COMMENTARY ARTICLES

Commentary: A Significant Transition of Mode of Teaching and Studying to meet the Covid-19 challenges in an university in Vietnam

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ABSTRACT

Since the coronavirus outbreak in January, many schools and universities in Vietnam have almost entirely closed for nearly three months as a means of social distancing. The Ministry of Education has requested institutions to shift to online teaching to ensure students are kept up with their study progress while staying at home, and millions of students have been using different digital online learning approaches to satisfy their home-based learning needs. This paper is to comment on the change and challenges of students and lecturers in adapting training strategies response to Covid 19. Although the social distancing lasted only 3 months and there were some concerns regarding the disadvantages of digital and online way of studying, the training strategies in the Universities have changed significantly. Covid -19 also brings an opportunity in rebuild our education system carefully and adaptably in this sensitive world.

Keywords: *Covid-19, university, training, opportunity, challenges, Vietnam.*

INTRODUCTION

In the world, 90 per cent of the world's learners – more than 1.5 billion students - have been affected by school closures, according to the Organisation for Economic Co-operation and Development estimates (1). In Vietnam, during lockdown due to Covid - 19 from March to May, 2020, almost all students have been learning on digital apps such as Zoom, Google class or Mircrosoft team (2). Lecturers and students have to find a way to use this outbreak to reimagine education, including what and how our students learn. Never before has there been a concerted global effort to digitise education.

A Significant Transition of Teaching and Studying

As requirement of social distancing, students have been on home-based learning for 8 weeks from March to May, 2020. From the educator site, lecturers are overload with messages, emails and reminders for participants in virtual classes and also, other things that educators have to adapt and adjust such as preparing equipment, learning how to adapt lecture content and methodology of teaching and learning. From the student site, the challenges of digital equipments such as computers, laptops, smartphone and internet requirement for study were huge because not all students are well equipped with these devices. This situation is truly significant transition of teaching and studying from traditional approach to the new style of learning. While there has a lot of focus on going digital this home-based learning season, the bigger issue is that education needs to modernise and become more relevant. Digitalisation is both the solution and the challenge.

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Submited: 16 October, 2020
Revised version received: 11 November, 2020
Published: 26 March, 2021

Change How the Lecturers Teach

Starting with the "transition", many academic institutions and lecturers are unprepared for this sudden transition to digital platforms to move to the online teaching. For example, in the Hanoi University of Public health, the young lecturers were easy to familiar with digital platforms of Zoom and Mircrosoft team, however, the invited old lecturers (from other universities) faced challenges of using the electronic devices from home. The solutions for this problem was that the assistant lecturers had to assist these invited lecturers via team viewer or visit home of the invited lecturers to install apps or provide technical helps if needed.

According to Lange C, "while COVID-19 is challenging assumptions regarding engagement and building connections, these attempts at modernisation have merely offered the same outdated educational content and the same passive teaching methods, but now facing a webcam plonked in front of them" (3). Most of the time, lecturers talked and talked, shared their presentation slides and many students turned off their video/audio to stablize the internet. Many active teaching methods were ignored during the class such as role play or group discussion. We forget something else is needed in the equation to spark learning when a distance is placed between the teacher and student. Most of the discussions, group works were left for students to complete at their own pace, but it was clear that not all of student members involved in the project. Only one to two key persons of the group completed the assignments.

In order to transit from traditional to digital training environments, it is needed to avoid the temptation of distractions and maximise the learning experience (4). Educators need training in how to teach differently on these platforms, when the traditional method of teaching by instructing, asking and reviewing is still popular. Part of the issue may be that video conferencing solutions are not necessarily the right tools to deliver learning and come with their own challenges such as limited connection bandwidths, security and privacy. There were some evidences such as lagging video, internet disconection, or stranger(s) signed in the zoom class. Therefore, educators should equip themselves technical competencies in computer skills and improve communication with students through quality discussion (inside and outside classroom, email and other communication approaches).

During Covid-19 lockdown, education systems in the universities have done a good job making the jump onto digital platforms and must now focus on how to make digital learning count. So how about changing up teaching to nurture thinking rather than to dish out instructions?

Focus on Interacting And Responses, Rather than Presentation

The teachers acted much more as facilitators, provoking thought and stimulated general discussion, while speaking for several classes from 40-120 students. Lessons started with a "chaos" at the beginning of waiting student logging into the class and counting for performing attendance. Some used laptop while the others used smartphone. Some students were at home, some were at the café/ tea house because their internet at home was not available. Lecturers shared screen and started presentation. Short quizzes and polls peppered for each class, and students were called on constantly to give their opinions, summarise the arguments presented by their peers so far, and even to step in for the teacher and moderate.

Teaching via zoom was a refreshing and thoroughly modern experience. It succeeded also because investments were made in having faculty undergo months of training

in the principles of learning sciences and online facilitation. The university paid for Zoom accounts, therefore, the lecture was not discreted, however, many students feeded back the internet was not stable, or their audio/ video was not available

It might sound like a difficult task but such investments in shaping the minds of our digital era across all learning ages will go a long way. Learning can be broken up with internet corruption or even bias sound from home of both lecturer and students.

CHANGE HOW WE TEACH AND EVALUATION

The rapid spread of COVID-19 has demonstrated the importance of developing resilience to cope with the volatility and uncertainty of the future. It seems that the traditional way of teaching (in class) cannot applied successfully online. Many active teaching techniques such as group discussions, role play… cannot or limited applied online. Furthermore, the training of some subjects required skills such as laboratory, statistic or data analysis face challenges. This may involve a strategic overhaul of curriculum so that we are not just adding more to our already weighty student workload, and a huge dose of imagination and creativity to weave some of these new digital-era competencies.

The online evaluation (via zoom) faced the risk of lost tests/or questions of examination bank. In one examination, all of the questions of examination bank were lost, and the university has to develop many new questions to compensate the test bank. This way of evaluation also cannot control the student's internet copying during exams time.

The Opportunity Covid-19

COVID-19 poses a valuable opportunity to remind us that the skills students and lecturers need in this era are meta-skills that they can apply to many different circumstances, for example, creative problem-solving, focus and perseverance, critical thinking, and above all, adaptability.

As experiences of this Covid-19 outbreak, students and lecturers are learning lessons about how interconnected we all are, the need of updating technology in training and what globalisation really means.

Let us not waste the opportunity this crisis offers and rebuild our education systems thoughtfully and intentionally, celebrating resilience, creativity and adaptability as the cornerstones of what it means to be educated in this sensitive world.

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ORIGINAL ARTICLES

The cost of HIV testing at five district health facilities intervented poct model to confirmation HIV detected

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ABSTRACT

Objective: HIV testing is the only method to confirm people infected with HIV. There are many models providing HIV testing services. HIV testing cost is an important component for the investment and strategic direction of policies and programs on HIV. This paper describes HIV testing costs of HIV confirmatory testing by using three rapid diagnostic tests at district level (POCT- Point of Care testing).

Methods: cross-sectional study design was employed, costs are calculated using the cost-allocation method based on the proportion of resources used for the personnel, investment such as infrastructure and equipments, routine operational costs including test kits and consumable supplies, administration and training, fuel costs using for HIV testing in the laboratory, transporting the sample to province for HIV positived confirmation and HIV confirmatory test at the province. Five district health centers (DHC) thực hiện mô hình can thiệp POCT HIV were studied, HIV tests were conducted for 4,636 clients in 2016.

Results : 201 HIV positive cases were detected; after implementing the POCT model to confirm HIV status at these five DHCs, the cost per HIV screening test case is 7,4 USD on average; and cost per an HIV comfirmatory test is 206,8 USD.

Conclusion: Applying the POCT model of HIV helps reducethe cost of HIV testing because of saving cost for sample transportion and implementing confirm HIV detected more in provincal standard laboratory. It should be expanded to use especially limitted resource settings in Vietnam

Keywords: *HIV, HIV test, POCT, cost*

INTRODUCTION

HIV infection affects the health of individuals and communities and the development of economic and social security. By June 30, 2020 in Vietnam, there are 212,816 people living with HIV and 108,623 deaths due to HIV- related causes. HIV epidemics are concentrated in Northern mountainous and Southeast regions, among high-risk populations such as people who inject drugs (PWID) (12,74%/2019), female sex workers (FSWs) (3,58%/2018) and men having sex with men (MSM) (11,36%/2018), mainly aged between 30 and 39 and tends to increase, with transmission shifted towards female

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Submited: 30 October, 2020
Revised version received: 17 November, 2020
Published: 26 March, 2021

population, implying a possible potential outbreak (1), (2).

HIV testing is the only method to determine HIV infection, which helps inform monitoring solutions and responses for prevention, treatment and control of epidemic. Location of providing HIV testing services can be either at a health facility or in the community. HIV confirmatory testing can only be implemented at a health facility under two main models: (1) HIV testing at standardized laboratories (Slab). This model requires necessary infrastructure, good practice staff and testing equipment. So each province only had one HIV confirmatory laboratory; (2) The point-of-care testing model (POCT) is a method that use three rapid diagnostic tests, which allows flexibility, simplicity and no need for intensive training and is easy to implement at local level, therefore, it is helpful in expanding HIV testing coverage.

Testing costs include: allowance for conducting the test, infrastructure, consumable supplies and operational cost for one client tested and one positive case. The cost depends on prevalence, client group, location, applied model, HIV testing algorithm, and techniques of HIV testing. When reviewing different testing models, the cost of facility-based HIV counseling and testing (VCT) was highest (36,78 USD), then community-based HIV testing (27,38 USD), testing at workplace and home (USD16,6 and USD8,58 respectively), testing during campaign months (11,17 USD), provider-initiated counselling and testing (PICT) in hospitals and clinics (12,56 USD and 12,32 USD respectively) (3). A New Jersey based study from 2008 to 2009 found that the average cost of test kit per test implemented standard method combining a rapid diagnostic test with an Webtern blot was USD27,8, while a rapid test only is 22,94 USD (4). The Systematic review found that testing costs were higher for general population group and in high income countries (5).

In Vietnam, since the establishment of the first HIV laboratory in 1986, there are now more than 1250 HIV screening facilities in all districts and 138 HIV confirmatory laboratories in 63 provinces/cities (2). However, the cost of HIV testing is still high, for example, according to a study in Thai Nguyen in 2012, the cost of a facility-based HIV test was 36,9 USD per client (from testing to receiving the result), and 117 USD for an HIV confirmed case (6). In the context of limited resources, changing management mechanisms, implementing decentralization in health sector, it is necessary to study the application of providing HIV confirmatory testing at district levels that is suitable to the locality. This model is flexible, easy to apply in places with limited resources, it can provide services near the people, perform on-the-spot and combine with many other medical services, thereby increasing the efficiency of testing in difficult and remote areas, reducing time to deliver and return test results, and savingcosts (7),(4),(8),(5), (9), (10). Because of the above reasons, this study aims to describe the cost of HIV testing in five health facilities in the Northern mountainous districts where POCT model is used to confirm HIV test results. Total cost for HIV testing including personnel, investment and other regular expenses, transporting the sample to province for HIV positived confirmation and HIV confirmatory test at the province. Base on total costs, number of HIV testing and number of confirmation HIV detected to calculate the unit cost.

METHODS

Study design: This is a cross-sectional study with collection of retrospective data on HIV testing expenditures at district and provincial health facilities in order to estimate total cost, component likes personnel, investment, other regular, sample transportion, comfirmation in PAC costs, and unit cost per screen testing and per case detected HIV test.

Location and time: Dien Bien, Thanh Hoa and Son La are provinces selected for HIV/AIDS sentinel surveillance in Vietnam, with 100% of districts/towns and over 80% of communes/wards having HIV infected people. These are places with low education level and concentration of drug addiction, diversity of cultures, beliefs, customs, leading to high risks of HIV infection and unpredictable progression of HIV epidemic (11), (12), (13), (13, 14). Still many people infected with HIV haven't known their status. According to case-based surveillance estimates in 2015, the percentage of infection detected is only 49,79% in Dien Bien, 56,35% in Son La and 49,85% in Thanh Hoa; the proportion of people living with HIV detected and received ARV treatment was 61,99% in Dien Bien, 39,52% in Son La and 48,66% in Thanh Hoa, respectively. This issue is clearly in somes mountainous districts with difficult travel, low income, underdeveloped health infrastructure, insufficient human resources, access to health services for people living with HIV is very limited such as Tuan Giao and Dien Bien District of Dien Bien province, Muong Lat and Quan Hoa of Thanh Hoa, Moc Chau of Son La.

Before 2015, all HIV samples in the district and surrounding areas were only screened for HIV at district health facilities (DHF) and the reactive screened samples are sent to provincial HIV/AIDS control center (PAC) for confirmation of HIV under the Slab model. The limitation of this model is that it takes long time requiring significant human and finanicial efforts, affecting the access to HIV testing and returning of test results (6, 15, 16).

Since 2016, the district medical facilities have been invested with equipment, human resources, training and technical assistances to implement the intervention model to confirm HIV at the district level with three rapid diagnostic tests (POCT) (17).

Selection criteria

Testing facilities are selected according to the criteria to ensure they meet the HIV screening and confirmatory testing standards of the Ministry of Health, representing the northern mountainous regions of Vietnam, to be allowed to pilot POCT model to confirm HIV at district level.

Sample size, sample selection

05 district health facilities were purposively selected with the intention to implement the intervention of HIV confirmation POCT model.

Variables / indicators: Cost classification

We have five types of variables in relation to cost classification used from provider perspective in this study, including:

(1) Human resource costs: salary, allowances, % time allocated for HIV testing services.

(2) Variables related to fixed costs: Items (equipments and consumable supplies used over 1 year), time of initiating use, time to start using, original price at purchase time, duration of use, simple depreciation coefficient, % used the items for HIV testing.

(3) Variables related to other routine operational costs: electricity costs, water costs, fuel costs, test kits and consumable supplies, administration and training.

(4) Expenses related to transporting HIV reactived samples from the district health center to the provincial HIV/AIDS prevention center for HIV confirmatory testing and confirmation HIV detected in PAC Laboratory.

(5) Other variables: Number of tested clients, number of clients with positive test results, number of HIV testing staff.

The study indicators include: unit cost of personnel, investment, other regular, sample transportion, comfirmation in PAC, average cost per client, average cost per one positive case.

Tools and data collection procedures

Forms to collect expenditure data on HIV testing were referenced from international cost studies and studies in Vietnam. However, the forms had adjusted to supplement the cost related to sample transport and the cost of conducting HIV confirmatory tests at provincial levels.

Lab staffs who conduct HIV testing were trained in filling forms of HIV testing activities, recording and collecting data on expenses for HIV testing activities.

Data collection team was instructed on how to enter and verify data, using standardized data collection form in Microsoft Excel format.

Cost calculation We calculate the cost per unit of product using the method of cost allocation based on the proportion of resources used for the activity: determining the total cost, determining the number of units of product / service from which the average cost is calculated

The cost of screen HIV testing = (Personnel costs + investment costs + Other regular expenses):

- Personnel costs include: Salaries, bonuses, allowances, insurance. This is inclusive of percentage of time allocatedtesting service of part-time personnel (if any)

- Investment costs include: infrastructure, equipments. In which, the value of fixed assets is adjusted according to the consumer price index of 2016, the asset depreciation is calculated on the assumption that duration of use of equipment is 10 years, facility is 25 years (according to guidelines of the Vietnamese Ministry of Finance) with a simple depreciation ratio and a discount rate to be 3%, percentage of use items of equipment for HIV testing.

- Other regular expenses include: Electricity, water, fuel, maintenance, administration, training, test kits and consumable supplies for HIV testing ...

The cost of HIV confirmed positive at screening facility (district laboratory) = Cost of HIV screening test + Cost of transporting the sample to province for HIV positived confirmation + Cost of HIV confirmatory test at the province.

The cost for an HIV confirmatory test at province (PAC laboratory) = total cost for an HIV confirmation facility x percentage of samples conducted HIV confirmation sent from districts.

The cost per patient tested was defined as the cost of the HIV testing services reported by a specific programme, divided by the number of people who received HIV testing services (5).

The cost per case detected was defined as the cost of the HIV testing services reported by a specific programme divided by the number of people who were diagnosed HIV-positive (5).

In this study, the collected information was entered into a computer on Microsoft Excel template to calculate in VND at 2016's prices then converted into USD at the World Bank rate.

The exchange rate at the time of the study will be converted to the general rate of the World Bank at the time of the study (https://data.worldbank.org/indicator/PA.NUS.FCRF?page=1): 1 USD = 21935,008 VND.

Ethical procedures

In this study, the data is only used for scientific study purposes, It will be shared with stakeholders aiming to develop related policies and planning. Study has been approved by the IRB of Hanoi University of Public Health at Decision No. 301 / 2017YTCC – HD3.

RESULTS

General characteristics of study participants

Table 1 shows the general characteristics of all HIV testing facilities that belong to government managed system. These facilities provide lab-based HIV testing to all populations of the district, 4/5 districts respond both 2 functions include providing prevention and health care services, except Moc Chau Preventive Medicine Center that does not provide health care services. In 2016, 5 falicities performed HIV tests for 4,636 clients and detected 201 HIV-positive clients (positivity rate of 4,3%).

Table 1. General characteristics of HIV testing facilities at five northern mountain districts in 2016

District	Function of district health centre	Testing model	Number of years started HIV testing	Number of sample		
				HIV testing	Suspect HIV	Positive HIV
Dien Bien District	Prevention and treatment	Facility - based	8	368	45	45
Moc Chau	Prevention	Facility - based	5	429	34	33
Muong Lat	Prevention and treatment	Facility - based	4	844	15	15
Quan Hoa	Prevention and treatment	Facility - based	6	1177	42	41
Tuan giao	Prevention and treatment	Facility - based	3	1818	70	67

Describe the costs of HIV testing in the district-level applying POCT model to confirmation HIV detected

Figure 1 describes 5 types of component cost unit for HIV testing: The unit cost of human resources remains the high proportion of costs in 4/5 HIV testing facilities, highest in Muong Lat (7,9 USD) and lowest in Dien Bien District (0,6 USD), suggesting the need to expand to collect samples to maximize resources for HIV testing. Routine operational costs were almost similar among testing facilities, with an average of 2,4

USD, being the highest in Muong Lat and lowest in Dien Bien District.

Investment cost is the lowest of all the cost components, but it gradually decreases if the laboratory continues to implement because it is a one-time investment and less arising. The unit cost for sample transportation and the provincial HIV confirmation test is found to be much higher than the other component unit costs, and these costs are only present in Dien Bien and Moc Chau districts because they have not done POCT model for HIV confirmation so there was still time when they had to send samples to the provincial level for HIV confirmation.

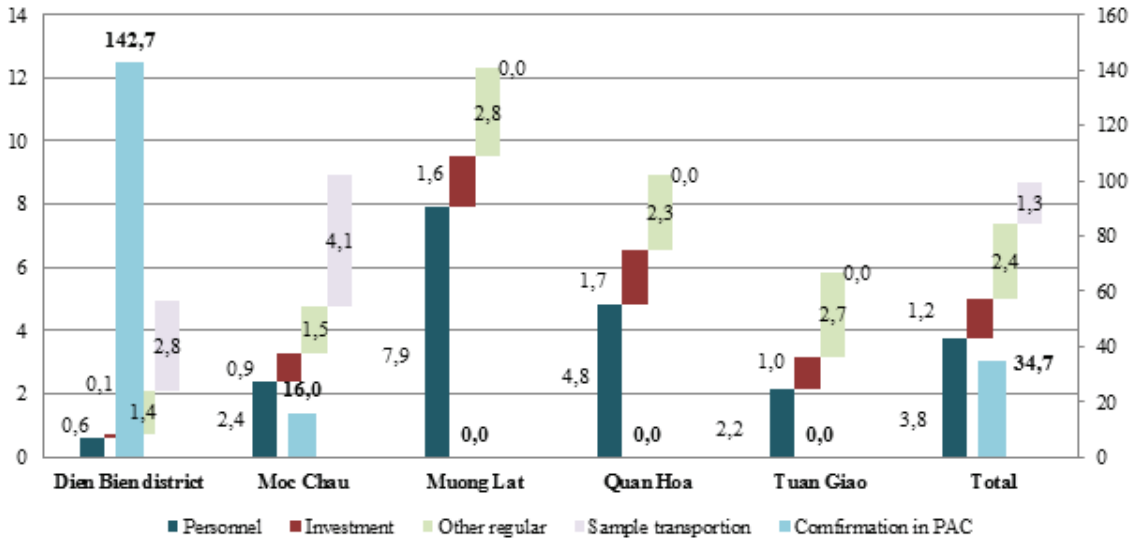

Figure 1. Unit of component costs of HIV testing

Figure 2 describes the average unit cost of HIV testing: The average cost per HIV testing at 5 studied districts in 2016 is 7,4 (2,1-12,3) USD, highest in Muong Lat and lowest in Dien Bien district. The average cost per positive case is 206,8 (82,9-691,6) USD, highest in Muong Lat and lowest in Moc Chau. There is a significant difference in average costs among the districts, which suggests that with the same investment, the lower the number of samples, the higher the cost will be.

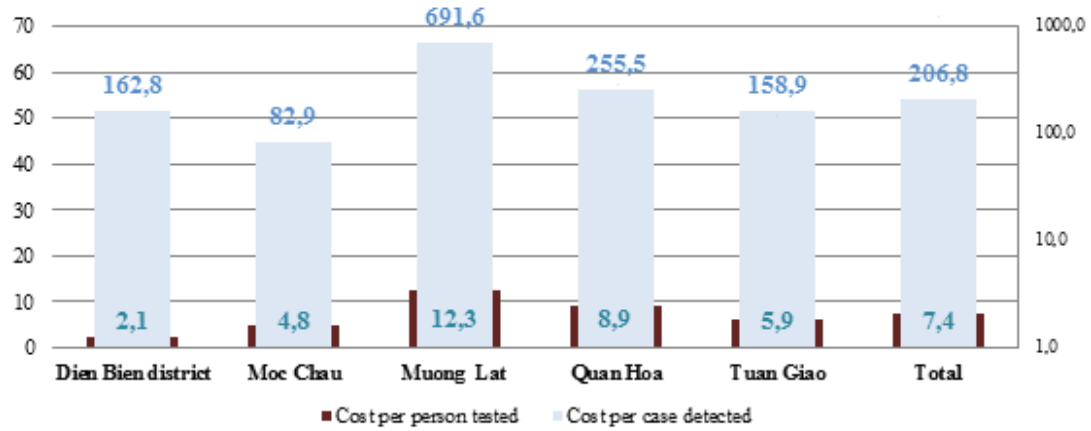

Figure 2. Average cost of HIV testing

DISCUSSION

This study has shown that with the support of the POCT, this model leads to reduced cost of transporting samples, conducting HIV confirmatory testing at the provincial level, thereby reducing total testing costs.

The average cost per HIV testing in the 5 district health facilities in this study is 7,4 USD, which is lower than those of previous study results using the Slab model in Thai Nguyen in 2012 (USD 36,9) (6); 7,6 USD in 9 HIV sential surveillance provinces in 2013 (18), lower than the average cost synthesized from world studies for the model of facility based testing, the average of the cost per HIV testing is 11(6-43) USD for the high-risk population (5). Compared with the POCT intervention studies in the world, the result calculated in our study is lower compared with the results of studies applying this model in các bệnh viện ở Uganda in 2009 (11,68 USD) (19), of 15 HIV testing facilities using combined rapid test and Western Blot to confirm HIV detected in New Jersey in 2008-2009 (26,10 USD) (4), and in HIV testing counseling facilities in West – Java province of Indonesia in 2008 (14,91 USD) (20). The lower cost of the study may be due to the intervention of the testing models in available resources of facilities so reducing the cost of investment in equipment and payment of labor. Using rapid algrothirm combined 3 rapid test also saving money more than algrothirm combine rapid test with ELISA or other test.

The study results showed that although the cost for one positive case is not equally low at all study sites but the average cost is 206,8 USD, In some site, the cost is still higher due to the small number of samples performed but it is still necessary to invest equipment and personnel to meet standards such as Muong Lat and Quan Hoa. The averge cost per HIV detected is lower than that of the study in 9 HIV key provinces in 2013 (320,3 USD) (18), higher than the results of the study applying Slab for HIV testing in Thai Nguyen in 2012 (117,6 USD) (6). This could possibly be the fact that the study included both transportation cost and the cost of conducting HIV confirmatory testing at the province. In the study, POCT model have applied in five districts so the cost is lower than the study in 9 provinces where HIV testing using Slab models concentrating in province.

Similarly, when compared with studies in the world, the average cost per client

tested for HIV testing at these five district health facilities was lower than the result of 334 (324-15308) USD for high-risk populations in the low and mid income countries summarized by the World Health Organization (5), much lower than the cost of 3637 USD in high income countries like the US in 2005-2006 (9). The results from our study are much lower than the cost of USD 2077,15 for one positive HIV case applying POCT model at 15 HIV testing facilities in New Jersey in 2008-2009 (4). In the study applying the POCT model for confirmed HIV testing, the average cost is lower than the studies applying the Slab (standard laboratory) or mixed model, and integrating the model at the district facilities will reduce the cost due to the utilization of available human resources and equipment.

In summary, in order to optimize resources and improve cost effectiveness, it is necessary to increase the number of testing samples by identifying surrounding geographic areas for sample collection, expanding HIV testing services, continuing sustainable expansion of POCT intervention in remote and disadvantaged areas.

Our study has some limitations such as the inability to evaluate the reduction in HIV incidence, followed by the cost of prevention of one HIV infection case after expanding the POCT model. The study can have certain imprecise number due to the cost estimation based on data extracted from books, reports may have unverified original errors, or percentage of time that lab staff spent for HIV testing is not completely accurate.

CONCLUSION

The study has provided sufficient information on HIV testing costs at district HIV testing facilities, helping to inform suitable cost norms for calculating health service fees and charges.

The POCT model to confirm HIV status at the district level has helped to save program costs and reduce HIV testing costs compared to the previous Slab model. Expanding the POCT model is a solution that can both facilitate access to HIV testing, in order to achieve the first 90 target of having 90% of people living with HIV to know their HIV infection status in the context of reduced resources for HIV/AIDS prevention and control as well as promote the effecient use of program resources in disadvantaged areas.

Acknowledgments: Authors would like to thank the members working in the District Health Care Centers and Preventive Medicine Centers of Dien Bien, Tuan Giao, Moc Chau, Muong Lat, Quan Hoa districts. Special thanks to Provincial HIV/AIDS Center in Dien Bien, Son La and Thanh Hoa provinces.

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