

**Triple Elimination of Mother-to-Child Transmission of HIV,
Syphilis, and Hepatitis B in Indonesia Towards Universal
Coverage: Progress and Challenges**

Word Count : 13.029

Dwi Puspasari
INDONESIA

55th Master of Science in Public Health/International Course in Health
Development

KIT (Royal Tropical Institute)
Vrije Universiteit Amsterdam (VU)

Triple Elimination of Mother-To-Child Transmission of HIV, Syphilis, and Hepatitis B in Indonesia Towards Universal Health Coverage: Progress and Challenges

A thesis submitted in partial fulfillment of the requirement for the degree of

Master of Science in Public Health

by

Dwi Puspasari
Indonesia

Declaration:

Where other people's work has been used (either from printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements.

This thesis "**Triple Elimination of Mother-To-Child Transmission of HIV, Syphilis, and Hepatitis B in Indonesia Towards Universal Health Coverage: Progress and Challenges**" is my own work.

Signature:



55th Master of Science in Public Health/International Course in Health Development
17 September 2018 – 6 September 2019
KIT (Royal Tropical Institute)/Vrije Universiteit Amsterdam
Amsterdam, The Netherlands

September 2019

Organised by:

KIT (Royal Tropical Institute)
Amsterdam, The Netherlands

In co-operation with:

Vrije Universiteit Amsterdam /Free University of Amsterdam (VU)
Amsterdam, The Netherlands

Table of Contents

LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF ABBREVIATIONS	vi
ACKNOWLEDGEMENTS.....	vii
ABSTRACT.....	viii
INTRODUCTION AND STRUCTURE OF THESIS.....	ix
CHAPTER 1. BACKGROUND.....	1
1.1 GEOGRAPHIC AND DEMOGRAPHIC PROFILE.....	1
1.2 INDONESIA HEALTH SYSTEM	1
1.3 SITUATION OF HIV, SYPHILIS AND HEPATITIS B IN INDONESIA	2
1.3.1 HIV	2
1.3.2 Syphilis.....	2
1.3.3 Hepatitis B	2
1.4 TRIPLE ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION OF HIV, SYPHILIS AND HEPATITIS B.....	2
CHAPTER 2. PROBLEM STATEMENTS, JUSTIFICATION, OBJECTIVES AND METHODOLOGY.....	3
2.1. PROBLEM STATEMENTS.....	3
2.1.1 Global Initiative	3
2.1.2 Inadequate Quality of Care on MCH Services	3
2.1.3 Inadequate Quality of PMTCT Services of HIV	4
2.1.4 Inadequate Quality of PMTCT Services of Syphilis.....	4
2.1.5 Inadequate Quality of PMTCT Services of Hepatitis B	4
2.1.6 Vertical Approach Among Programme.....	5
2.2 JUSTIFICATION	5
2.3 OBJECTIVES	5
2.3.1 Overall Objectives	5
2.3.2 Specific Objectives	5
2.4. METHODOLOGY.....	5
2.4.1 Secondary Data	5
2.4.2 Literature Review	6
2.4.3 Analytical Framework	7
CHAPTER 3. IMPLEMENTATION OF TRIPLE ELIMINATION PROGRAMME.....	10
3.1 ANTENATAL CARE	11
3.2 BIRTH ATTENDED BY SKILLED HEALTH WOKERS.....	12
3.3 SCREENING OF HIV, SYPHILIS AND HEPATITIS B ON PREGNANT WOMEN.....	12

3.4 TREATMENT FOR HIV POSITIVE PREGNANT WOMEN AND EXPOSED NEWBORN	14
3.5 TREATMENT FOR SYPHILIS POSITIVE PREGNANT WOMEN AND EXPOSED NEWBORN	17
3.6 POSITIVE RATE, TREATMENT FOR EXPOSED NEWBORN AND HEPATITIS B VACCINATION FOR ALL CHILDREN	20
CHAPTER 4. FACTORS INFLUENCING THE ACHIEVEMENT OF PROGRAMME TARGETS ...	23
4.1 POLICY.....	23
4.1.1 Policies on Prevention of Mother-to-Child Transmission	23
4.1.2 Commitment	25
4.1.3 Leadership	25
4.1.4 Partnership	25
4.2 SERVICE DELIVERY.....	26
4.2.1 Antenatal Care.....	26
4.2.2 Birth Attended by Skilled Health Workers	27
4.2.3 Screening and Treatment.....	27
4.2.4 Prevention of Mother-To-Child Transmission of Hepatitis B Through Vaccination For All Children	29
4.3 MONITORING AND EVALUATION.....	29
4.3.1 Regular Monitoring and Evaluation	30
4.3.2 Integrated Reporting System.....	30
CHAPTER 5. LESSON-LEARNED FROM OTHER COUNTRIES IN IMPLEMENTING TRIPLE ELIMINATION.....	31
5.1 LESSON LEARNED FROM VIETNAM.....	31
5.2 LESSON LEARNED FROM GUATEMALA	32
5.3 LESSON LEARNED FROM CHINA	32
5.4 LESSON LEARNED FROM THE NETHERLANDS	33
CHAPTER 6. DISCUSSION	34
6.1 THE ACHIEVEMENT OF TRIPLE ELIMINATION PROGRAMME	34
6.1.1 Antenatal Care and Birth Attended by Skilled Health Workers	34
6.1.2 Screening of HIV, Syphilis and Hepatitis B.....	34
6.1.3 Treatment for Positive Pregnant Women and Exposed Newborn	35
6.2 FACTORS INFLUENCING THE TARGET ACHIEVEMENT	35
6.2.1 Policy	35
6.2.2 Service Delivery.....	36
6.2.3 Monitoring and Evaluation	36
6.3 TAKING BENEFITS FROM LESSON LEARNED.....	36
6.4 REFLECTIONS ON ANALYTICAL FRAMEWORK	37
6.5 STRENGTH AND LIMITATION OF STUDY	37
CHAPTER 7. CONCLUSIONS AND RECOMMENDATIONS	38

7.1 CONCLUSIONS	38
7.2 RECOMMENDATIONS.....	38
7.2.1 Ministry of Health.....	39
7.2.2 Provincial and District Health Office in The Eastern Region	39
7.2.3 Provincial and District Health Office in The Western Region	39
7.2.4 Further research	40
REFERENCES	41
ANNEXES	48

LIST OF TABLES

Table 1.	Data Collection for National Programme Data
Table 2.	Search Strategy
Table 3.	Key Indicators of Triple Elimination Programme based on National Guideline of Triple Elimination and Regional Framework of Triple Elimination
Table 4.	National and Regional Coverage of Antenatal Care (Four Visits) in Indonesia, 2017-2018
Table 5.	National and Regional Coverage of Birth Attended by Skilled Health Workers in Indonesia, 2017-2018
Table 6.	National and Regional Screening Coverage of HIV, Syphilis and Hepatitis B, 2017-2018
Table 7.	National and Regional Key Indicators of HIV EMTCT, 2017-2018
Table 8.	Achievement of Key Indicators of HIV Treatment on Pregnant Women and Exposed Newborn, 2018
Table 9.	National and Regional Key Indicators of Syphilis EMTCT, 2017-2018
Table 10.	Achievement of Key Indicators of Syphilis Treatment on Pregnant Women and Exposed Newborn, 2018
Table 11.	National and Regional Key Indicators of Hepatitis B EMTCT, 2017-2018
Table 12.	National and Regional Coverage of Hepatitis B Birth Dose and Third Dose Children, 2017-2018
Table 13.	Achievement of Key Indicators of Delivery Coverage, Hepatitis B Treatment on Exposed Newborn and Hepatitis B Vaccination for All Children, 2018
Table 14.	Characteristics of Studies
Table 15.	Factors Related to Policy
Table 16.	National and Local Policies Related to PMTCT
Table 17.	Factors Related to Service Delivery
Table 18.	Factors Related to Monitoring and Evaluation
Table 19.	Lesson Learned from Other Countries

LIST OF FIGURES

- Figure 1. Geographic Situation and Population Density of Indonesia, 2017
- Figure 2. Percentage of Reported AIDS Cases by Risk Factors in Indonesia, 1987-2018
- Figure 3. Analytical Framework for Describing the Implementation of Triple Elimination of Mother-to-Child Transmission of HIV, syphilis, and hepatitis B in Indonesia
- Figure 4. National and Regional Screening Coverage and Percentage of Change of Each Diseases (HIV, Syphilis, Hepatitis B), 2017-2018
- Figure 5. PMTCT Cascade of HIV in Indonesia, 2018
- Figure 6. PMTCT Cascade of Syphilis in Indonesia, 2018
- Figure 7. PMTCT Cascade of Hepatitis B in Indonesia, 2018

LIST OF ABBREVIATIONS

3EMTCT	Triple elimination of mother-to-child transmission
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
EMTCT	Elimination of mother-to-child transmission
HBIg	Hepatitis B Immunoglobulin
HBSAg	Hepatitis B Surface Antigen
HBV	Hepatitis B Virus
HIV	Human Immunology Virus
IDHS	Indonesia Demographic and Health Survey
JKN	National Health Insurance (<i>Jaminan Kesehatan Nasional</i>)
MCH	Maternal and Child Health
MTCT	Mother-to-child transmission
NGOs	Non-Governmental Organisations
PHCs	Public Health Centres
PMTCT	Prevention of mother-to-child transmission
Puskesmas	Public Health Centre (<i>Pusat Kesehatan Masyarakat</i>)
RISKESDAS	Basic Health Research
RMNCH	Reproductive, maternal, newborn and child health
STIs	Sexually Transmitted Infections
UHC	Universal Health Coverage
UNAIDS	United Nations Programme for HIV/AIDS
VU	Vrije Universiteit
WHA	World Health Assembly
WHO	World Health Organization

ACKNOWLEDGEMENTS

I would like to thank my excellent thesis advisor and back stopper for guiding, supporting and encouraging me to get through the thesis process. Also, a sincere thanks to all lecturers, the course coordinator and administration staff at KIT. The course learning broadened my public health perspective. I have learned a lot during one year of study at KIT.

I would like to acknowledge the support from the Dutch Ministry of Foreign Affairs through the Orange Knowledge Programme (OKP) for full scholarship for my master course. I would like to thank my organization, Directorate General of Disease Control and Prevention-Ministry of Health, to allow me a sabbatical leave and experience a new learning of public health. Thanks, and I appreciate the support from colleagues in the HIV and STIs Programme, Viral Hepatitis Programme, Maternal and Child Health Programme, Immunization Programme at the Ministry of Health Indonesia, and partner organizations: World Health Organization (WHO) South East Asia Region (SEARO) and Geneva on this study.

Special thanks to my mom and dad, husband and my lovely daughters (Nurul,Thania, Ajeng), my cousin sister and all families for their support, encouragement, and patience.

ABSTRACT

Background

Indonesia targeted for the triple elimination of HIV, syphilis and hepatitis B by 2022. Vertical programmes are implemented since 2007 while integration started in 2010. Elimination targets are not on track in 2018 to reach 2022 goals. This study aimed to describe the achievements since 2017 and (regional) implementation issues of the triple elimination programme to strengthen and enhance the interventions for accelerating the progress.

Methods

The WHO regional framework and Indonesia road map of triple elimination were used. This study analysed and compared national programme data of 2017 and 2018. Relevant indicators on ante- and postnatal care and confidence intervals were calculated per region and compared to targets. The literature review was used to explore the factors-the policies, service delivery, monitoring and evaluation- influencing the target and to identify the lesson learned from other countries to adopt to.

Results

Screening coverage of HIV, syphilis and hepatitis B increased to 44%, 5% and 37% respectively. Nevertheless, none of the indicators is achieved. The coverage in the eastern region was lower than the west. High loss of follow up was identified and impacted to the target achievement. Inadequate quality of care was identified as a barrier to achieve the target.

Conclusions

Training for health workers is important to improve the quality of care. Adoption of the national policy to local regulation and clear guidelines on referral mechanism are needed to increase the coverage and reduce the high loss follow up.

Keywords

mother-to-child-transmission, HIV, syphilis, hepatitis B, Indonesia

Word Count: 247

INTRODUCTION AND STRUCTURE OF THESIS

Every pregnant woman has a risk to transmit HIV, syphilis and hepatitis B to their newborn. Since those three diseases became a global concern, Indonesia began to implement services for the prevention of mother-to-child transmission (PMTCT) of HIV in 2007. Syphilis screening and treatment for pregnant women and exposed newborns was added in HIV PMTCT services which integrated in mother and child services in 2010. Since 2016, hepatitis B screening and treatment was included in antenatal care services. The national PMTCT guidelines have also been several times revised and updated in collaboration with the maternal and child health programme as a protocol for the health provider to provide services. However, Indonesia still faces many challenges to reduce mother-to-child transmission (MTCT).

The Ministry of Health launched a triple elimination program nationally and targeted the triple elimination by 2022 as a purpose to achieve universal health coverage (UHC). The program aimed to provide an efficient service delivery and better outcomes in the best interests of women, their partners, children, and their families, and putting them at the centre of care. Nevertheless, poor quality of care is still an issue across the country as identified in many studies.

The integration of a fragmented communicable disease programme and maternal and child health programme could be a solution to deal with scarce resources and duplication of activities in health facilities. On the other hand, some reports and studies found that the integration of services did not always occur in coordination. It is leading to missed opportunities to utilise the services by pregnant women and children, and limits the impact of the interventions.

I have been working on the maternal and child health program in Japan International Cooperation Agency (JICA) for 3,5 years after graduating from the Public Health Faculty at the University of Indonesia. I joined the Ministry of Health of The Republic of Indonesia in 2003 in the Directorate General of Diseases Prevention and Control. I had various experiences during my work assignment as the head of the general affairs section in Secretariat and Directorate for six years, as head of the procurement section and head of the gastro-intestinal tract infections section for 1,5 year. In my assignment on hepatitis and gastro-intestinal tract infections programme, I have a special interest in the programme integration like triple elimination and how to make it works efficiently with limited health resources.

The purpose of this study is to describe the implementation of triple elimination of mother-to-child transmission (3EMTCT) of HIV, syphilis, and hepatitis B in Indonesia. I hope this study can contribute to policy suggestions for the Ministry of Health to strengthen and enhance the interventions for accelerating the progress to achieve triple elimination by 2022.

This thesis consists of seven chapters. First chapter is an overview of the country context and general information on HIV, syphilis and hepatitis B and the triple elimination program. The second chapter is defining the gap between the current state and the goal, which focusses on the evidence found, justification, objectives, methodology used and framework for analysis. The third chapter presents the results of data analysis on the triple elimination programme. The fourth chapter presents the literature analysis on factors influencing the programme targets. Chapter five is the lesson learned from other countries in implementing the triple elimination strategy. The sixth chapter is discussion then conclusion and recommendation in chapter seven. References and annexes are at the end of this paper.

CHAPTER 1. BACKGROUND

1.1 GEOGRAPHIC AND DEMOGRAPHIC PROFILE

Indonesia lies at the equator in Southeast Asia, with a total area around 1.9 million square kilometres. It has 34 provinces, 514 districts and municipalities spreading over five main islands: Sumatera, Java, Kalimantan, Sulawesi, and Papua island; and four archipelagos: Riau, Bangka Belitung, Nusa Tenggara, Maluku archipelago. The current total population is approximately 282 million and makes Indonesia the fourth most populous country in the world (annexe 1). The population is dominated by people of the productive age (15 – 64 years old) who make up around 62% of the population.(1) The total fertility rate was 2.33 and the life expectancy rate was 71.1 years in 2017.(2,3)

Geographic Situation and Population Density of Indonesia, 2017

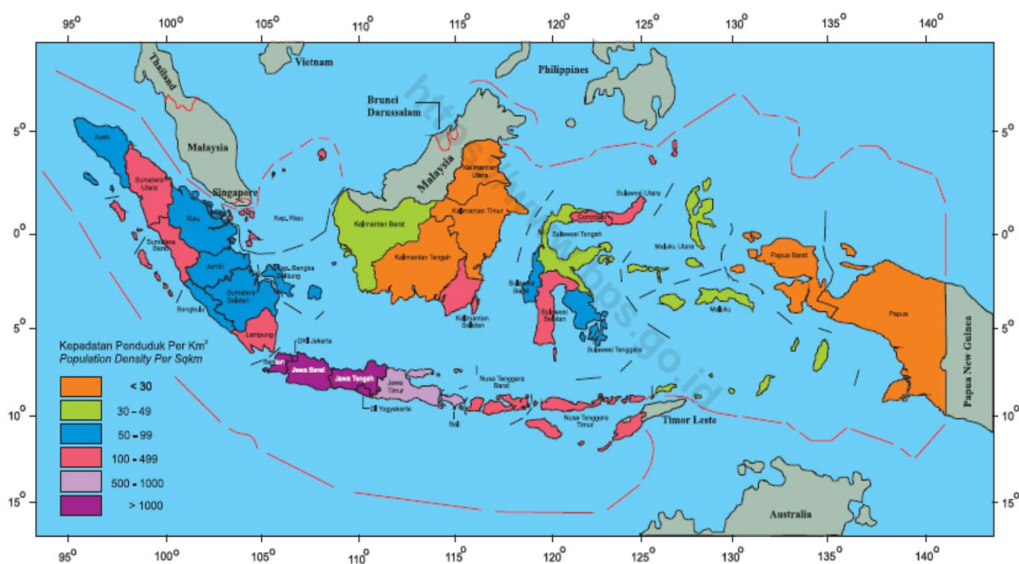


Figure 1. Geographic Situation and Population Density of Indonesia, 2017 (1)

The country is divided into the western and the eastern part, based on economic development. There are 13 provinces in the eastern part: South Sulawesi, West Sulawesi, Southeast Sulawesi, Central Sulawesi, Gorontalo, North Sulawesi, North Maluku, Maluku, Bali, West Nusa Tenggara and East Nusa Tenggara, West Papua and Papua.(4) The western region is identified to have more resources, compared to the east such as Puskesmas, hospitals, and training centres.(3) However, the economic development in the eastern part currently improves rapidly along with strong commitment of the central government to prioritise the infrastructure growth and expanding the fiscal decision of local government.(1)

1.2 INDONESIA HEALTH SYSTEM

Since the decentralisation 1999, the central (Ministry of Health) transferred the health services management and funding to local government (provincial and district health office) (annexe 2).(5) The health services are structured in five levels: central, provincial, district, sub district and village. The Puskesmas (Public Health Centre) provides the main services for preventive and curative, including antenatal and postnatal care, immunization, family planning service. The district, provincial and national hospitals give the referral care which provides the secondary and tertiary level. The link between MoH, PHO and DHO is

not a hierarchical line, which means no subordinate and responsibility to MoH or health offices in turns.(3,6)

1.3 SITUATION OF HIV, SYPHILIS AND HEPATITIS B IN INDONESIA

1.3.1 HIV

According to the Indonesia Demographic and Health Survey (IDHS) 2012, Human Immunology Virus (HIV) prevalence is 0.33% and the provincial HIV prevalence is estimated in the range between 0.1 to 2.0%. The primary transmission is currently sexual transmission; however, it was driven earlier by needle sharing among people who injected drugs.(7) Over five years (2011-2015) the ratio of HIV cases, among male and female, are 1:1.5, this means females are more affected by a HIV infection than males. The HIV epidemic was generally concentrated in the key population except for Papua.(8)

1.3.2 Syphilis

The highest prevalence rates of syphilis in Indonesia were reported 11.3% in males having sex with males (MSM), 9.7% in Waria (male transvestites), and 6.5% in female sex workers, 1.5% in people injecting drugs (PWID).(9) The presence of syphilis in sex partners increases the rate of HIV transmissions, two to five times. Syphilis and other STDs were reported based on syndrome approach and laboratory diagnosis.(10)

1.3.3 Hepatitis B

The prevalence of hepatitis B in Indonesia is estimated around 6.3-8.2% based on a modelling study from 120 countries. However, the estimation might be lower than actual due to the exclusion of specific populations, e.g. immigrants, people who inject drugs, sex workers, haemophiliacs and indigenous peoples.(11)

1.4 TRIPLE ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION OF HIV, SYPHILIS AND HEPATITIS B

The global health community, led by the WHO, has identified triple elimination of mother-to-child transmission (3EMTCT) of HIV, syphilis and hepatitis B as a priority to achieve an Universal Health Coverage (UHC). Due to global commitment and negative health consequences for mothers and children, Indonesia committed to eliminate those three diseases by implementing the triple elimination programme. To reach the elimination, a road map and national guideline had been developed as a guidance for stakeholders to implement the programme.(12)

The Ministry of Health (MoH) and local health offices conducted workshops, seminars and talk shows for health workers, stakeholders and academia to socialize the programme. Therefore, training of triple elimination for the province and district programme manager and health workers has been conducted with participants from 34 provinces consisting of specialists, midwives, and nurses.

CHAPTER 2. PROBLEM STATEMENTS, JUSTIFICATION, OBJECTIVES AND METHODOLOGY

2.1. PROBLEM STATEMENTS

Mother to child transmission (MTCT) of HIV, syphilis and hepatitis B, during pregnancy and delivery, are affecting the quality of life and are causing a serious impact on individual economies.(13) The transmission can lead to mortality and morbidity that may require lifelong treatment with a high-cost burden. It not only impacts health, these three diseases can cause psychological consequences including stigma, shame, loss of self-esteem and furthermore have been associated with relationship disruption and gender-based violence.(14) Because the infection risk of the child is around 45% for HIV, 80% for syphilis, 90% for hepatitis B and they may carry the diseases in life, there are global efforts to prevent and eliminate these so that it would not be a public health problem in the future.(15)

The vertical programme for the prevention of mother to child transmission of HIV has been implemented in Indonesia since 2007. A congenital syphilis test for pregnant women has been complemented into MCH services, after global initiatives for dual elimination of MTCT HIV and syphilis, launched in 2010. Prevention of mother-to-child transmission (PMTCT) of hepatitis B has started to be introduced after global commitments to prevent and control viral hepatitis in the World Health Assembly 2015.(16) In 2017, Indonesia started with the triple elimination strategy. However, inadequate quality of care and lack of coordination among health agencies have caused the target of each programme not to be reached.

2.1.1 Global Initiative

The World Health Organization (WHO) initiated a triple elimination of MTCT of HIV, syphilis and hepatitis B in the World Health Assembly (WHA) meeting of 2016. Towards the goal of zero new HIV infections in infants by 2020, the elimination of congenital syphilis and achieving 0.1% prevalence of hepatitis B surface antigen (HBsAg) among children by 2030, every country committed to support these global initiatives.(17) Some countries have eliminated single or double infection of HIV and syphilis e.g. Cuba, Belarus, Thailand, Armenia, Moldova, Malaysia.(18) Nevertheless, no country is achieving 3EMTCT of HIV, syphilis and hepatitis B until now.

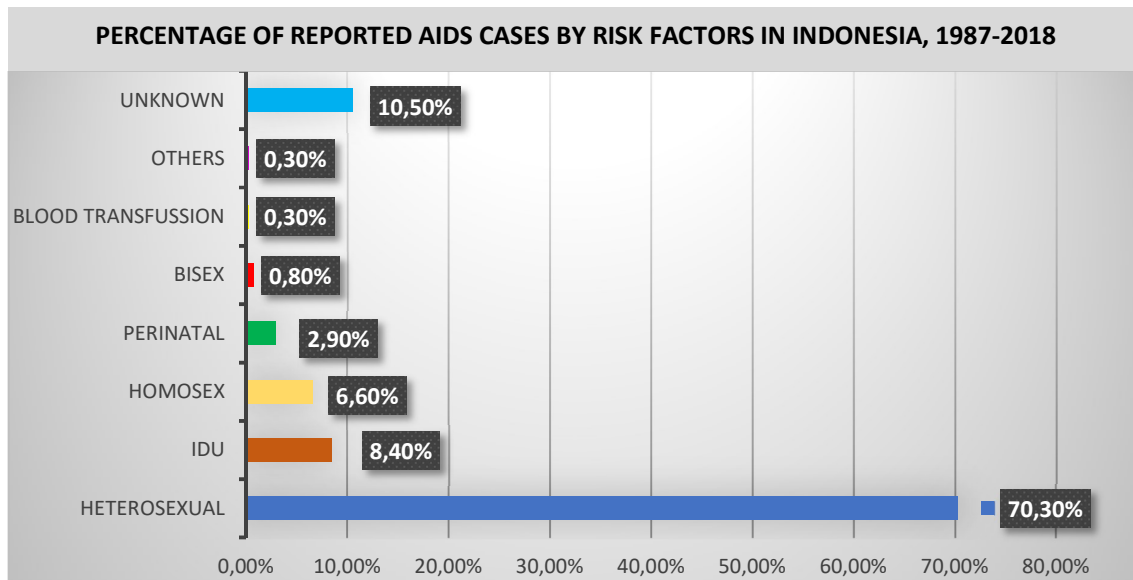
2.1.2 Inadequate Quality of Care on MCH Services

Maternal screening, treatment and infant follow up, are the cornerstones of the elimination of mother-to-child transmission (EMTCT) programme. Maternal and child health (MCH) services in Indonesia was carried out mainly by 9.993 Puskesmas (Public Health Centres).(19) The number of Puskesmas increases every year, especially in the eastern part of Indonesia which was from 1.907 Puskesmas in 2007(20) to 2.726 in 2018.(19) Increased public health infrastructure resulted in an increased access to health services and more avoidable maternal and infant mortality and morbidity. The maternal mortality ratio declined to 34 as well as the infant mortality rate (23 per 1000 live birth).(3) Yet, there are some disparities on health service delivery, among provinces, affecting the population's health.

A study on the effect of decentralised health care to maternal services in Indonesia reported that the quality of antenatal care services were low, with only 27% of women that had received the full antenatal service package.(21) In addition, an assessment of the quality of care for mothers and infants in 100 health facilities in Indonesia found gaps related to incomplete medical records, inadequate competencies of health workers, poor counselling of patients and infrastructure.(22) Both studies showed the challenges to deliver the quality of care.

2.1.3 Inadequate Quality of PMTCT Services of HIV

The UNAIDS 2017 reported approximately 48 thousand new cases of HIV infections in Indonesia with an estimated 3.200 cases of new paediatric HIV infections in 2016.(23) The transmission of HIV was mainly due to heterosexual contact (70,3%), with the perinatal transmission as the third main risk factor (2.9%). Around 5.074 pregnant mothers were identified as HIV positive in 2018 and only 35% of them received antiretroviral therapy (ART).(24) Some studies revealed that the low HIV testing and treatment coverage in health facilities are due to low knowledge on PMTCT, negative perception, stigma, fear and lack of support from peer and health provider.(25,26)



Source: Ministry of Health, 2018

Figure 2. Percentage of Reported AIDS Cases By Risk Factors in Indonesia, 1987-2018 (24)

2.1.4 Inadequate Quality of PMTCT Services of Syphilis

An evaluation report of HIV and STIs program in Indonesia showed that 323.122 pregnant women were positive for syphilis. However, 4% of them received benzathine penicillin at least 30 days before delivery.(24) Syphilis screening coverage remained low and stable because the test was offered to high risk pregnant women. The availability of the test kit and poor counselling of pregnant women, during pregnancy, are barriers that increase the coverage.(27)

2.1.5 Inadequate Quality of PMTCT Services of Hepatitis B

Prevalence of the hepatitis B virus (HBV) infection in Indonesia is 2.21% which is higher than the prevalence in the South-East Asia Region (2.0%).(28) Five million cases of Hepatitis B are likely to progress to chronic hepatitis due to inadequate treatment. Preventing parenteral transmission, with hepatitis B screening with HBsAg (Hepatitis B Surface Antigen), in pregnant women and hepatitis B immunoglobulin (HBIG) treatment for exposed newborns is recommended universally by the WHO.(29) However, hepatitis B vaccination is a basis of mother-to-child transmission and has become a national priority. Free birth and a third-dose of hepatitis B in under-five children is provided in all public health facilities. The challenge on geographical disparities, cold chain and adherence to the immunisation schedule were identified in many districts.(30)

2.1.6 Vertical Approach Among Programme

Despite challenges on the quality of care, vertical programmes of HIV, syphilis and hepatitis B developed their PMTCT strategies and activities in primary care. Those actions affected health workers with overburdened tasks and responsibilities in mastering the guidelines and reporting system. The programme integration began in 2010 when HIV and the syphilis programme were incorporated into maternal and child health services.(15) Nevertheless, there is some evidence that lack of funding, communication, coordination, and unwillingness to change are identified as barriers to the integration of care.(31)

2.2 JUSTIFICATION

Setting up to eliminate vertical transmission of HIV, syphilis and hepatitis B by 2022, the implementation of the programme needs to be reviewed. The progress has to be properly justified to improve the interventions. The challenges in providing the quality of care, programme integration, coordinating among health agencies are rising due to limited resources and capacity. Furthermore, there are some gaps in the health systems within the country, resulting in different health outcomes among provinces. Provinces in the eastern part of Indonesia were reported to have a lesser public health infrastructure and resources.(2,32) Those factors became barriers to achieve the goals.

For those reasons, there is an urgent need to review the on-going intervention, to ensure that the programme implementation is on track. This study aimed to assess the triple elimination programme in Indonesia in order to contribute to policy suggestions for the Ministry of Health to strengthen and scale up the interventions in Indonesia.

2.3 OBJECTIVES

2.3.1 Overall Objectives

To describe the implementation of the triple elimination program in Indonesia, in order to achieve triple elimination of mother-to-child transmission (3EMTCT) of HIV, syphilis and hepatitis B by 2022.

2.3.2 Specific Objectives

- 2.3.2.1 To analyse the implementation of triple elimination programme per region in relation to the national and global programme targets of EMTCT of HIV, syphilis and hepatitis B, and the PMTCT cascade, and to quantify the changes between 2017 and 2018.
- 2.3.2.2 To explore the factors of policy, service delivery, monitoring and evaluation that influenced the programme target achievement.
- 2.3.2.3 To identify the lessons learned in implementation of triple elimination from other countries for improving the interventions
- 2.3.2.4 To contribute to policy suggestions for the Ministry of Health to strengthen and enhance the interventions for accelerating progress towards an Universal Health Coverage (UHC) in Indonesia

2.4. METHODOLOGY

A descriptive quantitative study used secondary data from the national programme and literature review. Data from the routine health information system between 2017 and 2018 was analysed to meet objective 1. The articles from national and international peer-review, grey literatures, policy documents have been used to meet objective 2 and 3.

2.4.1 Secondary Data

The dataset of triple elimination per province between 2017-2018 was obtained from the routine monitoring information system. These were provinces-disaggregated records on pregnant women who received antenatal care, a screening test, treatment on three diseases (HIV, syphilis and hepatitis B) and children as well at health facilities. The provinces were grouped into two regions: western and eastern in order to describe the

gap of implementation. Eastern region consists of 13 provinces located in Sulawesi, Bali, Nusa Tenggara, Maluku and Papua island. The other provinces are in Sumatera, Java and Kalimantan island were grouped into the western region. The data of PMTCT 2017 is included in this study to describe the situation before the implementation of programme and that year, PMTCT of three diseases implemented vertically in all provinces.

Data for triple elimination was collected from each programme (table 1). Pooled data was gathered by a programme coordinator in one spreadsheet monthly. The coordination meeting among the health programme has been held every semester in the Ministry of Health, including validation of the data. The national meeting on the triple elimination programme was conducted once in 2018. Therefore, the training, coordination meeting, field visit to provinces and districts were utilised to validate the data. For the triple elimination program, the director of direct transmitted diseases was appointed by the Minister of Health as a programme coordinator. For operational activities, the hepatitis sub-directorate is in charge to coordinate among health actors.

Table 1. Data Collection for National Programme Data

Description	ANC, Birth Attended by Skilled Health Workers	HIV	Syphilis	Hepatitis B	Hepatitis B Vaccination
Programme in Charge	Maternal and Child Health	HIV/AIDS and STIs		Hepatitis	Immunization
Data Collection	Monthly	Monthly		Monthly	Monthly
Web-based Reporting System	Data of Communication Application (KOMDAT)	Information System of HIV/AIDS and STIs (SIHA)		Information System of Hepatitis (SIHEPI)	Data of Communication Application (KOMDAT)
Evaluation	Every Semester	Every Quarter		Every Semester	Every Semester

Ethical issues

The study is based on the routine health information system, which is aimed for assessing PMTCT service provision across the country. There is no identifiable information on pregnant women and children so this data is exempted from ethical review. Clearance for using and analysing data of the triple elimination programme has been approved by the Director of Direct Transmitted Disease Control and Prevention, the Ministry of Health Indonesia (annexe 3).

2.4.2 Literature Review

The articles from national and international peer-review, grey literatures and policy documents in this study were obtained by using Google, Google Scholars, PubMed, VU Library, Library of Research and Health Development Institute-Ministry of Health, and online national library of Indonesia (OneSearch). The reference lists from articles which related to topics were used accordingly. The website of the World Health Organization (WHO), Ministry of Health (Kemenkes), Statistic Indonesia (BPS) were utilised in this study.

A comprehensive literature review on EMTCT of HIV, syphilis and hepatitis B was conducted from May 2019 until July 2019. The main search keywords included mother-to-child transmission (MTCT), prevention of mother-to-child transmission (PMTCT), parent to child transmission, HIV, syphilis, virus hepatitis B, hepatitis B, sexually transmitted disease, sexually transmitted infections, triple elimination, Indonesia, Asia, low-middle income

countries, policy, service delivery, monitoring and evaluation. The keyword also used the Indonesian language (Bahasa) for searching the articles in local publications such as mother to child transmission = *pencegahan penularan dari ibu ke anak* or PPIA, policy = *kebijakan*. The Boolean operators ("AND", "OR") were employed in PubMed, VU Library and Google scholars. Those keywords were used in combination with two or more keywords to obtain the desired literature (table 2).

The articles or research were refined based on the language: English and Indonesia; the year: 2007-2019; and free full-text. All articles identified from 2007 to July 2019 were included, as a reason because 2007 is the beginning year of PMTCT of HIV in Indonesia. The initial search results were filtered based on title and abstract, then exclude articles that were irrelevant. The relevant articles were reviewed for synthesis and analysis. Articles of HIV, syphilis and hepatitis B in the general population or specific group were excluded. Those were related to mother-to-child transmission were included.

Table 2. Search Strategy

Mother-to-child transmission (MTCT)	AND	HIV	AND	Indonesia	AND	Policy
Parent to child transmission		OR Syphilis		OR Asia		OR Service Delivery
Prevention of mother-to-child transmission (PMTCT)		OR Hepatitis B		OR Low Middle Income Countries		OR Monitoring and evaluation
Triple elimination		OR Sexually Transmitted Diseases/ Infections				

2.4.3 Analytical Framework

The analytical framework for this study was based on the WHO Regional Framework of MTCT of HIV, syphilis and hepatitis B in Asia and the Pacific 2018-2030 (17) and the road map of the triple elimination program in Indonesia(15). The road map was used to analyse the achievement of programme using the indicators (objective 1) and the framework was used to described the factors influencing the target achievement (objective 2). Programme target (95+), unless hepatitis B vaccine birth-dose and third-dose, were not reviewed. Also, impact target on the framework were not analysed because those targets will be achieved by 2022 and 2030. Hepatitis B vaccination was included in this study to assess the triple elimination as described in the framework (figure 3).

The framework has been applied as follows; First, the data of triple elimination (2017-2018) was analysed in descriptive statistics (frequencies, proportions, and percentages). Then the implementation of the triple elimination programme was compared with the national and programme target. Second, the literature review was sourced to understand the factors behind the programme attainment, using the WHO framework. Policy, service delivery and monitoring and evaluation are the factors to support the implementation of the triple elimination programme. The lesson learned on the implementation of triple elimination from other countries, found in the literature, might be a benefit for Indonesia to improve the current interventions towards the goal's achievement.

Data Analysis

Nine indicators were analysed to enumerate the implementation of the triple elimination programme (objective 1). Each indicator had components -numerator and denominator- as referred to in the national guideline of the triple elimination (Table 3). The results of analysis are presented in tables and graph and compared to programme targets.

The coverage of four ANC visits is one of the indicators in the triple elimination programme in Indonesia whereas in the WHO guideline, the first visit coverage is an indicator for triple elimination; so, it follows using four ANC visits. The EMTCT cascade of three diseases was presented to describe the gap in the services. Additionally, the change of coverage between 2017 and 2018 was calculated. A descriptive statistics analysis was conducted with a 95% confidence interval (CI) using Microsoft Excel 2016.

Table 3. Key Indicators of Triple Elimination Programme based on National Guideline of Triple Elimination and Regional Framework of Triple Elimination

No	Key Indicator	Numerator	Denominator
Pregnant Women			
1	ANC coverage	Number of pregnant women who visits ANC four times in the period of time	Number of pregnant women in the period of time
2	Birth attended by skilled health workers in health facilities	Number of pregnant women who gave birth attended by skilled health workers in health facilities in the period of time	Number of pregnant women in the period of time
3	a. Screening coverage of HIV	Number of pregnant women who screened HIV and get the results in the period of time	Number of pregnant women who visits ANC four times in the period of time
	b. Screening coverage of Syphilis	Number of pregnant women who screened syphilis and get the results in the period of time	Number of pregnant women who visits ANC four times in the period of time
	c. Screening coverage of hepatitis B	Number of pregnant women who screened hepatitis B and get the results in the period of time	Number of pregnant women who visits ANC four times in the period of time
4	a. Treatment coverage of HIV	Number of pregnant women with positive HIV getting treatment antiretroviral (ARV) in the period of time	Number of pregnant women with positive HIV in the period of time
	b. Treatment coverage of syphilis	Number of pregnant women with positive syphilis getting benzathine penicillin treatment in the period of time	Number of pregnant women with positive syphilis in the period of time
5	a. Delivery coverage for positive HIV pregnant women	Number of pregnant women with positive HIV delivered in health facilities with skilled health personnel in the period of time	Number of pregnant women with positive HIV in the period of time
	b. Delivery coverage for positive syphilis pregnant women	Number of pregnant women with positive syphilis delivered in health facilities with skilled health personnel in the period of time	Number of pregnant women with positive syphilis in the period of time

	c. Delivery coverage for positive hepatitis B pregnant women	Number of pregnant women with positive hepatitis B delivered in health facilities with skilled health personnel in the period of time	Number of pregnant women with positive hepatitis B in the period of time
Exposed Newborn			
6	a. Treatment coverage of exposed newborn from positive HIV pregnant women	Number of exposed newborn, from positive HIV pregnant women, getting ARV prophylaxis in the period of time	Number of exposed newborn from positive HIV pregnant women in the period of time
	b. Treatment coverage of exposed newborn from positive syphilis pregnant women	Number of exposed newborn, from positive syphilis pregnant women, getting benzathine penicillin treatment in the period of time	Number of exposed newborn from positive syphilis pregnant women in the period of time
	c. Treatment coverage of exposed newborn from positive hepatitis B pregnant women	Number of exposed newborn, from positive hepatitis B pregnant women, getting hepatitis B immunoglobulin (HBIG) in the period of time	Number of exposed newborn from positive hepatitis B pregnant women in the period of time
7	a. Exposed newborn confirmed for HIV positive	Number of exposed newborns getting ARV prophylaxis and taking early infant diagnosis test after 6 weeks delivery in the period of time	Number of exposed newborn from positive HIV pregnant women in the period of time
	b. Exposed newborn confirmed for syphilis positive	Number of exposed newborns getting benzathine penicillin treatment and taking syphilis test confirmation after 3 months delivery in the period of time	Number of exposed newborn from positive syphilis pregnant women in the period of time
	c. Exposed newborn confirmed for hepatitis B positive	Number of exposed newborns getting HBIG and taking HBsAg rapid test after 9 months delivery in the period of time	Number of exposed newborn from positive hepatitis B pregnant women in the period of time
8	Hepatitis B vaccine birth dose coverage	Number of newborns getting a hepatitis B vaccine birth dose in the period of time	Number of newborn in the period of time
9	Hepatitis B vaccine third dose coverage	Number of newborns getting a hepatitis B vaccine third-dose in the period of time	Number of newborn in the period of time

Source: National Guideline of Triple Elimination Programme, Ministry of Health(12)and WHO Regional Framework on Triple Elimination of Mother-to-Child Transmission of HIV, Syphilis and Hepatitis B in Asia and The Pacific 2018-2030(17)

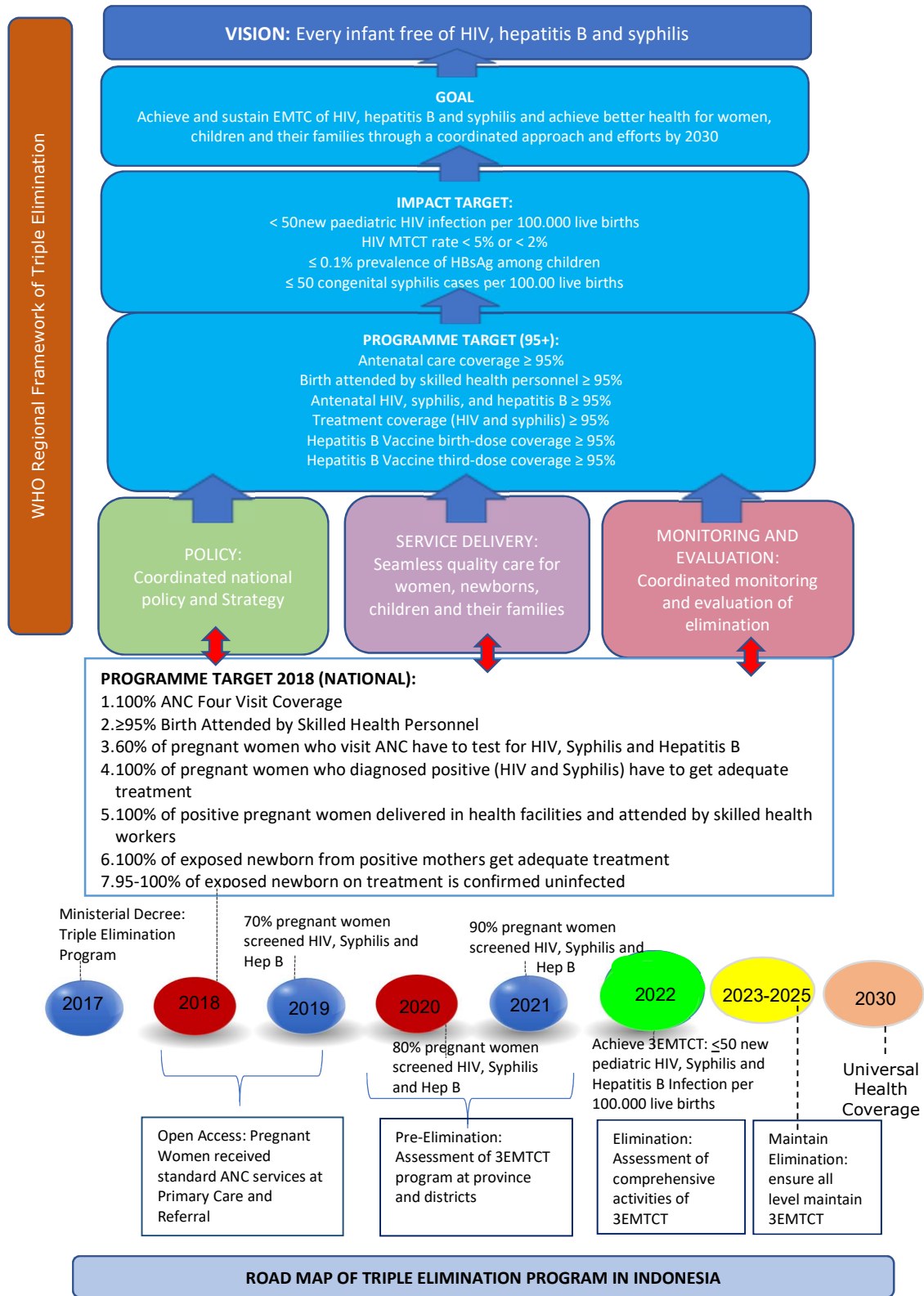


Figure 3. Analytical Framework for Describing The Implementation of Triple Elimination of Mother-to-Child Transmission of HIV, syphilis and hepatitis B in Indonesia(12,17)

CHAPTER 3. IMPLEMENTATION OF TRIPLE ELIMINATION PROGRAMME

In this chapter, the result of the data analysis is presented to indicators compared to meet the national target, to quantify the change of the PMTCT service cascade in the last two years as well as regional differences.

3.1 ANTENATAL CARE

During a one year of programme, a total of 5.2 million pregnant women is estimated to use ANC services and 4.1 million of them registered to visit ANC four times (table 4). 62% (95% CI = 61.9-62.1) of pregnant women in eastern region utilised ANC four times which is lower significantly compared to the west. However, 18.9% of pregnant women in the west and 38% in the east were found to have not accessed the maternal care in health facilities.

Overall there is a decreased proportion in utilization of the maternal care between 2017 and 2018 of around 12% in both regions. The wide disparity of the ANC coverage in both regions in the last two years shows a virtual stable. From disaggregate data, Jakarta reported the highest coverage (114.4%) in 2017. This could be coincidental when pregnant women, who worked in Jakarta, utilised the health facilities while they were registered elsewhere.

While some provinces in the east do better than some in the west, there is a wide range in the eastern region. The lowest coverage in the eastern region was 30.8% in Papua.

Table 4. National and Regional Coverage of Antenatal Care (Four Visits) in Indonesia, 2017-2018

Region	Antenatal Visit (Four Time Visits)						
	2017	95% CI	Range of ANC coverage	2018	95% CI	Range of ANC coverage	% Change (2017-2018)
Western	90.3% (3.949.089/ 4.372.656)	90.2-90.3	74.1 % - 114.4%	81.1% (3.518.372/ 4.339.283)	81.0-81.1	58.6% - 94.9%	-12,2%
Eastern	69.3% (657.115/ 947.894)	69.3-69.4	23.2% - 93.8%	62% (585.279/ 943.882)	61.9-62.1	30.8% - 85.1%	-12.3%
Total (National)	86.6% (4.606.204/ 5.320.550)	86.5-86.6	23.2%- 114.4%	77.7 % (4.102.651/ 5.283.165)	77.6-77.7	30.8% - 94.9%	-12.3%
National Programme Target (2018)				100%			Not Achieved (77.7%)

3.2 BIRTH ATTENDED BY SKILLED HEALTH WORKERS

In table 5, the coverage of birth, attended by skilled health workers, is increasing from 83.14% (2017) to 86.3% (2018). The disparity between the western and eastern region were found similar to ANC coverage. Meanwhile, the safe delivery by skilled health workers in the east increased about 2.5 times more (7.5%/2.1%) than the west. Yet, the situation in the east is far worse in 2017 while some provinces were better than the west.

One province in the west, Jakarta, has reached $\geq 100\%$ coverage in the last two years which could be because pregnant women who live in Jakarta border utilised this services in a reason of distance to their residence. Furthermore, there are three provinces (Riau Archipelago=95.5%, Jakarta=102.9%, East Java=95.6%) in the western region and one province (Bali=97.7%) in the eastern met the target. Although the target is not achieved in both regions, all provinces showed the progress to provide safe delivery.

Table 5. National and Regional Coverage of Birth Attended by Skilled Health Workers in Indonesia, 2017-2018

Region	Birth Attended by Skilled Health Workers						
	2017	95% CI	Range of ANC coverage	2018	95% CI	Range of ANC coverage	% Change (2017-2018)
Western	86.5% (3.608.674/ 4.173.899)	86.4-86.5	47.4 %- 114.4%	89% (3.687.643/ 4.142.044)	88.9-89.1	56.2% - 102.9%	2.1%
Eastern	67.9% (613.832/ 904.737)	67.8-67.9	30.7% - 96%	73.7% (901.034/ 943.882)	73.6-73.8	45.2% - 97.7%	7.5%
Total (National)	83.1% (4.222.506/ 5.078.636)	83.1-83.2	30.7%- 114.4%	86.3% (5.043.078/ 5.283.165)	86.2-86.1	45.2% - 102.9%	2.9%
National Programme Target (2018)				$\geq 95\%$ Not Achieved (86.3%)			

3.3 SCREENING OF HIV, SYPHILIS AND HEPATITIS B ON PREGNANT WOMEN

Seventy seven percent (4.1/5.2 millions) of pregnant women registered to visit the maternal care at Puskesmas in 2018 (table 4). Hence, the health workers have to offer them the screening test of HIV, syphilis and hepatitis B for free at first visit or during the ANC visit. Nevertheless, only 44%, 5.2% and 37.3% of pregnant women take the screening test on HIV, syphilis and hepatitis B respectively (table 6).

Table 6. National and Regional Screening Coverage of HIV, Syphilis and Hepatitis B, 2017-2018

Region	Screening Test					
	HIV		Syphilis		Hepatitis B	
	2017	2018	2017	2018	2017	2018
Western	29.3% (1.155.678/ 3.949.089) 95% CI= 29.2-29.3	44.7% (1.572.157/ 3.518.372) 95% CI= 44.6-44.7	1,8% (70.282/ 3.949.089) 95% CI= 1.7-1.8	5.4% (191.504/ 3.518.372) 95% CI= 5.4-5.5	13% (512.716/ 3.949.089) 95% CI= 12.9-13.0	36.2% (1.272.129/ 3.518.372) 95% CI= 36.1-36.2
Eastern	30.7% (201.577/ 657.115) 95% CI= 30.6-30.8	40% (233.836/ 585.279) 95% CI= 39.8-40.1	2.6% (17.136/ 657.115) 95% CI= 2.5-2.6	3.8% (22.675/ 585.279) 95% CI= 3.8-3.9	14.7% (96.424/ 657.115) 95% CI= 14.6-14.8	44.3% (259.392/ 585.279) 95% CI= 44.2-44.5
Total (National)	29.5% (1.357.255/ 4.606.204) 95% CI= 29.4-29.5	44% (1.805.993/ 4.103.651) 95% CI= 43.9-44.0	1.9% (87.418/ 4.606.204) 95% CI= 1.8-1.9	5.2% (214.179/ 4.103.651) 95% CI= 5.1-5.3	13.2% (609.140/ 4.606.204) 95% CI= 13.2-13.3	37.3% (214.179/ 4.103.651) 95% CI= 37.3-37.4
National Programme Target (2018)	60% Not Achieved (western =44.7%) (eastern = 44%)		60% Not Achieved (western =5.4%) (eastern = 3.8%)		60% Not Achieved (western =36.2%) (eastern = 44.3%)	

The coverage of the syphilis and hepatitis B test, during the programme, increased more than 50%, compared to before the implementation. On the other hand, HIV progressed 25%. The study found a significant increased on syphilis test in the western region, which is more than two-fold (1.8% to 5.4%) from the previous year. Unfortunately, this progress is not followed by the east (figure 4).

Figure 4 shows that the test coverage of two infections, HIV and syphilis, in eastern region are increased less than west whereas hepatitis B is inversely. It could be happened because some provinces in the east had a high coverage of hepatitis B screening.

The three-screening test coverage in both regions has not achieved the national target. However, disaggregate data per province showed some provinces met the national target either in HIV or hepatitis B or both. Eight provinces (Bangka Belitung=65.6%, Yogyakarta=103.8%, East Java=75.5%, North Kalimantan=78.8%, Bali=89.9%, Maluku=60.5%, Papua=98.9%, West Papua=109.2%) met the national target of HIV screening coverage, four provinces (Aceh=65.6%, Central Java=74%, West Nusa

Tenggara=62.5%, South Sulawesi=73.2%) met the HBV test target and two provinces (Jakarta=74% for HIV and 67.4% for HBV; Central Kalimantan=69.6% for HIV and 69.7% for HBV) met both HIV and hepatitis B test target. There is no province that met the 2018 target for all three diseases.

Interestingly however Yogyakarta and West Papua had more than 100% coverage on HIV screening. It could be explained that pregnant women who come for an ANC visit and are tested for HIV attended the maternal care less than four times; so, they are not included in the calculation of antenatal visits (four times) however they are registered to screen for HIV.

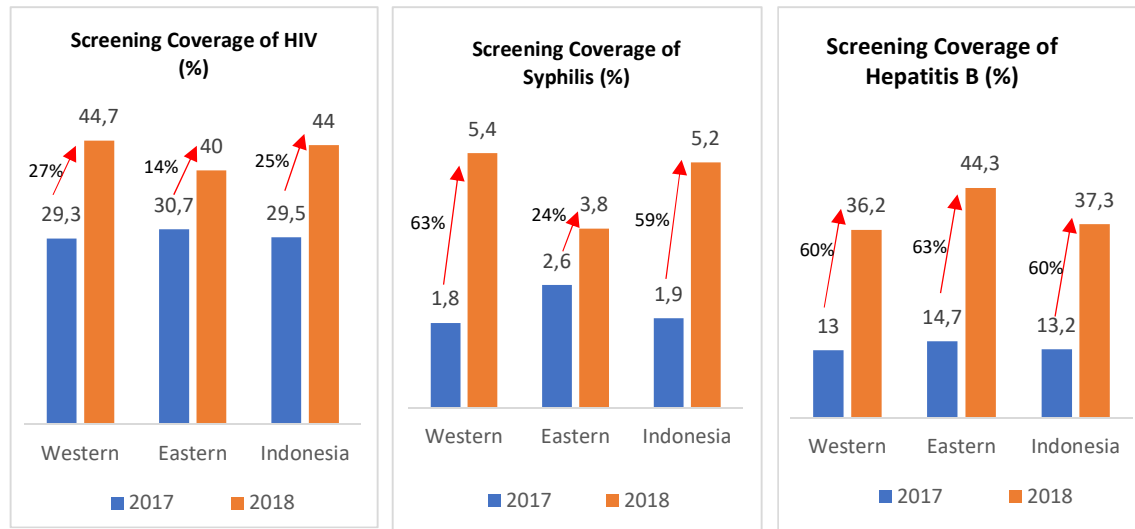


Figure 4. National and Regional Screening Coverage and Percentage of Change of Each Diseases (HIV, Syphilis, Hepatitis B), 2017-2018

3.4 TREATMENT FOR HIV POSITIVE PREGNANT WOMEN AND EXPOSED NEWBORN

The national positive rate of HIV remained stable in the last two years (table 7). In the eastern region, it declined 14% (from 0.6% to 0.4%) and the number of pregnant women to be diagnosed HIV positive, decreased with 50%. Furthermore, the positive rate of HIV among pregnant women in eastern showed significantly decreased by 13% than previous years.

In 2018, 35.9 % of pregnant women who are living with HIV, take the ARV treatment. The remain of positive HIV pregnant women (65.1%), who were not enrolled in treatment, have a higher risk to transmit the disease to her infants or partner. The ARV uptake in the west region is decreased than the previous year (from 41.5% to 32.9%) however, the change showed 15.7%. It means that proportions of pregnant women who were in treatment increased than previous year.

Positive pregnant women who delivered in health facilities with skilled health professionals is decreased in both regions. The number of delivery in western region is decreased from 546 to 497 while the number of positive pregnant women is increased from 2.699 to 4.041. 87.7% of positive pregnant women in western region were loss follows up and no further information either they did not continue their pregnancy (aborted), stillbirth or delivery at private hospitals.

Table 7. National and Regional Key Indicators of HIV EMTCT, 2017-2018

Indicator	Western			Eastern			Total (National)		
	2017	2018	% Change	2017	2018	% Change	2017	2018	% Change
Positive Rate	0.2% (2.699/ 1.155.678) 95% CI = 0.23-0.24	0.3% (4.041/ 1.572.157) 95% CI = 0.2-0.3	33.2%	0.6% (2.699/ 201.577) 95% CI = 0.5-0.6	0.4% (1,033/ 233.836) 95% CI = 0.4-0.5	-13.7%	0.3% (2.699/ 1.357.255) 95% CI = 0.2-0.3	0.3% (5.074/ 1.805.993) 95% CI = 0.2-0.23	23.7%
Treatment coverage of HIV	41.5% (1.121/ 2.699) 95% CI = 39.7-43.4	32.9% (1.329/ 4.041) 95% CI = 31.4-34.3	15.7%	35.4% (415/ 1.174) 95% CI = 32.6-38.1	47.3% (489/ 1.033) 95% CI = 44.3-50.4	15.1%	39.7% (1.536/ 3.873) 95% CI = 38.1-41.2	35.9% (1.818/ 5.074) 95% CI = 34.5-37.2	15.5%
Delivery coverage for positive HIV pregnant women	20.2% (546/ 2.699) 95% CI = 18.7-21.8	12.3% (497/ 4.041) 95% CI = 11.3-13.3	-9.9%	31.9% (375/ 1.174) 95% CI = 29.3-34.6	28.9% (299/ 1.033) 95% CI = 26.2-31.7	-25.4%	23.8% (921/ 3.873) 95% CI = 22.4-25.1	15.7% (796/ 5.074) 95% CI = 14.7-16.7	-15.7%
Treatment coverage of exposed newborn from positive HIV pregnant women	96.6% (401/415) 95% CI = 94.9-98.4	84.2% (331/380) 95% CI = 83.7-90.5	-21.2%	81.4% (301/370) 95% CI = 77.4-85.3	80.1% (217/271) 95% CI = 75.3-84.8	-38.7%	89.4% (702/785) 95% CI = 87.3-91.6	84.2% (548/651) 95% CI = 81.4-86.9	-28.1%
Exposed newborn confirmed for HIV positive	12.3% (51/415) 95% CI = 9.1-15.4	2.6% (10/380) 95% CI = 1.0-4.2	-410%	2.4% (9/370) 95% CI = 0.9-4.0	0.4% (1/271) 95% CI = 0.04-1.0	-800%	7.6% (60/785) 95% CI = 5.7-9.5	1.7% (11/651) 95% CI = 0.6-2.7	-446%

There were a total of 1.436 newborns (785 in 2017 and 651 in 2018) from mothers who lived with HIV, in two years 2017 and 2018 (table 7). 87% (1.250/1.436) of them received ARV prophylaxis. Table 7 shows that 80% of exposed newborns in both regions received ARV. However, the number of exposed newborns which are HIV positive, decreased significantly from 7.6% to 1.7%. The decrease has to be investigated further with the cascade of the services to identify the gap.

From the cascade for HIV in 2018, 80% (439/548) of exposed newborns did not initiate for early infant diagnosis (EID) after six weeks of delivery and added with 15% (103/651) of exposed newborns did not receive ARV prophylaxis which resulted in that 83% (542/651) of exposed newborns missed the chance to be healthy (figure 5). EID is a serology testing using a polymerase chain reaction (PCR) to determine if the exposed

newborn is infected or uninfected.(33) The low number of newborns who are HIV positive is not because of the adequate treatment but 500 exposed newborns were lost and did not follow-up since delivery. In addition, neonatal death, because of HIV infection, was not included in the triple elimination evaluation which may be leading to incomplete evidence to address the gaps.

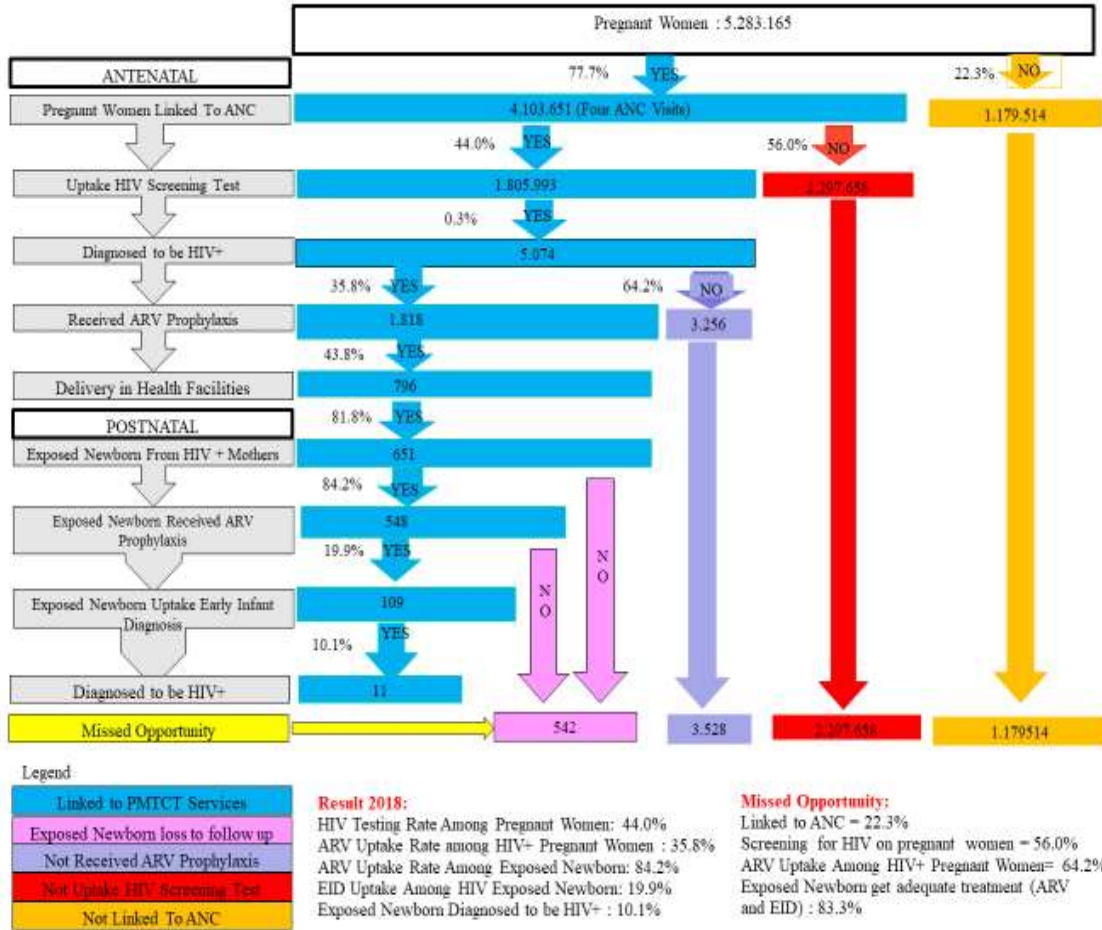


Figure 5. PMTCT Cascade of HIV in Indonesia, 2018

One of four indicators in triple elimination is met in the national target (table 8). Interestingly, the percentage of exposed newborn who were uninfected is significantly increased in both regions (97% in western and 99% in eastern). Nonetheless, those achievements need to be reviewed because of the high loss follow up of exposed newborns found in the cascade.

Table 8. Achievement of Key Indicators of HIV Treatment on Pregnant Women and Exposed Newborn, 2018

Key Indicator	National Programme Target 2018	National Achievement	Western	Eastern
Treatment coverage of HIV	100%	Not Achieved (35.9%)	Not Achieved (32.9%)	Not Achieved (47.3%)
Delivery coverage for positive HIV pregnant women	100%	Not Achieved (15.7%)	Not Achieved (28.9%)	Not Achieved (12.3%)
Treatment coverage of exposed newborn from positive HIV pregnant women	100%	Not Achieved (84.2%)	Not Achieved (84.2%)	Not Achieved (80.1%)
Exposed Newborn is confirmed uninfected	95%-100%	Achieved (98.3%)	Achieved (97.4%)	Achieved (99.6%)

3.5 TREATMENT FOR SYPHILIS POSITIVE PREGNANT WOMEN AND EXPOSED NEWBORN

The positive rate of syphilis among pregnant women was recorded as 3.2% and 1.4% in 2017 and 2018 respectively (table 9). The rate is significantly decreased (from 2.6% to 0.8%) in the west while it is increased (from 5.5% to 6.6%) in the east. It indicates that prevalence of syphilis among pregnant in the east is higher than the west.

Twenty eight percent (1.673/5887) of total syphilis positive pregnant women in western region and 46% (901/1.971) in eastern, in two years, got the treatment with benzathine penicillin. Those are causing a decline of the proportion of pregnant women who were not on treatment in both regions (western: 81.4% to 54.7%; eastern: 56.1% to 41.5%). Nevertheless, the proportions of pregnant women who were on treatment in the west increased significantly from 18.6% to 45.3% in 2018.

In the data on provincial syphilis services, it was found that some variables were not filled in causing incomplete analysis for three indicators (table 9). It is interesting because data was unfilled for the last two years.

Table 9. National and Regional Key Indicators of Syphilis EMTCT, 2017-2018

Indicator	Western			Eastern			Total (National)		
	2017	2018	% Change	2017	2018	% Change	2017	2018	% Change
Positive Rate	2.6% (1.846/ 70.282) 95% CI = 2.5-2.8	0.8% (1.588/ 191.504) 95% CI = 0.8-0.9	-16.3%	5.5% (938/ 17.136) 95% CI= 5.1-5.8	6.6% (1.493/ 22.675) 95% CI = 6.3-6.9	37.2%	3.2% (2.784/ 87.418) 95% CI = 3.1-3.3	1.4% (3.081/ 214.179) 95% CI = 1.4-1.5	9.7%
Treatment coverage of Syphilis	18.6% (344/ 1.846) 95% CI = 16.9-20.4	45.3% (1.329/ 4.041) 95% CI = 42.9-47.8	17.3%	43.9% (412/ 938) 95% CI = 40.8-47.1	58.5% (489/ 1.033) 95% CI= 55.9-60.9	59.9%	27.2% (756/ 2.784) 95% CI = 25.5-28.8	51.7% (1.818/ 5.074) 95% CI = 49.9-53.5	35.3%
Positive Pregnant Women Delivered in Health Facilities and attended by skilled health workers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Treatment coverage of exposed newborn from positive syphilis pregnant women	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Exposed newborn confirmed for syphilis positive	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

From the cascade of syphilis in 2018, 94.8% (3.8/4.1 million) of pregnant women were not tested (Figure 6). It seems like the test was offered to high risk pregnant women, not for all pregnant women who visit ANC. Furthermore, 48.3% of positive pregnant women did not initiate for uptaking benzathine penicillin. The cascade indicates that the PMTCT services of syphilis are not fully implemented.

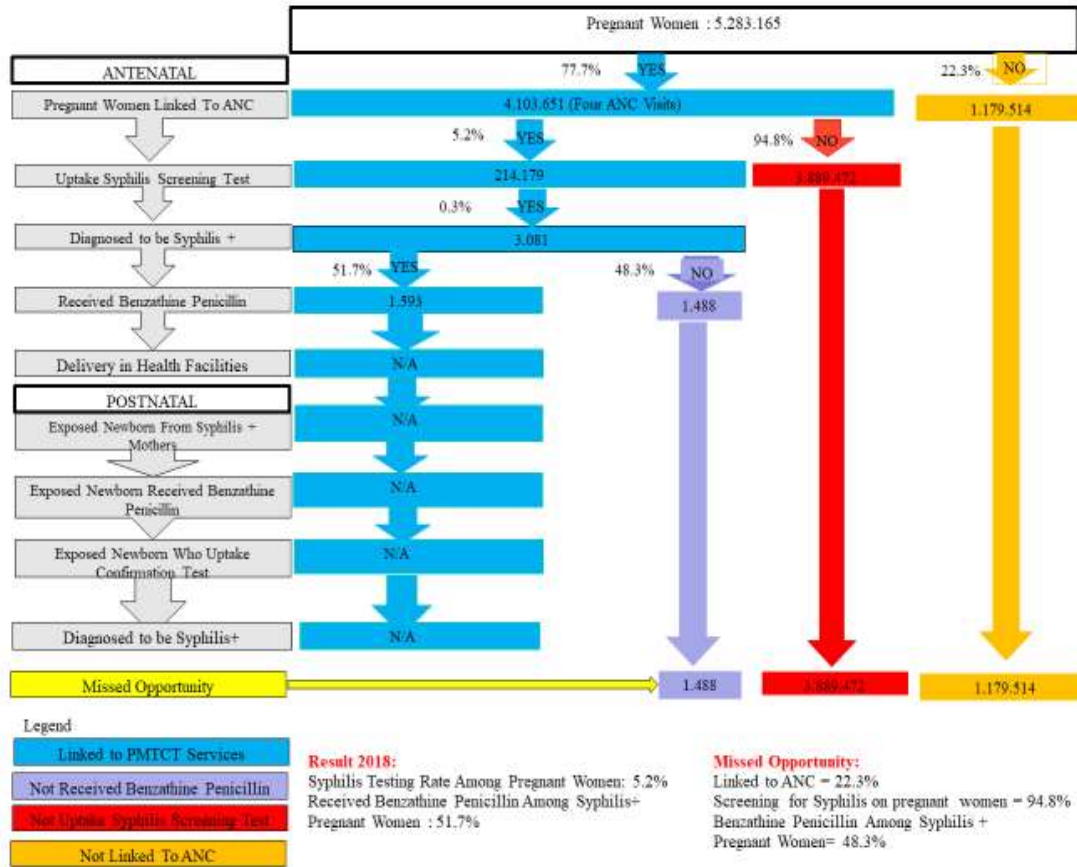


Figure 6. PMTCT Cascade of Syphilis in Indonesia, 2018

Three of four indicators have no available data and one indicator is unmet in the national target (table 10). It has to be noted that no available data for three indicators affected the lack of insight to address the gap of the services.

Table 10. Achievement of Key Indicators of Syphilis Treatment on Pregnant Women and Exposed Newborn, 2018

Indicator	National Programme Target 2018	National Achievement	Western	Eastern
Treatment coverage of syphilis	100%	Not Achieved (51.7%)	Not Achieved (58.5%)	Not Achieved (45.3%)
Delivery coverage for positive syphilis pregnant women	100%	Not Achieved (N/A)	Not Achieved (N/A)	Not Achieved (N/A)
Treatment coverage of exposed newborn from positive syphilis pregnant women	100%	Not Achieved (N/A)	Not Achieved (N/A)	Not Achieved (N/A)
Exposed newborn is confirmed uninfected	95%-100%	Not Achieved (N/A)	Not Achieved (N/A)	Not Achieved (N/A)

3.6 POSITIVE RATE, TREATMENT FOR EXPOSED NEWBORN AND HEPATITIS B VACCINATION FOR ALL CHILDREN

The number of pregnant women, who tested hepatitis B, was increased more than 2.5 times in 2018 (from 0.6 to 1.5 million) and 2% (42.006/2.140.661) of them were positive for hepatitis B (table 11). A significant decreased rate was found in the east which is from 3,8% to 2.8%.

The hepatitis B services on screening of pregnant women and HBIg treatment for exposed newborn increased in both regions (Table 8). The average of exposed newborns who got HBIg in the western region was 54% (52% in 2017 and 56% in 2018) which was lower than the eastern region, accounting for 41% (34% in 2017 and 48% in 2018).

The data of hepatitis B services was found not filled in, some variables affected to two indicators uncalculated. It indicates that the services provision did not follow the protocols (national guideline of triple elimination and guideline of viral hepatitis prevention).(12,16)

Table 11. National and Regional Key Indicators of Hepatitis B EMTCT, 2017-2018

Indicator	Western			Eastern			Total (National)		
	2017	2018	% Change	2017	2018	% Change	2017	2018	% Change
Positive Rate	1.8% (9.334/ 512.716) 95% CI = 1.8-1.9	1.7% (21.829/ 1.272.129) 95% CI = 1.6-1.7	57.2%	3.8% (3.612/ 96.424) 95% CI= 3.6-3.9	2.8% (7.231/ 259.392) 95% CI = 2.7-2.9	50.1%	2.1% (12.946/ 609.140) 95% CI = 2.1-2.2	1.9% (29.060/ 1,531.521) 95% CI = 1.8-1.9	55.5%
Delivery coverage for positive hepatitis B pregnant women	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Treatment coverage of exposed newborn from positive hepatitis B pregnant women	52.1% (4.861/ 9.334) 95% CI= 51.1-53.1	56.3% (12.285/ 21.829) 95% CI = 55.6-56.9	60.4%	33.9% (1.224/ 3.612) 95% CI= 32.3-35.4	47.9% (3.462/ 7.231) 95% CI= 46.7-49.0	64.6%	47% (6.085/ 12.946) 95% CI = 46.1-47.9	54.2% (15.747/ 29.060) 95% CI = 53.6-54.8	61.4%
Exposed newborn confirmed for hepatitis B positive	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The first big loss in the PMTCT cascade for hepatitis B is in the percentage of women who were screened: only 37.3%. Not even half of the exposed newborns from positive mothers receive treatment with HBIg. Indeed, no data is available on the follow up of the babies to check whether their treatment was successful.

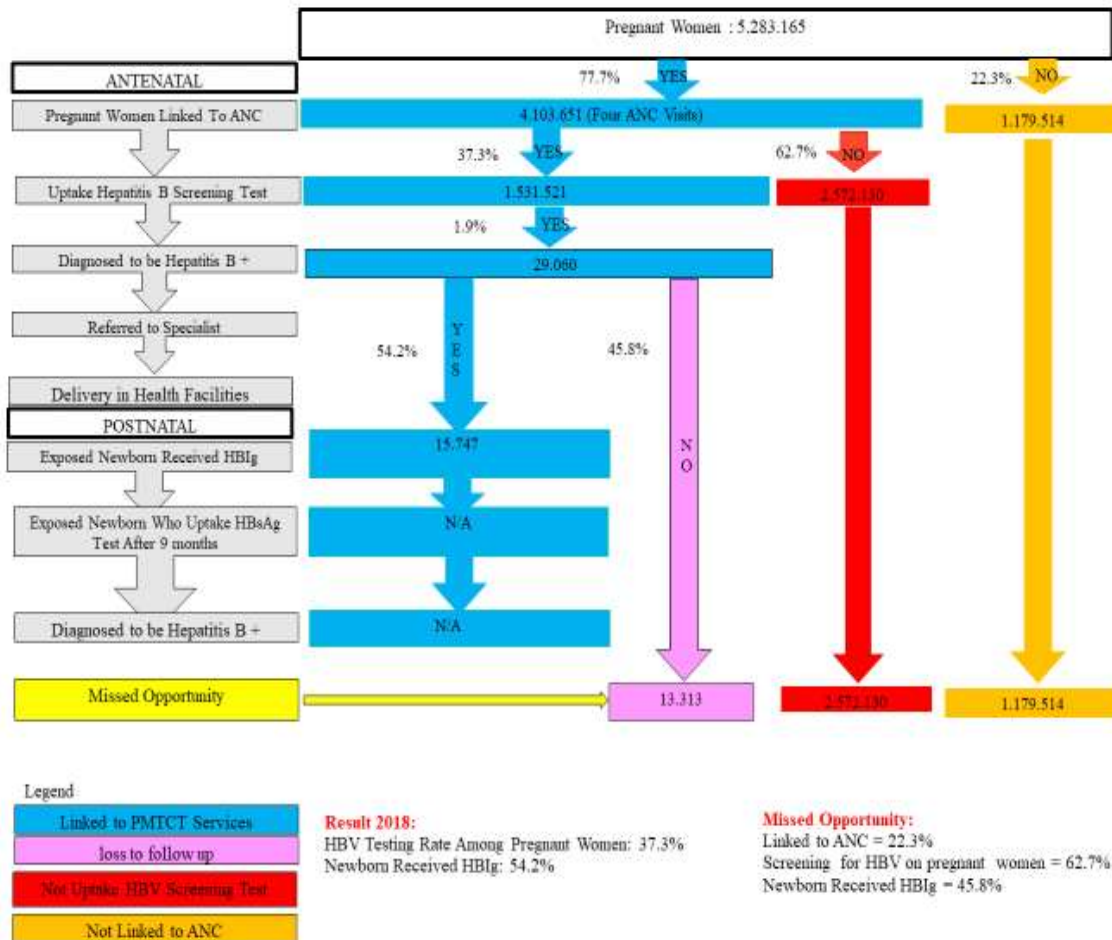


Figure 7. PMTCT Cascade of Hepatitis B in Indonesia, 2018

As recommended by the WHO, hepatitis B vaccination for all children, has to be included in the triple elimination target. It is an essential intervention to reduce MTCT of hepatitis B beside the screening testing, hepatitis B immunoglobulin (HBIg) for exposed infants and antiviral for infected mothers for elimination(17). The coverage of the birth-dose and third-dose vaccine between 2017 and 2018 decreased from 94% to 84% for both birth-dose and third-dose (table 12). Yet, the birth dose and third dose coverage in both regions remains a challenge with a wide coverage range in the last two years.

In 2017, the birth-dose and third-dose of hepatitis B vaccination in eastern region reached 101% and 109% respectively. Disaggregated data per provinces showed that some provinces also reported a coverage of more than 100% in two years. It could be due to mass campaign on immunization in the last two years, particularly on measles and rubella immunization,(3) affected the increase of the coverage of immunization in general.

In addition, the provincial health office set up their target for number of children to immunize, which are higher than programme estimation, so when it was reached it resulted in more than 100% achievement.

Table 12. National and Regional Coverage of Hepatitis B Birth Dose and Third Dose Children, 2017-2018

Description	2017			2018		
	Western	Eastern	Total (National)	Western	Eastern	Total (National)
Newborn	3.794.974	653.504	4.448.478	3.944.803	859.467	4.804.270
Birth Dose Hepatitis B Coverage	92.25% (3.051.052)	101.18% (661.247)	93.57% (4.162.299)	87.26% (3.442.333)	72.87% (626.272)	84.69% (4.068.605)
Range of Immunization Coverage of Birth Dose	80.78%- 110.36%	76.76%- 124.04%	76.76%- 124.04%	53.31%- 126.76%	37.28%- 105.07%	37.28%- 126.76%
Third-Dose Hepatitis B Coverage	91.25% (3.462.807)	109.81% (717.645)	93.97% (4.180.452)	86.53% (3.413.594)	73.99% (635.884)	84.29% (4.049.478)
Range of Third-Dose Hepatitis B Coverage	82.42%- 113.67%	93.52%- 133.82%	82.42%- 133.82%	46.54%- 104.41%	51.41%- 122.48%	46.54%- 122.48%

Two of five indicators have no available data and none is met in the national target (table 13). None of both regions achieved the national target, however the region's achievement showed a progress to attain the target (Table 11 and Table 12). On the contrary, disaggregate data per province showed some provinces met the programme target (95+). Two provinces (Bangka Belitung=126.8%, Banten=102.3%, West Papua=105.1%,) met the programme target of birth-dose vaccination and seven provinces (Jambi=100.1% for birth dose and 96.6% for third dose, South Sumatera=95.6% and 99.4%, Riau Archipelago= 101.2% and 100.5%, Jakarta=100% and 104.4%, Central Java= 98.7% and 97.5%, Bali=101.2% and 98.7%, West Sulawesi = 97% and 122.5%) met both birth dose and third-dose target.

Table 13. Achievement of Key Indicators of Delivery Coverage, Hepatitis B Treatment on Exposed Newborn and Hepatitis B Vaccination for All Children, 2018

Indicator	National Programme Target 2018	National Achievement	Western	Eastern
Delivery coverage for positive hepatitis B pregnant women	100%	Not Achieved (N/A)	Not Achieved (N/A)	Not Achieved (N/A)
Treatment coverage of exposed newborn from positive hepatitis B pregnant women	100%	Not Achieved (54.2%)	Not Achieved (47.9%)	Not Achieved (56.3%)
Exposed newborn is confirmed uninfected	95%-100%	Not Achieved (N/A)	Not Achieved (N/A)	Not Achieved (N/A)
Indicator	Programme Target (95+)	National Achievement	Western	Eastern
Birth Dose Hepatitis B Coverage	≥ 95%	Not Achieved (84.7%)	Not Achieved (87.3%)	Not Achieved (72,9%)
Third-Dose Hepatitis B Coverage	≥ 95%	Not Achieved (84.3%)	Not Achieved (86.5%)	Not Achieved (74%)

CHAPTER 4. FACTORS INFLUENCING THE ACHIEVEMENT OF PROGRAMME TARGETS

The implementation of triple elimination and its achievement have been described in the previous chapter. The gaps in screening and treatment of pregnant women and exposed newborn was found. This section describes the findings in the literature which could explain the factors behind the gap found in data analysis, in order to propose solutions to improve the interventions. Three factors -policy, service delivery and monitoring and evaluation is used to explore the barriers and facilitators that influence the process of target attainment (figure 3).

There were 33 articles (table 14) and 4 national policy documents which are relevant to factors discussed in this chapter. Three of them took the eastern region as a study location.

Table 14. Characteristics of Studies

Location of Studies	Western	(35) (37) (38) (39) (42) (43) (45) (48) (49) (53) (55) (57) (58) (61) (63) (69)
	Eastern	(44) (60) (62)
	Indonesia	(40) (47) (50) (54) (68) (73)
	Other Countries	(51) (52) (59) (64) (65) (66) (70) (71)

4.1 POLICY

Policy is a decision, plan, and actions undertaken to achieve the goals within the population. It determined the programme implementation and also affects whether and how services are delivered. (17) In this section, we discuss findings of studies related to policy of mother-to-child transmission which are policies on prevention of mother-to-child transmission, stakeholders' commitment, leadership, partnership (table 15).

Table 15. Factors Related to Policy

Policy	Articles
Policies on Prevention of Mother-to-Child Transmission	(35) (37) (38) (39) (40) (41) (42)
Commitment	(35) (37) (39) (40) (43)
Leadership	(37) (40) (44)
Partnership	(37) (40) (43) (45)

4.1.1 Policies on Prevention of Mother-to-Child Transmission

The Ministry of Health released national policies related to PMTCT of HIV and syphilis since 2013 which incorporated a circulate letter to all provincial, district health office and hospitals to implement PMTCT services integrated to MCH services, family planning and adolescent health services at health facilities.(10,34) The strategy focused on HIV transmission, while syphilis is targeted at high risk pregnant women. Some provinces and districts developed provincial or district policy on HIV/AIDS prevention (table 16). Some

of these included syphilis prevention and control as part of the programme-(35) however those policies are unspecific and mentioned for preventing mother-to-child transmission and do not support the local guideline. None of the provinces has a relevant policy that was updated after 2013 apart from west Java.

After few years, PMTCT of hepatitis B integrated to MCH services through Ministerial Decree no 52/2015 (16) whereas the implementation of programme nationally started in 2017. There are no local policy documents found until now, related to viral hepatitis prevention and control.

Table 16. National and Local Policies Related to PMTCT(36)

Year	National Policy (Ministerial Decree)	Notes
2013	No. 1/2013: PMTCT Services	Implementation of PMTCT to provinces, districts, and hospitals to improve coverage of screening to reduce mother-to-child transmission of HIV and syphilis (for high risk pregnant women)
2013	No. 21/2013: HIV/AIDS Prevention and Control	Prevention of HIV/AIDS including STIs including mother-to-child transmission
2013	No. 51/2013: National Guideline of PMTCT of HIV	As standard protocol for PMTCT services in health facilities
2015	No. 52/2015: Viral Hepatitis Prevention and Control	Prevention of Viral Hepatitis including mother-to-child transmission
Year	Local Policy (Governor/Mayor Decree)	Province/Districts
Western Region		
2004	HIV/AIDS Prevention and Control	East Java
2007	HIV/AIDS Prevention and Control	East Kalimantan
2008	HIV/AIDS Prevention and Control	Jakarta
2009	HIV/AIDS Prevention and Control	East Aceh District, Java
2010	HIV/AIDS Prevention and Control	Semarang City, West Java
2012	HIV/AIDS Prevention and Control	Yogyakarta
2013	HIV/AIDS Prevention and Control	Kudus District, West Java
Eastern Region		
2006	HIV/AIDS Prevention and Control	Bali
2007	HIV/AIDS Prevention and Control	Gianyar District, Bali
2008	HIV/AIDS Prevention and Control	West Nusa Tenggara
2008	HIV/AIDS Prevention and Control	Fakfak District, West Papua
2011	HIV/AIDS Prevention and Control	Jayapura City, Papua
2012	HIV/AIDS Prevention and Control	West Nusa Tenggara

An assessment on the implementation of local policies in West Java provinces, western region, suggested that adoption of national policies into local policies are needed for a

positive effect in assurance of service availability. The study found the implementation of MTCT was suboptimal due to unspecific local policies on PMTCT which became a barrier to district health, to scale up the intervention. The inclusion of PMTCT of HIV into HIV/AIDS prevention is not giving a priority to be implemented.(37) Effects of that, a low coverage of mother-to-child transmission programme was found in this province.(38) Some studies found a similar result that implementation of HIV/AIDS prevention and control needs a local policy to support the activities, especially related to funding (35,39,40) and to engage all stakeholders to be involved in the programme. (35,40,41) All studies confirmed the unspecific policy effected to sub-optimal interventions to reach the target. On the other hand, the unspecific policy could create benefits for local health offices to prioritise the health programme based on local needs.

Some studies found that local policy plays an important role to determine the success of the programme in their area. Without the provincial and district health offices support, the implementation of PMTCT services makes it difficult to meet the programme target. (40,42) However, policy does not have a legal force for health actors to implement the programme in their area.

4.1.2 Commitment

In the road map of the elimination of HIV, syphilis and hepatitis B transmission from mothers to her infant, the political will and commitment are the key factors to achieve the goals in a way of allocation of sufficient resources for intervention.(15) Since decentralization, the local policy became a commitment to determine the priority interventions in the health programme.(5) A study in Semarang city, western region, revealed that stakeholders commitment coupled with an active coordination by local board commission of HIV/AIDS affected the funding allocation in the district health office for PMTCT services.(35) The role of the local board commission of HIV/AIDS prevention and the control mentioned in some studies is important for lobbying to the local parliament, as a counsellor for local leaders and coordinator among stakeholders.(35,37,39,40,43) Those studies highlighted the involvement of stakeholders affected to the likelihood of programme attainment. Stakeholder's engagement is also related to their motives-interest and benefits- on the programme which is not mentioned in those studies.

4.1.3 Leadership

PMTCT was found to be uncoordinated or separately governed across programmes. There was no formal agreement, integrated teams and clear job description on PMTCT.(37,44) At central level, each programme coordinator independently translated PMTCT regulation into activities required by their own regulation. Guidelines had been developed with less consultation and coordination, among health agencies, which affected poor responsibilities on programme implementation.(40) It indicates that strong leadership is required in response to the issues raised on the vertical approach.

4.1.4 Partnership

Partnership is a crucial element to expand the PMTCT programme within the country. Private health providers, international and local non-governmental organizations including faith-based organizations played an important role in the health system in Indonesia. A study by Ningsih and Hastuti in Yogyakarta City, revealed that the involvement of a private midwife practice in PMTCT services is partially because of limited medical equipment and supply, such as test kits and tetanus toxoid vaccines. Midwives do the counselling on pregnancy, complications and risk of disease prevention, however the screening test will refer to Puskesmas or hospitals.(45) Some studies mentioned that the PMTCT programme has been socialised to private health providers by health offices.(37,40,43) Nonetheless, no further studies mentioned a partnership with private health providers after socialization or assessment on the impact of socialization to private providers.

4.2 SERVICE DELIVERY

Service delivery is the key element in the triple elimination programme. It determined the likelihood of programme interventions on the target achievement. (17) At first, we discuss factors influencing antenatal care services and skilled birth attendance. Then we will discuss factors influencing the screening and treatment and finally vaccination of hepatitis B for all children as PMTCT of hepatitis B (table 17).

Table 17. Factors Related to Service Delivery

Service Delivery	Articles
Antenatal Care Services	(46) (47) (48) (49) (50) (51) (52) (53)
Birth Attended by Skilled Health Workers	(54) (55)
Screening and Treatment:	
1. Integrated Services	(40) (42) (57) (58) (59) (60) (61) (62) (63) (64) (65)
2. Knowledge and Perception of Pregnant Women to Uptake PMTCT Services	(57) (58) (60) (62) (66) (67)
3. Performance of Health Workers to Deliver PMTCT Services	(57) (58) (61)
Prevention of Mother-to-Child Transmission of Hepatitis B Through Vaccination for All Children	(68) (69) (70) (71)

4.2.1 Antenatal Care

Antenatal care aims to prevent maternal mortality and disease transmission from mother to her child. The results of data analysis in this study found that four ANC visits decreased from 86% to 77%, with a wide variation between provinces in the western and eastern region. In addition, descriptive data from 2018 Indonesia Basic Health Survey has shown that a proportion of four ANC visits per province between 2013-2018 increased from 70.0% (2013) to 74.1% (2018). Also, the survey reported the proportion of non-attendance ANC services varied widely ranging from 56.2% in Papua (eastern region) to 98% in Yogyakarta (western region) in 2018.(46)

Factors associated to low utilization of ANC services in Indonesia were investigated by Titaley et al (2010) and found that geographic and type of residence are contributing factors to the wide range of disparity of ANC coverage among provinces. The western region had more health infrastructure such as Puskesmas, private midwife clinics and hospitals with enough health workers. The pregnant women who lived in outer Java and Bali island and in rural residence were more likely underutilizing antenatal services. The underutilization of antenatal care services among pregnant women, who lived in an urban area at eastern region, increased by 2.39 (adjusted OR, 95% CI=1.52-3.79, $p<0.001$) times than pregnant women who lived in the urban area, Java-Bali region. In addition, the underutilization was more likely increased to 4.6 (adjusted OR 4,60,95% CI=3.49-6.07, $p<0.001$) in rural areas in Sumatera (western region) and 4.9 times (adjusted OR=4.93, 95% CI=3.82-6.36, $p<0.001$) in eastern region.(47) Additionally, a study in Lampung City, western region found that knowledge of antenatal care and distance of health services to home, influences pregnant women to attend antenatal care.(48)

The other factors, such as socio-economic, education, knowledge of pregnancy complications were associated with low utilization of ANC services among pregnant women within the country (47,49–52). Furthermore, another study by Fitriyani et al in 2015

revealed that coverage of four ANC visits in the health centre at Padang city for the last three years (2009–2011) decreased from 95% to 77% because of the poor knowledge of mothers on pregnancy risks, low support from husband and family and less responsiveness of midwives. (53) Those studies confirmed that the coverage of four antenatal visits is associated with the pregnant women's acceptance of the health service.

From above studies, it is noted that social determinants play a major role towards health. Yet, no studies were found on the role of finances, gender, community factors, culture, lifestyle, work environment, unemployment, which may be relevant to antenatal care utilization in both western or eastern region.

4.2.2 Birth Attended by Skilled Health Workers

The birth attended by skilled health workers in this study was found to be high 95.46% (2018) with a narrow range between 95.45%-95.55%. Since The national health insurance scheme could be one of factors contributed to it. Since 2014, Indonesia implemented national health insurance (*JKN=Jaminan Kesehatan Nasional*) which covers maternal and neonatal health (antenatal and post-natal care) including delivery in Puskesmas or hospitals. The findings of a study at six provinces in 2016 found that since then, the proportion of pregnant women, who used traditional birth attendance, decreased from 17% in 2011 to 7% in 2016, while birth attendance by skilled health professionals increased from 17% to 29%. (54) However, the inequity of health service delivery between rural and urban, western, and eastern region still exists as an impact of uneven economic development in Indonesia.

Different findings found in Kutai Kartanegara District, East Kalimantan where a high rate of ANC, PNC visit and delivery by skilled birth attendants has not decreased the mortality rate. The study found that 75% (22/30) of maternal deaths in this district are due to inadequate knowledge and skills of health workers, to perform the obstetric emergency care and failure to follow the protocols. Lack of equipment and blood supplies are contributing factors to those deaths. Poor transfer services from Puskesmas to hospitals played a role in deaths. (55) Poor quality of care was identified at referral care as well as primary care.

4.2.3 Screening and Treatment

Triple elimination programme is an integrated PMTCT of three diseases into MNCH services. (56) This study found an increased screening coverage of HIV for 25%, syphilis 59%, and hepatitis B for 60% (figure 4) after programme implementation. Puspitasari and Junadi revealed their study results that HIV screening coverage increased from 3.98% (1839/40.096) to 17.6% (8246/46.840) between 2016-2017 after PMTCT of HIV integrated into antenatal care. (42) Their study confirmed the findings of this study. Furthermore, none of studies on integration of syphilis or hepatitis B PMTCT into MCH services in Indonesia revealed the findings yet.

The national positive rate of HIV remains stable (0.3%) in the last two year (table 7). This is in line with the national trends are reported in the background. The national data for PMTCT of HIV 2011-2015 showed a decreased trend from 2.5% (2011) to 0.6% (2015). Six provinces (western region: Jakarta, East Java, West Kalimantan; eastern region: Bali, Maluku, Papua) presented PMTCT of HIV cascade in 2015 that the positive rate on pregnant women was ranging from 0.16% to 1.35%. The lowest was reported in West Kalimantan and the highest was reported in Papua. (8) This study found similar findings that the highest positive rate of HIV in eastern region is in Papua (1.30%).

Integrated Services

An integrated approach aims to improve the health outcomes by using the resources effectively for maternal and child health. PMTCT integration into MNCH services increased number of women tested and treated, patient satisfaction and decreased HIV transmission.

(42,57–59) Additionally, provider initiative testing and counselling (PITC) is identified to play a crucial role in increasing the coverage of HIV screening among pregnant women during ANC visit.(42,60)

Another study found that factors, that hindered pregnant women, to access ART and maternal services, were internal and external stigmatization, transportation cost and distance of health facilities.(40,61) Lack of support from health workers was identified as barriers to adhere the treatment in some studies.(62–64) Additionally, the study in Jakarta city on the uptake of HIV screening, on pregnant women through voluntary counselling mobile clinics-conducted by one local NGOs-, confirmed that transport cost and other benefits such as free lunch or snacks, provided by NGOs, as facilitators to motivate pregnant women attending ANC and uptake the test. This study also highlighted the influence of the community health workers (cadres) to persuade pregnant women to come for testing, the need of peer support to accompany mothers to follow the treatment, and notify their partner for taking the test.(65) Although some studies found the benefits on the integration of services, many studies also found the challenges on providing those services. Furthermore, many studies investigated stigma and discrimination on key population but excluded positive pregnant women.

A comprehensive study on PMTCT in six provinces in Indonesia by Tarigan et al revealed that many districts had insufficient resources to implement PMTCT in their areas. Health facilities which provided PMTCT were limited and uncoordinated such as the screening test done in Puskesmas (public health centre), while the confirmation positive test and treatment would refer to hospitals or HIV clinics. The confirmation test result would send them to Puskesmas and pregnant women had to come back to Puskesmas for taking post-counselling. The ARV for HIV positive pregnant women has to be taken in hospitals or HIV clinics. The next ANC visits can be done in Puskesmas or hospitals. The delivery of positive HIV pregnant women and post-natal care are done in hospital. These mechanisms are identified as barriers on providing a seamless care and resulted in many losses of follow up cases.(40) Similar findings found some studies in Surabaya City, Depok City at western region.(42,61) In addition, an unclear referral mechanism, long waiting time, sub-optimal facilities including laboratories at referral care were contributing factors for positive pregnant women to utilise the services.(42) None of the studies were investigated on standard time for a confirmation test of HIV in referral care which is mentioned in the national guideline. In addition, no studies explored the referral mechanism for syphilis or hepatitis B pregnant women and the roles of laboratory on PMTCT services.

Knowledge and Perception of Pregnant Women to Uptake PMTCT Services

The study by Arniti et al. revealed that the integration of PMTCT of HIV into ANC package services increased the acceptance of HIV testing by pregnant women in the health centre. The study found that the uptake of a HIV test among pregnant women was more likely to increase 8.71 times by the support from their husband/family (OR=8.71,95% CI=2.89-26.28).(60) Another study investigated the implementation of PMTCT services in Papua, Indonesia, found that some factors contributed to the uptake and adherence on the HIV treatment among infected pregnant women, which were continuous counselled, belief in the efficacy of ARV, a supportive partner who did not prevent women from seeking PMTCT care. (62) The partner supported or was involved in influencing the women's decision to seek care.

The pregnant women's knowledge, health workers attitude, pre-counselling acceptance were contributing factors on the uptake of the screening of HIV and hepatitis B in Bengkulu City, western region. The study results found 81.4% (48/59) pregnant women received less information on HIV and hepatitis B screening as they did not know that those screenings are a programme to reduce mother-to-child transmission. 57.6% (34/59) pregnant women mentioned they received poor counselling because midwives talk fast and are not using any media information.(57,58) A similar finding found the mother's knowledge on HIV and syphilis influenced the screening uptake after pre-

counselling(57,66). The likelihood of screening uptake among pregnant women, who had knowledge on HIV and syphilis, were 8.60 higher than low knowledge (OR=8.6; CI 95%=1.08-68.56; p=0.042).(67)

Performance of Health Workers to Deliver PMTCT Services

The prior studies on PMTCT across the country found that the poor quality of services from health providers in providing counselling and health education to pregnant women. Low acceptance of the test due to stigma and discrimination in the community and affected the uptake of the screening test during the ANC visits. (57,58) A qualitative study by Widiyari et al in Surabaya City, western region, found poor quality of care, provided by midwives, because of the unwillingness to provide counselling following the protocols. One citation of midwives about time wasting (61):

"...information on HIV/AIDS was given in general at pre-counselling of screening test. It took 20-30 minutes for counselling if I have to give the information followed the protocols...whereas I have to provide ANC services for 40 mothers in a day. Time was not enough...."

Those above studies might indicate the lack of human resources (health workers) to provide the PMTCT and ANC services, which effected to a low adherence on protocols. Nevertheless, there is no study investigating pre-counselling of syphilis or hepatitis B.

The lack of communication of health workers in Puskesmas and the referral hospital in Surabaya City was identified while referring positive pregnant women for the confirmation test. Health workers in Puskesmas do not inform the health workers in the hospital about the referred patients and the hospital never gives feedback on the referred patient to the origin Puskesmas.(61) It indicates that health workers do not follow up the patients and may result in a high loss of follow up.

4.2.4 Prevention of Mother-To-Child Transmission of Hepatitis B Through Vaccination for All Children

Timely hepatitis B vaccination for children is an essential intervention to reduce MTCT of hepatitis B, added with screening testing, hepatitis B immunoglobulin (HBIG) for exposed infants and antiviral for infected mothers for elimination.(17) The study results a wide range of disparity among provinces in both regions (Table 13). A similar findings found in a study by Herliana and Douiri that immunization coverage in Java, western region was higher than Maluku and Papua, in the east. The geographic factor and place of residence was significantly associated with immunisation coverage within the country. The likelihood of children who lived in Maluku and Papua being unimmunised were almost two-fold (adjusted OR 1.94; 95% CI= 1.24-1.83). The children from rural areas were more likely to be not immunised compared to children from the urban area (adjusted OR 0.82; 95% CI= 0.69-0.96).(68)

Poor management of vaccine cold chain management was found at three districts in Indonesia which resulted in impotent vaccines which leads to fail the stimulation of the immune response. In addition, most of the health workers in charge were trained but have a poor attitude.(69) The factors related to poor management of cold chain and logistic distribution are also found in India and Malaysia. (70,71) It could be related to insufficient budget allocation for cold chain maintenance coupled with issues on electricity supply.

4.3 MONITORING AND EVALUATION

Monitoring and evaluation in triple elimination programme is a process to review the achievement of key indicators, identify the implementation gaps and improve the interventions.(17) Factors related to monitoring and evaluation (table 18) were discussed.

Table 18. Factors Related Monitoring and Evaluation

Monitoring and Evaluation	Articles
Regular Monitoring and Evaluation	(37) (40) (43) (61)
Integration Reporting System	(37) (40) (42) (72) (73)

4.3.1 Regular Monitoring and Evaluation

Monitoring of progress toward programme targets achievement needs to be conducted periodically and intensively, particularly at district level. The local government has tasks to monitor and evaluate the programme through the periodic evaluation meeting in order to review the coverage and effectiveness.(37,40,43) The study in East Java, western region, highlighted the importance of regular monitoring and evaluation of services from the head of Puskesmas and the district health office to result in a synergy between the MCH and disease prevention programme.(61) Those situation indicates a gap between two programmes due to unclear roles and responsibilities of all actors involved in the programme.

4.3.2 Integrated Reporting System

The variation of the reporting system at local level and at each programme, caused an issue for the national health information system. In addition, minimal data sharing among health agencies, weakened the situation. Integration of the programme reporting system into the local and national health information system was suggested in this study (37,40) Furthermore, another study mentioned about data analysis was an essential element to plan the next intervention and as evidence based to formulate the policy and strategies.(8,72)

A review by Braa et al. on the health information system in Indonesia confirmed that there is a need to integrate the reporting systems in health facilities into one dashboard which is linked to national and local database. The study identified that the western part had a much more developed infrastructure than the eastern part were most Puskesmas have an electronic patient system (developed locally) (73). The integration does not mean that the existing system should be closed and that the data could not be used anymore, but data sharing among programmes would be beneficial based on needs. Another study in one Puskesmas at Depok city, western region, found that the use of a different format on each programme resulted in a different number of pregnant women who screened for HIV (HIV programme=17.6%; MCH programme=22.9%) in 2017.(42) That study indicates a lack of communication among health workers from different programmes in one workplace which affects the quality of data.

CHAPTER 5. LESSON-LEARNED FROM OTHER COUNTRIES IN IMPLEMENTING TRIPLE ELIMINATION

This section describes the review of triple PMTCT from other countries in order to take benefits from their experience in implementing the interventions. Those experiences could be implemented in Indonesia for accelerating the progress of programme. There are six articles in the literature that describe or assess the triple PMTCT in four countries. One article on the context of lower middle income countries: Vietnam(74), three articles on the setting of upper middle income countries: Guatemala(75) and China(56,76), and two articles from a high-income country: The Netherlands(77,78).

Table 19. Lesson-Learned from Other Countries

Country	Policy	Service Delivery	Monitoring and Evaluation	Mass Media	Training
Vietnam		√ Screening to all pregnant women, HBIg for exposed newborn			
Guatemala		√ Free screening to all pregnant women	√ Regular monitoring, field supervision	√ Programme Promotion through radio and leaflets	√ Training for midwives and health promoters before implementation
China	√ Guideline for PMTCT of HIV, syphilis and Hepatitis B, Budget allocation for interventions	√ Free screening to all pregnant women,	√ Report forms sent monthly, feedback of report,		√ Training for health workers
The Netherlands		√ Screening to all pregnant women	√ Integrated Reporting System		

5.1 LESSON LEARNED FROM VIETNAM

An article on the implementation of triple elimination approach in Vietnam was revealed by Nguyen et al in 2015. This article reported that the three screening testing was offered during ANC visits to all pregnant women in Thai Nguyen District. The result of the study found that the prevalence rates of HIV, HBV and syphilis were 0.02%,8% and 0.03% respectively. Not only increased the screening uptake of HBV and syphilis to 100%, whereas both tests were not routinely offered. Hepatitis B birth dose and HBIg for infants was significantly associated with reduced risk of HBV transmission. The risk of HBV transmission from mother to infant who received both HBIg and birth-dose was 23% (OR=0.23, 95% CI=0.08-0.64, P value=0.005) compared to infant who received only

birth-dose or only HBIg or neither both.(74) From the Vietnam's experience, implementation of triple elimination is potentially effective to be scaled up. Treatment of HBIg to exposed newborn coupled with birth dose vaccination reduced the HBV transmission up to 77%. Nevertheless, no further studies on implementation of triple elimination whether it enhanced to other provinces or national.

5.2 LESSON LEARNED FROM GUATEMALA

A project of triple screening of HIV, syphilis and hepatitis B has been conducted in Guatemala for one year (May 2012-April 2013). The screening was done through public health services and outreach teams and resulted in a significant increase of 32.5% ($P < 0.001$) of ANC coverage, 143.9% ($P < 0.001$) of HIV testing uptake and 1.3% ($P = 0.87$) of syphilis testing. Since hepatitis B testing was unavailable before the project started, 42.2% of pregnant women was screened during the project. However, it was noted that 50% (892/1793) of pregnant women, were not screened because of issues on stigma, waiting time, partner disapproval, stock out of the test kit. In addition, collaboration with local and national authorities, radio campaign, leaflet distribution, and prior involvement of community healthcare workers before the project had removed barriers on the provision of screening to pregnant women. (75) It is noted that the integrated three screening tests into ANC services affected the increased coverage of screening and treatment for positive pregnant women. The mass media played an important role in expanding the information of programme activities. The training and regular supervision were important elements to ensure the quality of care.

5.3 LESSON LEARNED FROM CHINA

There are two articles on triple elimination in China found in the literature. The first article was a case study and the second was a review study. Both studies are not exposed to relate to one another, however the findings are similar.

A case study in Yunnan Province between 2005-2012 is evident that the integration of PMTCT and MCH services give benefits for pregnant women and their partners. Given free testing and treatment for the partners of positive HIV or syphilis or hepatitis B, including catch up hepatitis B vaccination, increased the uptake of HBV testing among the partners up to 38% (1825/4849) and 54% of negative partner received the hepatitis B vaccination in 2012. In addition, the screening coverage reached 95% and treatment coverage of HIV, syphilis and hepatitis B was more than 80%.(56) Although it took seven years to achieve the targets, the integration of the services and coordination among provincial, county and health facilities are solid and affected to result in a good quality of care.

The review of Wang et al on implementation of integrated PMTCT of HIV, syphilis and hepatitis B in China since 2011, demonstrated significant benefits on the interventions. The integrated services resulted HIV vertical transmission fell from 8.1% (2009) to 6.7% (2013) and more than 95% of pregnant women and children were screened and received treatment. The funding on this programme was 573 million US dollar for four years from central allocation. Training for health workers conducted at provincial and prefecture (district) level on management of PMTCT services and data collection.(76) However, the review was presenting an incomplete results for PMTCT of three diseases because the MTCT rate of syphilis and hepatitis B was not analysed. No further information of spending allocation, local budget for the interventions and monitoring and evaluation of the programme.

From two studies, coordination among stakeholders (all related department at central level, provincial, prefecture, county, township) led by a programme coordinator (Yunnan Provincial AIDS Care Centre/YACC in the first article). The free screening and treatment services are noted to improve the access to PMTCT services. While conducting a

comprehensive training of health workers, to deliver midwifery, PMTCT services, and data collection could be improve the technical and management skills.

5.4 LESSON LEARNED FROM THE NETHERLANDS

An article on implementation of triple screening during the first ANC in the Netherlands revealed the interventions were effective. 99.8% pregnant women screened for HIV, syphilis and hepatitis B during 2006-2008 and vertical transmission of HIV, syphilis and hepatitis B reduced from 0.05%, 0.11%, 0.41 to 0.03%, 0.09%, 0.31% respectively. The universal screening has been conducted since 2004 and resulted in a low prevalence of those three diseases. However, it was noted that a lost follow up in cases and a missed opportunity to be tested existed and remained a challenge. In addition, the study also found that syphilis infection in pregnant women was overestimated due to that 17% of pregnant women, during that study, had not active syphilis. Data of screening was integrated to the national electronic database (Praeventis) while details on screening of each disease was collected by the regional coordination programmes.(77)

The other articles by Visser et al investigated the triple elimination of MTCT. It shows that the Netherlands met the target for EMTCT of HIV and hepatitis B. Only one from three targets was met for EMTCT syphilis. The data for evaluating the target of HIV and hepatitis B (WHO criteria for elimination) was available and the author was certain of a good quality. Nevertheless, data of syphilis remained a challenge because there were two databases for syphilis infection and this resulted in two different results. Furthermore, there was no record for stillborn children, due to congenital syphilis, from any reports.(78) This study confirmed the findings of a previous study by Op De Coul et al that universal screening may reduce the perinatal transmission while the data on syphilis was not improved yet.

Those above studies showed the national electronic database as an integrated monitoring and evaluation system can be used for evidence-based policy.

The lesson learned from those countries (table 19) shows only one country, China, portrayed the three factors on the framework -policy, service delivery, monitoring and evaluation- in the implementation of triple elimination. In addition, other factors such as media participation and training for health workers were identified as contributing factors to their goals' attainment.

CHAPTER 6. DISCUSSION

The findings from the descriptive analysis and literature review are discussed in relation to the objective of this study. The discussion starts to describe the achievement of the triple elimination programme, followed by factors influencing the target achievement, then taking benefits from other countries experience on implementation of triple elimination strategy.

6.1 THE ACHIEVEMENT OF TRIPLE ELIMINATION PROGRAMME

The analysis of secondary data showed that none of the national targets for 2018 were met. Below we discuss the results for antenatal care and birth attendance by skilled health workers, followed by the screening, treatment and vaccination of hepatitis B for all children.

6.1.1 Antenatal Care and Birth Attended by Skilled Health Workers

This study showed 82% of pregnant women are linked to antenatal care between 2017-2018. The wide disparity of ANC coverage on western and eastern indicated that there are barriers to access and utilise the ANC service. It could be related to geographic locations, socio economic, education, health care services as described in the findings. Other factors on social determinant of health as the finances which related to the cost spending by pregnant women to access health facilities, living conditions, culture, working type (agriculture, office, factory, unemployment) might altered pregnant women to use antenatal care.

In 2018, 86% of pregnant women utilised ANC services delivered in health facilities and were attended by skilled birth attendants. It is an indication that programmes and infrastructures exist in all provinces. The awareness and acceptance of skilled birth attendance by pregnant women increased. Although, the condition in the west is better than the east but yet maternal death is still reported in this region. Factors related to three delays in seeking care, such as delay in decision to seek care, delay in reaching health care, and delay in receiving adequate health services, were contributed to high maternal death across the country

Challenges to increase the coverage of antenatal care and safe delivery in western and eastern are different. The low utilization in the east due to the accessibility to health facilities and limited health workers. The coverage can be improved by conducting training for midwives (village or private), outreach activities, involving community health workers for health education, and socialisation of the national insurance scheme. While in the west, training for midwives on emergency obstetric care and maternal counselling are needed to improve their skills on safe delivery and increase mother's knowledge on pregnancy risk.

6.1.2 Screening of HIV, Syphilis and Hepatitis B

This study found that the screening test of the three diseases increased in both regions. While none of them met the national target. The test coverage of HIV, syphilis and hepatitis B during the implementation programme (2018) was inconsistent; despite the fact that the three testing services have been integrated. It seems like the integration of three PMTCT services was problematic. The possible explanations are denial on test from pregnant women, unoffered the test by health workers or poor capabilities of laboratory at health facilities to perform three tests due to limited tests materials, poor maintenance of laboratory instruments, lack of laboratory assistants coupled with lack of skills.

The analysis resulted in the coverage of syphilis screening was very low (5.2%) which is far behind HIV and hepatitis B. Reasons for low coverage of the syphilis test because the test was targeted for high risk pregnant women, not to all women. In addition, stigmatization on HIV and syphilis infections could hinders pregnant women to uptake the

test. On the other hand, there is no studies about syphilis screening on pregnant women in both regions. Similarly, studies on hepatitis B test were not discovered. So, other factors related to low coverage and disparities in both regions are difficult to explore. It appoints that syphilis and hepatitis B get less attention than HIV might be because of not priority programme.

6.1.3 Treatment for Positive Pregnant Women and Exposed Newborn

The high loss to follow up among positive pregnant women and exposed newborn is identified in both regions. It showed a wide variation of the PMTCT output across the country at same level of integration in health facilities. It indicates that the integration of services is not a single solution to determine PMTCT results. So, coordination among vertical programme are needed to integrate their planning, funding, human resource, monitoring and evaluation, training for health workers in order to avoid duplication activities at health facilities. In addition, integration of service delivery and service management are benefit for health facilities to deliver efficient health provision.

Evidence showed that PMTCT had different services and places that may misperceive pregnant women to engage and retain in care. Issues related to community perception, health facilities, referral system, financing were found as barriers for positive pregnant women who linked to PMTCT services. Problems can be solved by communication with peer groups, health care communities; conducting public discussion; providing active post-counselling and support for positive women and her family. Clear guidelines with local context could assists health workers in providing the PMTCT services at primary and referral care. Furthermore, it removes the duplication of activities.

Another factor, associated with inadequate quality of PMTCT services, was poor motivation to perform the PMTCT services. Possible reason is no additional incentive for health workers to perform the counselling. This can be addressed by providing the incentive or rewards for health workers such as training opportunity, career promotion, in-cash incentives. Conducting training can increase knowledge and motivation of staff but it has to be coupled with assessment of staff performance after training.

The achievement of hepatitis B vaccination at the eastern region was lower than the west. Factors associated with wide disparity of immunization coverage were similar like disparity to access antenatal care. Another reasons could be related to a reduced budget allocation for outreach activities and cold chain maintenance affected the activities. In addition, negative perceptions of immunization such as side effects and *haram* the ingredients (forbidden by Islamic law) persist in communities.

6.2 FACTORS INFLUENCING THE TARGET ACHIEVEMENT

The findings from literature showed that service delivery is key element to determine the likelihood of goals attainment. There are six components in service delivery were found influencing the target. Those components are discussed in the previous section (the programme achievement) because they are interlinked to results of data analysis. Other factors had four components (policy) and two components (monitoring and evaluation). Next, we will discuss factors on policy, followed by service delivery and monitoring and evaluation.

6.2.1 Policy

Only few local policy documents on prevention of HIV including syphilis were found in the literature while no policy on hepatitis B prevention at local level. It indicates that HIV became a high priority in some provinces and districts and less for others. It is noted that those provinces and districts had a higher disease burden which needs to be addressed by local policy or regulation. Yet, there is no local policy on triple elimination at this moment would affect to insufficient funding for interventions.

Poor governance commitment, lack of leadership and no partnership with private health providers contributed to the unmet targets. The eastern region is deprived more due to the impact of those factors. The explanation for those situation is decision making on health priority influenced by political considerations and lobbying for special interests. Most of local health leaders appointed by governor or mayor, so health interventions become a political issue rather than addressing the health problem.

6.2.2 Service Delivery

This study discovered that pregnant women's experience in PMTCT services articulated as barriers to attend these services. Health service barriers, individual barriers and community barriers were interlinked and significantly influence the coverage of the services. The consent and confidentiality were explicitly mentioned in the findings. There are some women voiced about maintaining their health status confidential but in reality there are some reports on breaches of confidentiality by health workers. This is a serious issues which indicates the violence of the client's rights would impacted on the trust to health institutions and deterred the goals.

6.2.3 Monitoring and Evaluation

This study found that some variables were found unfilled in the programme reports. Although a web-based information system has been developed, implementation remains weak. This possibly happened because health workers did not understand how to collect the data or how to fill in the report. There are more than 10 columns that have to filled in the report for each programme. This might be overburdened the staffs which is limited and had less skill on data process. Moreover, there is no monitoring and evaluation, feedback to motivate them to work with responsibility. In addition, duplication data at health facilities oftentimes occurred due to using different reporting forms and unstandardized indicators (different numerators and denominators). These issues would pose a hindrance to result the valid data for evaluating the interventions.

6.3 TAKING BENEFITS FROM LESSON LEARNED

The lesson-learned from other countries showed that the governments have maintained their commitment to prevent mother-to-child transmission of HIV and syphilis over a long period of time. Long-term commitment in Indonesia is difficult to get due to the dynamic of political situations incorporate with leader's interest. Nevertheless, the elimination could be achieved when the governments are committed to allocate the sufficient resources to achieve the elimination by 2022.

Integrated PMTCT services to maternal care are successfully implemented in Vietnam, Guatemala, and China. Free testing for pregnant women and partners, followed-up case by community health workers, involvement of media to spread the programme activities are the good practice and can be implemented in Indonesia. Partner testing would be challenging because in reality, positive pregnant women asked health workers to not notify their partner due to fear for violence or disclosure. Media campaign or social media can be used to spread the information and remove those barriers.

The Netherlands, China and Vietnam have good health information systems that provide timely and reliable data. Meantime, the quality of data remains a challenge in Indonesia. Data is likely not ready to be assessed by programme managers or coordinator due to incomplete, overdue timelines, incoherent, and inaccurate. Furthermore, paper-based report is still used in Puskesmas. Although health facilities equipped with the computer, it did not install with the electronic health information system because the local system was

not developed yet. Consequently, health facilities have to send the report to district by email or by themselves then compiled by district officer.

Those features are indicative of the strong health systems that exist in those countries. In reality, the interventions can be adopted in Indonesia. Yet, the important lesson is still learnt on how to manage those interventions and integrate them in a decentralized environment like Indonesia.

6.4 REFLECTIONS ON ANALYTICAL FRAMEWORK

All factors of the framework were relevant to the study objective and useful in exploring how those factors are interrelated to determine the programme attainment. Nevertheless, the framework was to be broad and provided limited guidance on how to assess in the complex health system. Some factors related to health workforce, medical product (vaccine), financing was found and a need to add into the framework.

6.5 STRENGTH AND LIMITATION OF STUDY

This study is the first study in reviewing the triple elimination program in Indonesia using the national programme data. Therefore, the findings from this study would have important implications for the programme manager at the central level and local health offices to improve the interventions on PMTCT services in health facilities.

There were limitations in this study. Firstly, the dataset is incomplete because some variables (columns) are unfilled. Secondly, the data does not include the information of clients (pregnant women and children) which is difficult to determine for double counting. In addition, data of PMTCT services, provided by private health provider, might not be captured in the national programme data. It may cause lower number of cases than actual; and leads to underestimation of the burden of diseases in pregnancy and exposed newborns. Another limitation is no studies investigated on how local health office or health manager operated the integrated services, what factors hampered to achieve the target. This can be an area for further study. However, considering those limitations, it might not alter the findings of this study to contribute to policy suggestions and to scale up the interventions.

CHAPTER 7. CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

This study revealed that all key indicators of triple elimination were found unmet in the target. Screening and treatment of HIV, syphilis and hepatitis B increased while a high missed opportunity was also identified. Screening and treatment was found inadequate and mostly not in place. The quality of care is not up to standards and there is no integrated monitoring and evaluation effort. It affected the programme attainment. The targets of 2022 are unlikely to be met unless changes are made.

The fact that the targets are not met is not due to one factor, but a combination of issues. The high coverage of antenatal care does not reflect on an evidence of a good quality of care. Poor quality of pre- and post-counselling, health workers attitude, the complicated referral system, stigma and discrimination, were identified as factors that hindered pregnant women to uptake the screening and treatment. Therefore, these factors need to be addressed by improving the capacity of health workers through training. In addition, assessment of health workers performance after training need to be done for maintaining the quality of care. Clear guidelines need to be developed with local context to simplify the referral mechanism. Capacity building and regular coordination meetings at health facilities can remove barriers on communication gap between health actors. Stigma and discrimination can be addressed by active participation of peer groups and health communities in public discussion.

Furthermore, the situation is not equal across the country but worse in the eastern part due to issues in all factors: governance, service delivery, monitoring and evaluation. It needs to be addressed by allocation of more resources for the east. For instance, prioritising the training for health workers and health managers from the east. In addition, ensuring the triple elimination strategy in the local strategic plan, adoption of national policy into local regulation, collaboration with stakeholders, outreach programme are efforts to be done by local health actors in the east for achieving the goals.

The lack of adoption of the national policy in local regulation, either provincial or districts results insufficient resources and allocation to implement the interventions in the west. Therefore, poor involvement of all sectors -private sectors, NGOs, community- and unintegrated monitoring and evaluation of the programme would hamper the progress to achieve the goals.

The lesson learned from other countries have showed better results than currently achieved in Indonesia. Commitment of stakeholders, free services, media involvement, community health workers engagement, reliable health information systems will be applicable for Indonesia to scale up the interventions.

7.2 RECOMMENDATIONS

The findings of this study show that screening coverage and treatment for positive pregnant women and the exposed newborn remains low. Most of positive pregnant women were missed for screening and treatment as well as the exposed newborn. It has been identified that the high missed opportunity is due to a number of factors including policy and monitoring and evaluation factors. The targeted audience for recommendation in this study is the Ministry of Health and the provincial and district health office. The following recommendations are formulated to accelerate the target fulfilment and improve the quality of care:

7.2.1 Ministry of Health

1. Conduct regular meetings to improve the coordination among health actors who are involved in the triple elimination programme.
2. Conduct the training for a programme manager on the triple elimination programme including the planning, data analysis, evaluation of programme with prioritising the participant from the east.
3. Media campaign on triple elimination programme across the country through activities on commemoration day (world HIV day, hepatitis day, children's day), websites, media press briefing, blogger's workshop, social media (Twitter, Facebook).
4. Conduct the mid-term evaluation for assessing the progress of the programme and scaling up the intervention.
5. Allocate sufficient funding from the central budget for the triple elimination programme especially for the eastern region.
6. Develop a management guideline for health manager at health facilities and technical guideline for health workers to provide the PMTCT service at health facilities.
7. Develop mechanism for free service of triple elimination in collaboration with NGOs or other stakeholders (national health insurance).

7.2.2 Provincial and District Health Office in The Eastern Region

1. Conduct a training for health workers and health managers who work at public and private health facilities in delivering integrated PMTCT services and management of infected pregnant women and their children.
2. Conduct an outreach programme to increase the coverage of PMTCT services and reduce the high loss of follow up
3. Regular monitoring and evaluation from province to district and from district to health facilities to ensure the quality of care and reporting system.
4. Produce and distribute IEC materials to health centres (public and private), academia, public facilities.
5. Expand the information on triple elimination programme to community through talk shows on local radio or TV, local newspaper, local magazines, billboards.
6. Socialize the programme to private health providers and engage them in partnership to provide the triple screening in the ANC package and treatment for positive pregnant women and children
7. Conduct an assessment for health workers who get training to maintain the quality of service.
8. Develop the local protocols for programme managers/coordinator and health workers in delivering 3EMTCT services.
9. Develop local regulation on elimination of mother-to-child transmission as a legal basis to include the interventions on provincial or district strategic plan.
10. Allocate sufficient local budget and human resources (midwives, nurses, doctors) for implementing triple elimination programme through integration of planning of each programme.

7.2.3 Provincial and District Health Office in The Western Region

1. Conduct a training for health workers who work at public and private health facilities in delivering integrated PMTCT services and management of infected pregnant women and their children
2. Socialize the programme to private health providers and engage them in partnership to provide the triple screening in the ANC package and treatment for positive pregnant women and children.
3. Socialize the programme to local professional organization and academia (local university, nursing academy, midwife academy, public health school) for enhancing the information of triple elimination programme and collaborate with them to conduct the joint evaluation or research.

4. Regular monitoring and evaluation from province to district and from district to health facilities to ensure the quality of care and reporting system.
5. Produce and distribute IEC materials to health centres (public and private), academia, public facilities.
6. Expand the information on triple elimination programme to community through talk shows on local radio or TV, local newspaper, local magazines, billboards.
7. Conduct an assessment for health workers who get training to maintain the quality of service.
8. Develop the local protocols for programme managers/coordinator and health workers in delivering 3EMTCT services.
9. Develop specific local regulation on implementation of triple elimination programme as a legal basis to include the interventions on provincial or district strategic plan.

7.2.4 Further research

To provide evidence-based for decision making, a qualitative research, that explored the operational challenges in the management of triple elimination and the reasons for the unmet the target in the provincial and district level, should be conducted. In addition, a prospective study should be carried out to identify factors associated with a high loss of follow up, among positive pregnant women and exposed newborns as there is paucity published research on triple elimination in Indonesia especially in the eastern region.

REFERENCES

1. Statistics Indonesia (BPS). Statistical Yearbook of Indonesia 2018. Jakarta; 2018.
2. Statistics Indonesia (BPS). Mother and Child Health Profile [Profil Kesehatan Ibu dan Anak] 2018. Jakarta; 2019
3. Ministry of Health Indonesia. Indonesia Health Profile 2017 [Internet]. 2017. Available from: <http://www.depkes.go.id/Resources/Download/Pusdatin/Lain-Lain//Datadaninformasikesehatanindonesia2016-Smaller-size-Web.Pdf>
4. Statistics Indonesia (BPS). Statistical Yearbook of Indonesia 2017. Jakarta; 2017
5. Mahendradhata Y, Trisnantoro L, Listyadewi S, Soewondo P, Marthias T, Harimurti P, et al. The Republic of Indonesia Health System Review. Hort K, Patcharanarumol W, editors. Vol. 7. Jakarta: Asia Pacific Observatory on Health Systems and Policies; 2017.
6. Suryanto, Plummer V, Boyle M. Healthcare System in Indonesia. Hospital Topics Journal [Internet]. 2017 Oct 2 [cited 2019 Jun 3];95(4):82–9. Available from: <https://www.tandfonline.com/doi/full/10.1080/00185868.2017.1333806>
7. Statistics Indonesia (BPS), National Population and Family Planning Board (BKKBN), Ministry of Health, ICF International. Indonesia Demographic and Health Survey 2012 [Internet]. Jakarta; 2013 [cited 2019 May 30]. Available from: <https://dhsprogram.com/pubs/pdf/fr275/fr275.pdf>
8. Ministry of Health Indonesia. HIV Epidemiology Review Indonesia 2016 [Internet]. Jakarta; 2017 [cited 2019 Jun 30]. Available from: http://siha.depkes.go.id/portal/files_upload/HIV_EPIDEMIOLOGY_REVIEW_INDONESIA_2016.pdf
9. Ministry of Health Indonesia. Integrated Bio-Behavioural Survey 2013 [Internet]. Jakarta; 2013 [cited 2019 Jul 7]. Available from: http://siha.depkes.go.id/portal/files_upload/Laporan_STBP_2013.pdf
10. Ministry of Health Indonesia. Management Guideline for MTCT of HIV and Syphilis Program. Jakarta; 2017.
11. Razavi Shearer D, Gamkrelidze I, Nguyen MH, Chen DS, Van Damme P, Abbas Z, et al. Global prevalence, treatment, and prevention of hepatitis B virus infection in 2016: a modelling study. The Lancet Gastroenterology Hepatology [Internet]. 2018 Jun [cited 2019 Jun 28];3(6):383–403. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S2468125318300566>
12. Ministry of Health Indonesia. Guideline of Elimination of Mother-to-Child-Transmission of HIV, Syphilis and Hepatitis B. Jakarta; 2017.
13. Fuchs W, Brockmeyer NH. Sexually transmitted infections. JDDG Journal der Deutschen Dermatologischen Gesellschaft [Internet]. 2014 Jun 1 [cited 2019 Jun 1];12(6):451–64. Available from: <http://doi.wiley.com/10.1111/ddg.12310>
14. World Health Organisation (WHO). WHO Guideline on Syphilis screening and treatment for pregnant women [Internet]. Geneva; 2017 [cited 2019 Jul 5]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/259003/9789241550093-eng.pdf?sequence=1>
15. Ministry of Health Indonesia. Ministerial Decree No. 52 Year 2017 on Elimination of Mother-to-Child Transmission of HIV, Syphilis and Hepatitis B. Jakarta; 2017.

16. Ministry of Health Indonesia. Ministerial Decree No. 53 Year 2015 on Viral Hepatitis Prevention and Control. Jakarta; 2015.
17. World Health Organisation (WHO). Regional Framework for the Triple Elimination of Mother-to-child Transmission of HIV , Hepatitis B and Syphilis in Asia and the Pacific 2018 – 2030 [Internet]. 2018. Available from: <http://iris.wpro.who.int/bitstream/handle/10665.1/14193/9789290618553-eng.pdf>
18. World Health Organisation (WHO). WHO validates elimination of mother-to-child transmission of HIV and syphilis in Thailand, Armenia, Belarus and the Republic of Moldova [Internet]. 2016 [cited 2019 Jun 1]. Available from: <https://www.who.int/reproductivehealth/news/emtct-hiv-syphilis/en/>
19. Ministry of Health Indonesia. Indonesia Health Profile 2018 [Internet]. Jakarta; 2019 [cited 2019 Jun 14]. Available from: http://www.depkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Data-dan-Informasi_Profil-Kesehatan-Indonesia-2018.pdf
20. Ministry of Health Indonesia. Indonesia Health Profile 2007 [Internet]. Jakarta; 2008 [cited 2019 Jun 14]. Available from: <http://www.depkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/profil-kesehatan-indonesia-2007.pdf>
21. Hartwig R, Sparrow R, Budiyati S, Yumma A, Warda N, Suryahadi A, et al. Effects of Decentralized Health Care Financing on Maternal Care in Indonesia [Internet]. Rotterdam; 2015 [cited 2019 Jul 4]. Available from: https://www.eur.nl/sites/corporate/files/HEFPA_28_0.pdf
22. World Health Organization. Improving the Quality of Care for Reproductive, Maternal, Neonatal, Child and Adolescent Health in South-East Asia Region A Regional Framework [Internet]. 2015. Available from: http://www.euro.who.int/__data/assets/pdf_file/0009/330957/RMNCAH-QI-Framework.pdf?ua=1
23. Joint United Nations Programme on HIV/AIDS (UNAIDS). UNAIDS Data 2017 [Internet]. 2017. Available from: http://www.unaids.org/sites/default/files/media_asset/20170720_Data_book_2017_en.pdf
24. Ministry of Health Indonesia. Quarterly Report of HIV AIDS and STIs 2018 [Internet]. Jakarta; 2019 [cited 2019 Jun 2]. Available from: http://siha.depkes.go.id/portal/files_upload/Laporan_Triwulan_IV_2018.pdf
25. Tania IM. Factors Influencing Mother-to-Child Transmission of HIV on Prevention of Mother-to-Child Transmission of HIV Programme in Yogyakarta [PhD thesis]; Yogyakarta: University of Gajah Mada; 2014. Available from: http://etd.repository.ugm.ac.id/index.php?mod=penelitian_detail&sub=Penelitian_Detail&act=view&typ=html&buku_id=88302&obyek_id=4
26. Kwapong GD, Boateng D, Agyei-Baffour P, Addy EA. Health service barriers to HIV testing and counseling among pregnant women attending Antenatal Clinic; a cross-sectional study [Internet]. 2014 [cited 2019 Jun 2]. Available from: <http://www.biomedcentral.com/1472-6963/14/267>
27. Hikmah TFH, Novitasari D, Aniroh U. Factors Influencing Pregnant Women For Uptake HIV/AIDS Screening Through Programme of Prevention of Mother To Child Transmission in Kretek Public Health Centre Bantul Yogyakarta [Internet]. Jurnal Keperawatan Maternitas [Internet]. 2015 [cited 2019 Jun 2];3. Available from: <https://jurnal.unimus.ac.id/index.php/JKMat/article/view/4037>

28. Lusida MI, Juniastuti, Yano Y. Current hepatitis B virus infection situation in Indonesia and its genetic diversity[Internet]. *World Journal Gastroenterology*. 2016[cited 2019 Jun 1];22(32):7264–74. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4997646/DOI:10.37482/wjg.v22.i32.7264>
29. Hutin Y, Desai S, Bulterys M. Preventing hepatitis B virus infection: milestones and targets. *Bulletin World Health Organization* [Internet]. 2018 Jul 1 [cited 2019 Jul 4];96(7):443-443A. Available from: <http://www.who.int/entity/bulletin/volumes/96/7/18-215210.pdf>
30. Purwono PB, Juniastuti, Amin M, Bramanthi R, Nursidah, Resi EM, et al. Hepatitis B Virus Infection in Indonesia 15 Years After Adoption of a Universal Infant Vaccination Program: Possible Impacts of Low Birth Dose Coverage and a Vaccine-Escape Mutant. *Am J Trop Med Hyg* [Internet]. 2016 [cited 2019 Jul 4];95(3):674–9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27402524>
31. Auschra C. Barriers to the Integration of Care in Inter-Organisational Settings: A Literature Review. *Int J Integr Care* [Internet]. 2018 Jan 16 [cited 2019 Jul 4];18(1):5. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/29632455>
32. National Research Council. *Reducing Maternal and Neonatal Mortality in Indonesia: Saving Lives, Saving Future*. The National Academies Press, editor. Washington, SC; 2013.
33. Ministry of Health Indonesia. *Technical Guideline of MTCT of HIV and Syphilis for Health Workers* [Internet]. Jakarta; 2015. Available from: <http://kpakotabandung.or.id/book/pedoman-pelaksanaan-pencegahan-penularan-hiv-dan-sifilis-dari-ibu-ke-anak-bagi-tenaga-kesehatan/>
34. Ministry of Health Indonesia. *Ministerial Decree No. 97 Year 2014 on The Services of Antenatal, Delivery, Postnatal, Family Planning and Sexual Health*. Jakarta; 2014.
35. Putri IBAP, Nurcahyanto H, Marom A. Implementation of Local Regulation No 4 Year 2013 on HIV and AIDS Prevention and Control in Semarang City. *Journal of Public Policy and Management Review* [Internet]. 2014 Jul 1 [cited 2019 Jul 19];3(3):150–9. Available from: <https://ejournal3.undip.ac.id/index.php/jppmr/article/view/5732/5515>
36. *Local Policy: HIV/AIDS Prevention and Control* [Internet]. *Indonesia AIDS Policy*. [cited 2019 Jun 27]. Available from: <http://www.kebijakanaidssindonesia.net/id/dokumen-kebijakan/category/18-peraturan-daerah-sub-national-regulation>
37. Sugiharti S, Lestary H. How Does Local Government of West Java Implement Prevention of Mother To Child Transmission (PMTCT) of HIV-AIDS. *Bulletin Health Research* [Internet]. 2016 Dec 30 [cited 2019 Jun 1];44(4). Available from: <http://ejournal.litbang.kemkes.go.id/index.php/BPK/article/view/5555>
38. Tromp N, Prawiranegara R, Subhan Riparev H, Siregar A, Sunjaya D, Baltussen R. Priority setting in HIV/AIDS control in West Java Indonesia: an evaluation based on the accountability for reasonableness framework. *Health Policy Plan* [Internet]. 2015 Apr 1 [cited 2019 Jul 2];30(3):345–55. Available from: <https://academic.oup.com/heapol/article-lookup/doi/10.1093/heapol/czu020>
39. Puadi ARAP, Qomaruddin MB. Roles of AIDS Prevention and Control Commission in East Kotawaringin, Central Kalimantan. *Indonesia Health Promotion Journal* [Internet]. 2016 [cited 2019 Jun 29];4(2 December 2016):117–28. Available from: <https://e-journal.unair.ac.id/PROMKES/article/download/7622/4508>

40. Tarigan IU, Kosen S, Suryati. Tati, Indriasis E, Yulianti A, Rosita T, et al. Assessment of PMTCT Implementation in Indonesia [Internet]. Jakarta; 2011 [cited 2019 Jun 15]. Available from: [http://repository.litbang.kemkes.go.id/698/1/PS4 35 - KAJIAN IMPLEMENTASI PROGRAM PENCEGAHAN PENULARAN H ocr cs.pdf](http://repository.litbang.kemkes.go.id/698/1/PS4_35_-_KAJIAN_IMPLEMENTASI_PROGRAM_PENCEGAHAN_PENULARAN_H_ocr_cs.pdf)
41. Praptoraharja I, Pudjiati SR, Perwira I, Sempulur S, Suharni M, Hersumpena, et al. Policy and Programme of HIV & AIDS in Health System in Indonesia. 1st ed. INSIST Press; 2016.
42. Puspitasari MM, Junadi P. Analysis of The Implementation PMTCT HIV to Antenatal Services in Depok City 2017. Indonesia Public Health Policy [Internet]. 2018 [cited 2019 Jul 6];07(2 June 2018):79–87. Available from: <https://journal.ugm.ac.id/jkki/article/download/36396/22510>
43. Budisuari MA, Mirojab A. Implementation of PMTCT of HIV/AIDS: A Case Study in Surabaya City. Bulletin Health System Research [Internet]. 2011 [cited 2019 Jul 21];14(4 October 2011). Available from: <http://ejournal.litbang.depkes.go.id/index.php/hsr/article/view/1386>
44. Sinaga H. Screening of Communicable Diseases on Pregnant Women at Antenatal Care Visit in Kampung Harapan Health Centre Jayapura District. Jurnal Biologi Papua. 2019;10(2):62–7. Available from: <https://www.researchgate.net/publication/330155121>
45. Ningsih IK. Study of Prevention of Mother-to-Child Transmission on Antenatal Care by Independent Midwifery Clinic at Yogyakarta [Internet]. Jurnal Administrasi Kesehatan Indonesia. 2018 [cited 2019 Jun 6];6(1):61. Available from: <https://ejournal.unair.ac.id/JAKI/article/view/6117/DOI:http://dx.doi.org/10.20473/jaki.v6i1.2018.61-67>
46. Ministry of Health Indonesia. Main Report of Indonesia Basic Health Research 2018. Jakarta;2018.
47. Titaley CR, Dibley MJ, Roberts CL. Factors associated with underutilization of antenatal care services in Indonesia: results of Indonesia Demographic and Health Survey 2002/2003 and 2007. BMC Public Health [Internet]. 2010 Aug 16 [cited 2019 Jul 15];10:485. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/20712866>
48. Erlina R, Larasati T, Kurniawan B. Factors Influencing Pregnant Women To Attend Antenatal Care in Panjang Health Centres, Bandar Lampung. Medical Journal of Lampung University [Internet]. 2013 Feb 4 [cited 2019 Jun 22];2(4). Available from: <http://juke.kedokteran.unila.ac.id/index.php/majority/article/view/59/58>
49. Mikrajab MA, Syahrianti. Utilization of Pregnant Women Services through Integrating Childbirth Planning and Complications Prevention Program in Health Service post at East Java. Bulletin Health System Research [Internet]. 2013;(17):203–16. Available from: [http://ejournal.litbang.depkes.go.id/index.php/hsr/article/download/3311/3302%5Cndiakses, tanggal 07/06/2014](http://ejournal.litbang.depkes.go.id/index.php/hsr/article/download/3311/3302%5Cndiakses,tanggal_07/06/2014)
50. Tripathi V, Singh R. Regional differences in usage of antenatal care and safe delivery services in Indonesia: findings from a nationally representative survey. BMJ Open [Internet]. 2017 Feb 3 [cited 2019 Jul 15];7(2):e013408. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/28159851>
51. Sebayang SK, Efendi F, Astutik E. Women's Empowerment and the Use of Antenatal Care Services in Southeast Asian Countries [Internet]. Rockville, Maryland; 2017 [cited 2019 Jul 3]. Report No.: 129. Available from: <https://www.dhsprogram.com/pubs/pdf/WP129/WP129.pdf>

52. Ponna SN, Upadrasta VP, Babu Geddam JJ, Dudala SR, Sadasivuni R, Bathina H. Regional variation in utilization of Antenatal care services in the state of Andhra Pradesh. *Journal of Family Medicine and Primary Care* [Internet]. 2017 [cited 2019 Jul 3];6(2):231–9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/29302523>
53. Fitrayeni, Suryati, Faranti RM. The Cause of The Low Completeness of Pregnant Women Visiting Antenatal Care in Puskesmas Pegambiran, Padang. *Andalas Public Health Journal* [Internet]. 2015 [cited 2019 Jun 27];(1 October 2015):7. Available from: <http://jurnal.fkm.unand.ac.id/index.php/jkma/>
54. Teplitskaya L, Dutta A. Is National Health Insurance Scheme Increasing Access to Maternal and Neonatal Health? [Internet]. 2018 [cited 2019 Jul 27]. Available from: http://www.healthpolicyplus.com/ns/pubs/8226-10432_IndonesiaJKNAccesstoMNHservicesBahasa.pdf
55. Mahmood MA, Mufidah I, Scroggs S, Siddiqui AR, Raheel H, Wibdarminto K, et al. Root-Cause Analysis of Persistently High Maternal Mortality in a Rural District of Indonesia: Role of Clinical Care Quality and Health Services Organizational Factors. *Biomed Research International* [Internet]. 2018 Feb 22 [cited 2019 Jul 6];2018:1–11. Available from: <https://www.hindawi.com/journals/bmri/2018/3673265/>
56. World Health Organization (WHO). Towards eliminating perinatal transmission of HIV , syphilis and hepatitis B in Yunnan; a case study 2005-2012[Internet]. Manila: WHO Regional Office for the Western Pacific. 2015 [cited 2019 May 20]. Available from: <https://apps.who.int/iris/handle/10665/208191>
57. Tsaniyah Farkhanani F, Baroya Mal, Wahjudi. Implementation of Provider Initiated HIV Testing and Counseling (PITC) Services for Pregnant Women at Pakusari Public Health Center Jember Regency [Internet]. [cited 2019 Jul 23]. Available from: <https://pdfs.semanticscholar.org/288c/aeec294c0a0660cb9da255407cf6f62e8954.pdf>
58. Oktavia N, Lolli EZ. The Implementation of Pre-Test Counselling to improve the understanding of pregnant women about HIV and hepatitis B Examination. *Jurnal Keperawatan dan Kebidanan Aisyiyah* [Internet]. 2018 [cited 2019 Jun 23];14(1 June 2018):40–8. Available from: <https://www.researchgate.net/publication/327725658>
59. Woodring J, Ishikawa N, Nagai M, Malarski M, Takashima Y, Sobel H, et al. Integrating HIV, hepatitis B and syphilis screening and treatment through the Maternal, Newborn and Child Health platform to reach global elimination targets. *Western Pac Surveill Response J* [Internet]. 2017 Dec 31 [cited 2019 Mar 15];8(4):1–5. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/29487757>
60. Ni Ketut A. Factors related to Acceptance of HIV Testing by Pregnant Mothers in Health Centres in Denpasar City. *Public Health and Preventive Medicine Archive* [Internet]. 2018;2(1):63–9. Available from: <http://ojs.unud.ac.id/index.php/phpma/article/view/13804>
61. Widiyarsari E, Shaluhayah Z, Margawati A. Implememntation of Integration between Prevention of Mother to Child HIV Transmission (PMTCT) and Antenatal Services at Primary Healthcare Centers of Surabaya. *Jurnal Manajemen Kesehatan Indonesia* [Internet]. 2014 [cited 2019 Jun 23];2(1). Available from: <https://ejournal.undip.ac.id/index.php/jmki/article/view/10341>

62. Lumbantoruan C, Kermode M, Giyai A, Ang A, Kelaher M. Understanding women's uptake and adherence in option b+ for prevention of mother-to-child hiv transmission in papua, Indonesia: A qualitative study. *PLoS One*[Internet]. 2018[cited 2019 Jun 17];13(6):1–17. Available from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0198329>
63. Legiati T. Perilaku ibu hamil untuk tes HIV di Kelurahan Bandarharjo dan Tanjung Mas Kota Semarang. *Jurnal Promosi Kesehatan Indonesia* [Internet]. 2010[cited 2019 Jun 3];7(2):153–64. Available from: <https://ejournal.undip.ac.id/index.php/jpki/article/view/5560>
64. Xia J, Rutherford S, Ma Y, Wu L, Gao S, Chen T, et al. Obstacles to the coordination of delivering integrated prenatal HIV, syphilis and hepatitis B testing services in Guangdong: using a needs assessment approach. *BMC Health Services Research* [Internet]. 2015 Dec 24 [cited 2019 May 18];15(1):117. Available from: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-015-0760-0>
65. Hardon AP, Oosterhoff P, Imelda JD, Anh NT, Hidayana I. Preventing mother-to-child transmission of HIV in Vietnam and Indonesia: Diverging care dynamics. *Elsevier* [Internet]. 2009 [cited 2019 Jul 2];69(6):838–45. Available from: <https://pdf.sciencedirectassets.com/271821/1-s2.0-S0277953609X00171/1-s2.0-S0277953609003402/main.pdf?X-Amz-Security-Token=AgoJb3JpZ2luX2VjEFsaCXVzLWVhc3QtMSJGMEQCIHMNvxWMghf4c3CrFGLdFoIXU9%2FZo6tg1jvyaNTiWy5AiBDDmVNkteC1Fche3ceNsfhM8U1rtOPrAcgNC%2BgxZZI>
66. Gourlay A, Wringe A, Todd J, Cawley C, Michael D, Machemba R, et al. Factors associated with uptake of services to prevent mother-to-child transmission of HIV in a community cohort in rural Tanzania. *Sex Transm Infect* [Internet]. 2015 Nov 1 [cited 2019 Jul 10];91(7):520–7. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26045467>
67. Vitasari RN. Association of Knowledge on Sexually Transmitted Infections and Midwife Motivation with Screening Uptake on Pregnant Women in Campurejo Public Health Centre Kediri [PhD thesis]; Surakarta: University of Sebelas Maret; 2014; Available from: <https://pdfs.semanticscholar.org/d508/91aa143975000618389158fb3f66583c9883.pdf>
68. Herliana P, Douiri A. Determinants of immunisation coverage of children aged 12–59 months in Indonesia: a cross-sectional study. *BMJ Open* [Internet]. 2017 Dec 1 [cited 2019 Jul 6];7(12):e015790. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/29275336>
69. Saraswati LD, Ginandjar P, Budiyo, Martini, Udiyono A, Kairul. Vaccines Cold Chain Monitoring: A Cross Sectional Study at Three District in Indonesia. In: *IOP Conference Series: Earth and Environmental Science* [Internet]. IOP Publishing; 2018 [cited 2019 Jul 6]. p. 012082. Available from: <http://stacks.iop.org/1755-1315/116/i=1/a=012082?key=crossref.5d0bd8bad2592b9a2275e01f22b18dbd>
70. Azira B, Norhayati MN, Norwati D, Norhayati D, Noor M. Knowledge, Attitude and Adherence to Cold Chain among General Practitioners in Kelantan, Malaysia [Internet]. *International Journal of Collaborative Research on Internal Medicine & Public Health*. 2013 [cited 2019 Jul 6]. Available from: <https://pdfs.semanticscholar.org/2219/f50ad571e473452913a8dfcf87128b5b78c8.pdf>

71. Sinha AK, Verma AR, Chandrakar A, Khes SP, Panda PS, Dixit S. Evaluation of cold chain and logistics management practice in Durg district of Chhattisgarh: pointer from Central India. *Int Journal of Community Medicine and Public Health* [Internet]. 2017 [cited 2019 Jul 6];4(2):390–5. Available from: <http://www.ijcmph.com>
72. Ministry of Health Indonesia. Roadmap of Health Information System 2011-2014[Internet]. Data and Information Centre. 2014 [cited 2019 May 20];(1):1–5. Available from: <http://www.depkes.go.id/download.php?file=download/pusdatin/lain-lain/roadmap-sik.pdf>
73. Braa J, Sahay S, Lewis J, Senyoni W. Health Information Systems in Indonesia: Understanding and Addressing Complexity. In: *Agile Methods in Ethiopia: An Empirical Study* [Internet]. 2017 [cited 2019 Jul 7]. p. 59–70. Available from: http://link.springer.com/10.1007/978-3-319-59111-7_6
74. Van Thi Thuy Nguyen, Trang HQ, Anh NTL, Anh LAK, Minh TB, Vuong ND, et al. An innovative approach to triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B in Viet Nam. Monday, 20 July [Internet]. 2015;(Poster number MOPEC464):2015. Available from: <http://www.who.int/hiv/pub/posters/ias2015-poster9/en/#.WBdh7HqGcDg.mendeley>
75. Smith A, Sabido M, Amey E, Batres A, Casabona J. Integrating simultaneous triple point-of-care screening for Syphilis, Hepatitis B and HIV in antenatal services through rural outreach teams in Guatemala. *Sexually Transmitted Infections* [Internet]. 2013;89:70–2. Available from: https://www.researchgate.net/publication/273585788_P6064
76. Wang A-L, Qiao Y-P, Wang L-H, Fang L-W, Wang F, Jin X, et al. Integrated prevention of mother-to-child transmission for human immunodeficiency virus, syphilis and hepatitis B virus in China. *Bull World Health Organ* [Internet]. 2015;93(1):52–6. Available from: <http://www.who.int/entity/bulletin/volumes/93/1/14-139626.pdf>
77. Op de Coul EL, Hahné S, van Weert YW, Oomen P, Smit C, van der Ploeg KP, et al. Antenatal screening for HIV, hepatitis B and syphilis in the Netherlands is effective. *BMC Infectious Disease* [Internet]. 2011 Dec 30 [cited 2019 May 18];11(1):185. Available from: <https://bmcinfectdis.biomedcentral.com/articles/10.1186/1471-2334-11-185>
78. Visser M, Van Der Ploeg CPB, Smit C, Hukkelhoven CWPM, Abbink F, Van Benthem BHB, et al. Evaluating progress towards triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B in the Netherlands. *BMC Public Health*. 2019;19(1):1–9. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30922277>

ANNEXES

Annexe 1

Indonesia Social and Economic Statistic, 2016-2017

General Information: Key Statistics	Unit	2016	2017
SOCIAL			
Population ¹	Million	258.7	261.9
Population Growth ¹	%	1.27	1.34
Total Fertility Rate ¹	Child	2.33	2.35
Infant Mortality Rate-IMR (per 1000 live births) ¹	Infant	25.5	25.1
Life Expectancy Rate ¹	Years	70.9	71.1
Literacy Rate Aged 15+ ¹	%	95.4	95.5
Unemployment Rate ²	%	5.6	5.5
Percentage of Poor People ³	%	10.9	10.6
Human Development Index ⁴	-	70.2	70.8
ECONOMIC			
Economic Growth ⁵	Trillion rupiahs	12408.6	13588.8
Gross Domestic Products (GDP) at current Price ⁶	%	5.0	5.1
Per Capita of GDP at Current Price ^{5,7}	Million rupiahs	48.0	51.9

Notes: ¹ Data from the result of Indonesia Population Projection 2010-2035

² Data was taken on condition at August

³ Data was taken on condition at March

⁴ *HDI was calculated using component of life expectancy at birth, expected years of schooling, means years of schooling, and expenditure per capita*

⁵ Data was in line with System of National Account 2008

⁶ Data was using 2010 base year

⁷ Data was using population projection based on Population Census 2010

Source: Statistical Yearbook of Indonesia, 2018

Annexe 3

Approval for Using Data and Information for Study



MINISTRY OF HEALTH REPUBLIC OF INDONESIA
DIRECTORATE GENERAL DISEASE PREVENTION AND CONTROL

Percetakan Negara Street No. 29 Mail Box 223 Jakarta 10560
Phone (+6221) 4247608 (Hunting) Fax (+6221) 4207807



Jakarta, ~~26~~ June 2019

Number : PP.04.03/6/1666/2019
Subject : Request for Permission to Use Data and Information

To:
Dwi Puspasari
KIT-Royal Tropical Institute
Amsterdam, The Netherlands

Dear Ms. Puspasari,

We have received your request for permission to use data and information of triple elimination 2017-2018 for your thesis which topic is triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B in Indonesia.

In regards to those above mentioned, I hereby give you a permission and allow you to use those data and information accordingly.

Thank you for your request and information.

Sincerely Yours,

dr. Wiendra Waworuntu, M.Kes
Director of Direct Transmitted Diseases Prevention and Control

- Cc:
1. Director General of Disease Prevention and Control
 2. ICHD/MPH Course Coordinator, KIT Royal Tropical Institute, Amsterdam, The Netherlands
 3. Head of Maternal and Neonates Health, Directorate General of Public Health
 4. Head of HIV/AIDS and Sexually Transmitted Diseases Sub-Directorate
 5. Head of Viral Hepatitis and Gastro-Intestinal Tract Infections Sub-Directorate