Trends, Determinants, and Possibilities of Eliminating HIV/AIDS in Indonesia by 2030

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Master in International Health
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A thesis submitted in partial fulfilment of the requirement for the degree of

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by

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List of Abbreviations

AEM	ASIAN Epidemic Model
AIDS	Acquired Immunodeficiency Syndrome
AIM	AIDS Impact Model
ART	Antiretroviral Therapy
ARV	Antiretroviral
ASC	AIDS Spending Category
BSS	Behavioural Surveillance System
CFR	Case Fatality Rate
CHPM	The Center for Health Policy and Management
CoC	Continuum of Care
FSW	Female Sex Worker
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
IBBS	Integrated Biological and Behavioral Surveillance
ICA	Investment Case Analysis
IDHS	Indonesia Demographic and Health Survey
IDUs	Injecting Drug Users
INAC	Indonesia National AIDS Commission
KPA	*Komisi Penanggulangan AIDS*
LKB	*Layanan Komprehensif Berkelanjutan* - Integrated, Decentralized Continuum of Care Services
MDGs	Millennium Development Goals
MOH - RI	Ministry of Health - Republic of Indonesia
MSM	Men having Sex with Men
NAC	National AIDS Commission
NASA	National AIDS Spending Assessment
PLHIV	People Living with HIV
PMTCT	Prevention of mother-to-child transmission
PWIDs	Persons who Inject Drugs
RSKO	*Rumah Sakit Ketergantungan Obat*
SDGs	Sustainable Development Goals
SEAR	South-East Asia Region
STIs	Sexually Transmitted Infections
SUART	Strategic use of ART
SUFA	Strategic use of Antiretroviral
UNDP	United Nation Development Program
WHO	World Health Organization
WHO-SEAR	World Health Organization - South East Asia Regional

Acknowledgements

Abstract

Background:
Despite being categorized as a country with a low HIV/AIDS prevalence, the incidence of HIV/AIDS in Indonesia is second highest among the countries within the South East Asia Region (SEAR). The prevalence rate continues to increase, while other countries in the SEAR region have shown a declining trend.

Objective:
To analyze trends in HIV infections, explore factors associated with the transmission of HIV and provide recommendations for improving the response to eliminate HIV/AIDS in Indonesia.

Methodology:
This study was a literature review and desk review. A proximate-determinants framework was used as a guide for analysing levels and trends in HIV infections.

Findings:
The epidemic of HIV among drug users using syringes, sex workers, and transgender in Indonesia shows a decrease but there is an increase among men having sex with men (MSM). Behavioral factors (condom use) and knowledge level contribute to the many cases of HIV/AIDS in Indonesia. Apart from that, dependence on funding by international organizations affects the impact of HIV/AIDS programs and interventions in Indonesia.

Conclusion and Recommendations:
Providing comprehensive health services to the at-risk groups is essential to prevent HIV transmission in Indonesia. Comprehensive health care includes education, medical care, support, and a well-structured plan to address this threat before more destruction occurs. In addition to maintaining prevention efforts in the general population, prevention efforts should also prioritize the MSM group without ruling out other groups. Regulations to protect the MSM group are needed so that it is not considered a criminal category of people so as to make it easier for them to be reached by prevention work. Regarding to the reduced support of funds from International Organization, program funding from domestic resources should continue to be improved by maximizing the role of local governments and private organizations.

Keywords: Determinant, Epidemiology, HIV/AIDS Program, Indonesia

Word Count: 10.126

Introduction

Reports from UNAIDS show that the HIV/AIDS prevalence in Indonesia has been stable since 2009 at 0.4%, unlike other countries in the ASEAN region that have started to show a downward trend in recent years. *Healthdata* noted that between 2005 and 2015, new HIV cases grew an average of 3.2 percent per year in Indonesia, while Malaysia, Thailand, and Vietnam experienced a decrease (IHME, 2017).

There is agreement around the world on the need to face the major challenge of ending the HIV/AIDS epidemic by 2030. Indonesia still faces many challenges to achieve this target, one of which is financing, which is still far from the expected target. The contribution of local funding sources has not reached the expected target of 70%, so the role of international institutions is still quite dominant.

The above facts encourage me to contribute to HIV/AIDS prevention and control in Indonesia. Every year, December 1st is always commemorated as World AIDS Day, and the observance of this event always reminds me that there are many people out there who are struggling against this deadly disease.

This research will provide an overview of the development of HIV/AIDS in Indonesia and explain its determinants, including estimating how much it will cost to operate the HIV/AIDS prevention program to the fullest extent. This research is also expected to provide recommendations to policy makers on HIV/AIDS prevention programs in Indonesia.

This research is divided into six parts. The first chapter discusses the background of Indonesia from the demographic, social, and economic points of view, including the current situation of HIV/AIDS in Indonesia and the funds that have already been spent on the HIV/AIDS prevention program. The second chapter contains problem statements, objectives, and research methodologies. The third chapter will discuss the developmental trend of the HIV/AIDS epidemic in Indonesia as the first objective of this research. The fourth chapter will discuss the determinants of HIV/AIDS in Indonesia as the second goal. The fifth chapter will discuss the third objectives, the program and interventions that have been implemented to slow down the epidemic. The sixth chapter contains discussions, conclusions, and recommendations.

Chapter 1
Background Information on Indonesia

1.1. Geography

The Indonesian Archipelago, which consists of approximately 17,000 islands, is situated between Asia and Australia. The five largest islands are, from west to east, Sumatra, Java, Kalimantan, Sulawesi, and Papua. It is bordered by the South China Sea to the north, the Pacific Ocean to the north and east, and the Indian Ocean to the south and west. More than 80 percent of the country's area consists of water, while about 1.9 million square kilometers are land area. The country straddles the equator, which gives it a tropical climate with two seasons; the dry season extends from May to October, and the rainy season continues from November to April (IDHS, 2012).

1.2. Demography

Indonesia is the most populous country in the world after the People's Republic of China, India, and the United States of America. The country comprises hundreds of ethnic groups and diverse cultures inhabiting the large number of islands dispersed over a wide area (IDHS, 2012). According to the Ministry of Health together with the National Statistics Census, it had an estimated 252 million citizens in 2014. According to data from the World Bank, the National Population Growth Rate was 1.2 percent in 2015. The population in Indonesia is not evenly distributed, the highest population density being on Java Island, particularly in Jakarta Province with 15,263 inhabitants per km^2, and the lowest in West Papua with nine inhabitants per km^2. The sex ratio of men to women in 2014 was 101 to 100 (MOH-RI, 2014). The share of the population under age 15 years is 29% and that aged over 60 years is 8%. The median age of the population is 28 years (WHO, 2015). Approximately 118 million people were living in urban areas in 2010, and 87% of the total population was Moslem (IDHS, 2012).

1.3. Socio-Economic Situation and Education

In the latest United Nations Development Program (UNDP) report, Indonesia is classified among the countries with a medium rate of human development, ranking 113th of the 188 nations (UNDP, 2016). The World Bank categorizes Indonesia as a lower-middle-income country. The country's GDP per capita has risen continuously from $857 in 2000 to $3,603 in 2016. Indonesia has successfully become the world's 10th largest economy in terms of purchasing power parity, and it is a member of the G-20. Another achievement is the reduction of poverty to 11.2 percent in 2014, less than half the poverty rate in 1999. The economic sector grew significantly during the last decades, but its benefits were distributed unequally. Indonesia's Gini Coefficient—a measure of inequality—was 0.40 in 2016, which is higher than that of neighboring countries (World Bank, 2017).

In the area of education, the literacy rate among children aged 10 and older increased 31% in the past 40 years to 92% in 2011. The improvement in education is more conspicuous among females than males. From 1971 to 2011, school attendance among children aged 7–12 increased significantly, from 62 percent to 97 percent for males, and from 58 percent to 98 percent for females (IDHS, 2012).

1.4. HIV/AIDS Epidemiology and Response

Since the earliest case was identified in Bali in 1987, HIV/AIDS in Indonesia has had a high potential of transmission regardless of the prevailing risk factors, such as the high prevalence of Sexually Transmitted Infections (STIs), wide availability of commercial sex workers, high rate of population mobility, and poverty (Kaldor, 1999). The HIV/AIDS Epidemic in Indonesia can be divided into three phases based on the main mode of transmission: 1) 1987–1996: HIV/AIDS was mainly transmitted via sexual contact; 2) 1997–2006: The mode of transmission was mainly the sharing of used needles among persons who inject drugs (PWIDs); and 3) 2007–present: As in the first period, sexual contacts again became the main mode of transmission (Suharni, 2016).
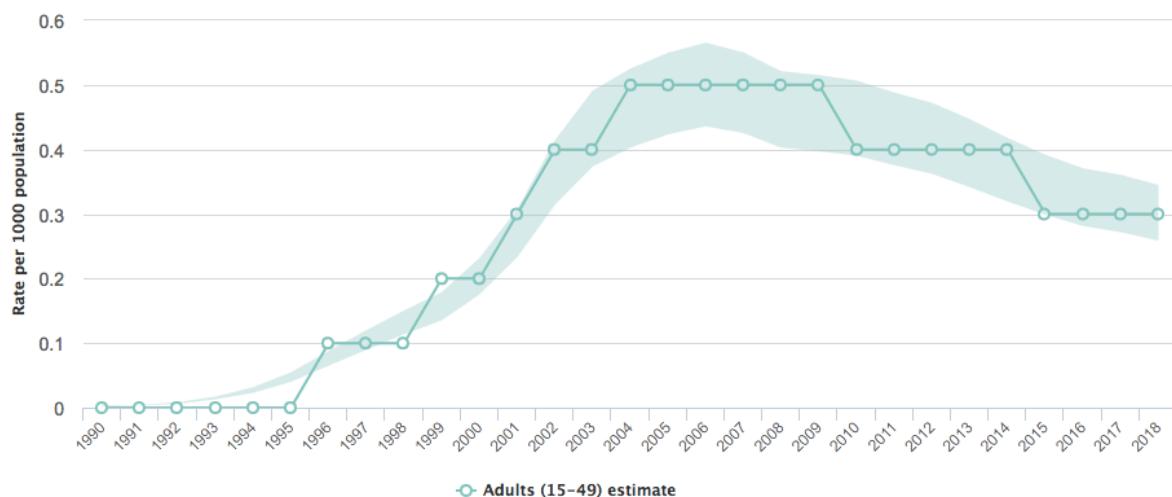
*Figure 1. HIV Incidence among adults (15–49) in Indonesia for 1990–2018
[Source: UNAIDS Estimates 2019]*

1987–1996: During this period, there was hardly a significant increase in the number of new cases (see Figure 1). However, the situation changed substantially in the late 1990s, when the number of young PWIDs quickly increased, mainly in large cities. Based on data reported by Drug Dependence Hospital (RSKO/*Rumah Sakit Ketergantungan Obat*) in Jakarta, in 2001 it was found that one out of every two PWIDs in Jakarta were infected with HIV, and thus transmission by shared needles became the primary cause of HIV/AIDS transmission in Indonesia for the next five years (Suharni, 2016).

The response from the government started with the first report of HIV/AIDS in 1987 by establishing the National AIDS Committee chaired by the Director General of Communicable Disease Control and Environmental Sanitation. In this period, HIV/AIDS was recognized only as a health issue. Only when the epidemic started to spread in 1992 was it realized that HIV/AIDS not only affected the health sector, but also non-health sectors. As a consequence, an AIDS Commission (KPA) was established by Presidential Decree in 1994 as a multi-sector coordinating institution for HIV/AIDS response. During 1987–1996, most HIV/AIDS programs focused on raising awareness of the existence of HIV/AIDS in Indonesia (Suharni, 2016).

1997–2006: Before the early 1990s, HIV/AIDS transmission among PWIDs had not become the primary concern, even though data from other countries showed that the spread of HIV/AIDS was highly related to the habit of sharing needles. Three HIV/AIDS cases among PWIDs were first reported in 1997, then the prevalence of HIV/AIDS showed an increasing trend (see Figure 2).

In 2006, the National AIDS Commission evaluated the spread of infections among PWIDs, which appeared to be stagnant. Although HIV/AIDS prevalence rates in transgenders, Female Sex Workers (FSWs), and FSW clients is lower than in PWIDs, these groups make up more of the total population, which means a higher number of cases. The National AIDS Commission then estimated that within the following decade, new cases would mainly be caused by heterosexual contacts, which had been responsible for nearly 70% of new infections in 2006 (INAC, 2007). The response from the government during this period was indicated by the first HIV/AIDS behavioral surveillance system (BSS) by Ministry of Health in 1996, which then became the main reference for assessing the development of the HIV/AIDS epidemic in Indonesia (Suharni, 2016).
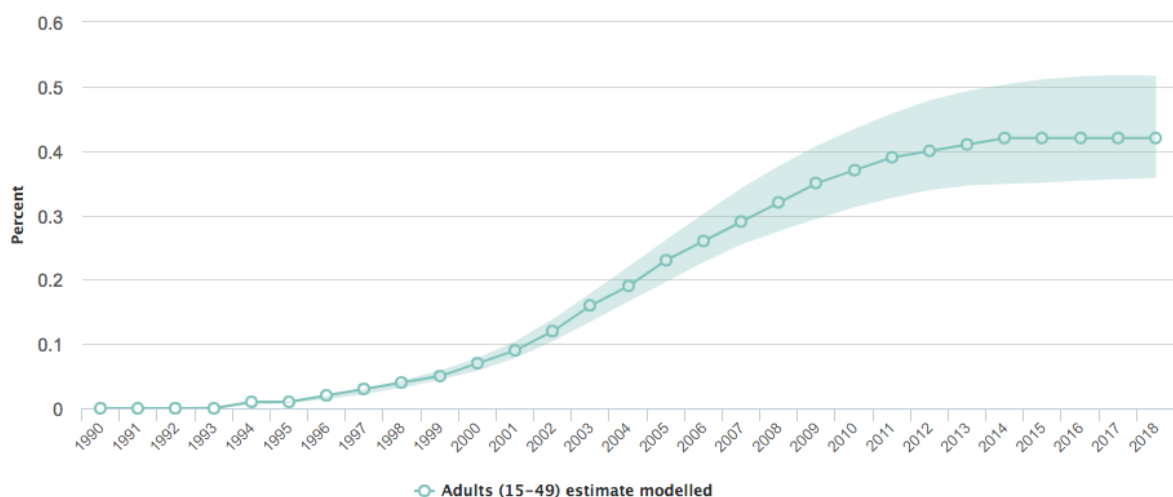
Figure 2. HIV Prevalence rates among adults (15–49) in Indonesia between 1990–2018
[Source: UNAIDS Estimates 2019]

2007–present: The UNAIDS Report on the Global AIDS Epidemic in 2008 reported that the HIV/AIDS epidemic in Indonesia was one of the most rapidly growing among Asian countries. At the end of 2000, only 16 out of 34 provinces had reported HIV/AIDS cases, which rapidly increased to 25 provinces in 2003 and 32 provinces in 2006. By 2017, all 34 provinces were reported to have HIV/AIDS cases (MoH, 2017).

1.5. Cost of Combatting HIV/AIDS and the Main Funding Agencies

The National AIDS Spending Assessment (NASA) is an instrument used to measure the total budget devoted to implementing HIV/AIDS programs. Indonesia has conducted an assessment using NASA instruments since 2006, the results of which serve as the basis for the preparation of HIV/AIDS program financing policies in Indonesia (INAC, 2006, 2012, 2015).

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Domestic Public	15.038	15.162	21.514	21.318	27.779	29.728	36.852	51.413	60.488
Domestic Private						71	52	59	26
Intenational	41.538	43.258	30.046	38.966	41.367	42.816	50.151	47.047	46.281
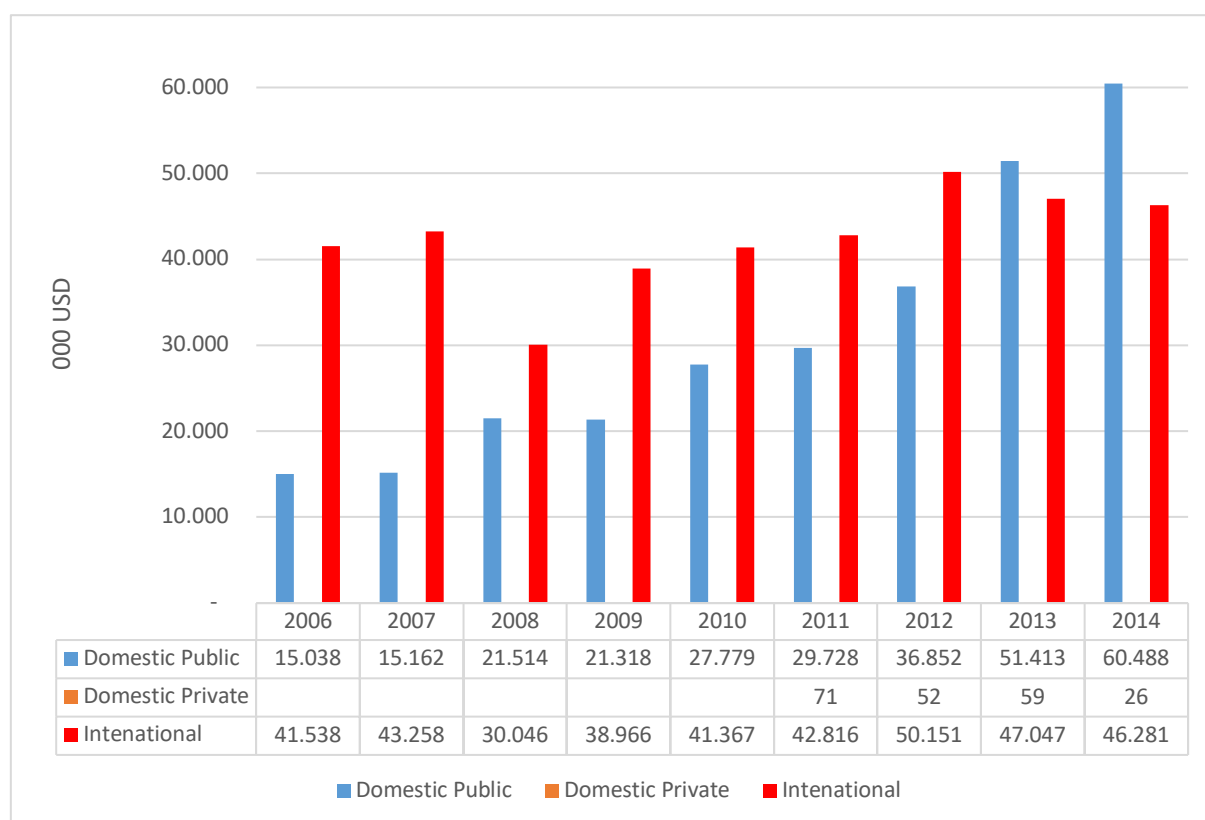
Note: domestic private expenditures are not visible because they are comparatively very low

Figure 3. Trend on HIV and AIDS Program Expenditure in Indonesia between 2006 and 2014 [Source: NASA 2006–2015]

Figure 3 above illustrates that until 2013 the financing of HIV/AIDS programs was still dominated by international assistance. However, 2013 marked the turning point, in that the percentage of the domestic financial contribution exceeded that of international donors, with 52% and 57% in 2013 and 2014, respectively; this increase differs from the results of NASA reports in the previous years (INAC, 2006, 2012, 2015).

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Regarding budget utilization, the latest report shows that the largest expenditure allocated is for service and medication (especially ARV procurement), reaching 33% of the total 2014 HIV/AIDS budget allocation, equivalent to US$ 35 million. The second largest proportion is for strengthening the administration and management of the program, which is in the range of 28–29%. While the budget allocation for prevention in recent years has declined, it is inversely related to the distributions for human resources (financial incentives and increased officer capacity), which increased drastically from 2% of total expenditures in 2009 to 16% in 2014 (INAC, 2015).

International aid has been focused on three main types of projects: 1) Providing incentives for human resources, 2) program management and administrative reinforcement, and 3) programs related to prevention. The Global Fund has always been the largest contributor of international aid to Indonesia. In addition to the main role of the Global Fund, the Australian government also plays a significant role, providing a quarter of all international assistance to HIV/AIDS programs in Indonesia. The table below illustrates the percentages and trends of international donors from the last two editions of the NASA report (INAC, 2015).

NO	INTERNATIONAL SOURCE	TOTAL 2011		TOTAL 2012		TOTAL 2013		TOTAL 2014	
		USD	%	USD	%	USD	%	USD	%
	MULTILATERAL	*30,239,464.00*		*27,734,502.00*		*31,104,660.16*		*29,415,201.19*	
1	Global Fund	27,428,479.00	64.06%	24,858,113.00	49.57%	29,724,201.94	63.18%	27,570,560.19	59.57%
2	UN Agencies	2,764,342.00	6.46%	2,821,289.00	5.63%	1,327,928.00	2.82%	1,733,774.00	3.75%
3	World Bank	46,643.00	0.11%	55,100.00	0.11%	52,530.22	0.11%	110,867.00	0.24%
	BILATERAL	*12,576,180.00*		*22,416,277.00*		*15,891,828.37*		*16,642,283.19*	
1	Government of Australia	8,788,691.00	20.53%	16,496,612.00	32.89%	11,698,007.88	24.86%	11,380,589.74	24.59%
2	Government of USA	3,736,517.00	8.73%	5,728,045.00	11.42%	4,193,820.49	8.91%	5,261,693.45	11.37%
	OTHER INTERNATIONAL	*50,972.00*	*0.12%*	*191,620.00*	*0.38%*	*51,047.80*	*0.11%*	*223,277.82*	*0.48%*
	TOTAL	*42,815,644.00*		*50,150,779.00*		*47,047,536.33*		*46,280,762.20*	

Table 1. Trend in International Donor assistance for HIV/AIDS Program in Indonesia between 2011 and 2014 [Source: INAC 2012, INAC 2015]

Chapter 2
Problem Statement, Objectives, Justification, and Methodology

2.1. Problem Statement and Justification

By the end of 2015, which marked the end of the Millennium Development Goals (MDGs), and the beginning of 2016, a new agenda was set called Sustainable Development Goals (SDGs), having 17 main objectives to build a better world leaving no one behind. In contrast to the MDGs, which were basically directed towards low or middle-income countries, SDGs are more universal, including health issues across countries as a shared global commitment within the broader framework of sustainable development.

In relation to HIV/AIDS prevention, in contrast to the MDGs, which clearly state as one of its objectives in point six the fight against HIV/AIDS, malaria, and other diseases, the SDGs as described in the above paragraph have a more universal goal of achieving health and welfare for everyone (the third goal in the SDGs). With that goal, there is no longer a specific target on one particular disease, but rather the goal of holistic health and welfare is advanced. This means that to achieve this universal goal, all health issues and related issues must be addressed, including the HIV/AIDS problem.

The target of HIV/AIDS-related SDGs has been translated by UNAIDS into the form of the *Fast Track: End AIDS by 2030* strategy. UNAIDS suggests there that the AIDS epidemic will end by 2030. Upon reaching this target, AIDS will no longer pose a growing threat to public health as the spread of HIV will then be controlled and the impact of HIV on people's lives can be reduced and addressed. Thus, the life expectancy and productivity of People Living with HIV/AIDS (PLHIV) will increase, as well as the costs incurred owing to HIV being reduced. In the context of Indonesia, one response to the Fast Track strategy developed by UNAIDS is the Fast Track program of Jakarta City to end the AIDS epidemic by 2020. The target in 2020 is known as the 90-90-90 strategy, whereby by 2020, 90% of all people living with HIV will know their HIV status; by 2020, 90% of all people with diagnosed HIV infections will receive sustained antiretroviral therapy; and by 2020, 90% of all people receiving antiretroviral therapy will have viral suppression.

The global HIV epidemic claimed fewer lives in 2016 than the year before, for the first time in nearly 20 years. Prevention programs have managed to reduce the number of new HIV infections per year to 2.1 million by 2015, a 35% decrease since 2000. The expansion of antiretroviral therapy has reduced the number of people dying of HIV to about 1.1 million in 2015, nearly 45% less than in 2005.

The trend of the HIV/AIDS epidemic globally has shown many positive notes in recent years. HIV/AIDS-related deaths have fallen by 48%, from

1.9 million in 2005 to 1.0 million in 2016. The number of children 0–14 years old who died from AIDS-related causes has also declined by almost half in the last six years, from 210,000 in 2010 to 120,000 in 2016 (UNAIDS, 2017).

In addition to the various achievements that have been made in tackling HIV/AIDS, recent data from UNAIDS show that many challenges remain. The latest report from UNAIDS shows 36.7 million people around the world currently living with HIV (PLHIV), of whom 17.8 million are women > 15 years old and 2.1 million are children < 15 years old. The number of new HIV infections (incidence) in 2016 was 1.8 million people, of whom 1.7 million were adults and 160,000 children < 15 years old.

Indonesia is one of 11 South-East Asia Region (SEAR) member states, where the epidemic of HIV/AIDS represents 10% of the total PLHIV in the world, around 3.5 million people. HIV prevalence in this region is relatively small (0.3%), with 180,000 [150,000–210,000] new HIV infections and 130,000 [110,000–150,000] AIDS-related deaths throughout 2015. 99% of PLHIV in SEAR are concentrated in five countries (India, Indonesia, Myanmar, Thailand, and Nepal), while the other 1% PLHIV are spread across Bangladesh, Bhutan, Maldives, Sri Lanka, and Timor-Leste. Another country in SEAR, the Democratic People's Republic of Korea, has not reported HIV/AIDS cases to date. The table below provides a comparison of the HIV/AIDS epidemic among the top five SEAR countries in 2016:

	Number of PLHIV	Number of HIV New Infection	Incidence	Prevalence
Indonesia	620,000 [530,000 - 730,000]	48,000 [43,000 - 52,000]	0.32 [0.28 - 0.37]	0.4 [0.4 - 0.5]
India	2,100,000 [1,700,000 - 2,600,000]	80,000 [62,000 - 100,000]	0.1 [0.08 - 0.14]	0.3 [0.2 - 0.3]
Myanmar	230,000 [200,000 - 260,000]	11,000 [9,900 - 12,000]	0.38 [0.33 - 0.44]	0.8 [0.6 - 0.9]
Nepal	32,000 [28,000 - 38,000]	940 [840 - 1,000]	0.06 [0.05 - 0.06]	0.2 [0.1 - 0.2]
Thailand	450,000 [400,000 - 520,000]	6,400 [5,800 - 7,000]	0.19 [0.16 - 0.23]	1.1 [0.9 - 1.3]

Table 2. Epidemiology of the HIV epidemic in the 11 WHO-SEAR member states in 2016
[source: UNAIDS Aidsinfo 2017]

HIV epidemics in SEAR vary in levels and trends. Thailand is the only SEAR country with an HIV prevalence of more than 1%, which has declined from 1.7% in 2002 to 1.1% in 2016. Prevalence in India, Myanmar, and Nepal was 0.3%, 0.8% and 0.2%, respectively, with the trend showing a decline from 2002 to 2016. Although the HIV prevalence in Indonesia has been stable since 2009, the prevalence has not declined since 2002 (see Figure 4) (UNAIDS 2017):
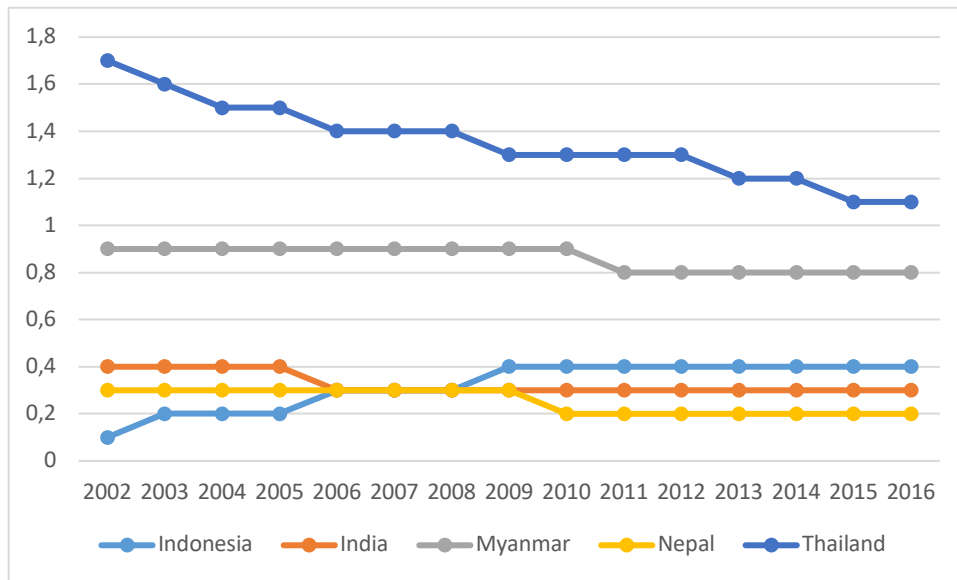
*Figure 4. Trend in Prevalence in 5 high-burden countries SEAR between 2002 and 2016
(Source: UNAIDS Aidsinfo, 2017)*

The trend in Indonesia can also be seen from a comparison of incidence figures. In 2002, HIV incidence in Indonesia was ranked fourth among the top five high-burden countries, but by 2016, HIV incidence in Indonesia ranked second behind Myanmar (see Figure 5) (UNAIDS, 2017):
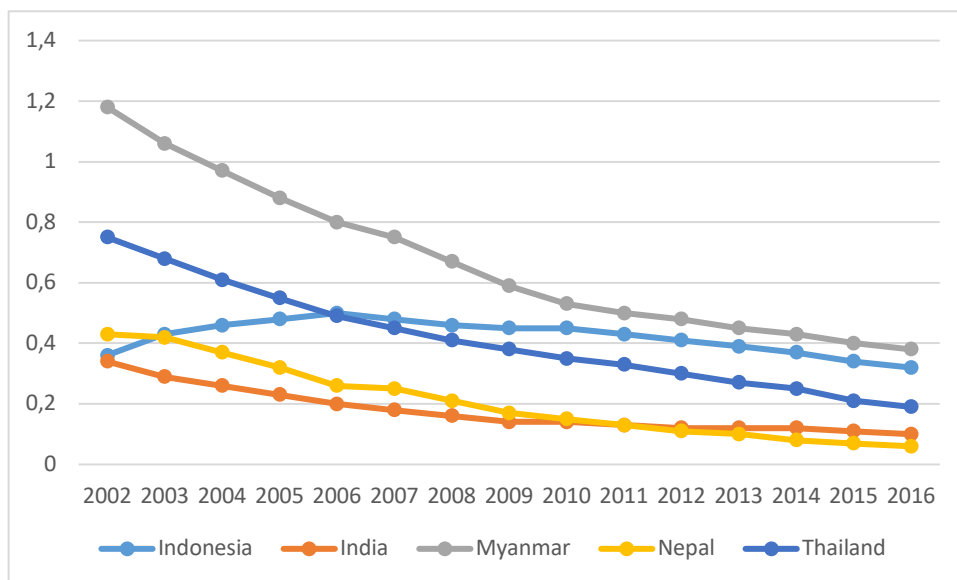
*Figure 5. Incidence trends in 5 high-burden SEAR countries between 2002 and 2016
(Source: UNAIDS Aidsinfo, 2017)*

HIV/AIDS is still an important issue in Indonesia, particularly the issue of the prevalence never showing a declining trend unlike the decline in the other countries in the SEAR region. Why is the incidence rate still relatively high compared to other countries in the SEAR region? Of course, these issues require much attention and resources to achieve the target set in the SDGs of ending the HIV epidemic by 2030. If prevention efforts do not receive serious attention in the next few years, it is very likely that the

burden of disease caused by HIV will continue to rise in Indonesia, when it should be declining.

2.2. Objectives
2.2.1. General Objective

To explore the relevant factors and provide recommendations to the Indonesian MOH with a view to eliminate HIV by 2030 according to the SDGs goals.

2.2.2. Specific Objectives
1. To describe the development of the HIV/AIDS epidemic in Indonesia.
2. To investigate the determinants of the HIV/AIDS epidemic in Indonesia.
3. To give an indication of the necessary financial investments in HIV/AIDS control up to 2030.
4. To formulate possible recommendations to improve the HIV/AIDS program in Indonesia.

2.3. Methodology
2.3.1. Study Design

This study comprises a literature review and a desk study. The literature and available data on the HIV/AIDS epidemic and its determinants, as well as on interventions for HIV/AIDS programs in Indonesia were thoroughly reviewed to achieve the study objectives.

2.3.2. Search Strategy

A literature search using pre-determined keywords was conducted using the electronic databases of PubMed, The Cochrane Library, and Catalogues UvA. Grey literature and data were also gathered through specific websites such as WHO, UNAIDS, AIDSDATAHUB, and the World Bank. Important information from databases of the Ministry of Health Indonesia (articles, policy papers, and data reports) was also used.

2.3.3. Keywords

The following keywords (either single or combined) were used for the literature search: *HIV, AIDS, Indonesia, epidemiology, determinant, incidence, prevalence, policy, governance, budgeting, financial, sustainability, exit strategy, transition, South-East Asia countries, low and middle income countries, MDGs, SDGs, global health, UNAIDS, gender, risk behavior, unsafe sex, condom, harm reduction, stigma, discrimination, ART*, as well as some keywords in Bahasa Indonesia, such as: *program, pencegahan, anggaran, intervensi, dan penyebab*.
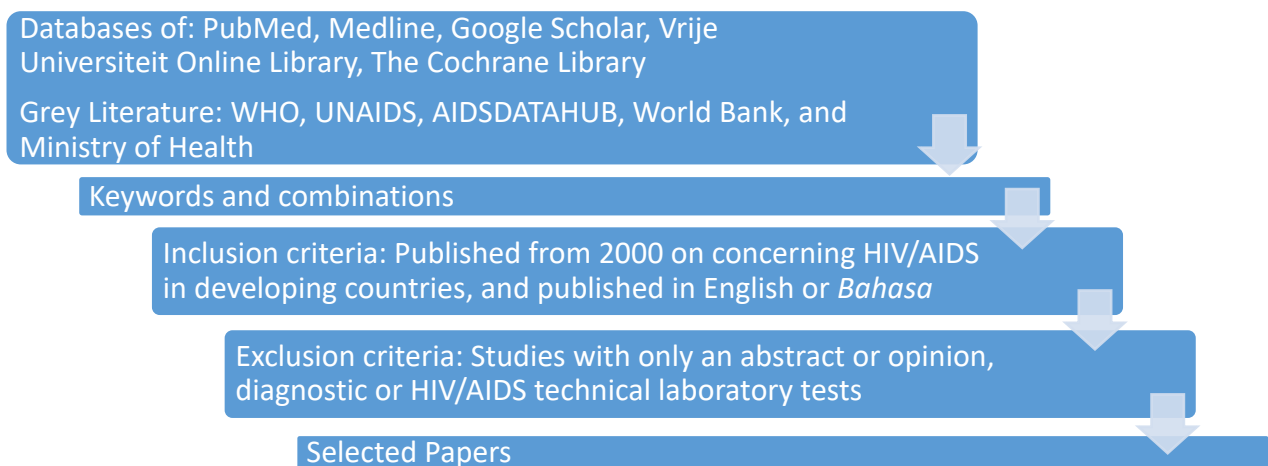
Figure 6. Paper search strategy

2.3.4. Conceptual Framework

The conceptual framework of a study is very important for guiding the process of analysis and answering the research objectives. This study uses a framework developed by Baral et al. (2013) known as the Modified Social Ecological Model (MSEM). MSEM consists of five layers: Individual, social and sexual network, community, public policy, and the HIV epidemic stage.

There are several reasons why this research uses the MSEM as a conceptual framework. First, the MSEM was developed to help illustrate the multi-level risk of HIV infection and guide the development of epidemiological studies of HIV, which is consistent with one of the aims of this study. Second, the MSEM is a version of the pre-existing conceptual framework that modifies the level of risk and adds a stage or level of the HIV epidemic. Thus the concept is more comprehensive because it not only explains individual-level risks but also the dynamics of population-level epidemics.
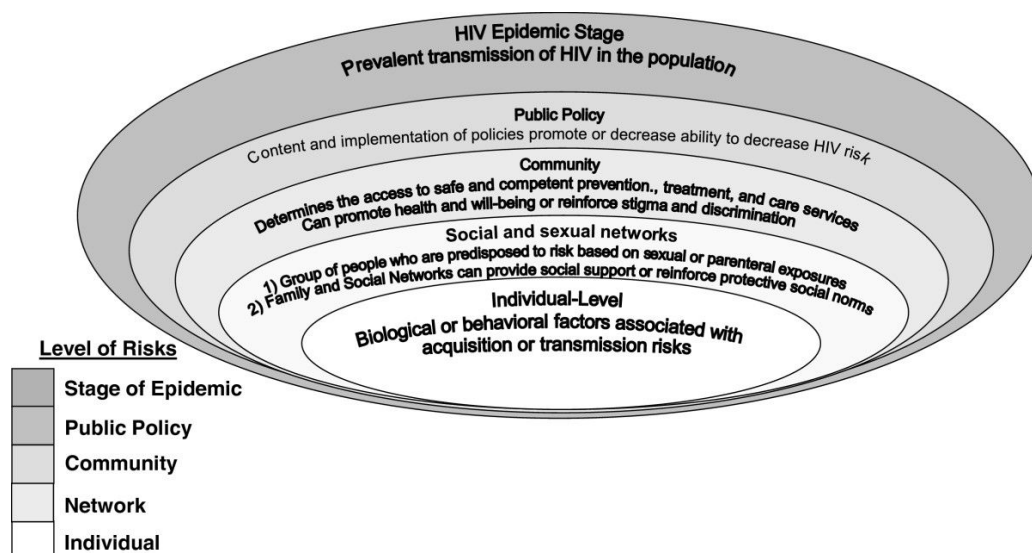
Figure 7. Modified Social Ecological Model (MSEM); [Source: Baral et al., 2013]

Chapter 3
Development of the HIV/AIDS Epidemic in Indonesia

3.1. The Burden of HIV/AIDS in Indonesia

HIV/AIDS in Indonesia is not only limited to health problems but also involves a significant and important social aspect. Although the increasing trend of new cases (incidence) peaked in 2007, it has since gradually declined (see Figure 1). However, although the prevalence of this disease continues to show an upward trend, studies suggest that the actual number of cases is in fact far higher than what is reported (Riono, 2014).

Data from Ministry of Health during the period from 1987 until March 2017 showed a total of 242,699 HIV infections and 87,453 AIDS cases. Most HIV infections occur in people's productive ages, that is, in the age group of 20–29 years and 30–39 years (31.4% and 30.6% of the total number of AIDS patients from 1987–2016). The cumulative numbers of AIDS cases by sex were 56% for males, 32% for females, and 12% remaining unknown/unlisted sex. The cumulative highest number of AIDS cases by occupation/status are housewives (12,302), employees (11,744), entrepreneurs (11,176), farmers/fishermen (4,062), laborers (3,840), sex workers (2,963), civil servants (2,219), and students (2,034) (MoH, 2017).

As of December 2015, 407 of the 507 districts/cities in Indonesia have reported cases of HIV/AIDS; while the 100 other districts/cities have not so reported, this does not mean that the prevalence in the 100 other areas is 0, for there is a possibility that because of the great extent of the territory of Indonesia and deficiencies in the record system, reports of cases of HIV/AIDS have not been collected from all regions in Indonesia. The five provinces with the highest AIDS case rates per 100,000 population between 1987 and the 2nd quarter of 2016 were Papua Province (472.86), followed by West Papua Province (228.95), Bali (174.85), Jakarta (90.5), and Riau Islands (64.08). Case Fatality Rate (CFR) figures show a slightly declining trend over the last ten years, from 11.70% in 2006 to 11.11% in 2016. This indicates that treatment efforts are quite successful in reducing the death rate from AIDS (MoH, 2016).

3.2. Epidemic Trends among Key Populations

WHO define key populations as "groups who, due to specific higher-risk behaviours, are at increased risk of HIV *irrespective of the epidemic type or local context*". The epidemic trend of HIV/AIDS among the key populations at risk of HIV infection in Indonesia in the last five years did not change much, HIV infection among drug users (PWIDs) and Heterosexual showing a downward trend, but the opposite occurring in men who have sex with men (MSM), for which an increasing trend has manifested in recent years. Figure 8 below shows the development of HIV infections based on risk factors in the last five years (2010–2015).

	2010	2011	2012	2013	2014	2015
PWIDs	2.780	3.299	2.461	2.675	1.794	802
Heterosexual	6.623	10.668	10.825	14.792	12.511	9.873
MSM	506	1.040	1.514	3.287	3.858	4.241
Others	4.362	6.549	6.903	8.499	6.075	4.677
Unknown	7.320	-	-	-	-	-
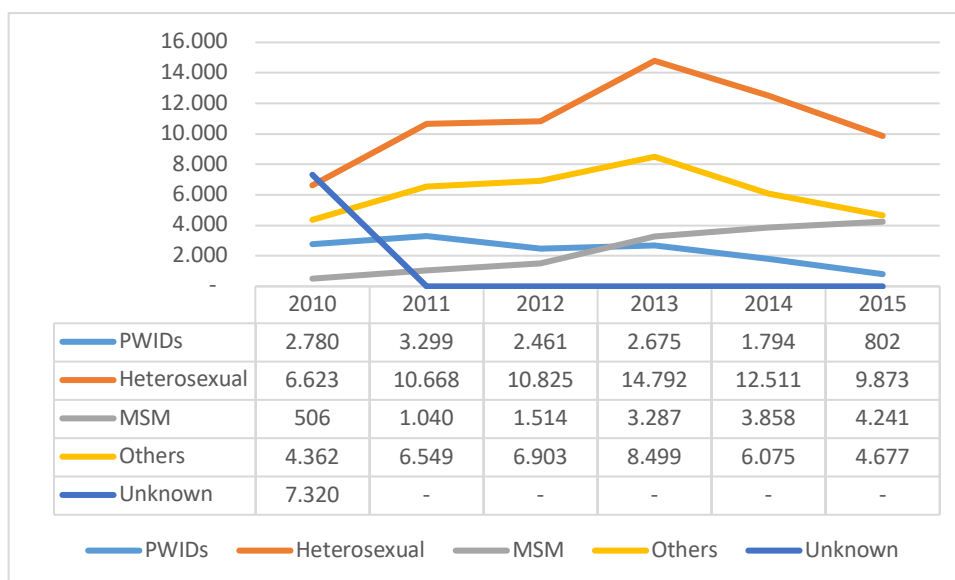
Figure 8. HIV Incidence in *Indonesia per 1000 population by risk factors between 2010 and 2015 [Source: MoH, 2016]*

In 2015 there were an estimated 613,435 people living with HIV (PLHIV) in Indonesia. As in other Asia-Pacific countries, HIV & AIDS in Indonesia remains concentrated in sub-populations exposed to a higher risk of HIV transmission due to their behavior. These people are usually called "Key Populations" and include women sex workers and their clients, Injection Drug Users, Men with Sex with Men (MSM), and transgenders. The national HIV prevalence rate for the age group of 15 years and over is estimated at 0.33% in 2015. Provincial estimates for HIV prevalence range from 0.1% to more than 2.0%. The highest absolute number of PLHIV was found in Jakarta and in the provinces with the highest population on the island of Java. Papua and West Papua also have high numbers of PLHIV. Although HIV was initially caused by the use of shared needles among IDUs, transmission through sexual contact is currently the primary mode of transmission of HIV. The number of new infections per year is estimated at around 49,000 (MoH, 2016).

A slightly different epidemic trend exists in the provinces of Papua and West Papua (commonly known as Tanah Papua), an area in Eastern Indonesia. Although Tanah Papua accounts for only 1.57% of Indonesia's population, these provinces accounted for over 17% of all Indonesia's total AIDS cases for 1987–2017. The number of PWIDs in Tanah Papua is lower than in other parts of Indonesia; hence the main factor for the transmission of HIV is sexual contact, especially heterosexual contact. The prevalence rate in Tanah Papua is highest of all regions in Indonesia, reaching 2.3%. Non-circumcised men had a higher risk of HIV infection, with a prevalence of 2.4% compared with 0.1% in the circumcised group (IBBS 2013).

There are many factors influencing the higher prevalence of HIV / AIDS in Tanah Papua than in other regions in Indonesia, and the weak education

and large numbers of commercial sex workers (PSKs) from other regions domiciled in Papua are some of the causes. Another factor is the lack of health centers and hospitals, which makes it difficult for people to access ARV drugs. From the topographical aspect, the spread of people who live in the highlands, lowlands, or valleys and adherence to certain social customs and beliefs are challenges for organizing health in Papua (Butt et al., 2002).

Chapter 4
Determinants of the HIV/AIDS Epidemic in Indonesia

Many factors have had an important influence on the incidence and prevalence of HIV/AIDS in Indonesia. This section will discuss HIV/AIDS determinants related to the main transmission patterns in key populations in accordance with the MSEM framework.

4.1. Individual Level

4.1.1. Awareness of the Disease

Malonzo et al. (2011) suggested that awareness of HIV/AIDS risks had no relation to condom use in a study of 40 MSM in the Philippines. Research has shown that even today, FSWs in Indonesia still lack knowledge and comprehension of HIV (Gay et al., 2012). Some believe that taking preventive actions before or after sexual intercourse, such as consuming antibiotics or traditional herbs or washing the hands with special cleaning agents, can prevent HIV. Others even believe short sexual intercourse can reduce or prevent the risk of sexually transmitted diseases (STDs) (Basuki, 2002).

4.1.2. Risky Sexual Behavior

The use of condoms by FSWs is still low. This contributes to the increases of HIV and STD incidence. The use of drugs and alcohol influences the decision to use condoms and can lead to risky behavior. There are many incidents in which alcohol is consumed before a sexual transaction (Safika, 2009). Vulnerability toward HIV contractibility is thought to be related to a decreased motivation to take preventive measures (Yang, 2011). A survey in Bali showed that 5% of sex workers are too drunk to remain conscious during sexual transactions, and therefore are unable to try to even negotiate the use of condoms (*The Jakarta Post*, 2012).

The risk of HIV transmission in Indonesia is currently dominated by high-risk heterosexual behavior (MoH, 2017). The results of a study on the pattern of changes in HIV transmission in West Java Province showed an increase in heterosexual transmission in 2012 that replaced PWID transmission as the main route of HIV transmission (Pratiwi, 2015). In another study (Fetty et al., 2016) it was found that heterosexual transmission is the most important transmission route in Indonesia. It was shown that the high rates of infection among heterosexual groups were influenced by several factors, such as a low rate of condom use, lack of information and education, and high levels of group mobility related to employment, increasing the risk of HIV infection. These results pose considerable challenges for outreach programs.

Unprotected anal intercourse is a major HIV transmission factor in MSM and transgender groups worldwide. The results of the study in the MSM group in Jogjakarta show that cultural perspectives and norms that prohibit same-

sex marriages and sexual contacts make MSM groups hide their sexual orientation, and consequently this group engages in unprotected sex, increasing the likelihood of HIV transmission (Fauk et al., 2017). Other studies in Central Java Province also showed that the MSM group had a higher risk of HIV/AIDS transmission than heterosexuals, especially through sex with more than one partner and anal sex (Laksana, 2010).

4.1.3. STI Incidence

There are reports of a high incidence of STDs in the population of FSWs in Indonesia (Bollen, 2012; Ford, 2000; Magnani, 2010; Thorpe, 1997). Epidemiological studies suggest that Sexually Transmitted Infections (STI) may serve as a biological marker of taking sexual risks (IBBS, 2007). STIs increase vulnerability to contracting HIV through the dormant phase via the skin or urinary tracts as *ports d'entrée.* The presence of STIs also increases the possibility of HIV transmission to the sexual partner (CDC, 2010).

4.1.4. Occupation

High-risk groups include FSWs, the transgendered, and immigrant workers owing to their frequent meetings with various people such as truck drivers, taxi drivers, sailors, and port workers. Unfortunately, they have a lack of knowledge and comprehension of HIV (USAID, 2010).

4.2. Social and Sexual Networks

4.2.1. Broad Sexual Networks

"In the first six months of 2011, the percentage of HIV infection through shared syringes is 16.3%, while STD caused 73% of total HIV infection" (Faisal, 2012). Wide sexual networks and multiple sexual partners play a key role in the high prevalence of HIV/AIDS. Sexual networks are common for men on business trips. It is not uncommon for men to have more than one permanent sexual partner apart from their wife. However, the sexual networks not only include people that they know, but also sex workers (male and female). About 49.1% of men reported that they had sexual intercourse with FSWs and 19.9% reported that they had sex with non-commercial women throughout 2008 (Mustikawati, 2008).

A study conducted in 2012 by the Ministry of Health and FHI involving 275 participants in MSM suggested that the sex networks of HIV/AIDS high-risk communities were very complex. Homosexual partners, in fact, also obtained sexual services from prostitutes (Praptoraharjo et al., 2007).

4.2.2. Partner/Client Influence

Another study found that unprotected sexual intercourse was reported as more satisfying to more men and women than protected sexual intercourse (Randolph, 2007). Many sex worker clients refuse to use condoms because they feel that it was their choice to have sex and also because they were paying for it. Others also believed that it is unnecessary because they know the sex worker from previous sexual relations (Basuki, 2002). In order to

satisfy the clients, sexual workers often do not force their clients to use condoms, as they are afraid of losing their customers if they force them to do so. In addition, sexual workers are also willing to perform unsafe sex acts such as anal sex to satisfy their clients. Therefore, in such cases, client satisfaction overrides safe sex as a measure preventing the contraction of HIV (Fajans, 1995).

4.3. Community

4.3.1. Religious Influences

There is a common belief in Indonesia, a country where most people are Moslem, that religion can prevent sex before marriage and therefore condoms must not be used in the context of marriage. In 2008, there were approximately 200,000–300,000 sexual workers and 7–9 million men as potential clients (National AIDS Commission Indonesia, 2008). Many religious leaders acknowledge this as a problem and are proactive in their belief. Also, many people are afraid to go against their religious leaders. In 2007, condom machines were removed from sex places owing to pressure from religion activists. In 2008 and 2009, there were no government funds for condoms (Bolen, 2010).

4.3.2. Stigma and Discrimination

Stigma and discrimination are among the factors that influence the life of people with HIV/AIDS and high-risk population such as sex workers and men who have sex men sex. The marginalization of this population prompts them to avoid places where they can receive treatment, education, and support. Harassment also promotes this alienation owing to the disturbances of mental health that it causes. The alienated population shares the thought that they are valueless owing to the deadly disease, complicating the effort to abolish stigma and discrimination (Stangl, 2010).

4.3.3. Poverty

Globally, poverty and low education contribute to the risk of HIV infection. Many children, parents, or siblings are forced to support the family; however, they have low education owing to work. Therefore, sex work is a promising source of income for many of them (Setyaningsih-Mamahit, 1999).

4.3.4. Limited Knowledge

Even though policies for the promotion of safe sex and regulation of drugs have been authorized by the Ministry of Health, their implementation remains a challenge in Indonesia for political and economic reasons (EDUCAIDS, 2012). A survey of students in rural areas in Indonesia showed that only 18% of the students in Jakarta and 30% in Surabaya have received sexual and reproductive health education at school. Meanwhile, knowledge on HIV/AIDS was mostly received from the media (Pohan, 2011). Another survey showed that only 14% of young people aged 15–24 years can identify correctly how to prevent transmission of HIV/AIDS from sexual intercourse (Win, 2012). There is an effort to increase knowledge

related to the transmission of HIV/AIDS in the population. However, the practice remains a challenge because it is not only about increasing knowledge but also changing behavior (Mboi & Smith, 2006).

4.3.5. Availability of Condoms

Many sex workers reported that condoms are not always available for them and others have condoms but do not use them (IBBS, 2007). Indonesia has established and promulgated regulations for 100% use of condoms during sex with sex workers; however, the distribution is still limited to prostitution areas (Kendall, 2010).

4.4. Public Policy Determinants

4.4.1. Decentralized Government

Indonesia has a decentralized health system. All health policies, strategies and monitoring are the responsibility of the Ministry of Health, while provincial and city/district authorities are fully responsible for health services in their administrative regions. Even though policies are adopted in the capital, policies throughout the nation are carried out in a decentralized manner in which each city is authorized to decide certain matters (Global Health Initiative, 2011). However, it is still unclear as to what extent the local government can introduce policies (USAID, 2007). This also influences the health policies related to HIV/AIDS in terms of funding and policy practice.

4.4.2. Lack of Universal Health Coverage

Indonesia has many public health centers and hospitals; however, most funds come from external sources (Riyarto et al., 2010). Indonesia has a strong commitment towards universal access to health care; however, only the very poor sector of the population receives subsidized health care services (20% of the total population). This means that 80% of the population must pay for their own health care, but only few are capable of doing so (Monshipori and Trapp, 2012). Therefore, many people do not use the health care system for prevention, and as many sex workers are unable to pay for health expenses, they cannot receive screening tests for HIV/AIDS or STD or preventive counseling.

Chapter 5
Programs, Interventions, and Investment Related to HIV/AIDS Prevention

5.1. Prevention and Treatment Programs

This chapter discusses the programs and interventions related to preventive measures against HIV/AIDS in Indonesia, both those that have been implemented and those that have not. Countermeasures against HIV/AIDS in Indonesia cannot be separated from global health initiatives that give funds through global programs and schemes (for example USAID from the United States and DFAT from Australia). The presence of global health initiatives through their programs helps to fund programs for HIV/AIDS and in particular to support HIV/AIDS prevention in Indonesia.

Until now, HIV/AIDS prevention and treatment programs have been vertically organized, in that the role of the international development partners as part of Global Health Initiatives (GHI), working through governments and NGOs, still dominates the direction and strategies for managing HIV and AIDS at the national and local levels. In addition, capacity constraints on both government and NGOs at the central and regional levels result in limited capability in handling HIV and AIDS (PKMK FK UGM, 2016).

Indonesia established the National AIDS Commission (NAC) in 1994 in order to address the growing prevalence of HIV. NAC coordinates government and non-government organizations' activities. The "*Aksi Stop AIDS*" program (ASA) was begun in 2000 by Family Health International (FHI). This program has an outreach specifically designed for FSWs that works through local NGOs in different provinces to provide outreach education, preventive services (providing or selling condoms), and preventive treatments for STIs. Condoms as well as "safe sex packets" are distributed to FSWs. These safe-sex packets include five condoms and information/educational material. They also work through local clinics to provide STI diagnosis and treatment and HIV counseling and testing (Reynolds, 2009).

5.2. Current Spending on HIV/AIDS Control

Data on the investments that have been made in HIV/AIDS programs can be derived from the National AIDS Spending Assessment (NASA) reports that have been completed since 2006, most recently in 2015. AIDS Spending Category (ASC) Number 02 (care and treatment) took up the highest proportion (33%) during the last two years of the NASA report. It is followed by the proportion for management and administrative

strengthening (ASC 04) and incentives to support human resources, on which around 24% and 23%, respectively, was spent. Details of investment in HIV/AIDS programs based on ASC in 2013–2014 are shown in the table below:

ASC	2013		2014	
	USD	%	USD	%
Prevention	17,782,861.14	18.05%	17,663,981.09	16.54%
Care and Treatment	32,554,467.81	33.04%	35,003,781.15	32.78%
Orphans and Vulnerable Children	-	0.00%	14,017.70	0.01%
Program Management and Administration Strengthening	23,632,701.53	23.99%	31,546,855.77	29.54%
Human Resources	20,125,458.96	20.43%	17,746,053.61	16.62%
Social Protection and Social Services Excluding OVC	2,230,128.55	2.26%	2,337,733.95	2.19%
Enabling Environment	1,622,177.13	1.65%	1,922,293.65	1.80%
Research	571,485.38	0.58%	559,879.94	0.52%
Total	**98,519,280.49**	**100%**	**106,794,596.86**	**100%**

Table 3. The Distribution of HIV and AIDS Program Expenditure By AIDS Spending Category (ASC) in Indonesia by All Organisations 2013-2014 (USD) [Source: NASA, 2015]

The ASC trend in the last five years (2009–2014) shows a downward trend of expenditures for prevention programs. In 2009, the budget allocation for prevention reached 32% (US$ 19 Million), with a proportion of 75% of donor contributions. This figure continued to show a downward trend in subsequent years, reaching 27.59% in 2012 and 16.54% in 2014. This is inversely related to ASC Category 5, which includes expenditures on human resources, including financial incentives and the capacity of officers. In 2009, the proportion devoted to ASC 05 was only 2%; this increased to 12.24% in 2012 and to 16.62% in 2014. The following graph shows the trend of proportions of expenditure for HIV/AIDS programs by ASC.
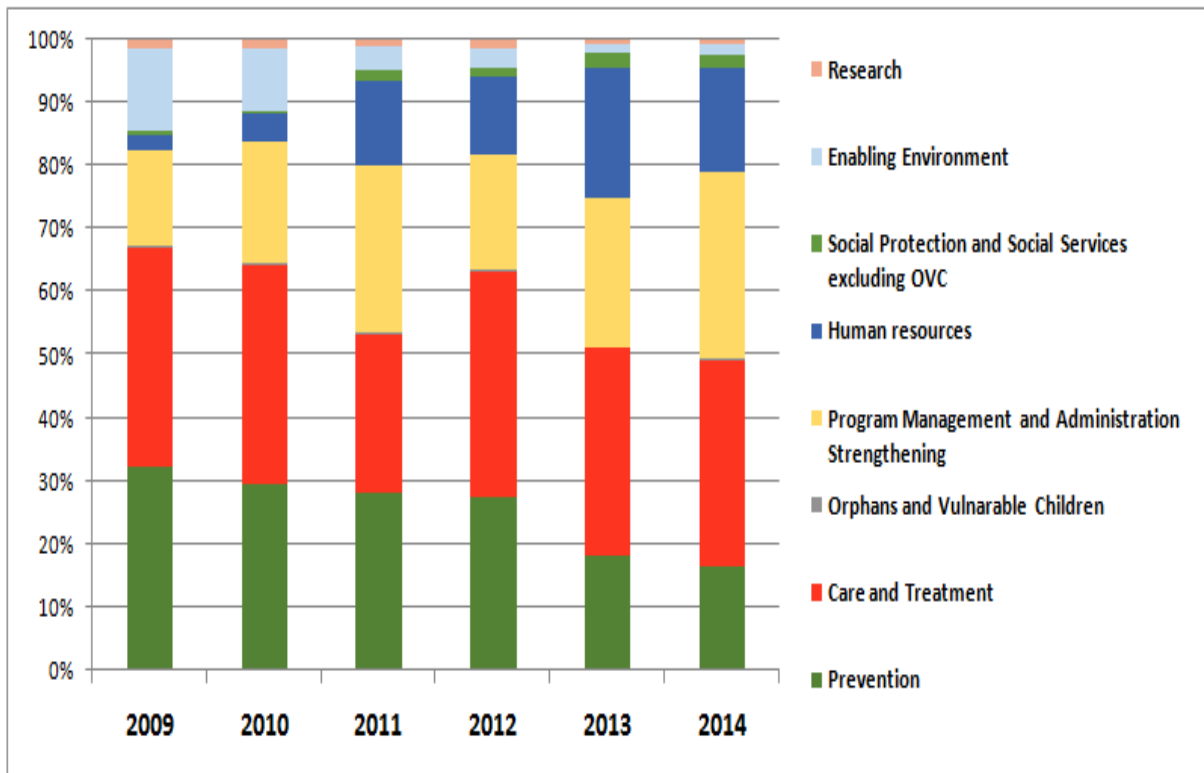
Figure 9. Trend on Proportion of HIV and AIDS Program Expenditure by AIDS Spending Category in Indonesia between 2009 and 2014 (US$) [Source: NASA, 2015]

Unfortunately, this NASA report does not elaborate further on the use of funds for each category, such as an explanation of how much of the funds are spent on ART, which is included in Care and Treatment. Data from UNAIDS show that ART coverage has remained low in Indonesia. Data from UNAIDS in 2016 that compared Indonesia to the surrounding countries (India, Thailand, Myanmar, Nepal) show that the percentage of people living with HIV receiving ART is much lower (13%) in Indonesia than in other countries (Thailand: 69%, Myanmar: 55%, India: 49%, Nepal: 40%).

According to the latest data from UNAIDS, there are 80,600 (13%) people with HIV receiving antiretroviral therapy in Indonesia in 2016. This number is projected to increase to 14.38% in 2019 (AEM, 2014). This projection also indicates an increase in the need for greater spending to deal with HIV/AIDS in the upcoming years.

Acceleration of Strategic Use of Antiretrovirals (SUFA) has been a priority in efforts to suppress the rate of HIV transmission and improve the quality of life of the Indonesian population. However, the implementation of such acceleration will face challenges due to the limited support through international aid. Efforts to improve the availability of domestic funding are also not easy, which would threaten the sustainability of HIV and AIDS prevention and mitigation programs in Indonesia.

In the latest official document of the Ministry of Health (Estimation and Projection of HIV/AIDS in Indonesia 2015–2020 using the ASIAN Epidemic

Model (AEM)), HIV prevalence in the population aged > 15 years will remain stable until 2019 and then start to decrease slightly to 0.32% by 2020. In the same report may be found the estimates and projections of AEM through 2015 to 2020 of the prevalence among the key populations.

Projections until 2020 show that the total number of MSM living with HIV will increase from 87,275 in 2015 to 111,902. Other groups projected to increase in terms of the number of HIV patients are male sex workers (from 6,200 to 7,664) and non-key population women (from 206,586 to 222,076). The number of HIV patients among other key populations is projected to remain the same or slightly decrease by 2020. Overall, the number of key population members living with HIV will increase from 613,435 in 2015 to 631,635 by 2018 and is projected to peak at 632,480 by 2019 before beginning to decline by 2020. Much of the modelling work is done using a combination of AIDS Epidemic Model (AEM) software and the Spectrum AIDS Impact Model (AIM) software package. These estimates and projections can serve as the basis for policies and spending regarding MSM groups, sex workers, and non-key population women and for setting priorities and devoting attention most effectively regarding prevention and treatment (MoH, 2017).

5.3. Required Future Spending on HIV/AIDS Control

The global target has been set to end the AIDS epidemic by 2030, an approach by UNAIDS to this ambitious target being known as *Fast Track: End AIDS by 2030*. The financial aspect is of major concern for reaching the target, because according to a study by Cost and the Financing Working Group in 2010 (known as the *AIDS Project 2031*) led by Robert Hecht, if the current trend in AIDS continues, AIDS will remain a major pandemic and the funds needed in resource-poor countries might reach approximately US$ 35 billion per year (Hecht et al., 2009).

The AIDS 2031 Cost and Financing Working Group estimates the cost of AIDS control in low and middle-income countries, based on Global Resource Needs Estimates made by UNAIDS but with some changes, and selects 15 example countries for global modeling by the AIDS 2031 project (Indonesia was not included). AIDS 2031 indicated long-term subsidizing requirements for HIV/AIDS to model nations with a scope of situations and wide variety in costs from US$ 397–722 billion internationally in 2009 and 2031, contingent upon arrangement decisions received by governments and donors. Estimated costs required for 2031 are calculated on the basis of population, cost per unit, and outreach to 2031 and estimate various interventions, such as pre-exposure prophylaxis, microbicides, and vaccines. The results of the model can be seen in the table below, which presents the estimated cumulative resources required for 139 low and middle-income countries for 2009–2031:

Scenario	Current Trends	Rapid Scale-up	Hard Choices for Prevention	Structural Change
Cumulative Resources Required, US$ Billions (2009-2031)	490	722	397	579
Cumulative Life Years Gained, Millions (2009-2031)	148	235	232	99
Cumulative Adult AIDS Deaths, Millions (2009-2031)	45.1	38.8	39.6	44.6
Cumulative Adult HIV Infections, Millions (2009-2031)	47.7	33.4	38.7	36.5
Annual Resources Required, US$ Billions (2031)	23.7	35.3	18.8	31.9
Number of People on ART, Millions (2015)	8.8	11.6	11.3	5.7
Number of People on ART, Millions (2031)	10.1	13 .1	13.2	8.6
Number of New HIV Infections, Millions (2031)	2.1	1.3	1.7	1.2

Table 4. Results of the Global Modeling Key Output and Outcome indicators, 2009–2031
[Source: Hecht et al., 2009]

The above table roughly indicates the financial needs for future HIV/AIDS programs under four scenarios. Under current trends US$ 490 billion in cumulative resources will be required between 2009–2031, while the other three scenarios modeled also require different cumulative resources as described below:

1. *Current Trends*: In 2010, AIDS 2031 projects that the range for interventions in key populations will continue to grow at the level achieved in 2010, and will account for approximately two-thirds of universal access goals by 2015 and remain at those levels until 2031. The target of elimination of HIV/AIDS will not be reached by 2030 if treatment programs and spending remains the same as current trends.

2. *Rapid Scale-Up*: Under this scenario, the country estimates indicate the achievement of universal access for key prevention, care and treatment, and support services for vulnerable children by 2031. The important key in this scenario is strong political support and adequate resources (including financial).

3. *Hard Choices for Prevention*: This scenario focuses on the most at-risk populations, including sex workers, men who have sex with men, and injecting drug users. The main consideration of this scenario is the limited resources that follow the most cost-effective approach but

can achieve maximum impact. The side effects of this scenario are that countries with a low epidemic and centralized levels will pay less attention to interventions for the general public.

4. *Structural Changes*: Under the consideration that HIV/AIDS is a long-term problem, this scenario also pays attention to other urgent issues, including reducing violence against women, changes in workplace policies that separate workers from families, removing barriers through stigma, and strengthening health systems. The advantages of this scenario, structural intervention (e.g., prevention of gender-based violence), have advantages besides measures against HIV/AIDS, so that the burden cost of the program can be shared with programs other than HIV/AIDS. In addition, this scenario will also result in greater reach of the population at greater risk and improve the effectiveness of the prevention program, but the disadvantage is that it will take another 10 years to implement.

Each of the four scenarios has advantages and disadvantages. The most expensive is Rapid Scale-Up, which requires up to US$ 35 billion globally per year by 2031 or a total cost of US$ 722 billion over the next 20 years (between 2009–2031). The surplus is a definite sum that is none other than the least cost-effective option (7,594 US dollars for every preventable HIV infection), while the Hard Choice for Prevention scenario is the most cost-effective, achieving nearly equal amounts of infection with an increase in cost-effective ratio of US$ 1.429 for every preventable HIV infection. HIV/AIDS in adults will only be reduced by 48% and there will still remain more than one million people with HIV infections by 2031.

AIDS 2031 also published the estimated cost for the top 22 countries, including Indonesia. Asia and sub-Saharan Africa are the two main regions with the largest resource requirements, Asia because of its large population and sub-Saharan Africa because of its large disease burden. The sum of resources from the top 22 countries in 2031 is about US$ 22 billion annually, accounting for about two-thirds of the overall expenditures required for low and middle-income countries in 2031 (US$ 35 billion annually); see Figure 11 below:
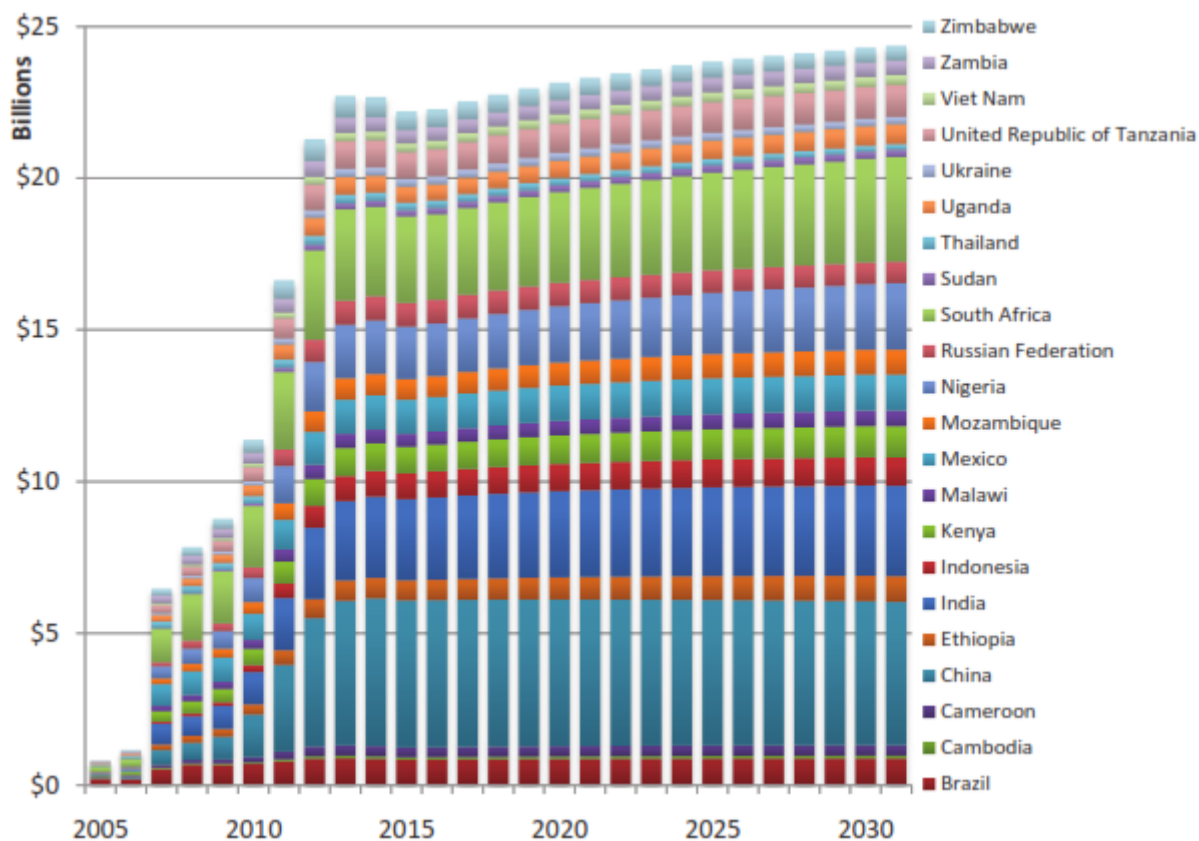
Figure 10. Resource Needs by Top 22 Countries for the Rapid Scale-Up Scenario
[Source: Hecht et al., 2009]

Figure 11 indicates that the highest resource needs are dominated by a few of the countries with the most significant populations (China, India, and Indonesia) and a combination of large populations and high HIV disease burden (South Africa, Nigeria). Based on the latest data from the World Bank, in 2016 Indonesia will account for 4.18% of the total population living in low and middle-income countries. If the data from the World Bank are compared to the estimates published by AIDS 2031, Indonesia would require about US$ 1.46 billion annually for the Rapid Scale-Up scenario (World Bank 2016). Referring to the information in Table 3 that Indonesia spent US$ 106 million for HIV/AIDS program in 2014, we see that actual sources amount to only 7.31% of the estimated cost required (US$ 1.46 billion) to implement the Rapid Scale-Up Scenario.

The Government of Indonesia also released the results of the *Investment Case Analysis* (ICA), an analysis conducted to forecast future investments needed to respond effectively and cost-effectively to HIV/AIDS, through the National Aids Commission in 2014. The results of this analysis show that if there is no expansion of program coverage and increased effectiveness of interventions, the target of eliminating AIDS by 2030 will be very difficult to achieve. Even the estimated numbers of infections will continue to grow to over 102,000 per year in 2030, impacting the rising cost of treatment (NAC, 2015).

Conversely, if the current national program priorities are well implemented, focus on implementing a unifying Continuum of Care (COC) model at the district level (*Layanan Komprehensif Berkelanjutan (LKB)*, Integrated, Decentralized Continuum of Care Services) and Strategic Use of ART (SUART) might dramatically reduce infections and HIV-related deaths. With the maximum implementation scenario in 141 priority districts and cities, it is projected that the results will be achieved as follows by 2030:

- People living with HIV/AIDS: Will reach a peak of 698,000 people in 2019 and then decrease to 509,000 people in 2030;

- New HIV infections: From 66,000 in 2013, predicted to fall to 32,600 in 2020, and fall further to 17,400 in 2030; and

- Preventable HIV-related deaths: 13,800 in 2020 and 33,700 in 2030.

However, the target of achieving elimination (zero infections and zero deaths from HIV) in 2030 would remain unattainable, as there will still be about 17,400 new infections and 39,000 HIV-related deaths each year under the best scenarios (NAC, 2015).

The Investment Case Analysis (ICA) also estimates the cost of the HIV prevention programs needed in 2030. Referring to the total program cost in 2013 of US$ 108 million, once LKB is fully implemented in 141 priority districts/city starting in 2015, a drastic increase in costs would result. To improve the expected LKB and strategic use of ART (SUART) in the best scenario, US$ 1.48 billion will be needed between 2014 and 2020 (approximately US$ 211 million per year) and US$ 3.22B between 2021 and 2030 (an average of US$ 330 million per year). The projected annual program cost will only begin to decline in 2027.

In the 2015–2019 National AIDS Strategy and Plan (SRAN) document, the calculation of cost requirements was carried out by considering the epidemic situation in Indonesia between 2015–2019. The following are the total funding needs for HIV and AIDS prevention in 2015–2019, sorted according to comprehensive prevention efforts in key populations and ARV treatment in PLHIV patients who meet the requirements.
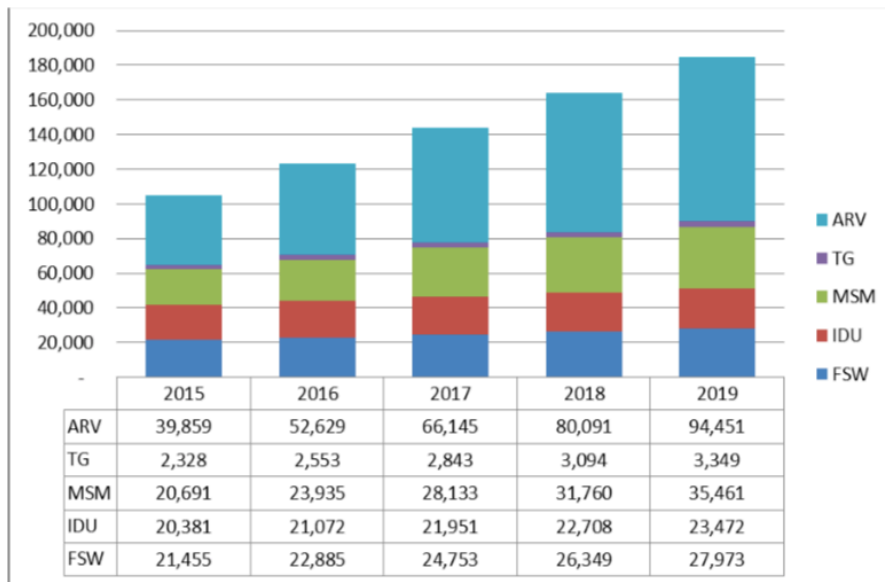
	2015	2016	2017	2018	2019
ARV	39,859	52,629	66,145	80,091	94,451
TG	2,328	2,553	2,843	3,094	3,349
MSM	20,691	23,935	28,133	31,760	35,461
IDU	20,381	21,072	21,951	22,708	23,472
FSW	21,455	22,885	24,753	26,349	27,973

Figure 11. Needs for HIV and AIDS Prevention (US$ 1,000) [Source: MoH, 2015]

As seen above, the budgetary needs for HIV and AIDS prevention in the 2015–2019 period are expected to continue to increase. Calculations regarding the availability of funds are carried out by entering domestic funds, assuming a growth of 20% per year in central funds, and an increase of 20% in regional funds. Meanwhile, domestic funds originating from the private sector are estimated to be around 3.4%–4% of total funding for HIV and AIDS, including from private health services, private assistance, and CSR. Availability of funds also includes foreign funds from the Global Fund and other bilateral funds, which account for around 50% of the total funding for HIV and AIDS (MoH, 2015). The following shows the Projected Needs, Fund Availability, and Gap in 2015–2019:

	2015	2016	2017	2018	2019
Resource Needs	104,714	123,074	143,826	164,002	184,706
Resource Available	82,262	84,940	89,887	69,095	75,586
Resource Gap	-22,452	-38,134	-53,939	-94,907	-109,120
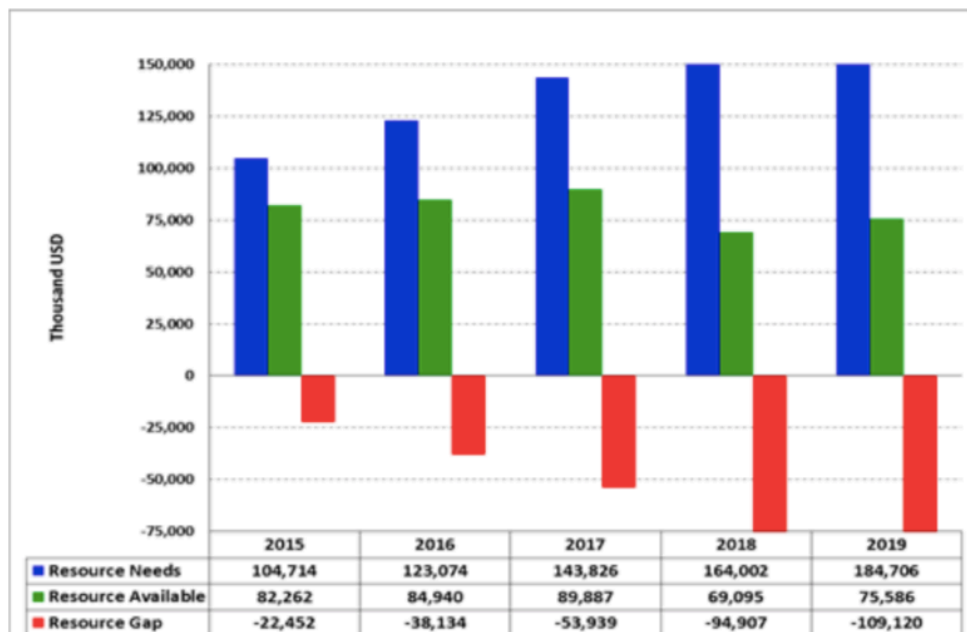
Figure 12. Projected Needs, Fund Availability, and Gap in 2015–2019 [Source: MoH, 2015]

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The picture above shows that in the first three years (2015–2017), the funding gap was relatively small. However, with the end of funding support from the Global Fund and increased needs, it is estimated that there will be large disparities in 2018 and 2019. However, until further such research has been conducted, there will be no more relevant data that can be analyzed.

Chapter 6
Discussion, Conclusions, and Recommendations

6.1. Discussion

6.1.1. Development of the HIV/AIDS Epidemic

Since it was first discovered in 1987 until March 2019, HIV/AIDS in Indonesia has been reported by 461 (89.7%) of 514 districts/cities. Various efforts to control this problem have been made by the government in cooperation with various national and international organizations. The cumulative number of HIV cases until March 2019 was 338,363, with 115,601 cases of AIDS.

The thing to remember is that the number of reported cases does not reflect actual HIV/AIDS cases in the community because the HIV/AIDS epidemic is closely related to the iceberg phenomenon. The reported case is described as the tip of the iceberg that appears above the surface of the sea water, while the case of HIV/AIDS that is not detected in the community is described as an iceberg below the surface of the sea. The vast area of Indonesia and the large number of population, will certainly be increasingly difficult to measure the development of HIV/AIDS.

HIV incidence in the 15–49 year age group has shown a downward trend since 2007 but still remains the second highest among countries in the South-East Asian region, while HIV prevalence for the same age group still shows an increasing trend, unlike other countries in South-East Asia where HIV prevalence has tended to decrease.

The coverage of ARV treatment in 2012 is only 17% of the estimated PLHIV in need of treatment, consistent condom use in direct-FSW and their customers is not optimal (below 60%), PMTCT coverage is 14–16% (although increasing, but still below 20%), and coverage of treatment in children is only 15%.

6.1.2. Determinants of the HIV/AIDS Epidemic

There are three major risk groups for HIV transmission in Indonesia, the heterosexual group with transmission by FSWs (67.81%), Injecting Drug Users (IDUs; 10.46%), and MSM (4.08%). The trend of HIV transmission among IDUs continues to decline, while transmission in the MSM group continues to increase. The decline in IDUs has been successfully brought about through harm reduction programs, while the increase in the MSM group is influenced by risky sex behavior (unprotected sex), low condom use rate, and more than one sex partner.

The number of HIV/AIDS sufferers in the MSM group who continue to show an increase in recent years should receive special attention and handling strategies. Until recently, AIDS prevention in the MSM community had been conducted through various methods seeking to change high-risk behavior. However, no decrease of prevalence was shown. The culture in Indonesia, which still views the MSM group as the perpetrators of criminal activity, also poses a major challenge in addressing the problems of this group. Moreover, if it is linked to the religious factor that the majority of Indonesians are Muslims who strongly oppose MSM, this group will tend to close itself off from social interaction, which will cause difficulties in reaching this group to undertake HIV/AIDS prevention and education efforts.

It is difficult for HIV/AIDS prevention and treatment programs to reach the MSM group because it is socially "hidden", which means MSM group tends to be afraid of revealing its identity among the general public. On the other hand, their behavior, such as frequently changing sex partners with no use of condoms and lubricants and performing oral and anal sex, have a high risk of spreading HIV/AIDS. This means that today, the positive HIV-MSM group is dominated by the productive age-group and sexually-active group, and the mode of HIV transmission is intercourse.

If the idea of increased pleasure due to performing unprotected sex continues among the MSM group, they will pose an uncontrolled threat of HIV/AIDS transmission to other communities owing to sexual intercourse with heterosexual or bisexual men, who in turn might transmit the disease through intercourse with their wives or other women.

6.1.3. Investments Made until 2015

NASA 2015 recorded a total expenditure of HIV and AIDS programs in 2013 amounting to US$ 98,519,280 and increasing to US$ 106,794,597 in 2014. A program expenditure map based on funding sources showed that 52% in 2013 and 57% in 2014 consisted of contributions from the government. The balance of 48% and 43% for these years came from international and private aid. By comparing the NASA reports of recent years, we find a positive trend when the national government slowly began to take over the role of donors that had been dominating program funding in Indonesia. This effort is being made to ensure the sustainability of HIV and AIDS prevention programs in the long term. The year 2013 marked the starting point where the financing of HIV/AIDS programs by the government exceeded that of international donors and private parties. The downward trend in the allocation of prevention funds may also need to be the subject of greater attention and further research because it is related to the prevalence of HIV/AIDS cases in Indonesia, which are still increasing.

Approximately 33% of available funds are used to finance maintenance and treatment activities, especially the provision of ARV drugs, administrative strengthening and program management makes up almost the same proportion, falling in the range of 28–29%, and incentives for health workers and program managers make up 18%, after which prevention programs only receive about 17%. The remaining 5% is distributed for mitigation and study activities. Allocations for prevention that show a downward trend can certainly lead to fears of new infections as more resources are allocated for treatment.

6.1.4. Estimated Cost to Reach Zero Infections by 2030

This paper found two studies that can serve as the basis for estimating the cost to reach zero infections by 2030, one study by AIDS 2031 and another study published by the Indonesia National AIDS Commission. Based on AIDS 2031, Indonesia would require about US$ 1.46 billion annually for the Rapid Scale-Up scenario, but it is important to note that this estimate was published in 2010; many factors would have to be taken into account to revise the estimates for the current situation.

Based on the results of the Investment Case Analysis (ICA) conducted by the Indonesia National AIDS Commission, the cost of HIV/AIDS prevention programs with the best scenarios is estimated at US$ 176 million in 2020. By comparing the last realization in 2014, recorded in NASA as US$ 107 million, that means there is still a difference of US$ 69 million to meet the estimated cost required in 2020. Looking at the commitment of the Indonesian government to gradually increase the allocation of HIV/AIDS budget annually to exceed the contribution of international assistance, the funding difference is likely to be met according to the target set. This is supported also by the trend of economic growth in Indonesia, where GDP is projected to continue to grow by an average of 5% per year.

WHO reports that health expenditures in Indonesia (Total Health Expenditure) were US$ 73,210,738,000 in 2013, while NASA 2015 results showed that total HIV expenditures in 2013 amounted to US$ 98,519,280.49. Thus the proportion of national spending on HIV and AIDS programs in 2013 is only about 0.13%.

6.2. Conclusion

The problem of HIV/AIDS in Indonesia is such that Indonesia still falls into the category of countries with a low prevalence rate (0.4%), but due to the large population, the actual numbers are high and that there is a rise, except for special areas (Papua Land) where the prevalence is 2.3%. The rate of HIV in Indonesia varies by geographic area and key population. In general, HIV is concentrated in key populations except in Papua Land, where the epidemic is already spreading to the general population. All

indicators at the moment show signs of epidemic stabilization. The future growth trend of HIV prevalence is smaller than the projected epidemic growth calculated 5 years ago. Nevertheless, mathematical modeling suggests that the HIV epidemic will continue to spread unless more intensive efforts are made to suppress the rate of growth.

The greatest concerns at present regarding the risk factors of transmission are for the MSM group, which continues to show an increasing trend, in contrast to other groups that have begun to show a decreasing trend in recent years. The government should take special measures to anticipate the increasingly deleterious impact of this phenomenon since it is very difficult for the general public in Indonesia to accept MSM. It certainly presents a great challenge to the government to reach out to this group, which will ultimately have an impact on the increasing difficulty of intervening in or preventing risk factors of transmission from homosexual groups.

The government has shown a strong financial commitment in recent years, shown by the fact that the proportion of domestically funded sources for HIV/AIDS programs in 2013 and 2014 has been greater than those from international and private donors. However, this proportion is still below the target of the 2010–2014 National AIDS Strategy of the proportion of public funds making up 70% of the total national expenditure.

Research on the factors and determinants of HIV/AIDS in Indonesia should also be improved, as it can serve as a basis for policy making and for planning HIV/AIDS prevention programs in Indonesia. The low number of research projects can also be seen from the budget allocation for research, which is less than 1% of the total expenditure for HIV/AIDS program.

6.3. Recommendations

I urge the following recommendations to the Indonesian MOH with a view to eliminating HIV by 2030 in accordance with the sustainable development goals.

Policy Level
1. The sustainability of HIV and AIDS prevention programs is highly dependent on the availability of program funds. Therefore, it is necessary for the Ministry of Health to conduct tiered advocacy that can explore the potential of possible funding sources so as to encourage the achievement of the target of at least 70% of the contribution coming from public funds.
2. Support in the form of regulations that encourage behavior change efforts (e.g., condom use) in the general population should continue to be pursued, while taking into consideration the sociocultural and religious aspects of Indonesian society.

3. The Ministry of Health, cooperating with the government in general should consider taking steps to eliminate the stigma and discrimination experienced by PLHIV, other key populations, and women, and implement a rights-based HIV response in line with the objectives of the national AIDS program.

Intervention Level

4. Education on the prevention and transmission of HIV should continue to be improved, given the low level of public knowledge, particularly about the use of condoms for protection.

5. Monitoring and evaluation of the program HIV/AIDS prevention, care and treatment should be carried out periodically, since so far the availability of the data is still minimal, making it extremely difficult to measure the success of the program or efforts to reduce the spread of HIV/AIDS infection.

6. Increase the coverage or access to preventive and curative services that are still constrained geographically, which will automatically also have an impact on the high cost of HIV/AIDS prevention.

7. Facilitate the access of people living with HIV to antiretroviral drugs, early detection, and HIV screening, especially in high-risk groups.

8. Interventions specifically for homosexual groups should be undertaken, taking into account socio-cultural approaches, to prevent further transmission in and via this group.

Research Level

9. Increase research in the field of HIV/AIDS epidemiology, which is still minimal in Indonesia.

10. Specific studies related to the expenditure or spending of HIV/AIDS programs originating from the private sector, given that the NASA report also described one of the obstacles is that it is still difficult to include expenditures from the private sector.

References

Baral, S., Logie, C. H., Grosso, A., Wirtz, A. L., & Beyrer, C. (2013). Modified social ecological model: a tool to guide the assessment of the risks and risk contexts of HIV epidemics. *BMC public health*, *13*(1), 482.

Basuki, E., Wolffers, I., Deville, W., Erlani, N., Luhpuri, D., Hargono, R., Maskuri, N., Suesen, N., van Beelen, N. (2002). Reasons for not using condoms among female sex workers in Indonesia. *AIDS Education and Prevention*, 14(2), 102-116.

Bollen, L.J.M., Anartati, A.S., Morineau, G., Sulami, S., Prabawanti, C., Silfanus, F.J., Esti, P.K., Nurhayati, Mahatmi, T., Sutarman, L., Rahadi, W., Natpratan, C., Magnani, R. (2010). Addressing the high prevalence of gonorrhoea and Chlamydia among female sex workers in Indonesia: results of an enhanced, comprehensive intervention. *Sexually Transmitted Infections*, 86, 61-65.

Boerma, J. T., & Weir, S. S. (2005). Integrating demographic and epidemiological approaches to research on HIV/AIDS: the proximate-determinants framework. *The Journal of Infectious Diseases*, *191*(Supplement_1), S61-S67.

Budiman, N. A., Istiarti, T., & Syamsulhuda, B. M. (2012). Faktor-Faktor Yang Berhubungan Dengan Praktik Wanita Pekerja Seks (WPS) Jalanan Dalam Upaya Pencegahan IMS Dan HIV/AIDS Di Sekitar Alun-Alun Dan Candi Prambanan Kabupaten Klaten. *JURNAL PROMOSI KESEHATAN INDONESIA, 3*(2), 120-126. doi:http://dx.doi.org/10.14710/jpki.3.2.120-126

Butt, L., Numbery, G., & Morin, J. (2003). *Preventing AIDS in Papua: revised research report*. The Authors.

Centers for Disease Control and Prevention (CDC). (2010). *The Role of STD Detection and Treatment in HIV Prevention – CDC Fact Sheet*. Retrieved from: http://www.cdc.gov/std/hiv/stdfact-std-hiv.htm

EDUCAIDS. (2012). *Indonesia: Assessment of the education sector's response to HIV, drugs and sexual health*. Retrieved from: http://unesdoc.unesco.org/images/0021/002149/214986e.pdf

Fajans, P., Ford, K., Wirawan, D. N. (1995). AIDS knowledge and risk behaviors among domestic clients of female sex workers in Bali, Indonesia. *Social Science Medicine*, 41(3), 409-417.

Fauk, N. K., Merry, M. S., Sigilipoe, M. A., Putra, S., Mwanri, L. (2017). Culture, social networks and HIV vulnerability among men who have sex with men in Indonesia. *PLoS ONE*, 12(6), e0178736.

Fauk, N. K., Crutzen, R., Merry, M. S., Putra, S., Sigilipoe, M. A., & Mwanri, L. (2017). Exploring determinants of unprotected sexual behaviours

favouring HIV transmission among men who have sex with men in Yogyakarta, Indonesia. *Global Journal of Health Science*, *9*(8), 47.

Fetty Wijayanti, S. N. T., Tobing, V., Nisa, T., Akhtar, M., Trihandini, I., & Djuwita, R. (2016). From the Millennium Development Goals to Sustainable Development Goals: the response to the HIV epidemic in Indonesia: challenges and opportunities. *Journal of Virus Eradication*, *2*(Suppl 4), 27.

Ford, K., Wirawan, D. N., Reed, B. D., Muliawan, P., Sutarga, M. (2000)*.* AIDS and STD knowledge, condom use and HIV/STD infection among female sex workers in Bali, Indonesia. *AIDS Care*, 12(5), 523-534.

Ford, K., Wirawan, D. N., Suastina, S. S., Reed, B. D., Muliawan, P. (2000). Evaluation of a peer education programme for female sex workers in Bali, Indonesia. *International Journal of STD AIDS*, 11(11), 731-733.

Gay, J., Croce-Galis, M., Hardee, K. (2012). *What Works for Women and Girls: Evidence for HIV/AIDS Interventions. 2nd edition*. Washington DC: Futures Group, Health Policy Project. www.whatworksforwomen.org

Global Health Initiative. (2011). *Indonesia GHI Country Strategy.* Retrieved from: http://www.ghi.gov/documents/organization/175131.pdf

Hecht R et al. (2009). Critical choices in financing the response to the global HIV/AIDS pandemic. *Health Affairs*, 28(6), 1591-1605.

Hugo, G. (2001). *Mobilitas penduduk dan HIV/AIDS di Indonesia*. Bangkok, UNDP South East Asia HIV and Development Office.

INAC. (2008). *Final Report: National AIDS Spending Assessment 2006-2007*. Indonesian National AIDS Commission, Jakarta.

INAC. (2013). *Final Report: National AIDS Spending Assessment 2011-2012*. Indonesian National AIDS Commission, Jakarta.

INAC. (2014). *Global AIDS Response Progress Reporting: Indonesia Country Progress Report 2014—Reporting Period 2012–2013*. Indonesian National AIDS Commission, Jakarta.

INAC. (2015). *Final Report: National AIDS Spending Assessment 2013-2014*. Indonesian National AIDS Commission, Jakarta.

Institute for Health Metrics and Evaluation (IHME). (2017). *GBD Compare Data Visualization*. Seattle, WA: IHME, University of Washington. Available from http://vizhub.healthdata.org/gbd-compare. (Accessed 21 January 2018).

Joint United Nations Programme on HIV/AIDS. (2014). *Fast track: Ending the AIDS Epidemic by 2030*. Geneva: UNAIDS.

Joint United Nations Programme on HIV/AIDS. (2016). *Global AIDS Update 2016*. Geneva: UNAIDS.

Joint United Nations Programme on HIV/AIDS (UNAIDS). (2017). *UNAIDS Data 2017*. UNAIDS: Geneva, Switzerland.

Kaldor, J. et al. (2000). *Penilaian Eksternal Tentang HIV AND AIDS Indonesia*. Jakarta: Dirjen Pemberantasan Penyakit Menular dan Penyehatan Lingkungan Pemukinan, Depkes RI.

Kambu, Y. (2012). *Analisis faktor-faktor yangmempengaruhi tindakan pencegahan penularan HIV oleh ODHA di Sorong [tesis]*. Fakultas Ilmu Keperawatan Universitas Indonesia.

Laksana, A. S. D., Lestari, D. (2010). Faktor-faktor Risiko Penularan HIV-AIDS pada Laki-laki dengan Orientasi Seks Heteroseksual dan Homoseksual di Purwokerto. *Mandala of Health*, 4(2), 113-123.

Magnani, R., Riono, P., Saputro, E., Mustikawati, D., Anartati, A., Prabawanti, C., Majid, N., Morineau, G. (2010). Sexual risk behaviors, HIV and other sexually transmitted infections among female sex workers in Indonesia. *Sexually Transmitted Infections*, 86, 393-399.

Mboi, N., Smith, K. (2006). *Current Status of HIV/AIDS in Indonesia and Prospects for its Spread.* Indonesia. Retrieved from http://www.jcie.org/researchpdfs/RisingTide/indonesia.pdf

Monshipouri, M., Trapp, T. (2012). HIV/AIDS, religion, and human rights: a comparative analysis of Bangladesh, Indonesia and Iran. *Human Rights Review,* 13(2), 187-204.

Mustikawati, D.E, Morinuaeu, G, Nurhayati, G, Irmaningrum, Y, Riono, P, Priohutomo, S, Magnani, R. (2009). Sexually transmitted infections. *Sexually Transmitted Infections*, 85, 391-396.

MOH-RI. (2007). *Integrated Biological-Behavioral Surveillance (IBBS) of Most-at-risk-groups (MARG)*. Retrieved from: http://www.aidsindonesia.or.id/repo/IBBSHighlightsFSW2007-eng.pdf

MOH-RI. (2013). *Estimasi dan Proyeksi HIV/AIDS di Indonesia Tahun 2011–2016.* Ministry of Health – Republic of Indonesia, Jakarta.

MOH-RI. (2014). *Profil Kesehatan Indonesia 2014.* Ministry of Health – Republic of Indonesia, Jakarta.

MOH-RI. (2015). *Strategi dan Rencana Aksi Nasional Pengendalian HIV-AIDS 2015–2019.* Ministry of Health – Republic of Indonesia, Jakarta.

MOH-RI, Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan. (2016). *Rencana Aksi Nasional Kolaborasi TB-HIV 2015–2019.* Ministry of Health – Republic of Indonesia, Jakarta.

MOH-RI. (2016). *Info Data dan Informasi Situasi Penyakit HIV/AIDS di Indonesia 2016.* Ministry of Health – Republic of Indonesia, Jakarta.

MOH-RI. (2016). *Kajian Epidemiologi HIV Indonesia 2016.* Ministry of Health – Republic of Indonesia, Jakarta.

MOH-RI. (2017). *Estimasi dan Proyeksi HIV/AIDS di Indonesia Tahun 2015–2020.* Ministry of Health – Republic of Indonesia, Jakarta.

MOH-RI, Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan. (2017). *HIV-AIDS Progress Report, First Quarter of 2017.* Ministry of Health – Republic of Indonesia, Jakarta.

Morineau, G., et al. (2102). HIV prevalence and risk behaviours among injecting drug users in six Indonesian cities implications for future HIV prevention programs. *Harm Reduction Journal*, 9(1), 37.

Morineau, G., Nugrahini, N., Riono, P., Girault, P., Mustikawati, D. E., & Magnani, R. (2011). Sexual risk taking, STI and HIV prevalence among men who have sex with men in six Indonesian cities. *AIDS and Behavior*, *15*(5), 1033-1044.

National AIDS Commission. (2007). *Strategi Nasional Penanggulangan HIV dan AIDS 2007–2010*. Jakarta: KPAN.

National AIDS Commission. (2015). *The Case for Increased and More Strategic Investment in HIV in Indonesia*. Jakarta: KPAN.

Oktarina, O., Hanafi, F., Budisuari, M. A. (2009). Hubungan antara karakteristik responden, keadaan wilayah dengan pengetahuan, sikap terhadap HIV/AIDS pada masyarakat indonesia. *Buletin Penelitian Sistem Kesehatan*, 12(4).

Pendse, R., Gupta, S., Yu, D., Sarkar, S. (2016). HIV/AIDS in the South-East Asia region: progress and challenges. *Journal of Virus Eradication*, 2(Suppl 4), 1-6.

Pisani, E., Sucahya, P. K., Kamil, O., Jazan, S. (2003). Sexual behavior among injection drug users in 3 Indonesian cities carries a high potential for HIV spread to noninjectors. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, *34*(4), 403-406.

PKMK FK UGM. (2016). *Kebijakan dan Program HIV dan AIDS dalam Sistem Kesehatan di Indonesia.*

Praptoraharjo I., et al. (2007). Jaringan Seksual dan Perilaku Berisiko Pengguna Napza Suntik: Episode Lain Penyebaran HIV di Indonesia. *Berita Kedokteran Masyarakat,* 23(3), 106.

Prawitri, R., Djajakusumah, T. S., Santosa, D. (2015). Pola Perubahan Transmisi Infeksi HIV di Jawa Barat Periode Tahun 2002–2012. *Global Medical & Health Communication*, *3*(1), 19-24.

Pohan, M. N., Hinduan, Z. R., Riyanti, E., Mukaromah, E., Mutiara, T., Tasya, I. A., Sumintardja, E. N., Pinxten, W. J. L., Hospers, H. J. (2011). *HIV-AIDS prevention through a life-skills school based program in Bandung, West Java, Indonesia: evidence of empowerment and partnership in education.* Retrieved from

http://www.sciencedirect.com/science/article/pii/S18770428110031
44#

Randolph, M. E., Pinkerton, S. D., Bogart, L. M., Cecil, H., Abramson, P. R. (2007). Sexual pleasure and condom use. *Archives of Sexual Behavior*, 36(6), 844-848.

Reynolds, J., Perla, G., Gunawan, S., Fihir, I., Haran, E., Pick, B., Kurniawati, R., Kramer, L., Uktolseja, J., Sakar, S. (2009). *Evaluation of the Indonesian Aksi Stop Aids Program*. Retrieved from: http://pdf.usaid.gov/pdf_docs/PDACD074.pdf

Safika, S. (2009). The influence of sex work venues on condom uses among female sex workers in Senggigi, Indonesia. Retrieved from: http://search.proquest.com/docview/305120421

Saktina, P. U., Satriyasa, B. K. (2017). Karakteristik Penderita AIDS Dan Infeksi Oportunistik di Rumah Sakit Umum Pusat Sanglah Denpasar Periode Juli 2013 Sampai Juni 2014. *E-Jurnal Medika Udayana*, *6*(3).

Setyawati, A., Widjanarko, B., Laksono, B. (2011). Factors influencing condom use behaviour among injecting drug users (IDUs) in Semarang, Central Java. *Jurnal Kesehatan Reproduksi*, *1*(3 Agt), 166-173.

Stangl, A. (2010). *Tackling HIV-related Stigma and Discrimination in Southeast Asia.* The World Bank. Retrieved from: http://site.ebrary.com.ezproxy.bu.edu/lib/bostonuniv/docDetail.acti on?docID=10408440

Statistics Indonesia (BPS), National Population and Family Planning Board (BKKBN), Ministry of Health & ICF International. (2013). *Indonesia Demographic and Health Survey 2012*. BPS, BKKBN, MOH, and ICF International, Jakarta.

Suharni, M. (2016). *HIV-AIDS Policy and Health System in Indonesia: A Document Review*. Center for Policy and Health Management (CHPM), Faculty of Medicine, Universitas Gadjah Mada.

The Jakarta Post. (2012). Beware! Condom Use low among sex workers in Bali. Retrieved from: http://www.thejakartapost.com/bali-daily/2012-05-11/beware-condom-use-low-among-prostitutes.html

Thorpe, L., Ford, K., Fajans, P., Wirawan, D. N. (1997). Correlates of condom use among female prostitutes and tourist clients in Bali, Indonesia. *AIDS Care*, 9(2), 181-198.

UNDP. (2016). *Human Development Report 2016.* UNDP, New York.

USAID. (2007). *Implementing 100% Condom Use Policies in Indonesia: A Case Study of Two Districts in Jakarta*. Retrieved from

http://www.healthpolicyinitiative.com/Publications/Documents/398_1_Indonesia_Cup_Case_Study_FINAL_2_28_08.pdf

USAID. (2010). *HIV/AIDS Health Profile*. Retrieved from: http://transition.usaid.gov/our_work/global_health/aids/Countries/asia/indonesia_profile.pdf

WHO. (2008). *WHO Country Cooperation Strategy 2007–2012: Indonesia.* World Health Organization, Geneva.

WHO. (2015). *Indonesia: WHO Statistical Profile.* World Health Organization, Geneva.

WHO. (2016). *Global Health Sector Strategy on HIV 2016–2021: Towards Ending AIDS*. World Health Organization, Geneva.

WHO SEAR. (2011). *Progress Report: HIV in the WHO South-East Asia Region 2011*. World Health Organization South East Asia Region, New Delhi, India.

WHO SEAR. (2016). *Progress Report: HIV in the WHO South-East Asia Region 2016*. World Health Organization South East Asia Region, New Delhi, India.

Win, T. L. (2012). Indonesia sees huge rise in housewives with HIV. *Alertnet*. Retrieved from: http://www.trust.org/alertnet/news/indonesia-sees-huge-rise-in-housewives-with-hiv-expert

World Bank. 2017. *Overview - Indonesia*. Washington, D.C.: World Bank Group. http://www.worldbank.org/en/country/indonesia/overview

Yang, X. (2011). Prevalence and correlates of HIV unsafe sex and STIs among women working in China's entertainment industry. *AIDS Care,* 23(1), 75-82.