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Increasing Access to HIV Treatment/ART through Scaling-up ART in West Java

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Abstract

The number of HIV cases in Indonesia has been rising rapidly, increasing the need for antiretroviral treatment (ART). However, the public health expenditure on HIV/AIDS is relatively low; ART is undersupplied and has limited funding. New strategies are required to increase the uptake of ART within the limited resource setting.

In this study we simulate the increase of ART uptake as an outcome of scaling up ART in hospital or at the community level. We use this simulation to forecast the costs and implications on the HIV epidemic in West Java by employing the HIV in Indonesia Model (HIM). The data is collected from both research sites and literature. The Benefit Incidence Analysis (BIA) was used to observe the distribution pattern of access to HIV care among HIV patients.

The results show that if by 2020 an additional 20,000 PLHIV are treated with ART, the epidemic may decrease by roughly 1 percent in that year, averting around 6 percent (±2,100) cases of HIV infection. Similarly, if around 45,000 additional PLHIV are treated in 2020, the epidemic may decrease by approximately 4 percent in that year, averting around 18 percent (±6,000) cases of HIV infection. The implementation of this plan requires an additional 19 to 43 hospitals (costing US$ 12.2 million to US$ 27.7 million) or around 833 to 11,358 *puskesmas* (costing around US$ 29.7 million to US$ 80.9 million) for distributing ART. In the BIA analysis the HIV patients' access to the hospital seems equally distributed.

In conclusion it can be said that the *puskesmas* act better as a support to the already established hospital-based HIV service. Second, the specific demand and need for ART in *puskesmas* in different regions should be acknowledged before up-scaling ART through the *puskesmas*. Third, ART upscale should be led by the main referral hospitals, supported by satellite hospitals and *puskesmas*.

Keywords: Indonesia, HIV, policy simulation, ART, economic analysis

JEL classification: I14, I18

Introduction

Indonesia has witnessed a rapid increase in the number of HIV cases in the recent past, even as the overall HIV prevalence in South East Asia is either on the decline or is stabilizing (WHO 2009). The face of the HIV epidemic in Indonesia is currently changing. While earlier the contagion was mainly concentrated among the injecting drug users (IDUs) and their sexual partners (MOH-RI 2009), it is now spreading to the general population. Indeed, the percentage of HIV transmission cases through IDU decreased from 50 percent in 2007 to around 20 percent in 2011, while HIV transmission through heterosexual relations increased from 42 to 71 percent in the same years (NAC 2012).

In response to the increasing number of people afflicted by the disease, the Indonesian government has been developing and implementing HIV/AIDS control policies since 1997 (NAC 2008). When the first case came to light in 1994, Indonesia responded quickly: it developed an AIDS strategy and established AIDS committees (at national, provincial, and city/district levels), and has approximately 150 district AIDS committees (Indonesian National AIDS Strategy 1994). In 2003, Indonesia's second AIDS national strategy (from 2003 to 2007) was released by the government, its main focus being HIV prevention and expanding care and treatment (Office of the Coordinating Minister for People's Welfare, 2003). This included Anti Retroviral Treatment (ART), a program that uniquely acts as both prevention and treatment (Cohen et al. 2011; Mathers et al. 2010), among other preventive measures (e.g. the needle exchange program, methadone maintenance treatment). As such, with the acceleration of Indonesia's HIV and AIDS control efforts in recent years (Siregar et al. 2009), the need for ART to be included as a part of care and treatment has gained significance. However, the implementation of ART may face some challenges.

First of all, the public health expenditure on HIV/AIDS in Indonesia is relatively low. While the total spending on AIDS increased from around US$ 57 million in 2006 to approximately US$ 67 million in 2010, the country's domestic HIV/AIDS budget still remained less than 50 percent, although it increased considerably from 27 percent of the total spending in 2006 to 49 percent in 2010. Within the same period, provincial and city/district budgets increased from about US$ 4 million to roughly US$ 11 million (NAC 2011; NAC 2012).

Secondly, ART in Indonesia, more specifically in West Java is undersupplied and has limited funding. Besides, its provision relies heavily on donor and not on local HIV/AIDS budget (which is relatively small). Consequently, only 24.8 percent of AIDS patients in Indonesia receive ART (NAC 2008), and even less than 50 percent of those eligible in West Java received the treatment (PHO 2010). Additionally, the erratic ART supply and the financial burden to the patient may also result in HIV patients becoming lost to follow-up (Wisaksana et al. 2009; Riyarto et al. 2010; Siregar et al., forthcoming), potentially leading to further reduction in the number of patients receiving ART.

Goal and Target

It is clear that new strategies are required to increase the uptake of ART within the limited resource setting. We propose an alternative policy in this simulation, its goal being to decrease the HIV epidemic in West Java through increasing the uptake of ARV among people living with HIV (PLHIV). Based on the estimation of the HIV in Indonesia Model (HIM) for West Java province, the number of PLHIV will reach approximately 45,000 in 2020 (HIM 2011). We will try to simulate the impact of certain ART coverage on the HIV epidemic in response to this projection and thus estimate the related costs.

Current and Proposed Policy

We propose to increase the ART uptake by scaling up the service to the community level. This, through community/primary healthcare centers as an addition to the current main policy of providing ART in a hospital. A detailed description of these two policies is given here.

Current Policy

In West Java, ART is mainly distributed through selected hospital clinics, supervised directly by the Ministry of Health. Hasan Sadikin Hospital, the main referral center in West Java, is a designated hospital to provide ART and to coordinate its provision in the other 26 designated hospitals across West Java. The hospital clinic is currently flooded with patients from all over West Java in need of ART, and is operating at full capacity (Siregar et al. 2011). Consequently, the waiting time and the increased transportation costs may add to the financial burden and the overall costs, with possible implications on the adherence of the patients to ART (Siregar et al. 2011; Riyarto et al. 2010; Brinkhof et al. 2009). It is argued that the role of the clinic merely seems to be that of a referral center for the treatment of late and/or complicated cases of HIV/AIDS and of related opportunistic infections (Siregar et al. 2011). As such, scaling up ART to the community level holds significant potential in that it can, among other things, reduce the load on the hospital while at the same time decreasing the waiting time and transportation cost for patients (Siregar et al., forthcoming).

For the sake of comparison, we will conduct an economic evaluation of increasing the ART coverage through a hospital. As will be explained in the next section, this will also include the cost of setting up voluntary counseling and testing (VCT) at the hospital.

Proposed Policy: ART Scaling Up through Community Healthcare Centers

Utilizing primary healthcare supported by adequate fiscal, infrastructural and human resources may increase the access of PLHIV and other risk groups to healthcare (Ibrahim *et al*. 2010). Indeed the scale-up of HIV testing and treatment is primarily related to improving access as well as integrating HIV services and adherence programs with primary healthcare (Mukherjee et al. 2006). From the patients' point of view, a survey among 57 HIV patients has revealed that most of them (74 percent) feel the need for ART at the primary/community healthcare centers (*puskesmas*) (Indriasari et al. 2010). A research by Handayani et al. (2010) indicates that community-based ART may ensure better adherence, although several conditions such as the guarantee of confidentiality need to be fulfilled to encourage the patients to take ART in *puskesmas*.

Hence, a possible approach to ensuring wider ART coverage and adherence is to provide the service at the community level through *puskesmas*. It is expected that patients will consequently have easier access to the service. Moreover, providing the ARV drugs through *puskesmas* on a larger scale (all over West Java) may further improve access to ART. This, however, will depend on the epidemiology data on each region, because there may not be any need to provide the service if there are only a limited number of cases in a region, given the limited budget and resources. We would also refrain from establishing more ART services in *puskesmas* outside of West Java because even in Bandung – the capital of West Java with the highest number of HIV and AIDS cases in the province – there are currently only two *puskesmas* that have started to provide the service, possibly indicating the complexity of establishing such services. One possible reason is the limited availability of ART, an issue that needs to be highlighted in our policy simulation (note that ARV drugs are provided for free and their provision is currently donor-supported).

Other benefits of the ART Program in Puskesmas

Setting up the ART service also requires the setting up of VCT and – if necessary and possible – provider-initiated testing and counseling (PITC) service. As such, the benefits of VCT and PITC should also be considered in scaling up the ART at the *puskesmas*. Within the current policy simulation, however, we will focus on VCT because presently PITC is rarely conducted at the *puskesmas*. The explanation and potential benefits of VCT are provided below.

VCT offers an entry point to treatment for HIV-positive individuals, and is instrumental in preventing further spread of the disease by reducing the risk behavior of the tested individuals (UNAIDS 2001). Traditional VCT focuses on walk-in patients and offers an individualized counseling session, tailored to personal risk behaviors. The nature of VCT, besides being voluntary, is confidential: only shared between the counselor and the person undergoing the procedure. To undertake VCT a person has to follow the entire procedure, namely pre-test counseling, HIV test, and post-test counseling. Counseling is defined as professional advice and suggestions – given to an individual with problems –by trained counselors with comprehensive understanding of HIV/AIDS. The post-test counseling focuses specifically on risk reduction and “positive living,” regardless of the results (Surdo 2007; RSHS 2008).

Therefore, by providing ART at the *puskesmas*, we may – besides providing better treatment to PLHIV – detect PLHIV or high-risk groups as well as alter their behavior for risk reduction. Potentially, the program can be attached to the local *puskesmas* in each city/district. Currently, there are 854 *puskesmas* distributed within the 26 cities/districts in West Java (BPS 2010). As such, providing ART in each of these *puskesmas* may not be feasible, efficient, nor effective. An epidemiological map of HIV in West Java is needed to identify areas with relatively severe HIV epidemic, which should then be given priority. The target population is PLHIV, and the fund source may be the local budget (preferably) or other funding sources (e.g. local/international donors, CSR).

Methodology

Study site

The study was conducted in Bandung, West Java province (43 million inhabitants). The hospital HIV/AIDS clinic which we studied is located in the largest public referral and teaching hospital, Hasan Sadikin, in West Java. The clinic is visited by high at-risk groups and the general population, and delivers HIV-related services such as VCT, ART, and sexually transmitted infections (STI) services. The *puskesmas* that we studied are located in one of the busiest areas in Bandung and offer HIV-related services such as VCT and ART, and limited STI treatment.

Output to be simulated

Based on our proposed policy, we estimate/simulate the increase in ART uptake consequent to the scaling up of ART at the community level, and accordingly forecast the costs and implications on the HIV epidemic of our proposed policy in West Java. Moreover, we capture the additional/potential benefits of the proposed policy.

HIV in Indonesia Model (HIM)

HIM is a tool to capture the specific epidemiology, behaviors, populations and the geography of Indonesia and is used for practical evaluation and development of policies and programs. Based on the international epidemic modeling standards, it uses the interacting systems of differential equations and calibration-optimization routines. The model includes the biological realism of transmission, detailed history of disease stages and mixing patterns, latest international evidence of heterogeneous transmission rates, efficacy of interventions and disease progression. The HIM was developed by a team from the University of New South Wales and the University if Indonesia, and was funded by the Australian Agency for International Development (AusAID) with support from the World Bank (MoH 2011).

Benefit Incidence Analysis (BIA)

The Benefit Incidence Analysis is performed to observe the distribution pattern of access to HIV care among HIV patients. The distribution is done by dividing the patients into quintiles according to their income. We then compare the findings with the distribution of access to health facilities by the general population in West Java so as to place the results in the context of the wider health system.

Data collection

We estimated the costs of setting up and running the ART at the *puskesmas*. The approach used was micro-costing (Drummond et al. 2005). The calculation involved extracting the costs data of establishing such a service in the current ART service in two *puskesmas* in Bandung, West Java. The data involving the recurrent and capital costs, and the unit costs will be adjusted to the real or projected number of visits. One category of costs that we might need to further estimate are the program costs that encompass the costs of the policy or program at a more administrative level (Johns et al. 2003). The VCT costs will refer to a study by Siregar et al. (2011). The costing analysis and assumptions on both the studies were adjusted to fit with the assumptions of our current policy simulation study. The cost estimation of providing ART at the hospital is based on a study by Siregar et al. (forthcoming), which calculates the cost of providing ART at the hospital level based on disease stages. For the BIA, again we used data from a study by Siregar et al. (forthcoming) to calculate the distribution of HIV patients' access to hospital-based HIV care by income.

Additionally, the data collection on the benefits of ART in *puskesmas* included a survey on a group of patients joining the currently ongoing ART service at the *puskesmas* in Bandung city. The existing constraints and additional benefits will also be identified. Patient costs of joining either program were estimated, which included, among other costs, clinic service fee, travel costs, traveling time, the monthly income of the patient, the average number of daily working hours, and monthly expenditure. The monthly income of the patients was then estimated, based on their monthly expenditure.

Assumptions

Certain assumptions have been made and used in this policy simulation. First, we assume that ART at the *puskesmas* level is utilized/accessed optimally. This assumption will later be relaxed and we will try to increase or decrease the percentage of utilization/access for the purpose of sensitivity analysis. Second, patients' preferences in terms of choice between services at a hospital or at the *puskesmas* are similar. Third, that every *puskesmas* is willing to provide ART. Fourth, that all the hospitals and *puskesmas* are frequented by patients from similar risk groups, characteristics, and disease stages. Fifth, all hospitals and *puskesmas* are providing the same number of services and that they utilize the same amount of resources. Sixth, we assume that the other interventions remain constant while we increase the coverage of (only) 1st line ART using the Atripla regimen (TDF/3TC/EFV) at the *puskesmas*. We do not project the effect of increasing ART through distributing 2nd line ART and providing Preventing Mother-to-Child Transmission of HIV (PMTCT) service. The number of patients going in for VCT and ART at the *puskesmas* is based on ART performed at a community-based clinic in Bali, Indonesia (Bali Medika), and we assume that all the tested patients are HIV positive and receive ART.

Results

The Estimated Costs of ART in Hospital

Table 1 presents the costs of providing hospital-based HIV treatment at the hospital level in West Java, based on a paper by Siregar et al. (forthcoming). Most visits occur within the group of patients with lower CD 4 cell count at the start of ART, indicating more resource utilization related to the severity of the disease. This also indicates that most patients attend the hospital clinic at the later stage of the disease. Patients with higher CD 4 cell count at the beginning of ART will incur lower costs during the entire period of HIV treatment, indicating less resource utilization as the disease is at an earlier stage. The costs of providing VCT at the hospital level are shown in Table 2, based on the paper by Siregar et al. (2011). The clinic performs approximately 421 VCT in a year, and among the patients tested, 167 were HIV (+). The recurrent personnel cost is the dominating share of costs, while personnel capital cost has the smallest share.

Currently, there are around 27 hospitals in West Java that act as referral hospitals for PLHIV. The total cost of providing ART (including VCT) for all of these hospitals amounts to approximately US$ 17.2 million per year (around US$ 637,000 per year for each hospital). We calculated this by multiplying the yearly hospital-based ART and VCT total cost (in one hospital) with 27 hospitals. Please note that this is based on the assumption that the other 26 hospitals have the same costs profile as the one we are studying.

Table 1: Total cost of providing hospital-based HIV treatment in 24 months of treatment and before, US$*

CD 4 cell count at the start of ART					
Item	**0-50**	**50-100**	**100-150**	**150-200**	**>200**
Estimated number of patients	564	194	129	100	59
Hospitalization	7,644 (4%)	475 (1%)	418 (1%)	247 (1%)	-
Outpatient visits	22,883 (11%)	7,995 (11%)	5,187 (13%)	3,771 (13%)	2,135 (14%)
OI treatment	15,218 (7%)	2,857 (4%)	924 (2%)	75 (0.3%)	1 (0.01%)
ARV drugs	146,201 (68%)	54,577 (74%)	28,253 (71%)	19,932 (70%)	11,087 (73%)
CD 4 test	4,238 (2%)	1,426 (2%)	990 (2%)	818 (3%)	475 (3%)
Viral load test	2,310 (1%)	990 (1%)	594 (1%)	660 (2%)	-
Routine lab test	15,141 (7%)	5,191 (7%)	3,442 (9%)	2,789 (10%)	1,537 (10%)
Total cost	352,247	117,695	65,095	46,458	26,976
Cost per patient per six months	625	608	504	466	460

Adapted from Siregar et al. (forthcoming)
*except for number of total visits

Table 2: Annual cost of delivering VCT service for hospital settings

Type of cost		US $	Proportion (%)
Healthcare costs			
Capital costs (annualized)			
Personnel (trainings & workshops)		145	10%
Building/Space		657	45%
Equipments		657	45%
Sub-total		***1,459***	***100%***
Recurrent costs			
Personnel		21,633	79%
Supplies		2,591	9%
HIV Test		3,255	12%
Sub-total		***27,479***	***100%***
Total Annual Cost		**28,937**	
Number of VCTs		568	
Cost per VCT		74	
Cost per HIV-positive case		178	

Adapted from Siregar *et al.* 2011 (US$, 2008 exchange rate)

† Productivity losses signify income losses because of seeking and undergoing VCT

The Estimated Costs of ART in Puskesmas

Tables 3 and 4 present the costs of providing both ART and VCT at *puskesmas* for covering 24 and 4 patients (assumed number), respectively. Up-scaling the service to every *puskesmas* in West Java will require funding of up to US$ 30,427,166 (for 24 patients) and US$ 6,079,626 (for 4 patients) per year.

Table 3: Estimated costs of providing ART in Puskesmas, 24 patients (one year)*

	US$	Proportion (%)
*VCT Costs (a)***		
Recurrent Costs		
1. Personnel	67	5%
2. Supplies	365	26%
3. HIV test	205	15%
Sub-total	*638*	
Capital Costs		
1. Training	229	16%
2. Building/space	214	15%
3. Equipment	329	23%
Sub-total	*771*	
VCT Total Costs	***1,409***	**100%**
*ART Costs(b)****		
Recurrent Costs		
1. Personnel	491	2%
2. Supplies	7	0.1%
3. Transportation costs	41	1%

4. CD 4 test	739	2%
5. Viral load test	3,284	9%
6. ARV drugs	29,500	83%
Sub-total	*34,062*	
Capital Costs		
1. Training	114	1.9%
2. Building/space	44	0.75%
Sub-total	*158*	
ART Total Costs	***34,220***	**100%**
Total Costs (a+b)	***35,629***	

*Using 2011 exchange rate (World Bank 2012)
**Source: Siregar et al. (2011). Exchange rate and calculation are adjusted
***Own calculation

Table 4: Estimated costs of providing ART in Puskesmas, 4 patients (one year)*

	US$	**Proportion (%)**
*VCT Costs (a)***		
Recurrent Costs		
4. Personnel	22	5%
5. Supplies	365	26%
6. HIV test	34	15%
Sub-total	*421*	
Capital Costs		
4. Training	229	16%
5. Building/space	214	15%
6. Equipment	329	23%
Sub-total	*771*	
VCT Total Costs	***1,193***	**100%**
*ART Costs(b)****		
Recurrent Costs		
7. Personnel	132	1%
8. Supplies	7	0.02%
9. Transportation costs	41	0.12%
10. CD 4 test	123	2%
11. Viral load test	547	10%
12. ARV drugs	4,917	86%
Sub-total	*5,768*	
Capital Costs		
3. Training	114	0.3%
4. Building/space	44	0.13%
Sub-total	*158*	
ART Total Costs	***5,926***	**100%**
Total Costs (a+b)	***7,119***	

*Using 2011 exchange rate (World Bank 2012)
**Source: Siregar et al. (2011). Exchange rate and calculation are adjusted
***Own calculation

Cost-Effectiveness Analysis
Table 5 provides the cost of ART upscale through hospital vs. *puskesmas,* while Figures 1 and 2 present the impact of increased ART coverage on the prevalence rate and infections averted, respectively. With the current policy, the number of PLHIV is projected to be around 45,000 people (0.092 percent prevalence rate) – a 9.6 percent increase from the prevalence rate in 2012.

Assuming that by 2020 an additional 20,000 PLHIV are treated with 1st line ART, the epidemic would potentially decrease by 1 percent (roughly) in that year, averting around 6 percent (approximately 2,100) of HIV infections. Again, assuming that around 45,000 additional PLHIV are treated with 1st line ART in 2020 the epidemic will potentially decrease by approximately 4 percent in that year, averting around 18 percent (roughly 6,000) of HIV infections.

To achieve this coverage, as many as 19 to 43 additional hospitals (total costs amounting to US$ 12.2 million to US$ 27.7 million) or around 833 to 11,400 additional *puskesmas* (total costs amounting to US$ 29.7 million to US$ 80.9 million), respectively, are required to distribute ART, depending on the assumed number of patients on ART in each facility.

The incremental cost-effectiveness ratio (ICER) calculates the incremental cost effectiveness of increasing the coverage by 20,000 patients and by around 45,000 patients: US$ 3,907/infection averted (hospital scenario), US$ 11,401 (*puskesmas*, 4 patients per year scenario), and US$ 9,510 (*puskesmas*, 24 patients per year scenario).

Figure 3 presents the one-way sensitivity analysis (±20 percent). The increase in female to male transmission rate by 20 percent has a dramatic increase in the ICER as it has the most profound effect on the epidemic itself. The change in injecting transmission rate has the least effect on the ICER.

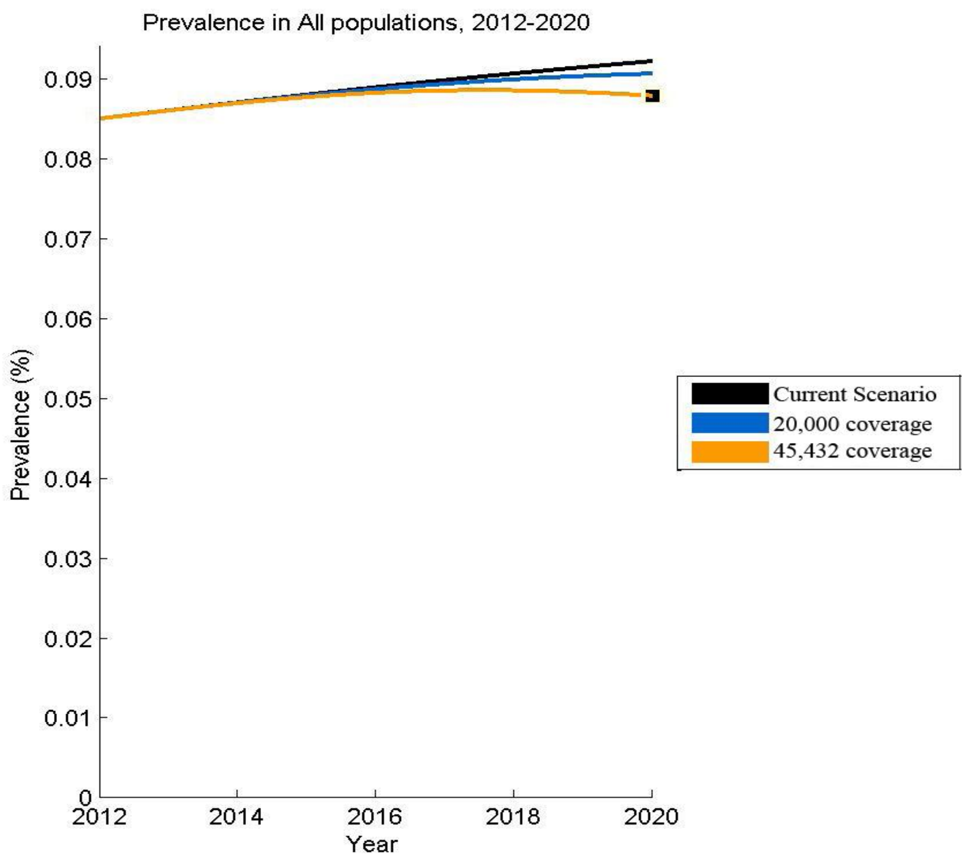
Table 5: Estimated costs of upscaling ART through hospital vs. puskesmas (one year)

Variable		**2012**		**2020 (current scenario, estimated around 45k of PLHIV)**		**2020 Coverage increase by 20k**		**2020 Coverage increase by 45k**
Prevalence rate		0.084		0.092		0.091		0.088
Num of infections averted		-		-		2.2k (6%)		6k (18%)
Required num. of hospitals*		-		-		19		43
Total cost		-		-		*US$12.2mln*		*US$27.7mln*
Cost per infection averted						*US$5,727*		*US$4,534*
Required num. of *puskesmas***		-		-		5k		11.4k
Total cost		-		-		*US$35.6mln*		*US$80.9mln*
Cost per infection averted						*US$16,711*		*US$13,255*
Required num. of		-		-		833		1.9k

*puskesmas ****								
Total cost		-		-		*US$29.7mln*		*US$67.4mln*
Cost per infection averted						*US$13,939*		*US$11,057*
Incremental cost-effectiveness ratio between adding 20k and 45k coverage								
Hospital*						*US$3,907/infection averted*		
Puskesmas**						*US$11,401/infection averted*		
Puskesmas***						*US$9,510/infection averted*		

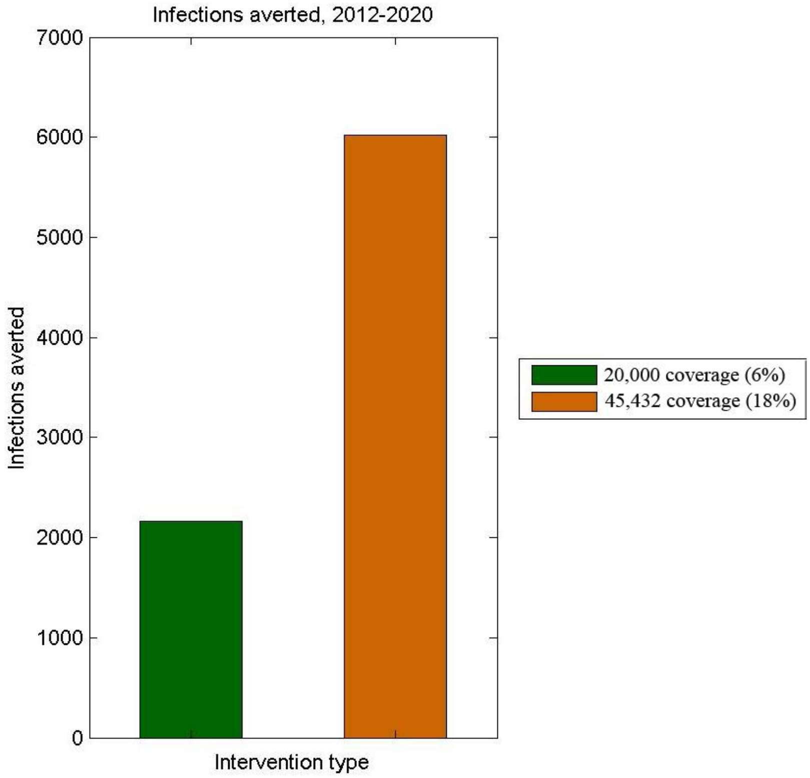
Source: Authors' calculation
* (1k patients per hospital per year)
**(4 patients on 1st line ART per center per year)
***(24 patients on 1st line ART per center per year)

Figure 1. HIV prevalence rate as ART coverage increased



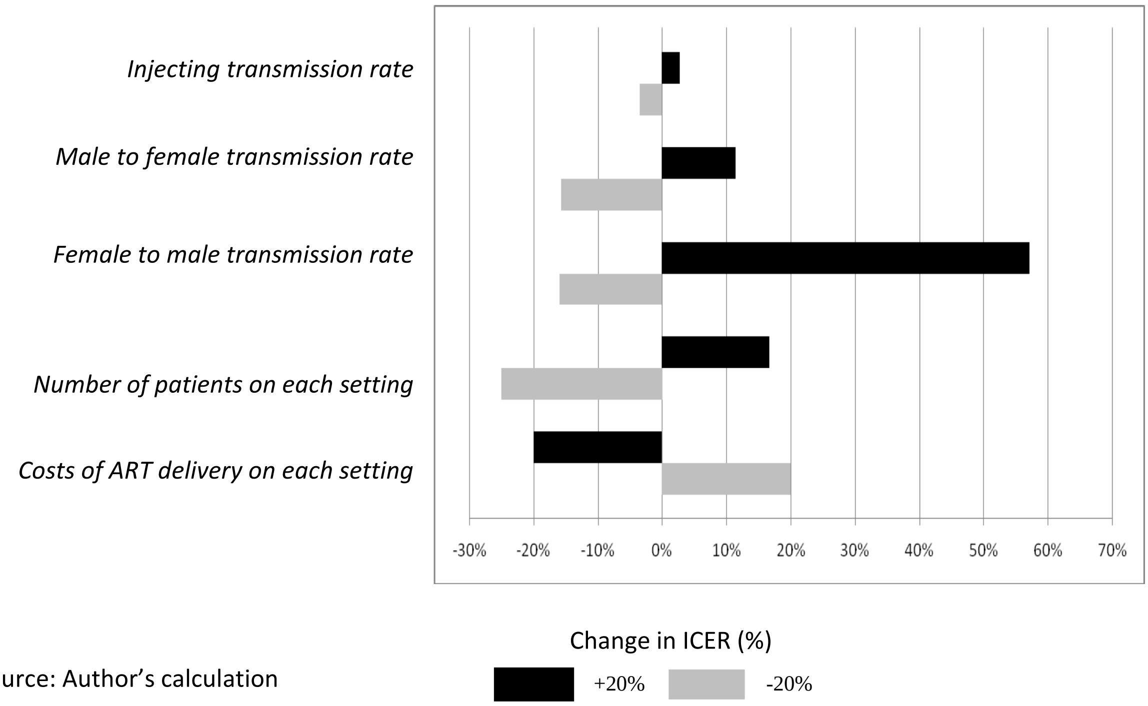
Source: HIM simulation results

Figure 2. HIV infection averted as ART coverage increased



Source: HIM simulation results

Figure 3. One-way sensitivity analysis, incremental costs per HIV infection averted



Source: Author's calculation

Benefit Incidence Analysis

Table 6 provides information about the distribution of HIV patients' access to hospital by income. By categorizing the patients' income into quintiles, their access to hospital can be shown to be equally distributed. Access by patients in the first quintile (i.e. patients in the lowest income group) accounts for more than 20 percent of the overall access to hospital by HIV patients. Meanwhile, access to hospital by patients in the highest quintle is slightly below 20 percent.

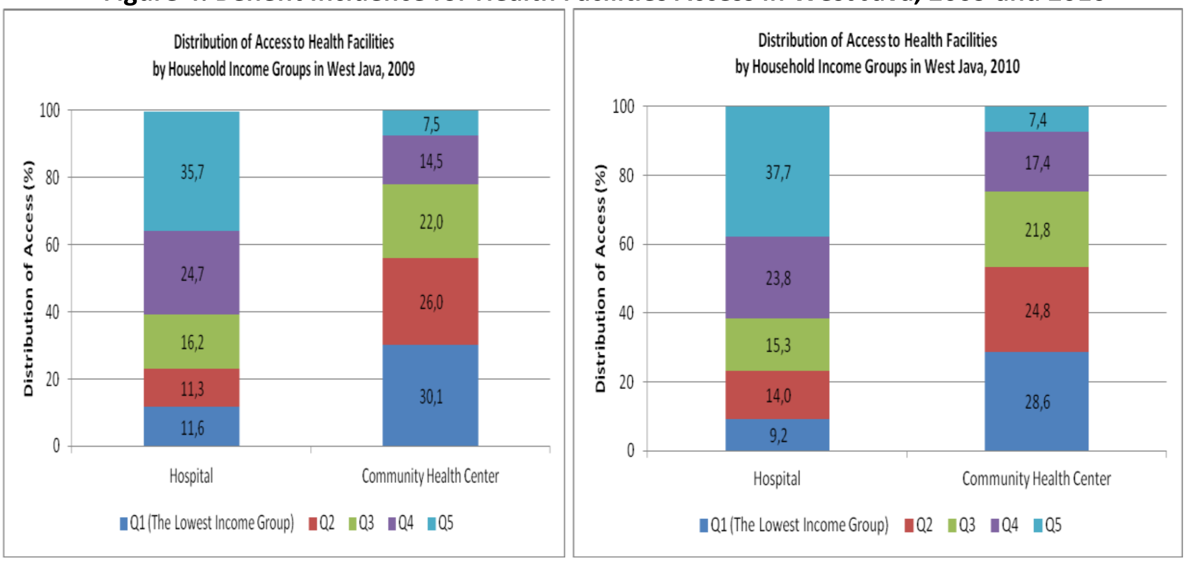
Table 6: Access to hospital by HIV patient's income in Bandung City

Quintile		1	2	3	4	5	Total
Number of access (people)		11	12	9	11	10	53
Percentage of Access (%)		20.75	22.64	16.98	20.75	18.87	100

Data Source : Siregar et al. (forthcoming)

None of patients in quintile 1 earn more than US$ 20 monthly, and patients who belong to the highest income group earn more than US$ 130 a month, with some of them even earning more than US$ 300 per month. To put this number within the context of the health system, we provide the breakup of access to health facilities in West Java across different income groups in Figure 4. The highest income group dominates the distribution of hospital access in West Java, in contrast with the income-based distribution of access to HIV care in hospital.

Figure 4. Benefit Incidence for Health Facilities Access in West Java, 2009 and 2010



Data Source : Calculation based on Susenas 2008 and 2009 data.

Advantages and disadvantages of accessing ART in puskesmas

In our small survey, we found that all patients experience the advantage in terms of distance, waiting time, travel and registration costs in accessing ART at the *puskesmas*. There are other advantages as well, but these vary for each patient. The common disadvantage experienced by all our respondents was that there is only one fixed day for ARV collection, while other disadvantages vary for each patient.

Table 7: Advantages and disadvantages of accessing ART in puskesmas in comparison to hospital

Advantages		Disadvantages
Lower registration fee Closer to home, reduced transportation costs Staff are friendlier and have more time to discuss problems, counsel, or just talk Less chance of meeting other high-risk persons, therefore less chance of relapse Procedure is more structured Not being the center of attention as patients' problems are more varied Better chances of regularly accessing ART Lesser/shorter queues and less crowded ➔ quicker service Less chance of meeting other PLHIV, patients feel healthier		Only one fixed day is allocated to collection of ARV, collection on another day requires appointment Staff is less informed than hospital staff in terms of the disease and community support Staff is less friendly compared to hospital staff Staff does not remind patients about ARV intake schedule by text message or phone call Cannot collect ARV for two months' treatment.

Source: Authors' survey

Discussion

This study has estimated the costs and effect of increasing the coverage of ART through *puskesmas* as well as through hospitals, and has made several observations. First, providing ART through hospital seemed to be, by far, a more cost-effective choice. The cost of providing ART at the *puskesmas* relies heavily on increased access to ART. Therefore, the findings by Ibrahim et al. (2010), which show that utilizing more *puskesmas* can increase the access of PLHIV and other risk groups to healthcare may only be realized if access to *puskesmas* is increased.

Second, if we assume that all the hospitals in the region have similar costs, disease, and patient characteristics as the one which we studied, we may only need to utilize hospitals to distribute ART. As per the results, only 19 hospitals are required to cover 20,000 patients and 43 hospitals are required to cover around 45,000 patients in need of ART. This indicates that in the scenario with 20,000 patients in need of ART, resource-intensive services can be focused on several hospitals and the other hospitals can act as satellites. If more ART is needed (to reach 43 hospitals), then it is possible that we may only need to increase the role of satellite hospitals and add several more main referral hospitals. This will bring up a question on the need of scaling up ART through *puskesmas* because if coverage can be easily undertaken by hospitals, then *puskesmas* may not be needed after all. To respond to this question we need to look back into patients' responses on the need for ART at the *puskesmas* (Indriasari et al. 2010; Handayani et al. 2010), and also at the significantly reduced transportation costs in accessing *puskesmas* (Siregar et al. 2011), an advantage that is also captured in our patient survey (Table 7), besides other advantages. Hence, given its many advantages there is the need for providing ART at the *puskesmas*, although up-scaling ART only through the *puskesmas* is not an economically viable approach. Therefore, we need to study the combination of up-scaling ART through hospitals as well as through the *puskesmas*. In this sense, the main referral hospitals as well as the satellite hospitals may both act as the main providers of ART, while *puskesmas* can serve as a support, targeting only a specific community or location where there is demand or need for HIV services. While this may require a more detailed study with proper geographical mapping of the location of high-risk groups in each city/district in West Java, the idea can be explored because a rough estimate on the location of high-risk group population in each city/district should be available.

Third, the additional funds required to avert infection as a result of increasing the coverage to around 45,000 patients instead of 20,000 patients may help garner additional information in terms of choosing between the scenarios. It seems that the hospital scenario is the most cost effective compared to the other two scenarios. Regardless, the decision to scale up coverage by 20,000 or 45,000 patients will largely depend on the available budget.

Fourth, going by the BIA results, it seems that patients from the lowest income groups can equally access hospital-based HIV care. This is quite significant as the income distribution among the sample itself is not very equal. However, we must be careful in drawing conclusions with regard to the distribution of access among HIV patients in hospital because the sample size is relatively small. In fact, the situation with regard to healthcare services in West Java in general is rather different, with the distribution of access to hospital by all patients still being far from equal (see Figure 4). A further BIA using a larger sample will give a clearer picture as to the fairness of access to HIV care among PLHIV and other high-risk groups, especially if the sample can include HIV patients currently not under treatment and reveal their level of income.

Next Steps and Funding Source

Policy advocacy

We recommend that *puskesmas* should provide ART only if there is a demand and need for the service, and should act as a support to the already established hospital-based ART system. Therefore, the scale-up of ART should combine the efforts of both these service providers, with the main referral hospital taking the lead, supported by the satellite hospitals and *puskesmas*.

Although the scale-up of ART will require substantial funding, it seems that any additional funding will depend largely on the expanding role of the satellite hospital and the number of additional *puskesmas* required to support the main referral hospitals. The total spending on AIDS in Indonesia has increased from around US$ 57 million (2006) to approximately US$ 67 million (2010), a considerable increase from 27 to 49 percent, respectively, and the cost of ARV provision has been fully covered by the local budget (NAC 2012). Within the same period, the provincial and city/district budgets increased from around US $ 4 million to roughly US $ 11 million (NAC 2011; NAC 2012). This may potentially provide room for ART scale-up through satellite hospitals and the *puskesmas*. An untapped potential source is the Corporate Social Responsibility (CSR) fund that requires public-private partnership. In Bandung, West Java, such collaboration was initiated in 2010, although the follow up still remains to be seen. Regardless, this may provide additional funds to upscale ART and other HIV services. As such, advocating our policy proposal to both government and private companies in order to fulfill the necessary fund and infrastructure requirements would be a feasible next step.

Limitations and further research

Our study has several limitations. First, it has evaluated a highly contextualized ART service delivery model in a hospital and *puskesmas*, which may hamper its generalizability. Cost structures and levels, patients and disease characteristics are likely to vary from clinic to clinic in different hospitals, *puskesmas*, and regions. As such, specific cost-effectiveness studies in other settings (e.g., other hospitals, community/primary health centers, prisons, regions) should be considered. Regardless, although this study is specific to West Java, Indonesia, the conceptual framework and overall conclusions may be equally relevant to other resource-limited settings. Second, the extent and mode of *puskesmas* contribution to the upscale of ART should be studied further, based on the demand and need for such service in a particular location. Third, BIA results on access to healthcare are generally inequitable as patients with highest income have greater access to hospital care. However, this is not so in the case of HIV patients accessing hospital care. This contradictory finding should be analysed carefully before reaching any conclusion with regard to the equitability of access to HIV care in hospital. Another BIA, using a larger sample including HIV patients not currently under treatment, may throw light on this issue. Fourth, we have relied heavily on assumptions in calculating the costs and simulating the effectiveness of scaling up ART. Therefore, all interpretations should highlight these assumptions carefully. Last of all, we have used the default parameters from the HIM model as the model is relatively new, and have used the latest data whenever possible. We have only made slight adjustments on the rate of transmission of patients within several CD 4 cell count categories, as some parameters appear to be inconsistent with the HIV/AIDS situation in West Java, and we have based these changes on our own assumptions. These changes may need further calibration as can be seen from the sensitivity analysis where it is apparent that it is not the injecting transmission that has a profound effect on the epidemic and ICER, but it is instead the female to male transmission rate. Although the Indonesian HIV epidemic is starting to change from injecting to heterosexual transmission, the epidemic is still concentrated among IDUs and their partners (MOH-RI 2009). Therefore, any interpretation should take this fact into account; a further study with updated data and further calibration to the model is warranted.

Conclusion

Four main conclusions can be derived from our study. First, *puskesmas* act better as a support to the already established hospital-based HIV service. Second, the specific demand and need for ART in *puskesmas* in different regions should be acknowledged before up-scaling ART through the *puskesmas*. Third, ART upscale should be led by the main referral hospitals, supported by satellite hospitals and *puskesmas*. Fourth, the increasing HIV/AIDS domestic budget and availability of CSR are some potential financial sources to upscale ART.

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References

BPS. Number of Public Health Care, Supporting Public Health Care, Mobile Health Care and Clinics in Jawa Barat by Regency/City 2010. http://jabar.bps.go.id/index.php/sosial/57-jumlah-puskesmas-puskesmas-pembantu-puskesmas-keliling-dan-balai-pengobatan-di-jawa-barat-menurut-kabupatenkota-number-of-public-health-care-supporting-public-health-care-mobile-health-care-and-clinics-in-jawa-barat-by-regencycity-2010 (accessed 6 June 2012)

Brinkhof, M.W.G., Pujadez-Rodiguez, M., Egger, M. Mortality of Patients Lost to Follow-Up in Antiretroviral Treatment Programmes in Resource-Limited Settings: Systematic Review and Meta-Analysis. PLoS ONE 2009; 4(6): e5790. doi: 10.1371/journal.pone.0005790

Cohen, M.S., Chen, Y.Q., McCauley, M., Gamble, T., Hosseinipour, M.C., Kumarasamy, N. Prevention of HIV-1 infection with early antiretroviral therapy. *The New England Journal of Medicine* 2011; 365;493-505.

General Directorate of Communicable Disease Control and Environmental Health, Ministry of Health, Republic of Indonesia (MOH-RI) Case Statistics of HIV/AIDS in Indonesia - Report of March 2009; Jakarta, 2009.

Handayani, M., Prawiranegara, P., Siregar, A.Y.M., Wisaksana, R., Pinxten, L., van der Ven, A. Need, Opinion, and Expectation of PLHIV toward Establishment of ART at Community Health Center (Puskesmas) in Bandung, Indonesia. Presented in the 42nd Asian Pacific Academic Consortium for Public Health Conference (APACPH), 2010.

HIM. HIM Results: West Java. 2011.

Ibrahim, K., Songwathana, P., Boonyasopun, U., Francis, K. The HIV/AIDS Epidemic in Indonesia: Does Primary Health Care as a Prevention and Intervention Strategy Work? International Journal of Nursing Practice, 2010; 16: 87-91. doi:10.1111/j.1440-172X.2010.01816.x
Indonesian National AIDS Strategy, Coordinating Minister for People's Welfare/Chair of the National AIDS Committee, Government of Indonesia, 1994. (Also available at http://www.youth-policy.com/Policies/Indonesia_National_HIV_AIDS_Strategy.cfm)

Indriasari, R., Oktavia, M.D., Handayani, M., Prawiranegara, R., Siregar, A.Y.M., Pinxten, L., *et al*. Development of Patient-oriented Health Services of Community Health Centers in Bandung, Indonesia. Presented in the 42nd Asian Pacific Academic Consortium for Public Health Conference (APACPH), 2010

Mathers, B.M., Degenhardt, L., Ali, H., Wiessing, L., Hickman, M., Mattick, R.P., *et al*. HIV prevention, treatment, and care services for people who inject drugs: a systematic review of global, regional, and national coverage. *The Lancet* 2010; 375; 1014-1028; DOI: 10.1016/S0140-6736(10)60232-2.

Ministry of Health (MoH) of Indonesia. HIV in Indonesia Model (HIM), 2011: Model Overview, Features and Launch, 2011.

Mukherjee, J.S., Ivers, L., Leandre, F., Farmer, P., Behforouz, H. Antiretroviral Therapy in Resource-Poor Settings: Decreasing Barriers to Access and Promoting Adherence. Journal of Acquired Immune Deficiency Syndromes 2006: 43:1:123-6

National AIDS Committee (2008), *Country Report on the Follow up to the Declaration of Commitment on HIV/AIDS*, UNGASS Reporting Period 2006-2007, Jakarta.

National AIDS Commission (NAC). The Response to HIV and AIDS in Indonesia 2006-2011: Report on 5 Years Implementation of Presidential Regulation No. 75/2006 on the National AIDS Commission. Indonesian National AIDS Commission, 2011.

National AIDS Committee (NAC). Republic of Indonesia Country Report on the Follow up to the Declaration of Commitment on HIV/AIDS (UNGASS), Reporting Period 2010-2011. Indonesian National AIDS Committee, 2012.

Office of the Coordinating Minister for People's Welfare; National AIDS Committee, Government of Indonesia, *National HIV/AIDS Strategy 2003-2007*, Office of the Coordinating Minister for People's Welfare/National AIDS Committee, Government of Indonesia, 2003, p.45 (Also available at http://www.undp.or.id/programme/pro-poor /national_hivaids_strategy_2003-2007_en.pdf)

Provincial Health Office (PHO) of West Java. HIV/AIDS Situational Analysis, 2010.

Riyarto, S., Hidayat, B., Johns, B., Probandari, A., Mahendradhata, Y., Utarini, A., *et al*. The Financial Burden of HIV Care, Including Antoretroviral Therapy, on Patients in Three Sites in Indonesia. Health Policy and Planning 2010; 1-11, DOI: 10.1093/heapol/czq004

RSHS. Hasan Sadikin Hospital Bandung VCT Procedure, 2008.

Siregar, A.Y.M., Komarudin, D., Leuwol, B., Afriandi, I., Djuhaeni, H., Baltussen, R. Economic Aspect of HIV/AIDS Control and Injecting Drug Use in Indonesia. Acta Medica Indonesiana, the Indonesian Journal of Internal Medicine, a Publication of the Indonesian Society of Internal Medicine 2009; 41 (suppl.1); 70-4

Siregar, A.Y.M., Komarudin, D., Wisaksana, R., van Crevel, R., Baltussen, R. Costs and Outcomes of VCT Delivery Models in the Context of Scaling Up Services in Indonesia. Tropical Medicine and International Health 16;2 (2011); 193-9

Siregar, A.Y.M., Tromp, N., Komarudin, D., Wisaksana, R., van der Ven, A., van Crevel, R., Baltussen, R. Costs of treatment of HIV/AIDS in Indonesia by Disease Stage. Forthcoming.

Surdo, A. Clinicians or Counselors? Challenges to the Scale-up of Provider-Initiated HIV Testing and Counseling. Presented at USAID Mini-University, October 2007.

UNAIDS (2006), *Report on the global AIDS epidemic 2006*, Washington, UNAIDS

UNAIDS. The Impact of Voluntary Counselling and Testing: a Global Review and Challenges: June 2001. Geneva: UNAIDS, 2001.

Wisaksana, R., Alijsahbana, B., Crevel, R., Kesumah, N., Sudjana, P., *et al*. Challenges in Delivering HIV care in Indonesia: Experience from a Referral Hospital. Acta Medica Indonesiana, the Indonesian Journal of Internal Medicine, a Publication of the Indonesian Society of Internal Medicine 2009; 41 (suppl.1); 45-51

World Bank, Official Exchange Rate (LCU per US$, period average), 2012. http://data.worldbank.org/indicator/PA.NUS.FCRF (accessed 5 June 2012)

World Health Organization. HIV/AIDS in the South East Asia Region, India, WHO, 2009.