pregnant women



5. Recommended practices for people with syphilis exposure (husband or partner)

Figure 5. Practices for people with syphilis exposure (husband or partner)



Appendix 3: Thailand Spectrum HIV

	2018	2019
Mothers needing PMTCT	3,659	3,316
Mothers receiving PMTCT	3,574	3,223
Single dose Nevirapine	0	0
Dual ART	0	0
Option A – maternal	37	0
Option B – triple prophylaxis from 14 weeks	0	0
Option B+: ART started before current pregnancy	1,281	1,161
Option B+: ART started during current pregnancy >4 weeks before delivery	1,993	1,739
Option B+: ART started during current pregnancy <4 weeks before delivery	263	324
PMTCT coverage	97.67	97.2
PMTCT coverage of more efficacious regimens	97.67	97.2
MTCT rate at 6 weeks	1.74	1.97
Final transmission rate including breastfeeding period	1.74	1.97
Number of HIV-positive breastfeeding women at 3 months	0	0
Number of HIV-positive breastfeeding women at 12 months	0	0
Number of new child infections due to mother-to-child transmission		
Total	64	65
Male	33	34
Female	31	32
Treatment coverage for HIV-positive pregnant women	96.67	97.2

Summary of indicators for EMTCT of HIV and syphilis (Private populations)

Indicator	Target	2018			2019		
		Unit	Numerator	Denominator	Unit	Numerator	Denominator
Monitoring#							
1. Antenatal care (ANC) coverage (at least one visit)	≥95%	99.24%	53,481	53,893	99.35%	52,910	53,257
2. HIV testing coverage among pregnant women	≥95%	98.68%	53,180	53,893	98.36	52,381	53,257
3. Syphilis testing coverage among pregnant women	≥95%	96.86%	52,201	53,893	94.13	50,131	53,257
4. Antiretroviral therapy (ART) coverage among HIV-positive pregnant women	≥95%	96.52%	222	230	96.64	230	238
5. Syphilis treatment coverage among pregnant women	≥95%	97.37%	111	114	98.20	164	167

Appendix 4. Summary of provinces that did not meet the EMTCT indicator targets (2019 data)

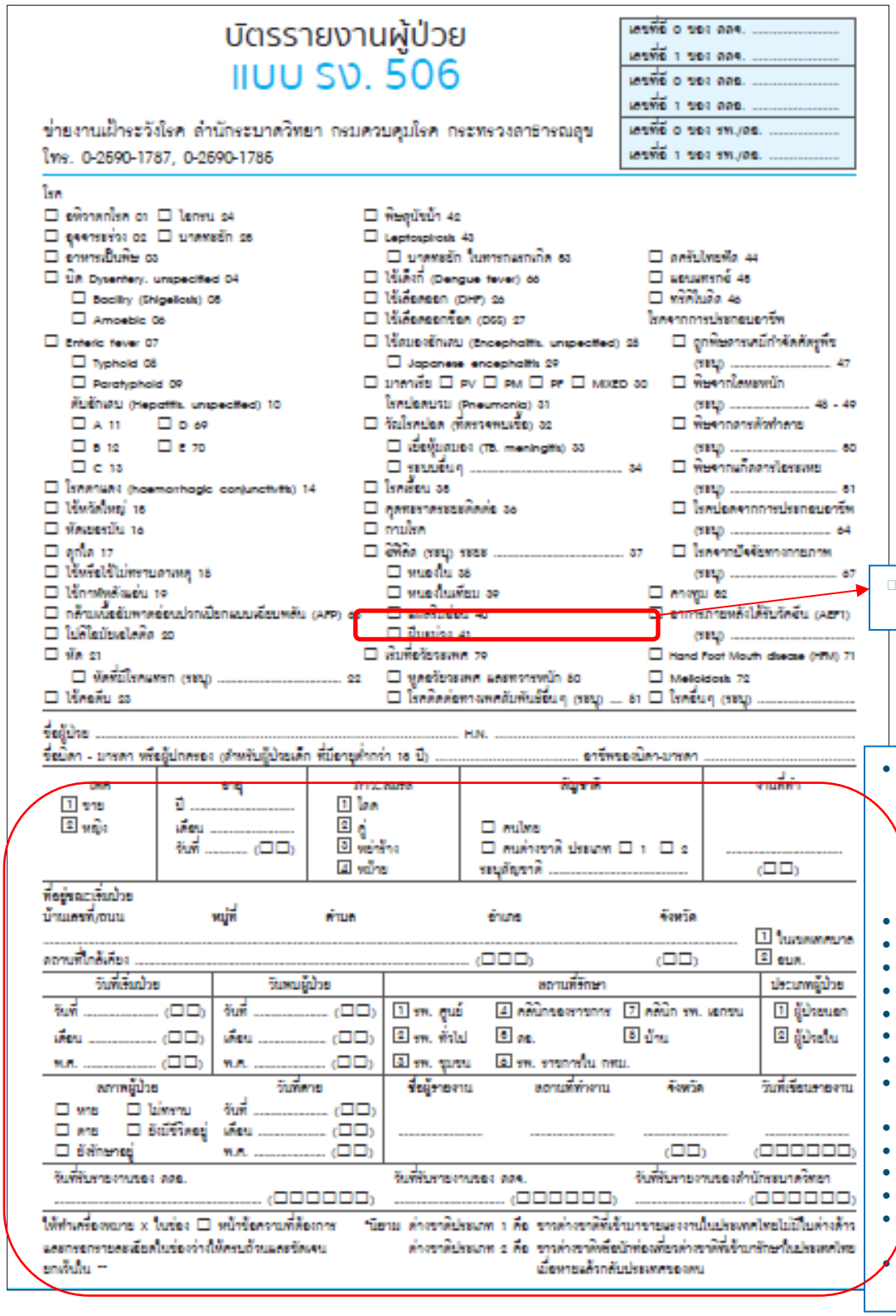
Indicator	Target	Number of provinces ot meeting the targets, and evels of lower performance	Notes		
Impact indicator					
1.Annual rate of mother-to-child transmission (MTCT) of HIV	<2%	Not available because SPECTRUM estimates are not done at the provincial level			
2. Annual rate of new, perinatal HIV infections per 100,000 live births by birth cohort***	≤50	1 province Samut Songkhram: 339	3 cases of new perinatal HIV infection (Thai); the number of live births is low at 885		
3. Annual rate of congenital syphilis (CS) per 100,000 live births**** by CS case investigation (confirmed and probable CS) at 100% coverage	≤50	17 provinces	Source: Case Investigation		
	1	Khon Khen	157 (23)		
	2	Rayong	204 (18)		
	3	Roi Et	193 (16)		
	4	Nonthaburi	176 (15)		
	5	Songkla	74 (12)		
	6	Ubon Ratchathani	65 (11)		
	7	Sisaket	99 (10)		
	8	Kanchanaburi	108 (8)		
	9	Burirum	59 (7)		
	10	Pathum Thani	63 (6)		
	11	Nakhon Sawan	71 (5)		
	12	Uttraradit	151 (4)		
	13	Kamphaeng Phet	89 (4)		
	14	Chachoengsao	65 (4)		
	15	Chaiyaphum	54 (4)		
	16	Phuket	55 (4)		
	17	Nakhon Panom	54 (4)		
Process indicator					
4. Antenatal care (ANC) coverage (at least one visit)	≥95%	1 province	Total	Thai	Non-Thai
		Sa Kaeo	93.3	98.2 (663)	77.7 (206)
5. HIV testing coverage among pregnant women	≥95%	0 province			
6. Syphilis testing coverage among pregnant women	≥95%	0 province			
7. Antiretroviral therapy (ART) coverage among HIV-positive pregnant women	≥95%	11 provinces	Total	Thai	Non-Thai

	1	Chonburi	97.3	97.8 (182)	83.3 (6)
	2	Nakhon Si Thammarat	94.3	94.2 (52)	100 (1)
	3	Surat Thani	92.3	95.9 (49)	33 (3)
	4	Surin	92.9	92.8 (42)	0
	5	Chantaburi	95.3	97.6 (41)	50.0 (2)
	6	Chiang Mai	91.7	97.0 (33)	33.3% (3)
	7	Rayong	93.3	93.1 (29)	100 (1)
	8	Chumporn	95.2	94.4 (18)	100 (3)
	9	Nakhon Panom	87.5	85.7 (21)	100 (3)
	10	Narathiwat	94.3	94.4 (18)	0
	11	Satun	92.3	92.3 (13)	85.7 (7)
8. Syphilis treatment coverage among pregnant women	**≥95%**	**7 provinces**	**Total**	**Thai**	**Non-Thai**
	1	Surin	92.0	92.0 (50)	0
	2	Chanthaburi	88.2	87.5 (16)	100 (1)
	3	Surat Thani	94.1	100 (15)	50 (2)
	4	Nakhon Panom	93.3	93.3 (15)	0
	5	Rayong	90.0	90.0 (10)	0
	6	Nakhon Nayok	75.0	75.0 (4)	0
	7	Tak	91.7	100 (4)	87.5 (8)

Appendix 5. Achievements of lower performing, sub-national areas: Samut Songkhram Province

Impact indicator	Target	2018	2019	Data source
Annual rate of mother-to-child transmission (MTCT) of HIV	<2%	Not available because SPECTRUM estimates are not done at the provincial level		
2. Annual rate of l new, perinatal HIV infections per 100,000 live births by birth cohort***	≤50	93	226	Based on PCR diagnosis of pediatric HIV infections 2018: 1 case of 1,079 live births 2019: 2 cases of 885 live births (Thai)
3. Annual rate of congenital syphilis (CS) per 100,000 live births****	≤50	92.7 (1)	0	Source: CS case investigation (confirmed and probable CS) at 100% coverage) 2018: 1 case of 1,079 live births
Process indicator				
4. Antenatal care (ANC) coverage (at least one visit)	≥95%	98.3 (1,219)	98.5 (1,098)	Source: PHIMS Non-Thai: 2018: 98.2% (283) 2019: 98.2% (271)
5. HIV testing coverage among pregnant women	≥95%	100 (1,219)	100 (1,098)	Source: PHIMS Non-Thai: 2018: 100% 2019: 100%
6. Syphilis testing coverage among pregnant women	≥95%	100 (1,219)	100 (1,098)	Source: PHIMS Non-Thai: 2018: 100% 2019: 100%
7. Antiretroviral therapy (ART) coverage among HIV-positive pregnant women	≥95%	100 (14)	100 (9)	Source: PHIMS Non-Thai: 2018: 0 cases 2019: 100%, 1 case
8. Syphilis treatment coverage among pregnant women	≥95%	100 (8)	0	Source: PHIMS Non-Thai: 2018: 0 cases 2019: 0 cases

Appendix 6. National disease surveillance reporting form (506)



บัตรรายงานผู้ป่วย
แบบ รง. 506

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- ☐ อุจจาระร่วง 02
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  - ☐ Bacilly (Shigellosis) 05
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เพศ	อายุ	สถานภาพสมรส	สัญชาติ	จำนวนที่ส่ง
1 ชาย 2 หญิง	ปี ..... เดือน ..... วันที่ ..... (☐☐)	1 โสด 2 คู่ 3 หย่าร้าง 4 หม้าย	☐ คนไทย ☐ คนต่างชาติ ประเภท ☐ 1 ☐ 2 ระบุสัญชาติ	..... (☐☐)

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สถานที่ใกล้เคียง ..... (☐☐☐) (☐☐)

วันที่เริ่มป่วย	วันพบผู้ป่วย	สถานที่รักษา	ประเภทผู้ป่วย
วันที่ ..... (☐☐) เดือน ..... (☐☐) พ.ศ. ..... (☐☐)	วันที่ ..... (☐☐) เดือน ..... (☐☐) พ.ศ. ..... (☐☐)	1 รพ. ศูนย์ 4 คลินิกของเอกชน 7 คลินิก รพ. เอกชน 2 รพ. ทั่วไป 5 สถ. 8 บ้าน 3 รพ. ชุมชน 6 รพ. ราชการใน กทม.	1 ผู้ป่วยนอก 2 ผู้ป่วยใน

สภาพผู้ป่วย	วันที่ตาย	ชื่อผู้รายงาน	สถานที่ทำงาน	จังหวัด	วันที่เขียนรายงาน
☐ หาย ☐ ไม่ทราบ ☐ ตาย ☐ ยังมีชีวิตอยู่ ☐ ยังรักษาอยู่	วันที่ ..... (☐☐) เดือน ..... (☐☐) พ.ศ. ..... (☐☐)	.....	.....	..... (☐☐)	..... (☐☐☐☐☐☐)

วันที่รับรายงานของ สสอ. ..... (☐☐☐☐☐☐)
วันที่รับรายงานของ สสจ. ..... (☐☐☐☐☐☐)
วันที่รับรายงานของสำนักระบาดวิทยา ..... (☐☐☐☐☐☐)

ให้ทำเครื่องหมาย x ในช่อง ☐ หน้าข้อความที่ต้องการ และกรอกรายละเอียดในช่องว่างให้ครบถ้วนและชัดเจน ยกเว้นใน --

*นิยาม ต่างชาติประเภท 1 คือ ชาวต่างชาติที่เข้ามาขายแรงงานในประเทศไทยไม่มีใบต่างด้าว
ต่างชาติประเภท 2 คือ ชาวต่างชาติที่มีนักท่องเที่ยวต่างชาติที่เข้ามาศึกษาในประเทศไทย เมื่อหายแล้วกลับประเทศของตน

☐ Syphilis (specify) Stage 37

- Patient name, Name of father - mother or guardian (For pediatric patients Who are under 15 years old), Parents' occupation
- Sex
- Age
- Marital status
- Nationality
- Occupation
- Address when sick
- The day when sick
- Date of seeing the patient
- Treatment facility
- Patient type
- Patient condition
- Date of death
- Reporter name & Workplace
- Report writing date

Appendix 7: A summary of resolutions on the ICD-10 from two meetings in 2019

[Unofficial translation]

Meeting minutes
Meeting to discuss guidelines to eliminate congenital syphilis
Summary of meetings held on 23 May 2019 and 18 July 2019

Background of the meetings:

- Increasing trend in congenital syphilis.
- Site visits conducted by the Bureau revealed that the definition of "congenital syphilis" is still unclear, leading to discrepancies in physicians' understanding. ICD-10 code is also unclear, so is the guidelines for lab testing for congenital syphilis.
- Diagnosis of congenital syphilis: Current diagnosis doesn't match the guidelines; resulting in incorrect ICD-10 code entry.

Resolution: Specify ICD-10 code for congenital syphilis as follows:

1. Congenital syphilis according to WHO guidelines should be reported.

1.1 confirmed case	- Mother didn't receive standard treatment or didn't complete treatment or completed treatment, but less than 30 days before giving birth; or treatment history is unknown. - Infant's VDRL/RPR detects ≥4 times more titer than the mother - and/or infant is symptomatic or chest x-ray meets the case definition of congenital syphilis	ICD-10: A50.0–A50.7, A50.9
1.2 confirmed case	- Mother received standard treatment or completed treatment ≥30 days before giving birth. - Infant's VDRL/RPR detects ≥4 times more titer than the mother - and/or infant is symptomatic or chest x-ray meets the case definition of congenital syphilis	ICD-10: A50.0–A50.7, A50.9

1.3 probable case	- Mother didn't receive standard treatment or didn't complete treatment or completed treatment, but less than 30 days before giving birth; or treatment history is unknown. - Infant's VDRL/RPR detects ≤4 times less titer than the mother - Infant is asymptomatic	ICD-10: A50.9
1.4 confirmed case	- Infant's non-treponemal test at month 6 is +ve - Whether mother received treatment or not doesn't matter - Case definition in 1.1–1.3 not met - Infant's VDRL/RPR detects ≤4 times less titer than the mother - Infant is asymptomatic	ICD-10: A50.0–A50.2, A50.9
1.5 probable case	- Mother didn't receive standard treatment or didn't complete treatment or completed treatment, but less than 30 days before giving birth; or treatment history is unknown. - Infant's VDRL/RPR detects < 4 times less titer than the mother - Infant is asymptomatic	1.5.1 Infant's non-treponemal test at month 6 is +ve; ICD-10 A50.0–A50.2, A50.9 1.5.2 Infant's non-treponemal test at month 6 is -ve; ICD-10 A50.9
1.6 probable case	- Mother completed standard treatment but stillbirth	ICD-10: Z 37.1 and 098.1

Not congenital syphilis; follow up for 6 months

- Mother received standard treatment or completed treatment ≥30 days before giving birth.
- Infant's VDRL/RPR detects ≤4 times less titer than the mother; and infant is asymptomatic.

Code: ICD-10: PDx Z38.0 - 38.8 and SDx Z 20.2

Note: Standard treatment = Benzathine penicillin, according to the country's CGP.

Case definition of congenital syphilis **includes:**

- <2 years of age =hepatosplenomegaly, rash, condylomalata, snuffles, jaundice (non-viral hepatitis), pseudo paralysis, anemia, edema (nephrotic syndrome and/or malnutrition).
- older children = stigmata (e.g., interstitial keratitis, nerve deafness, anterior bowing of shins, frontal bossing, mulberry molars, Hutchison teeth, saddle nose, rhagades, clutton joints).

Test results that meet the case definition of congenital syphilis should include any of the following:

1. Treponema pallidum detected in secretion specimen or in serum, skin, umbilical cord, placenta, or dead body of baby (0–28 days) using Dark-field microscopy, PCR or IHC or special stains.
2. X-ray shows unusual long bone.
3. Antibody test is +ve (>4 times titer than in mother).
4. CSF detects VDRL +ve.
5. LP detects high level of WBC and proteins.
   Recommended normal value:
   - In children ≤30 days CSF WBC >15 WBC/mm^3 or CSF protein >120 mg/dl.
   - In children >30 days CSF WBC >5 WBC/mm^3 or CSF protein >40 mg/dl.

   If WBC and/or CSF protein is abnormal while CSF VDRL is -ve and other tests results are normal and if mother has completed treatment = NOT congenital syphilis, but if mother did not complete treatment, consider case "probable" as in no. 5, but must follow up on blood test for 6 months to determine whether 5.1 or 5.2

Diagnosis guidelines and care for infants who mother is syphilis +ve

The current guidelines was used since 2015, therefore the CSF reporting criteria should be added to align with WHO reporting guideline in 2016:

- In children ≤30 days: For treatment = WBC >5 WBC/mm^3, protein >40 mg/dl.
- For reporting congenital syphilis = WBC >15 WBC/mm^3, protein > 120 mg/dl.
- In children >30 days: For treatment and reporting = WBC >5 WBC/mm^3, protein >40 mg/dl.

Reporting and following up on investigation

Currently this is done by the Division of Epidemiology through local PHOs and screening is already integrated in ANC.

Resolution: Assign Division of Health Promotion, DOH to be responsible of recording data on investigation and submit to Division of Epidemiology.

Appendix 8. Congenital syphilis case investigation form

1. Neonatal information

Name_____HN_____AN_____
Sex ☐ 1.Male ☐ 2.Female D/M/Y of Birth_____BW at Birth__gram Gestational Age at Birth _____weeks
Place of Delivery ☐ 1. District hospital ☐ 2. Provincial hospital ☐ 3. Private hospital ☐ 4. Others
Birth Outcome ☐ 1. Live birth ☐ 2. Infant death Date___/___/___Please specify_____
☐ 3. Fetal death Please specify_____ ☐ 4. Unknown

1.1 Neonatal symptoms

☐ 1. Condyloma lata ☐ 2. Syphilitic skin rash ☐ 3. Snuffles ☐ 4. Hepatosplenomegaly
☐ 5. Hydrop fetalis ☐ 6. Edema ☐ 7. Jaundice (non-viral hepatitis) ☐ 8. Pseudo paralysis
☐ 9. Others Please specify_____ ☐ 10. No symptom

1.2 Laboratory results

1.2.1 **Blood**

☐ 1. Cord blood ☐ 2. Vein ☐ 3. Others Please specify_____

1.2.2 **Non Treponemal (RPR/VDRL)**

☐ 1. Test Date___/___/____Titer_____ ☐ 2. Not Test ☐ 3. Unknown

1.2.3 **Treponemal** : ☐ 1. IgG ☐ 2. IgM ☐ 3. IgM/IgG ☐ 4. Not Test

1.2.4 **Dark field or special stain from cord blood**

☐ 1. Dark field, Please specify the result_____
☐ 2. Special stain, Please specify the result_____
☐ 3. Not Test
☐ 4. Unknown

1.2.5 **X-rays long bone**

☐ 1. Test Please specify the result_____
☐ 2. Not Test
☐ 3. Unknown

1.2.6 **CSF**

☐ 1. Test
☐ VDRL Please specify the result_____ ☐ WBC_____cell/mm^3
☐ RBC_____cell/cumm ☐ protein_____mg/dL
☐ 2. Not Test
☐ 3. Unknown

1.3 Neonatal Treatment

☐ 1. Penicillin G (PGS) for 10 days
☐ 2. Benzathine penicillin 1 dose
☐ 3. Others Please specify _____
☐ 4. No Treatment
☐ 5. Unknown

1.4 Neonatal Final Diagnosis (after 6 months)

☐ 1. Congenital syphilis ☐ 3. Loss to follow up
☐ 2. Not Congenital syphilis ☐ 4. Unknown

2. Maternal Information

Name_____ID number_____

HN_____AN_____

Age_____ Nationality_____Occupation_____Tel_____

Address_____

2.1 Obstetrical history

- Gravida (G) ____Para (P) _____Abortus (A) _____ครั้ง Living (L)
- ANC ☐ 1. ANC_____times First ANC_____weeks

☐ 1. Primary health care hospital ☐ 2. District hospital

☐ 3. Provincial hospital ☐ 4. Private hospital/Clinic ☐ 5. Others_____

☐ 2. No ANC

2.2 Laboratory result

2.2.1 RPR/VDRL ☐ 1. Test ☐ 2. Not Test ☐ 3. Unknown

1st Date___/___/___ GA___weeks Titer_____

2nd Date___/___/___ GA___weeks Titer_____

3rd Date___/___/___ GA___weeks Titer_____

2.2.2 Treponemal test ☐ 1. Positive ☐ 2. Negative ☐ 3. Unknown ☐ 4. Not Test

2.2.3 HIV ☐ 1. Positive ☐ 2. Negative ☐ 3. Unknown ☐ 4. Not Test

2.3 Maternal Diagnosis

☐ 1. Primary ☐ 2. Secondary ☐ 3. Early latent ☐ 4. Late or late latent

☐ 5. Previously treated/serofast ☐ 6. Unknown ☐ 7. Others_____

2.4 Maternal Treatment

2.4.1 Medication

☐ 1. Benzathine penicillin 2.4mU x 1 Dose ☐ 2. Benzathine penicillin 2.4mU x 3 Dose

☐ 3. Others_____

2.4.2 Treatment Date 1st____/____/_____2nd____/_____/_____3rd_____/_____/_____

2.4.3 Treatment courses

☐ 1. More than 30 days before labour ☐ 2. Less than 30 days before labour

☐ 3. During Treatment ☐ 4. Loss to follow up ☐ 5. Not complete treatment

☐ 6. Not receive treatment ☐ 7. Unknown

3. Maternal Partner Information

3.1 Syphilis Test ☐ 1. Test ☐ 2. Not Test ☐ 3. Unknown ☐ 4. Test but no result have seen

3.1.1 RPR/VDRL

1st Date____/____/_____Titer_____

2nd Date____/____/_____Titer_____

3.1.2 Treponemal test

☐ 1.Positive ☐ 2. Negative ☐ 3. Unknown ☐ 4. Not Test

3.2 HIV ☐ 1.Positive ☐ 2. Negative ☐ 3. Unknown ☐ 4. Not Test

3.3 Treatment ☐ 1. Treated ☐ 2. During treatment and follow up ☐ 3. Loss to follow up

☐ 4. Incomplete Treatment ☐ 5. No treatment ☐ 6. Unknown

4. Conclusion

Diagnosis	Criteria	ICD-10
☐ 1. congenital syphilis (WHO report)	☐ 1. (Confirm case) A condition affecting an infant whose mother had **untreated or inadequately treated syphilis** at delivery (complete treatment less than 30 days before delivery since first dose) and has RPR or VDRL in any neonate who has a serum quantitative **non-treponemal serologic titer more than or equal fourfold** the maternal titer and/or Infant has symptom of congenital syphilis or abnormal radiographs of long bone	PDx. A50.0 - 50.7, A50.9
	☐ 2. (Confirm case) A condition affecting an infant whose mother had **adequately treated syphilis** at delivery (complete treatment more than 30 days before delivery) and has RPR or VDRL in any neonate who has a serum quantitative **non-treponemal serologic titer more than or equal fourfold** the maternal titer and/or Infant has symptom of congenital syphilis or abnormal radiographs of long bone	A50.0 - 50.7, A50.9
	☐ 3. (Confirm case) **Stillbirth** from mother who had **untreated or inadequately treated syphilis** at delivery (complete treatment less than 30 days before delivery since first dose)	Z37.1 และ O98.1
	☐ 4. (Confirm case) RPR or VDRL in any (treated or untreated) neonate who still has **a reactive non-treponemal serologic serum at 6 months.**	A50.9
	☐ 5. (Probable case) A condition affecting an infant whose mother had **untreated or inadequately treated syphilis** at delivery (complete treatment less than 30 days before delivery since first dose) and has RPR or VDRL in any neonate who has a serum quantitative **non-treponemal serologic titer less than or equal fourfold** the maternal titer and/or Infant has no symptom of congenital syphilis.	A50.9
	☐ 6. (Probable case) **Stillbirth** from mother who had **adequately treated syphilis** at delivery (complete treatment less than 30 days before delivery since first dose)	Z 37.1 and O98.1
☐ 2. Not Congenital syphilis (follow up 6 months)	A condition affecting an infant whose mother had **adequately treated syphilis** at delivery (complete treatment more than 30 days before delivery) and has RPR or VDRL in any neonate who has a serum quantitative **non-treponemal serologic titer less than fourfold** the maternal titer and Infant has no symptom of congenital syphilis abnormal radiographs of long bone and do not has a reactive non-treponemal serologic serum at 6 months.	PDx Z38.0 - 38.8 SDx Z20.2

Report Name_____Province_____

Address_____Tel_____Date_____

Appendix 9. Congenital Syphilis Estimation Tool: Methods and results

Estimation of congenital syphilis (CS) cases and case rate per 100,000 live births using WHO Congenital Syphilis Estimation Tool

In order to present alongside the national data of congenital syphilis passive surveillance (R506) and case investigation data, the national team together with the technical partners – WHO, UNAIDS and UNICEF conducted the CS modelling and estimation exercise using WHO Congenital Syphilis Estimation Tool (https://www.who.int/reproductivehealth/congenital-syphilis/surveillance/en). The tool uses the methods and approaches recommended by WHO to estimate global CS cases[6] and it allows to assess the burden of CS in the country. The outcome of the CS estimation exercise provides the triangulation source of data to better understand the current and historical trend of CS cases, case rate per 100,000 live births and adverse birth outcomes (ABO).

The Congenital Syphilis Estimation Tool uses the core indicators of elimination of congenital syphilis (ECS)[7] recommended by WHO: 1) testing of ANC attendees for syphilis at first visit; 2) positive syphilis serology in pregnant women; and 3) treatment of syphilis-seropositive pregnant women – as well as ANC coverage and total live births (see table 1). These indicators are used to estimate the total number of CS cases and the case rate per 100,000 live births for all pregnant women. Data for all key indicators in each year are thoroughly reviewed, triangulated, and validated by the technical working group before inputting into the tool.

Table 1: Summary of data inputs used in congenital syphilis estimation tool

	2015	2016	2017	2018	2019
1. Total live births	736,352	704,058	702,755	666,357	618,193
2. Syphilis prevalence among pregnant women	0.08%	0.11%	0.17%	0.27%	0.39%
3. Antenatal care (ANC) coverage (at least one visit)	98.3%	98.5%	98.5%	98.6%	98.6%
4. Syphilis testing coverage among pregnant women	99%	99.3%	99.1%	99.5%	99.6%
5. % Treatment coverage for syphilis positive pregnant women	96%	97.9%	97.6%	98.3%	97.5%

Sources: Civil registration, Ministry of Interior and PHIMS Report of DOH.

Based on the data inputs described in table 1, the tool categorizes pregnant women in a given year into several groups that include if they are covered by ANC services or not, their syphilis serostatus, and if they were tested for syphilis and/or adequately treated for syphilis.[8] Congenital syphilis cases are then estimated

[6] Korenromp et al., 2019; Newman et al., 2013; Wijesooriya et al., 2016.
[7] WHO (2011). Methods for surveillance and monitoring of Congenital syphilis elimination within existing systems.
[8] The WHO Congenital Syphilis Estimation Tool: Structure and Methods, 16 June 2020.

according to WHO congenital syphilis (CS) surveillance case definition[9] that includes both live births and stillbirths with clinical manifestations of congenital syphilis (symptomatic at birth) and asymptomatic infants born to women with untreated syphilis[10].

Findings:

The results of congenital syphilis estimation exercise show that the estimated congenital syphilis case rate per 100,000 live births is 16 and 26 in 2018 and 2019 respectively – well below the validation benchmark of elimination of mother-to-child transmission of syphilis (i.e., ≤50 congenital syphilis cases per 100 000 live births). Table 2 shows the annual estimated congenital syphilis cases and case rate per 100,000 live births between 2015 and 2019.

Table 2: Estimated congenital syphilis cases and case rate per 100,000 live births, 2015–2019

	2015	2016	2017	2018	2019
Estimated number of congenital syphilis cases (clinical and asymptomatic)*	57	59	85	109	172
Congenital syphilis case rate per 100,000 live births	8	8	12	16	26

*** Non-clinical CS cases (asymptomatic) born to untreated women are also included**

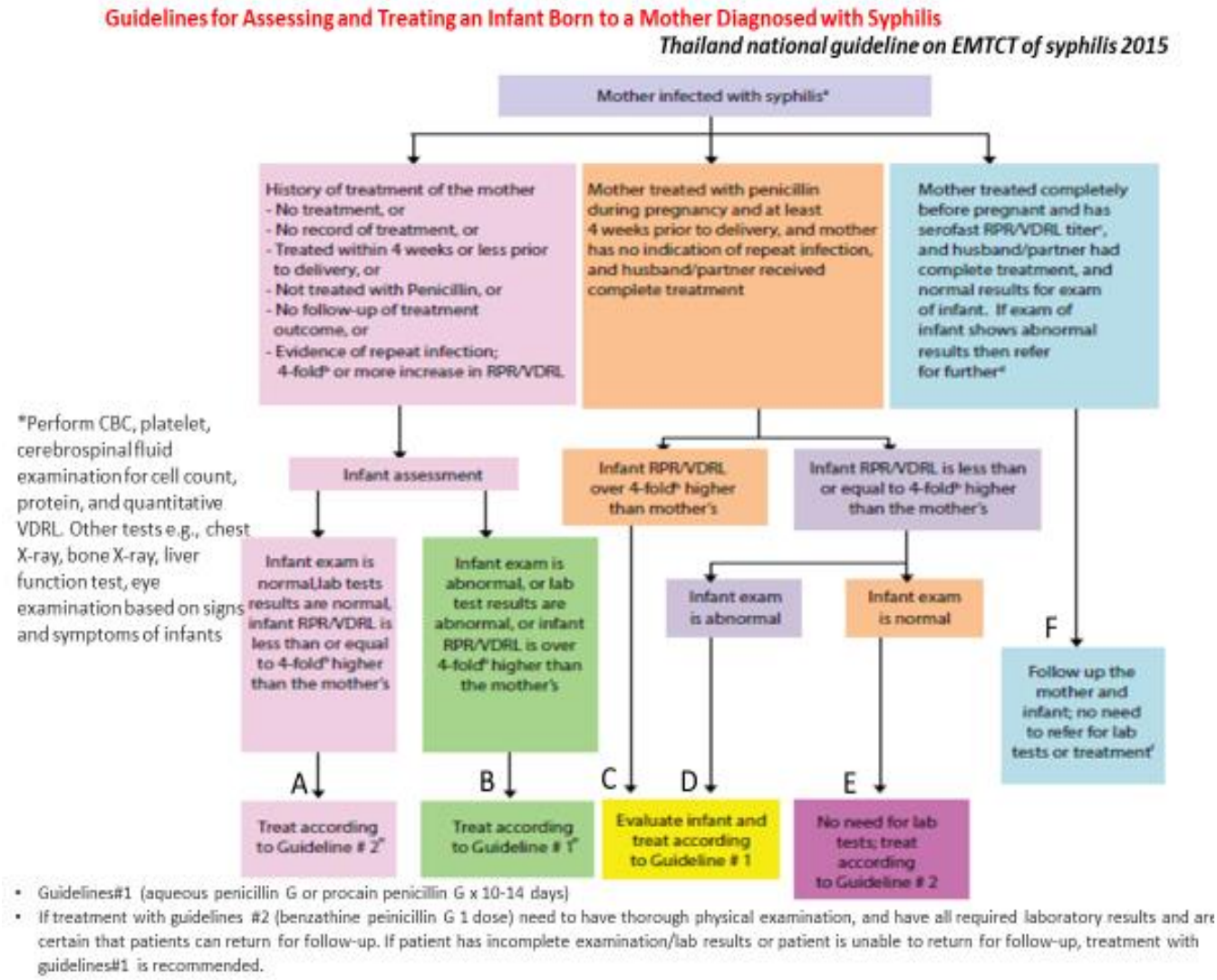
Despite the high level of syphilis testing and treatment coverage among pregnant women that achieved average of 99% and 98% respectively in recent years, it is observed that total number and case rate of congenital syphilis are gradually increasing since 2015. A drastic increase in estimated CS cases has been observed between 2018 and 2019. The major factor of increase in congenital syphilis is due to rising trend in syphilis prevalence among pregnant women during the observed years.

About 40% discrepancy between confirmed reported cases and estimated cases indicates that there are possibilities of overreporting of congenital syphilis in current reporting system. The findings also highlight the need to better understand the challenges in diagnosis and reporting of congenital syphilis, and to strengthen the national passive surveillance reporting system R506 and case investigation system.

[9] WHO. (2017). Global guidance on criteria and processes for validation: Elimination of mother-to-child transmission of HIV and syphilis, 2nd edition. https://www.who.int/reproductivehealth/publications/emtct-hiv-syphilis/en/

[10] All infants born to untreated women are considered to be surveillance cases irrespective of whether or not an adverse birth outcome (ABO) occurs

Appendix 10. Summary of congenital syphilis over treatment and investigation



- Guidelines#1 (aqueous penicillin G or procain penicillin G x 10-14 days)
- If treatment with guidelines #2 (benzathine peinicillin G 1 dose) need to have thorough physical examination, and have all required laboratory results and are certain that patients can return for follow-up. If patient has incomplete examination/lab results or patient is unable to return for follow-up, treatment with guidelines#1 is recommended.

Figure 5: Algorithm for assessing and treating infants born to syphilis positive mothers in Thailand.

Reporting the congenital syphilis case rate by including probable cases (surveillance case definition) is likely to over report the number of true congenital syphilis cases in Thailand. Many babies in the probable cases are unlikely to develop congenital syphilis based on the justifications below.

1. For babies born to syphilis positive mothers and the mothers receive syphilis treatment less than 4 weeks, it is recommended to perform thorough investigations as shown in figure 5, including lumbar puncture, liver function test, X-ray and provision of treatment. Babies in group B, C, D receive treatment guideline #1 (PGS 10–14 days).
2. According to the case investigation,

a. many babies classifying as group A and E also received treatment guideline #1. Based on the information above, babies diagnosed as probable cases based on the surveillance case definition are unlikely to develop congenital syphilis when follow-up in the long term because they receive comprehensive investigation and early treatment (PGS 10–14 days), and close follow-up for most cases in group A and B.
b. In addition, some doctors over-investigated babies born to syphilis positive mothers whose mothers received treatment more than 4 weeks before delivery, by performing lumbar puncture, LFT, X-ray. The babies who had any abnormal symptoms (e.g., neonatal jaundice) (group D) may also receive comprehensive investigation and treatment in guideline #1. In addition, some doctors performed comprehensive investigation for babies in group E as well.
c. With over-investigation in many babies, interpretation of any abnormal lab result is complicated. For example, asymptomatic babies whose mother received adequate treatment may have abnormal CSF from trauma LP with high RBC and WBC >40 cells/mm3, CSF VDRL negative, or neonatal jaundice from other causes. These babies may be overcounted as congenital syphilis in the case investigation as well.

JANUARY 2021

Ministry of Public Health
The Royal Thai Government