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# Impact of HIV/AIDS on household vulnerability and poverty in Viet Nam



*Report of UNDP-AusAID supported Project - VIE/98/006*

Ha Noi, August 2005

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IMPACT OF HIV/AIDS  
ON HOUSEHOLD VULNERABILITY  
AND POVERTY IN VIET NAM

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# Foreword

HIV/AIDS affects people in every province and virtually every community of Viet Nam. If left unchecked, the epidemic has the potential to reverse the nation's remarkable achievements in poverty reduction.

Viet Nam has taken steps to develop an effective national response to reduce HIV/AIDS. This increasing commitment has included the approval of a national strategy on HIV/AIDS prevention and control, considered among the best in the world.

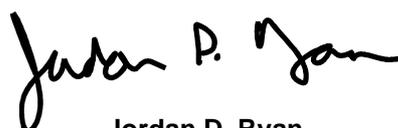
HIV/AIDS is a development issue and to respond to it as such is essential to understanding the epidemic's socio-economic impact. Assessing this impact in low-prevalence countries like Viet Nam, remains a difficult task. Even with low overall incidence, a very small percentage change in HIV/AIDS rates in Viet Nam's large population can mean huge increases in the actual numbers of people affected.

While the general macroeconomic impact of HIV/AIDS is still low, the epidemic has already had a considerable impact on the country's poor and on general progress towards poverty reduction and achievement of the first Millennium Development Goal (MDG), to eradicate extreme poverty and hunger. Put bluntly, HIV/AIDS has the power to reduce and even reverse gains made in poverty reduction by driving families affected with HIV/AIDS, into poverty.

This report sheds light on the impact of the epidemic on this micro-level. It presents a novel approach to the analysis of the implications of HIV/AIDS on Viet Nam's socio-economic development by linking the impact of HIV/AIDS to household poverty levels.

There are strategies to alleviate the pressure at the family-level. Providing financial and material support to households with one or more members living with HIV/AIDS, for example. If these households had easier-, cheaper or even free access to healthcare, HIV/AIDS would cease to have such a negative impact on poverty reduction efforts. This report also suggests a framework for socio-economic impact assessments to be conducted on a more regular basis in the future in order to facilitate policy making and planning.

Large numbers of Vietnamese are already feeling the impact of HIV/AIDS, especially the most vulnerable and poor. With this report, we hope to better understand the negative influence HIV/AIDS has on household income, and by doing so, promote action to prevent the dramatic effects it could have on poverty reduction efforts in this Viet Nam.



**Jordan D. Ryan**  
UNDP Resident Representative

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The UNDP team consisting of Nguyen Tien Phong, Ngyen Thi Phuong Mai, and Alice Schmidt, provided technical support and input. Further revising was provided by Alice Schmidt giving the report its current structure. The UNDP HIV/AIDS project (VIE/98/006) under the leadership of Dr. Dao Quang Vinh provided continuous support.

Gayle Martin from The Futures Group International led the research team and drafted the report. The team of consultants consisted of Le Minh Giang (independent consultant), Nguyen Chi Dung (Ho Chi Minh Political Academy), Nguyen Duy Tung (independent consultant), Nguyen Hong Ha (Mediconsult), Nguyen Xuan Thanh (independent consultant), Pham Huy Dung (Institute of Health Policy and Strategy) and Vu Ngoc Uyen (Institute of Economics). John Stover (The Futures Group International) and Jim Knowles (independent consultant) also provided input and assistance.

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## Acronyms and Abbreviations

|        |   |
|--------|---|
| ADB    | Asian Development Bank                                      |
| AHRN   | Asian Harm Reduction Network                                |
| AIDS   | Acquired Immunodeficiency Syndrome                          |
| ANC    | Antenatal Clinics   |
| ARV    | Antiretroviral (drugs)                                      |
| CHC    | Communal Health Centres                                     |
| CSW    | Commercial Sex Worker                                       |
| GDP    | Gross Domestic Product                                      |
| GNI    | Gross National Income                                       |
| GFATM  | Global Fund to fight AIDS, Tuberculosis and Malaria         |
| HCMC   | Ho Chi Minh City  |
| HIV    | Human Immunodeficiency Virus                                |
| IDU    | Injecting Drug User   |
| KAP    | Knowledge, Attitudes and Perceptions                        |
| MDG    | Millennium Development Goal                                 |
| OECD   | Organisation for Economic Cooperation and Development       |
| OI     | Opportunistic Infection                                     |
| PLHA   | People/Person Living with HIV/AIDS                          |
| PMTCT  | Prevention of Mother-to-Child Transmission                  |
| PHA    | People/Person with HIV/AIDS                                 |
| STD    | Sexually Transmitted Disease                                |
| STI    | Sexually Transmitted Infection                              |
| UNAIDS | Joint United Nations Programme on HIV/AIDS                  |
| UNDP   | United Nations Development Programme                        |
| UNFPA  | United Nations Population Fund                              |
| UNGASS | United Nations General Assembly Special Session on HIV/AIDS |
| UNICEF | United Nations Children's Fund                              |
| VCT    | Voluntary Counseling and Testing                            |
| VDG    | Viet Nam Development Goals                                  |
| VLSS   | Viet Nam Living Standards Survey                            |
| VND    | Vietnamese Dong   |
| VNHS   | Viet Nam National Health Survey                             |
| WHO    | World Health Organization                                   |

# Executive Summary

In Viet Nam, large numbers of people are already feeling the impact of HIV/AIDS, even at the current relatively low general prevalence level of less than half a percentage point. Due to the country's large population size, the present low prevalence already translates into high absolute numbers of people living with HIV or AIDS – 215,000 people today according to the Ministry of Health. In other words, Viet Nam today sees more people living with HIV/AIDS (PLHA) than Swaziland, a country with an adult prevalence of more than 30 percent, one of the highest HIV prevalence levels in the world. Moreover, it is important to remember that in addition to those who carry the virus, there are many other people affected by HIV/AIDS such as, parents, children, spouses, brothers and sisters, as well as other relatives and friends of PLHA. Investments in mitigating the impact of HIV/AIDS – as well as in prevention programmes – are therefore becoming increasingly important policy measures in Viet Nam.

To date, very little is known about the economic impact of HIV/AIDS on low-prevalence countries such as Viet Nam. Given the low prevalence level, the impact on per capita economic growth is likely to be minor. Nevertheless, globally there is a growing body of theoretical and empirical evidence of the negative direct and indirect impacts of HIV/AIDS at the household level. Households constitute the first line of defense against HIV/AIDS and are the first to feel the burden of its impact.

In order to better understand the socio-economic impact of HIV/AIDS at the household level, UNDP, with the support of AusAID, and in collaboration with the Ministry of Health, conducted a case study assessing the household impact of HIV/AIDS. The study collected information on HIV/AIDS-related expenditure and income losses of 125 households with a total number of 129 HIV/AIDS-infected individuals in four provinces of Viet Nam. The study found that HIV/AIDS-related health care spending accounts for the largest increase in household consumption expenditure, and such health care was also identified as the area in which households with a PLHA need assistance the most.

A better understanding of the costs of care and treatment for HIV/AIDS helps to inform policy decisions in order to enhance government assistance to PLHA and their families. To this end, a second case study looking at hospital costs and broader health sector costs of HIV/AIDS — “The Hospital Impact Case Study” — was conducted as well.

In Viet Nam, the proportion of household expenditure spent on health care costs was found to be among the largest globally. The emphasis on the impact of increased HIV/AIDS-related health spending on households is therefore particularly pertinent in assessing the socio-economic impacts of HIV/AIDS in Viet Nam.

## Summary of micro-level impacts

### Expenditure effects

*Health care costs are extraordinarily high.* Total health care expenditure for households with a PLHA was found to be 13 times higher than the average household's health spending in Viet Nam.

*Funeral costs add to the burden.* Families tend to bury deceased HIV/AIDS patients very soon after death. While these funeral ceremonies tend to be smaller than those for people who die from causes unrelated to HIV/AIDS, funeral costs in general are significant. In addition, smaller ceremonies imply smaller contributions from relatives and neighbours for assistance with funeral costs.

### Income effects

*The loss of income by both PLHAs and their caregivers is significant.* More than a third of the PLHAs sampled in the case study were employed at the time of interview or had had a job just before they died. Their reported annualized loss of income was VND7,416,000 (US\$480), approximately equaling consumption expenditure of households from the poorest 20 percent of the population. Three-quarters of PLHAs in the sample required the assistance of a caregiver. On average, one caregiver per PLHA was needed, spending nearly five hours a day caring for the PLHA. One-quarter of caregivers reported having to give up a job in order to spend time with the infected person, and over a third of caregivers experienced income reduction due to fewer hours worked.

*Most of the burden of care giving falls on women.* Non-income earning household members, or those earning the least, tend to be the first ones to give up a job to provide care to the sick family member. Mothers account for half of all caregivers, followed by wives, fathers, and sisters.

### **Financial coping strategies and other impacts**

*Coping usually means struggling.* Qualitative information suggests that coping strategies are more often “struggling strategies” with regard to financial survival. In many cases, it is necessary for the elderly to do menial work to help generate additional household income sufficient to cover the additional costs. Borrowing money, often at high interest rates, is the most common form of coping, followed by reduced food and health care consumption, as well as the selling of assets.

*Investments in education are lost* as new HIV infections are increasingly appearing among young people. The household impact of an adolescent’s premature death - in terms of sacrifices made, lost investments in education and other items, as well as unrealized dreams - is very significant.

### **Hospital care and treatment**

“The Hospital Impact Case Study” collected data on hospital costs related to inpatient and outpatient HIV/AIDS services. The key findings that emerged from the case study were that:

- Hospital care and treatment services for HIV/AIDS are poor and severely limited by resource constraints in the health system;
- Most HIV/AIDS-related care and treatment costs are borne by households;
- Health care-seeking behaviour by PLHAs is strongly influenced by stigma and discrimination; PLHA tend not to seek care at hospitals for fear of exposing their HIV/AIDS status.

## **Summary of macro-level impact**

### **HIV/AIDS slows down the pace of poverty reduction**

Most households with a PLHA, except for the richest 20 percent, will fall below the poverty line. The poorest 40 percent of households with a PLHA will in addition fall below the food poverty line as a result of the expenditure and income effects of HIV/AIDS.

HIV/AIDS significantly reduces the gains made in poverty reduction as it drives households into poverty for the first time or the already poor, more deeply into poverty. From a poverty-impact perspective, it is particularly noteworthy that HIV/AIDS-affected households are also affected by five of the seven most common causes of poverty identified in Viet Nam: illness, life cycle events (e.g., funerals), drug addiction, loss of physical assets, and unemployment. Indeed, participatory poverty assessments indicate that illness has been the most common cause for Vietnamese households to fall into poverty in recent years. Simulations based on the magnitude of increased health expenditure and lost income obtained from the case study as well as from official estimates and projections, estimated that in 2004, 126,000 people either became newly poor or fell deeper into poverty because of HIV/AIDS. This number could potentially increase over the next decade to reach almost half a million in 2015. The emergence of HIV/AIDS as a risk that increases household vulnerability needs to be fully acknowledged in poverty assessments and taken into account as a factor that may slow down the rate of poverty reduction in the future. Within this context, HIV/AIDS needs to be formally included in the Government’s efforts to reduce poverty.

## **Some solutions for responding to the challenges**

Several characteristics of Viet Nam may contribute to slowing down the rapid spread of HIV/AIDS. For example, the status of women in Viet Nam is reasonably good compared to many other Asian countries. To capitalize on this comparatively higher status, it will be important to further empower Vietnamese women, especially young

women, with negotiation and life skills so that they have greater control over their lives, including their sexual life. The better women's status in society, the less vulnerable they are to HIV/AIDS and its consequences. Moreover, Viet Nam has strong mass organizations and is able to organize effectively to address critical problems, as was illustrated by the success of the country's family planning programme. Furthermore, the Government is experienced in dealing swiftly and effectively with epidemics (e.g., SARS) and given the country's level of development, the Vietnamese health system is functioning reasonably well.

However, the level of stigma and discrimination in regard to HIV/AIDS is still pronounced and will determine whether these factors can really make a difference in slowing down the spread, and mitigating the impact of HIV/AIDS in Viet Nam. Stigma exacerbates the already dire consequences HIV/AIDS presents to children, siblings, spouses, parents and other family members and friends of PLHAs. People experience stigma and discrimination at a time when they are most in need of society's support. In other words, stigma and discrimination worsen the socio-economic impacts of HIV/AIDS and make responding to the epidemic more difficult. Therefore, a serious and genuine effort to curb stigma and discrimination is greatly needed.

The convergence of the impact of short-term income and expenditure effects, as well as longer-term effects, such as unrealized education investments, suggests that households of PLHAs will continue to bear the brunt of the epidemic. This is why efforts aimed at impact mitigation on the household level are essential.

Given its impoverishing consequences, HIV/AIDS should be formally recognized as a poverty risk in Viet Nam and included in poverty assessments and strategies.

Informal support mechanisms such as community and extended family assistance need to be complemented by formal mechanisms of assistance such as the health care fund for the Poor run by provincial Peoples' Committees. For households of PLHAs who are not yet poor, plans to assist with drug expenditure as well as in-patient hospitalization costs need to be devised.

Other formal support to poor households of PLHAs, both in terms of direct financial assistance as well as in the form of income generation opportunities, needs to be facilitated to mitigate the impact of the income and expenditure effects on household consumption. By building on existing forms of public assistance to poor households and the social security system, Government-funded assistance will likely be affordable and feasible.

As a starting point for addressing the health care needs of PLHAs, Government funding for a basic package of care and treatment is urgently needed and could be extremely effective in addressing the current situation of under-treatment by the health system and reducing the burden of care and treatment costs on households. With the support of international and multilateral development partners, the Government can assist households by negotiating price reductions for antiretroviral drugs with the pharmaceutical industry.

Given the relatively early stage of the epidemic, Viet Nam has a unique opportunity to respond to, and curb the spread of HIV/AIDS as well as mitigate its impact. However, the window of opportunity will close if swift and decisive actions are not taken.

## The Government can afford to help with basic medical needs

The Household Impact Study identified that assistance with health care payments and the provision of health care for PLHAs is what households need most urgently. Assistance is required especially in the form of access to drugs and treatment at hospitals.

It is estimated that in 2004, the basic tier of care and treatment cost was VND26.2 billion (US\$1.7 million) and is projected to increase by 45 percent to VND37.9 billion (US\$2.5 million) in 2007. Adding the cost of opportunistic infection prophylaxis increases health care costs by 17 percent. If antiretroviral therapy is included as well, the costs amount to about 20 times the costs for the first tier only, equaling roughly VND495 billion (US\$33 million). This estimate is based on current prices for antiretroviral treatment, which is expected to become more affordable in the upcoming years.

A basic level of palliative care and treatment of opportunistic infection for PLHAs costs less than one percentage point of Government spending on health care and is within the range of affordability for Viet Nam.

In the absence of Government support in making antiretroviral therapy affordable and accessible to a wider population, households will continue to spend substantial resources on antiretroviral treatment. Evidence from the two case studies suggests widespread irregular use of antiretroviral drugs in a manner that will contribute to drug resistance and therefore complicate the fight against HIV/AIDS in the long-run. The annualised cost of antiretroviral treatment per person at current prices was found to be higher than VND60 million (US\$4,000). Thus, while spending a large amount of money on antiretroviral therapy and therefore putting a heavy burden on their households, some PLHAs are not able to fully benefit from the therapy due to drug resistance resulting from irregular use of antiretroviral drugs.

The report is divided into four main sections. Part I provides an introduction and background to the study as well as an overview of HIV/AIDS in Viet Nam. Part II looks at the context and framework of the study and shows the linkages between HIV/AIDS and economic growth as well as between HIV/AIDS and poverty. Part III focuses on the findings of the case studies on the household impact of HIV/AIDS and the impact of the epidemic on the health sector. Part IV draws conclusions and makes some recommendations on potential ways to address problems arising from the socio-economic impact of HIV/AIDS on households. The Appendices and Technical Annexes section provides background data, information on the study methodology, and the assumptions and calculations made in the various analyses.

# Part 1: Introduction and Background

## 1.1. Introduction

The HIV/AIDS epidemic is at an early and concentrated stage in Viet Nam. Nevertheless, the country is at risk of entering a stage of a more expanded HIV/AIDS epidemic and is therefore extremely vulnerable to the epidemic's health, economic and social consequences. In Viet Nam, large numbers of people are already feeling the impact of HIV/AIDS, even at the current relatively low general prevalence level of less than half a percentage point. Due to the country's large population size, the present low prevalence already translates into high absolute numbers of people living with the virus – 215,000 people were living with HIV/AIDS at the end of 2003<sup>1</sup>. In other words, Viet Nam today sees more people living with HIV/AIDS (PLHA) than Swaziland, a country with an adult prevalence of more than 30 percent, one of the highest HIV prevalence levels in the world. While Asia has not yet been affected by HIV/AIDS as much as Africa, HIV infection rates are growing very fast and are among the fastest growing in the world (UNAIDS 2004). Presently, Asia accounts for between 22 percent and 29 percent of all new infections (UNAIDS 2004). In Viet Nam, although still at a relatively low overall level, infection rates continue to increase, with an estimated 40,000 new HIV infections reported annually<sup>2</sup> (Viet Nam Technical Working Group on Estimations and Projections 2004: 17).

HIV/AIDS is one of the 30 new diseases that have emerged during the last two decades of the 20th century (WHO 1999)<sup>3</sup>. Globally, it is also one of the most serious threats to human development. Thirty-eight million people are currently living with HIV/AIDS, and tens of millions have died already (UNAIDS 2004). The costs associated with HIV/AIDS are high. The cost for diagnoses, care, as well as treatment of HIV/AIDS, especially when antiretroviral therapy is used, are much higher than for many other diseases and syndromes. Moreover, the opportunity costs associated with long duration of illness have to be taken into account. HIV/AIDS affects prime-age adults, who are economically productive, biologically reproductive, and responsible for the support of children and elderly dependants. Not only is HIV/AIDS the single biggest threat to life expectancy in many countries, but it also reduces the size of the working-age population. Furthermore, HIV/AIDS is special due to the considerable lag between the time of infection and the outbreak of disease and other consequences. This may mislead governments into believing that the stage of their country's epidemic is less serious than it really is and thus not take the appropriate actions and prevention measures.

The United Nations Millennium Poll identified health as the item that people value most in life (WHO 2001b). The links between health and economic development are becoming more and more evident (WHO 2001a) with HIV/AIDS playing a major role. Never before has health been more at the centre of development debates. Examples are the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) in 2001, the World Health Organization's Commission on Macroeconomics and Health<sup>4</sup> in 2001 and the World Trade Organization debates about pharmaceuticals for HIV/AIDS in 2003. Furthermore, health is one of the most important assets of the poor, and one of the most important factors that allow poor households to emerge from poverty. As a result, ill health can pull entire households back into poverty.

### 1.1.1. Why assess the impact of HIV/AIDS in a low prevalence country?

Some may wonder whether an impact assessment for a low-prevalence country can yield any useful results. One key motivation for impact assessments in low prevalence countries is to inform effective prevention activities (UNFPA 2003: 33) as well as targeted strategies for care and support. Due to the fact that HIV/AIDS has a long incubation period, with its social and economic consequences unfolding slowly, the epidemic has usually progressed significantly by the time the disease is clinically detected for the first time (Loewenson and Whiteside 2001). Usually such detections only reveal just a small part of a much larger problem. In October 2003 for example, the system of case reporting in Viet Nam had detected a cumulative number of 73,660 infections, yet estimates

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<sup>1</sup> MoH, 2004.

<sup>2</sup> Case reporting systems substantially underestimate the true incidence of HIV/AIDS in any country. However, this figure is used for illustrative purposes, demonstrating that even a measure that vastly underestimates the true incidence shows an alarming annual increase.

<sup>3</sup> Other new diseases include Ebola, Hepatitis C, the Hanta virus, new variants of Creutzfeldt-Jacob disease. It should also be noted that AIDS, while commonly referred to as a disease, is technically a syndrome.

<sup>4</sup> This commission examined the interrelations among investments in health, economic growth and poverty reduction (WHO 2001a).

based on sentinel surveillance data suggested the number of people living with HIV/AIDS in Viet Nam to be closer to 330,000. According to the Ministry of Health, 215,000 people were living with HIV or AIDS at the end of 2003. National prevalence rates below one percent often hide considerable rates, well above one percent, in certain cities or areas and among certain groups of the population. For example, the HIV prevalence in Ho Chi Minh City is estimated to be above one percent and prevalence rates of more than 20 percent were found among injecting drug users in some areas.

One of the most compelling motivations for a socio-economic impact assessment in Viet Nam is that the level and rate of increase of HIV/AIDS appears to be at a point at which it could either be contained or result in a major pandemic within a decade (World Bank/Poverty Working Group 2002: 9). For Viet Nam, the window of opportunity to intervene and avert more serious human and economic consequences is still open. Viet Nam can draw and benefit from other countries' experiences in dealing with the epidemic.

HIV/AIDS is a "problem with deep economic roots and potentially serious economic consequences" (Bloom and Mahal 1995: 1). However, due to the low general HIV prevalence, the aggregate demand and supply-side effects used in macroeconomic modeling of the impact of HIV/AIDS are unlikely to be significant. Nonetheless, the impacts can be very significant at the household level. There is sufficient theoretical and empirical evidence of the negative direct and indirect impacts of HIV/AIDS on households (Bachman and Booyesen 2003; Bell et al. 2003; Chong 1999; Donahue 1998; Greener 2000; Lundberg et al. 2000; Pitayanon et al. 1994; Roy et al. 2000). In response to an economic shock, such as HIV/AIDS, households try to minimize the impact of the shock on household welfare by adopting various coping strategies. It is critical to understand the household-level impacts of the epidemic if assessments at the macro-level are to be made. This is of particular importance given that 47 percent of the population in Viet Nam is poor or near-poor<sup>5</sup> (Haughton et al. 2001).

This report focuses especially on the micro-level impact of HIV/AIDS on household vulnerability and its consequences for poverty at the macro-level. Key emphasis is put on how HIV/AIDS might hamper development efforts aimed at reducing poverty. Poverty reduction is one of Viet Nam's key priorities (e.g., the Comprehensive Poverty Reduction and Growth Strategy). Therefore, the report outlines the potential impacts of HIV/AIDS at the micro- and macro-levels and identifies linkages with the country's path to future development achievements.

### 1.1.2. Rethinking assumptions about drug users

As is the case in many other Asian countries, injecting drug users (IDU) still account for the largest share of those affected by the epidemic in Viet Nam. IDUs generally operate in relatively closed circles, tend to be marginalized, and are more likely to be un- or underemployed than other parts of the population. These features have contributed to the perception that the socio-economic impact of HIV/AIDS will only be minor since IDUs contributions to the economy are generally low. Furthermore, it is often assumed that the marginal impact of HIV/AIDS-related health care costs at the household level, over and above the devastating household impact of IDU, is minimal.

In this regard, it is necessary to mention a few points. The first is that not all IDUs are unemployed as assumed. In various studies, at least a third of IDUs were found to have some form of employment (Tran Hien 2002). Secondly, since the early 1990s, there have been considerable financial investments into the rehabilitation of IDUs. These investments have been increasingly intertwined with HIV/AIDS. The returns on these investments are substantially reduced if IDUs die of HIV/AIDS during early adulthood. Thirdly, a forward-looking assessment of the potential impact of HIV/AIDS will have to take into account the decreasing age of IDUs and patterns of recreational drug use. Lastly, the behaviour of the bridging population (i.e., individuals who link high-risk groups with the general population) will determine the extent to which the epidemic spreads between so-called high-risk groups and the general population. It is therefore important to shift the focus from the stigmatized notion of high-risk groups such as IDUs and sex workers to high-risk behaviours, because it is these high-risk behaviours that will determine the rate of transmission of the virus beyond the high-risk groups in Viet Nam (POLICY Project 2003: 9, 10). Examples of high-risk behaviours are unsafe injecting drug use and unprotected sex with non-regular partners.

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<sup>5</sup> The near-poor are defined as those households who fall within a line ten percent above the poverty line. (The poverty line is defined at VND1,790,000).

### 1.1.3. Implications for the health sector

While HIV/AIDS is a multisectoral development issue, it has profound implications for the health sector. This sector, especially its public health arm, is most immediately vulnerable to the impacts of HIV/AIDS. Health care needs of the population increase dramatically due to HIV/AIDS-related morbidity, putting the country's health care services under pressure. This may be reflected in increased government health expenditure, with increased demands being made on health budgets at all levels of government. The impact of HIV/AIDS on the health sector and costs of intervening were therefore evaluated separately in this study.

This report contributes to a growing body of information and evidence on the social and economic consequences of HIV/AIDS beyond the medical context. One single comprehensive analysis of the social and economic impact of HIV/AIDS is not possible since the consequences of HIV/AIDS are too varied, dynamic and widespread to lend itself to any finite analysis. Therefore, selected parts of the bigger picture are presented in this report. It is hoped that this will open the door to further analyses of the social and economic consequences of HIV/AIDS in Viet Nam.

# Part 2: Context and Framework

## 2.1. HIV/AIDS and economic growth

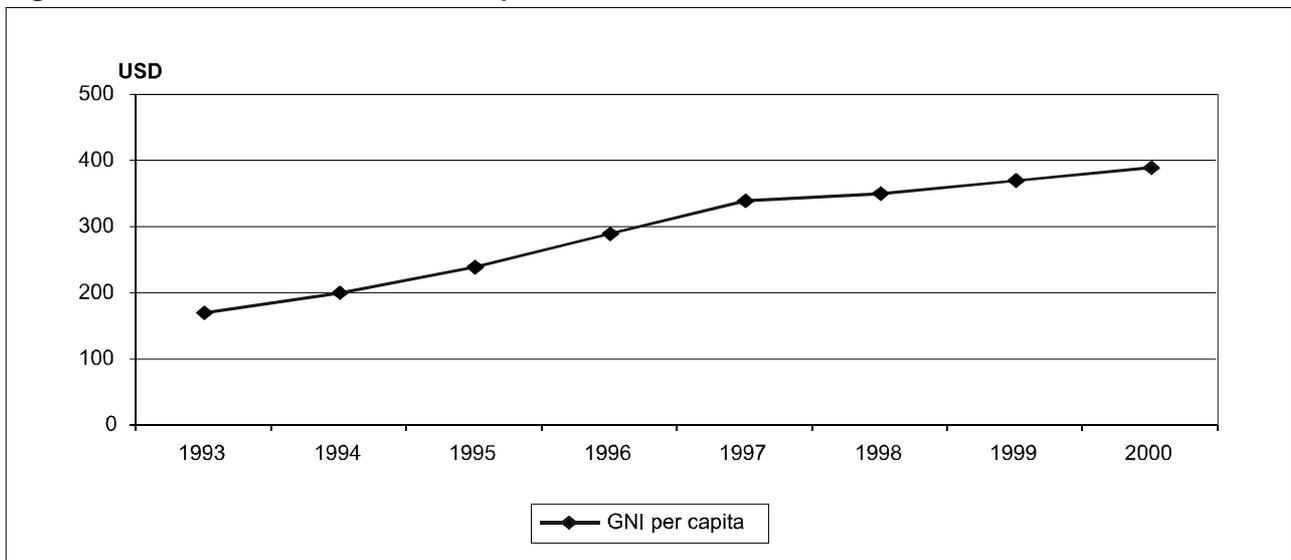
This chapter looks at the linkages between HIV/AIDS and economic growth from two perspectives. Firstly, it discusses the impacts of economic growth on HIV/AIDS and secondly it outlines possible impacts of HIV/AIDS on economic growth. HIV/AIDS and economic growth do influence each other. While some aspects of economic growth facilitate the spread of HIV/AIDS, others are working towards successful prevention and care targets. On the other hand, the impact that HIV/AIDS has on economic growth is usually negative. In other words, HIV/AIDS usually represents a risk to economic growth and contributes to its slow-down, especially in high prevalence countries.

### 2.1.1. The impact of economic growth on HIV/AIDS

Economic development is associated with infrastructure development and increased mobility, including internal and external migration. The latter factors, along with increases in disposable income, often reinforce the patronage of sex workers.

Between 1993 and 1998 Viet Nam's economy grew at an average annual rate of 8.9 percent which is the fourth fastest rate globally (Houghton 2001: 9). This was accompanied by significant improvements in living standards. Numerous development indicators have improved and the first Millennium Development Goal (MDG)<sup>6</sup>, pertaining to poverty reduction, has already been achieved. The *Doi Moi* reforms brought about openness to trade, infrastructure improvement, increased employment mobility, urbanization, and improvement in average incomes (World Bank/Poverty Working Group 2000). Nevertheless, literature suggests that many of these factors can contribute to Viet Nam's vulnerability to HIV/AIDS (Bloom et al. 2001; Bloom et al. 2002; WHO 2001a; WHO 2001b; UNFPA 2003).

Figure 1: Growth and economic development in Viet Nam



Source: World Bank 2003b.

There is widely acknowledged epidemiologic evidence that migration increases people's vulnerability to HIV/AIDS (Deaton and Lubotsky 2001; Nielsen 1994; UNFPA 2003). In a cross-country regression of 60 developing countries, labour migration was identified as one of the key determinants of the HIV prevalence rate (Bonnel 2000: 836). Migrants have a higher rate of HIV infection than those who do not migrate, regardless of the HIV prevalence at the sites of origin and destination of the migration (UNFPA 2003). The factors that contribute to the

<sup>6</sup> In 2001, Viet Nam and 188 other countries adopted the Millennium Declaration which embodies eight development goals. Viet Nam has already met one of the MDGs – to halve poverty by 2015. Viet Nam has reduced poverty levels from over 75 percent in 1990 to 58 percent in 1993 and 37 percent in 1998. Food poverty rates have declined from over 30 percent to about 15 percent in 2000 (United Nations Country Team Viet Nam 2002: 4).

spread of HIV infection among labour migrants are: (1) long absence from the social control of the home environment; (2) housing in single-sex accommodation; (3) lack of access to reproductive health services and medical care for STIs; (4) alcohol and drug abuse related to loneliness and boredom; and (5) a “dysfunctional symbiosis between migrant labour and sex work” (UNFPA 2003: 25). Since labour migrants often return to their sites of origin, which are most often rural villages, migration also contributes to the spread of HIV in rural areas.

In Viet Nam, migration has been mainly internal - rural to rural as well as rural to urban. The urban population in Viet Nam has progressively increased from 18.8 percent in the 1970s to 24.0 percent in the 1990s, affecting close to nine million<sup>7</sup> people (World Bank 2002). This urbanization is also reflected in employment patterns. The share of agriculture as a contributor to the economy decreased from 71 percent in 1993 to 66 percent in 1998. Employment increased at an average annual rate of 1.8 percent between 1993 and 1998 (International Center for Economics 2002) with the smallest increase being in the agriculture sector (i.e., rural) and the largest in the industrial and services sectors (largely urban). It should however be noted that urbanization has progressed more slowly in Viet Nam than in many other countries in the region (Knowles 2003a) and may at least in part explain why the spread of HIV/AIDS so far has been slower than in other Asian countries.

Labour mobility is facilitated by improvements in infrastructure. Although there is currently little evidence to quantify the extent of HIV/AIDS-related risks caused by development projects (for example infrastructure projects), there is a strong case for making HIV/AIDS impact assessments a routine part of such programmes<sup>8</sup> (Bloom et al. 2001: 5). As Viet Nam’s trade infrastructure (road accessibility to rural areas, waterway shipping and port facilities) is continuously improving, negative consequences such as increased vulnerability to HIV/AIDS may counterbalance some of the benefits.

A further key factor determining vulnerability to HIV/AIDS is disposable income and patronage of sex workers. Viet Nam’s household consumption expenditure grew by 10.6 percent annually in the early 1990s, and by 1999, this rate had increased to 18 percent (World Bank 2002). Annual consumption expenditure per capita increased by 42.7 percent from VND1,936,000 (US\$129) in 1993 to VND2,764,000 (US\$184) in 1998 (Haughton et al. 2001: 15). Increased disposable income reinforces the impact of labour mobility and infrastructure on risks related to HIV/AIDS.

The above-mentioned factors are impossible to empirically isolate and quantify. Nevertheless, they have to be paid special attention to when responding to HIV/AIDS.

### 2.1.2. The impact of HIV/AIDS on economic growth

Macroeconomic studies provide highly aggregated estimates of the impact of HIV/AIDS on economic growth. The findings range from zero to six percentage points of economic growth (Cuddington 1993; Over 1992; Bloom and Mahal 1997; Arndt and Lewis 2000; Bonnel 2000).

These estimates are based on assumptions made regarding the various channels of influence by which HIV/AIDS impacts on households, firms and governments. The key channels of influence are skills availability, savings, demand patterns, and productivity (Arndt and Lewis 2000: 857).

On the one hand, the impact of HIV/AIDS increases per capita income due to increased mortality and reduced life expectancy. Moreover, population pressure on land and capital are alleviated. On the other hand, the impact of HIV/AIDS may decrease per capita income since increased medical expenses result in a reallocation of household expenditures away from savings<sup>9</sup> which may translate into reduced investment as well. Domestic saving is the most important source of investment in many developing countries. In addition, increased government spending on health care is financed from savings as well. The latter factors lead to decreases in capital stock and economic output.

<sup>7</sup> Difference between the average urban population for 1970s (10.1 million) and urban population for 2000 (18.8 million) (Source: World Bank 2002).

<sup>8</sup> The Universiti Sains Malaysia, with the support of UNDP, has recently developed such a tool for practical use during the design and appraisal stages of development projects ([www.hivundp.apdip.net/Regional/overview.htm](http://www.hivundp.apdip.net/Regional/overview.htm)).

<sup>9</sup> Bonnel (2000) showed an inverse relationship between domestic savings rate and HIV prevalence rate.

Because of the two sets of countervailing factors, it is not possible to determine *ex ante* the macroeconomic impact of HIV/AIDS and empirical research becomes necessary. Nevertheless, empirical studies have produced conflicting evidence on the impact of HIV/AIDS on per capita income. Some studies found no impact (for example, Bloom and Mahal 1995) while others report a modest impact on economic growth of between -0.3 and -1.5 percentage points (Arndt and Lewis 2000; Bonnel 2000; Kambou et al. 1992; Over 1992; Sackey and Raparla 2000).

**Table 1: Impact of HIV/AIDS on GDP growth**

| Study/Author                              | Country                       | Effect on GDP growth<br>(percentage points) |
|---|-------------------------------|---|
| Arndt and Lewis (2000)                    | South Africa                  | -0.8 to -1.0                                |
| Bloom and Mahal (1995)                    | Multiple countries            | 0   |
| Bonnel (2000)                             | 47 countries                  | -0.7 (per capita)                           |
| Kambou et al. (1992)                      | Cameroon                      | -0.5 to -1.2                                |
| Loewenson and Whiteside (2001)            | Southern African countries    | -1.0 to -2.0 (per capita)                   |
| Center for International Economics (2002) | Papua New Guinea              | -6.8 (over 20 year period)                  |
| Nicholls et al. (2000)                    | Caribbean region              | -4.2 to -6.4 <sup>10</sup>                  |
| Over (1992)                               | 30 countries                  | -0.3 to -0.6                                |
| Sackey and Raparla (2000)                 | Botswana, Lesotho and Namibia | -1.0 to -1.5                                |

Source: Adapted from Bell et al. (2003: 7), UNFPA (2003: 52).

In most countries where the impact of HIV/AIDS on economic growth was studied, HIV prevalence was well above ten percent and the impact was found to be between zero and six negative percentage points. Given the current HIV prevalence of less than half a percent in Viet Nam, HIV/AIDS is unlikely to have a significant impact on economic growth at this stage. The future impact depends on how the epidemic will spread. One factor that reduces the likely impact of HIV/AIDS on growth is the current concentration among intravenous drug users and other populations who follow high-risk behaviours. While not all drug users are economically inactive, they contribute less to the economy than other parts of the population. Therefore, the economic impact is likely to be less pronounced than in countries where the epidemic is predominantly sex worker-driven.

Bell et al. (2003) argue that the macroeconomic impact of the epidemic has so far been understated as the long-term impact of HIV/AIDS on human capital formation, a key driver of economic growth, has not been fully assessed. By causing premature death, HIV/AIDS selectively destroys the human capital built up in young adults through investments in child-rearing as well as formal and informal education and training (Bell et al. 2003). HIV/AIDS also weakens other mechanisms for human capital formation, for example when disrupting the process of transmission of knowledge and expertise across generations through the death of one or both parents (Bell et al. 2003). Long-term effects depend on whether or not (and to which extent) the gap left by parents can be filled by substitute caregivers.

International attention has increasingly focused on the microeconomic impact of HIV/AIDS. There is clear theoretical and empirical evidence of the negative direct and indirect impacts of HIV/AIDS at the household level (Bachman and Booyesen 2003; Bell et al. 2003; Chong 1999; Donahue 1998; Greener 2000; Lundberg et al. 2000; Pitayanon et al. 1994; Roy et al. 2000). The impact of HIV/AIDS on poverty and inequality is one of the epidemic's most significant impacts on the macro-level (Greener 2000).

Literature has been increasingly stressing the development impact of HIV/AIDS. This is partly due to the fact that HIV/AIDS impacts negatively on life expectancy, a major component of the Human Development Index.<sup>11</sup> The inter-generational impact of HIV/AIDS on human capital formation, a key driver of economic growth, is another important aspect (Bell et al. 2003). Furthermore, the impact of HIV/AIDS on household vulnerability and its

<sup>10</sup> Jamaica: -6.4 percent and Trinidad and Tobago: -4.2 percent (Theodore and La Foucade 2001).

<sup>11</sup> In fact, life expectancy accounts for about a third of the HDI (Chong 1999).

associated impact on physical and human capital investments by households are of particular importance as well. The long-term consequences of households' risk-mitigating actions when faced with an economic shock such as HIV/AIDS has led some authors to conclude that HIV/AIDS significantly affects the pace of growth and path of development (Over et al. 1996; Lundberg et al. 2000: 950).

Youth are an important component of any rapidly growing economy. At the same time, young people are at the centre of the HIV/AIDS epidemic, both globally and in Viet Nam<sup>12</sup>. Youth combine two key risk factors fueling the HIV/AIDS epidemic: injecting drug use and sexual activity. The impact of HIV/AIDS on youth is thus an important aspect of the assessment of the socio-economic impact of HIV/AIDS in Viet Nam.

## 2.2. HIV/AIDS and poverty

The following section scrutinizes the links between poverty and HIV/AIDS. It shows that while being poor can, under certain circumstances, decrease people's chances of becoming infected with HIV, poverty usually goes together with heightened vulnerability to HIV/AIDS. At the same time, it becomes clear that HIV/AIDS has more severe socio-economic impacts on those who are already poor or close to becoming so. There is a strong link between health and poverty in general, and HIV/AIDS and poverty in particular.

### 2.2.1. Impact of poverty on HIV/AIDS

The relationship between economic development and vulnerability to HIV is characterized by a complex interplay of economic forces. Micro-level data suggest that early in the epidemic the non-poor appear to be more vulnerable for reasons such as mobility. However, with time, the non-poor learnt to protect themselves and reduce risk-taking behaviour while the poor and less educated remain vulnerable. It is therefore not surprising that as the epidemic matures, HIV/AIDS becomes increasingly concentrated among the poor (Bloom et al. 2002).

Household data show a strong correlation between wealth and education on the one hand and HIV/AIDS-related risk-taking on the other hand, suggesting that the poor and those with low education are predisposed to risk-taking behaviour. (Bloom et al. 2001: 3, 14). The table below shows that individuals in the wealthiest quintile of Viet Nam are more than two times as likely to be aware of the HIV/AIDS-preventive benefits of using a condom, avoiding sex with sex workers, where to get condoms and how to use them, compared to those with lower incomes. Higher education correlates even more strongly with such knowledge: individuals with tertiary education are more than six times as likely to be aware of the preventive benefits of using a condom, four times as likely to know about the preventive benefits of having only one sexual partner, 34 times as likely to know a source for condoms, and 26 times as likely to know how to use condoms compared to those with lower levels of education. There was almost no difference between more or less highly-educated individuals when it comes to knowledge about the preventive benefits of avoiding sex with a sex worker.

### 2.2.2. Impact of HIV/AIDS on poverty

Increased health care spending is a key driver of HIV/AIDS-related expenditure effects and can therefore provide important insights into the poverty impact of HIV/AIDS. Understanding the relationship between household health expenditure and poverty is essential. This section looks at the impact of health care spending on household welfare and uses this information to better understand the impact of HIV/AIDS-related effects on the household.

Apart from the value of good health in general, health particularly matters as an asset. For the poor, health matters even more because they possess fewer assets and ill health limits their already constrained asset base even further (Wagstaff 2001). In poor households, illness and death of a household member can therefore have economically devastating impacts. In fact, serious illness of an economically active adult is one of the most common and devastating shocks that Vietnamese households have to deal with (United Nations Country Team Viet Nam 2002: 6).

<sup>12</sup> Individuals under 30 years of age represent 64 percent of HIV infections in Viet Nam (MOH 2003a). PLHAs aged 20-29 years constitute an increasing proportion of HIV infections in Viet Nam. This proportion increased from a low of 15 percent in 1993 to a high of 53.8 percent of HIV infections in 2003 (MOH 2003a; Tran Hien 2003).

**Table 2: Poverty, low education and risk-taking behaviour in Viet Nam<sup>13</sup>**

|                                | <b>Wealthiest quintile</b><br>(Number of times more likely to be aware of prevention measures vs. lower income brackets) | <b>Highest education</b><br>(Number of times more likely to be aware of prevention measures vs. lower education levels) |
|--------------------------------|--|---|
| Condom use                     | 2.684  | 6.455   |
| Having only one sex partner    | 1.959  | 4.144   |
| Avoiding sex with sex workers  | 2.233  | 0.967   |
| Knowledge of source of condoms | 2.175  | 34.132  |
| Knowledge about condoms        | 2.504  | 26.72   |

Source: Bloom et al. 2001: 14.

Table 3 shows the most frequently cited crises identified in Viet Nam's participatory poverty assessments.<sup>14</sup> Half of all households whose standard of living had declined identified illness as the major cause (ActionAid 1999). Poor households are three times as likely to lose productive capacity and income as a result of non-working days associated with illness as households in the richest quintile (World Bank/Poverty Working Group 2000: 95; 2002: 6).<sup>15</sup> This phenomenon has been described as the "medical poverty trap" (Dahlgren 2002).

From a poverty-impact perspective, it is particularly compelling that HIV/AIDS-affected households are affected by five of the seven most common risks identified in Viet Nam: illness, life cycle events (e.g., funerals), drug addiction, loss of physical assets and unemployment. The participatory poverty assessments indicated that, in recent years, illness was the most common cause of poverty in Viet Nam.

**Table 3: Most frequently cited crises in poverty assessments**

|                                | <b>Type of crisis</b>   | <b>Effect</b>  |
|--------------------------------|---|--|
| <b>Human Crisis</b>            | Illness   | High direct and indirect treatment costs and loss of income through reduced labour |
|                                | Death of a labourer   | High costs of funeral expenses and loss of income from labour loss                 |
|                                | Alcoholism, drug addiction and gambling                             | High expenditure, reduced income from lost labour                                  |
| <b>Material crisis</b>         | Theft   | Loss of assets; reduced income   |
|                                | Damage to housing (weather, fire)                                   | High, unexpected expenditure   |
| <b>Non-crop economic shock</b> | Failure of investment   | Reduced income; inability to repay debts   |
|                                | Unemployment  | Reduced income   |
|                                | Death of animals/animal epidemic                                    | Reduced income; reduced assets and security  |
| <b>Crop failure</b>            | Crop loss: rats/mice and other pests                                | Reduced income; inability to repay debts   |
|                                | Crop loss: landslide  | Reduced income   |
|                                | Crop loss: weather (floods, droughts, typhoons, storms, high winds) | Reduced income; reduced assets and security  |

Source: World Bank/Poverty Working Group (2000: 94).

<sup>13</sup> These findings are consistent with similar analyses for Cambodia, Nicaragua and Tanzania. Education and wealth seem to produce better knowledge of HIV preventive benefits of having just one sexual partner in all four countries but the results are statistically significant only in Viet Nam and Nicaragua for education, and Tanzania for wealth. Education does not produce better knowledge of HIV preventive benefits of avoiding sex with sex workers in any of the four countries. Wealth has a mixed effect: It produces better knowledge of HIV preventive benefits of avoiding sex with sex workers in Viet Nam and Nicaragua, less awareness of these benefits in Cambodia, and the same awareness in Tanzania. Education and wealth are very powerful when it comes to knowledge about sources of condoms in all four countries.

<sup>14</sup> The PPAS referred to here were conducted with more than 1,000 households in one city and three provinces (HCMC, Lao Cai, Ha Tinh, and Tra Vinh) in 1998 and 1999, jointly by the Viet Nam-Sweden Mountain Rural Development Programme, ActionAid, Save the Children UK and Oxfam GB.

<sup>15</sup> Poor households lose 25 percent of annual per capita household expenditure, in terms of foregone earnings, compared to 7 percent among households in the highest consumption quintile (World Bank/Poverty Working Group 2000: 95; 2002: 6).

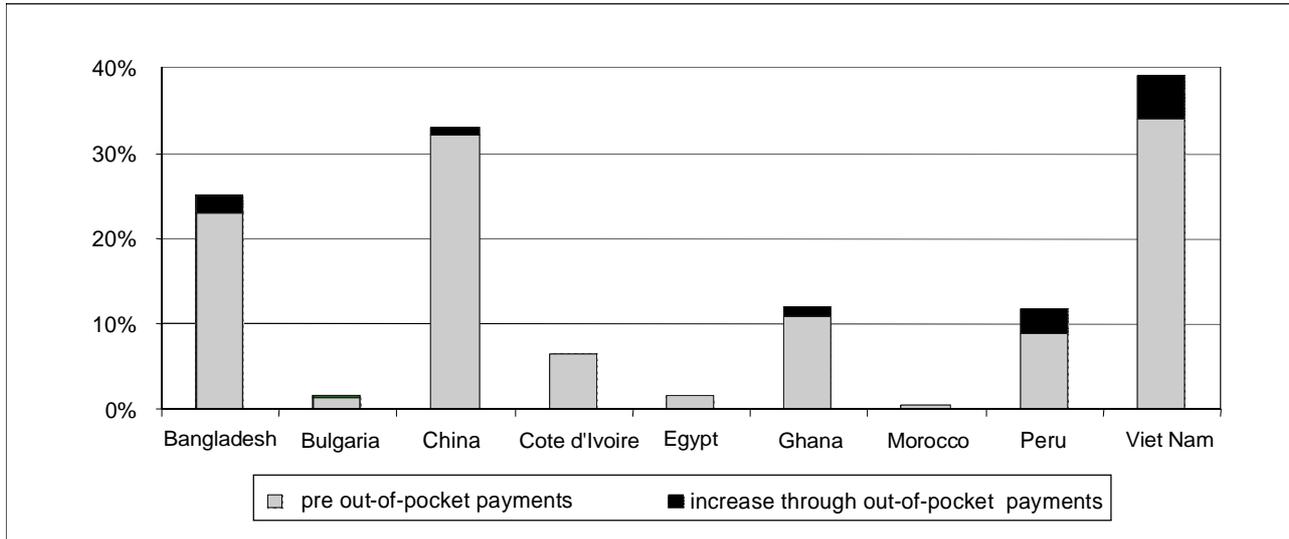
When comparing international experiences, estimates from Latin American and Caribbean countries found that average annual expenditure for health care by PLHA households was US\$1,000 (Mc Greevey et al., 2002). In Thailand, similar studies estimated the cost of medical care to be US\$837 (Viravaiya et al. 1992) and US\$1,335 (in Bloom et al. 2002). An assessment of household responses to HIV/AIDS in Thailand found that 19 percent of households surveyed sold assets and 60 percent spent all their savings in response to the illness of a PLHA. Furthermore, over half of households with a PLHA reduced their non-medical expenses by over 40 percent (Pitayanon et al. 1994). HIV/AIDS was found to adversely affect the health and wealth of households and exacerbated pre-existing poverty in South Africa (Bachman and Fredericks 2003: 14).

While in many countries the poverty impact of household health expenditure was found to be small (Wagstaff 2001), Viet Nam shows a different picture. The proportion of household expenditure for health care is among the highest globally (Wagstaff 2001: 40). A benchmark of five percent of total household income is often used to assess the affordability of health care costs. In Viet Nam, a third of households spend more than five percent of their income on health care (Wagstaff and van Doorslaer 2003).<sup>16</sup>

The burden of out-of-pocket payments, measured in terms of ability-to-pay (i.e., as a percentage of non-food consumption), weighs heavier on the poor than on the better-off (Wagstaff and van Doorslaer 2001: 24)<sup>17</sup>. For example, one episode of curative treatment that involves hospitalisation, costs the equivalent of 22 percent of annual non-food expenditure for a household in the poorest quintile, compared to eight percent for a household in the richest quintile (Segall et al. 2000; World Bank/Poverty Working Group 2002: 6).<sup>18</sup>

In some instances, health expenditure is large enough to cause previously non-poor households to fall below the food poverty line (i.e., those defined as extremely poor). In other instances, previously poor households are driven deeper into poverty. A comparison of the poverty indicators before and after out-of-pocket payments for health care helps to assess impoverishment caused by out-of-pocket payments.

**Figure 2: Impact of out-of-pocket health payments on poverty headcount**



Source: Wagstaff (2001)

<sup>16</sup> On average, households spend 13.1 percent of total non-food expenditure on health care, ranging from 15.1 percent to 9.8 percent for the poorest and richest quintiles respectively (VLSS 1997/98). There is large variation in this percentage, and across all quintiles non-trivial numbers of households spend more than 50 percent of non-food income on health care.

<sup>17</sup> While the incidence among the poor has decreased between 1993 and 1998, the incidence of catastrophic health care payments is concentrated among the poor in Viet Nam (Wagstaff and van Doorslaer 2001: 24).

<sup>18</sup> For ambulatory care the incidence is 17 percent of the income among the poorest quintile and 5 percent among the richest quintile (Segall et al. 2000). Even a commune health care visit, which is supposed to be free of charge, can cost up to four percent of annual non-food expenditure for the poorest quintile but less than one percent for the richest quintile (World Bank/Poverty Working Group 2000: 95).

As Figure 2 indicates, a multi-country study found that Viet Nam had the largest change in poverty headcount ratio when comparing before and after out-of-pocket health spending. The poverty headcount ratio increased from 34 to 38 percent (Wagstaff and van Doorslaer 2001). While this increase by four percentage points may appear small, it translates into three million people becoming poor (World Bank/Poverty Working Group 2003: 61).

Whether or not increased health expenditure results in poverty largely depends on the household's vulnerability. Vulnerable households are those who are currently poor and those who are near-poor. A large proportion of households in Viet Nam are clustered around the poverty line and nearly half (47 percent) of the population can be described as vulnerable (World Bank/Poverty Working Group 2002: 4). Given this distribution, even small economic shocks may force a large number of households into poverty or deeper below the poverty line.

Most of the Millennium Development Goals (MDGs) have direct linkages with HIV/AIDS. They are listed in Table 4. The development impact of HIV/AIDS potentially detracts from the achievement of these MDGs.

**Table 4: MDGs with direct links to HIV/AIDS**

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|   |
|---|
| MDG 1: Eradicate extreme poverty and hunger         |
| MDG 2: Achieve universal primary education          |
| MDG 3: Promote gender equality and empower women    |
| MDG 4: Reduce child mortality                       |
| MDG 5: Improve maternal health                      |
| MDG 6: Combat HIV/AIDS, malaria, and other diseases |
| MDG 8: Develop a global partnership for development |

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While high-prevalence countries may already experience strong impacts and interference with the achievement of most MDGs due to HIV/AIDS, in Viet Nam the epidemic has thus far directly and measurably influenced the achievement of only MDG number one and six. The particular impact of HIV/AIDS on the first MDG, the eradication of extreme poverty, is explored in the next section, which outlines the study findings.

### **2.2.3. Channels of impact of HIV/AIDS on households**

The microeconomic effects of HIV/AIDS are exerted via two main channels: expenditure effects and income effects. (See Figure 3 below) In order to compensate for these expenditure and income effects, households decrease their consumption expenditure and potentially eliminate or reduce other items of expenditure. Households that were marginally poor before a family member fell sick may find themselves below the poverty line, and those who had already been poor are likely to experience deepening poverty.

#### *2.2.3.1. Expenditure effects*

Expenditure effects come about due to increased expenses for health care and eventually for funeral costs. These costs are transient effects, but the increased spending needs may drive households into debt that may take many years to repay. The specific health care needs of people living with HIV/AIDS depend on the stage of illness. As with any terminal illness, PLHAs use medical services most extensively when they are in their final stages. Household spending for HIV/AIDS-related health care is much higher than health care spending for many other diseases, including terminal illnesses (World Bank 1997). The expenditure effects associated with HIV/AIDS are further aggravated by funeral costs. However, when PLHAs die, households usually experience a small positive expenditure effect due to reduced consumption expenditure needs.

#### *2.2.3.2. Income effects*

Income effects are a consequence of lost income when an HIV-positive breadwinner works less or becomes unemployed because of illness and of income loss of other income-earning household members who work less or stop working in order to provide care for a sick family member. The first income effect is permanent and the latter income effect is transient. Nevertheless, in unfavourable labour market conditions the latter income effect could potentially become permanent.

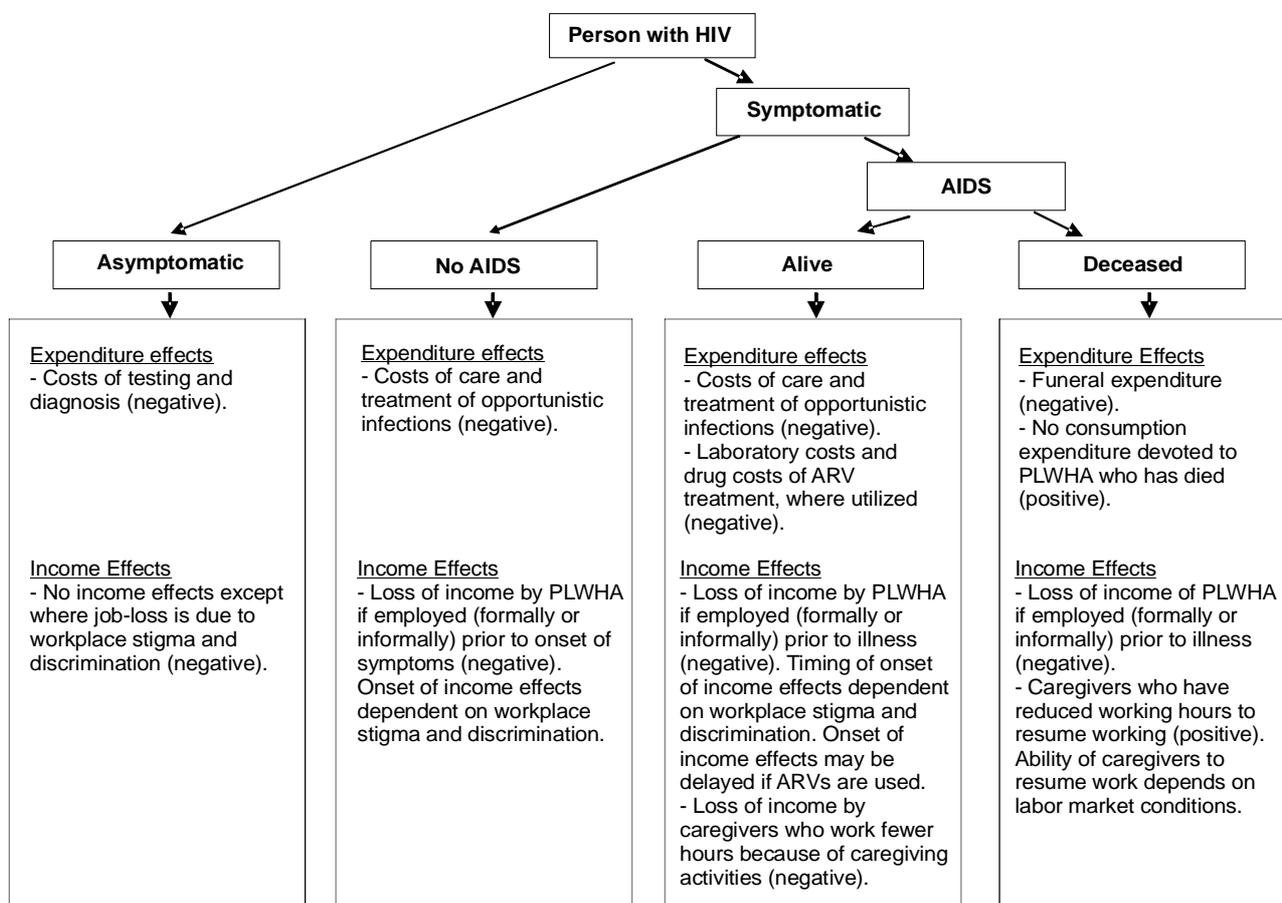
As PLHAs or their caregivers stop working or work less their work may become less productive due to physical weakness or psychological distress. Stigma and discrimination may prevent even healthy PLHAs from working. The loss of income of the PLHA has an irreversible effect on the household's lifetime resources. The income effect on a caregiver is generally reversible because the adult caregiver may resume full-time work. Research found, that at the time of death of a PLHA, households will have lost an equivalent of two years of labour (Rugalema 1998 in UNFPA 2003: 43). Illness of the breadwinning household member caused household income to decrease by 83 percent on average (Pitayanon et al. 1994 in UNFPA 2003: 47). After the death of an income-earner, households took between two and three years to recover from the lost income and regain income security (Lundberg et al. 2000). (See Figure 3 below.)

### 2.2.3.3. Household financial coping strategies

The various income and expenditure effects may have both short-term and long-term impacts. When faced with a decrease in disposable income, households engage in various coping strategies. These include consumption-smoothing strategies (reducing education expenditure, food consumption, etc.), using existing savings, selling assets, borrowing rice and money from informal (friends and relatives) or formal sources (banks and short-term moneylenders), making changes in living arrangements (e.g., migration of an adult or child), and drawing on various sources of social capital in the form of community gifts (e.g., food, money, moral support, and the sharing of work contracts).

Coping strategies are actions taken once an economic shock has already occurred, as opposed to risk reduction and mitigation activities that are taken in advance of a shock. The most important objective of household coping strategies is to maintain a certain level of food consumption (UNAIDS 1999: 17).

**Figure 3: HIV/AIDS-related income and expenditure effects**



The sequence of household responses to a shock is strongly determined by the reversibility of the action. Therefore, households prefer to reallocate labour rather than sell productive assets (Lundberg et al. 2000: 956). The result is a hierarchy of coping strategies, including the use of savings, selling assets<sup>19</sup>, borrowing money and food, and seeking community assistance and support (Donahue 1998; Chong 1999: 40)<sup>20</sup>.

The three most important sources of financial assistance available to households following the death of a household member are private transfers, private borrowing, and institutional assistance (Lundberg et al. 2000: 951). Poor households benefit less from private assistance networks and are therefore more likely to borrow and incur debt. Non-poor households have more assets, more savings and greater access to credit (Lundberg et al. 2000), suggesting that non-poor households are more easily able to cope than poor households. Nevertheless, there is evidence that non-poor households are more likely to spend larger amounts on catastrophic health care (Wagstaff and van Doorslaer 2001), suggesting that non-poor households are also at risk of encountering the devastating effects of HIV/AIDS. The amount of assets, food-stock, savings, and access to credit available to the household determines its ability to cope with HIV/AIDS-related health care expenses and the rate at which the household moves from reversible to irreversible stages of impact.

### 2.3. Rationale and limitations of the case study approach

The development impact of HIV/AIDS stems largely from the aggregation of the microeconomic, household-level social and economic impacts of the epidemic. Analysing the microeconomic impact of HIV/AIDS is important for several reasons. Firstly, households are the first line of defence as they are the first to feel the burden of HIV/AIDS if one of their members becomes infected or affected (Hunter and Williamson 1998). Secondly, assessments of the macroeconomic impact of HIV/AIDS make assumptions about the microeconomic building blocks that underpin the macro effects. There is not enough empirical evidence on the microeconomic impact and specifically the magnitude and mechanisms of household-level effects<sup>21</sup>. Thirdly, where the macroeconomic impact will not likely be large, such as in Viet Nam, it is important to stress the micro-level impacts, which are significant and worsened by stigma and discrimination. Lastly and importantly, macro-level studies give little insight into the distributional impact of the HIV/AIDS epidemic, whereas microeconomic analyses using household data are able to shed light on the impact of HIV/AIDS on poverty and inequality on different parts of the population.

There are several methodological challenges when studying the household impact of AIDS. These challenges are primarily related to the fact that HIV/AIDS is highly stigmatized, which is not unique to Viet Nam. The case study methodology was chosen over the survey methodology, for a technical reason: given the low HIV prevalence in Viet Nam, an enormous sample would be required to conduct a probability sample survey of households in order to yield sufficient numbers of households with a PLHA. Furthermore, the cost of testing such a large sample for HIV/AIDS would be extremely high. In addition, given the level of stigmatization of HIV/AIDS and the likely reluctance of PLHAs to participate in such a study, it is probable that a large sample survey would result in large selection bias. Last but not least, since HIV testing needs to be confidential and voluntary for ethical reasons, it is not possible to obtain the HIV status of household members – data needed for survey analysis.

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<sup>19</sup> In a Thai study the sale of assets (including productive assets like land, livestock and vehicles) was the response by nearly 20 percent of HIV/AIDS-affected households, and 10 percent of households borrowed money (Pitayanon et al. 1994).

<sup>20</sup> Donahue (1998) identified three stages of loss management based on reversible and irreversible coping strategies: (1) reversible mechanisms and disposal of self-insuring assets; (2) disposal of productive assets; and (3) destitution.

<sup>21</sup> Given the existing body of macroeconomic impact evidence, it is unlikely that further aggregate impact investigation will yield much additional information (Greener 2002). One of the key areas of additional information that will enhance the validity of macroeconomic impact assessment, is the impact of HIV/AIDS on households and poverty, and exploring possible poverty interventions that respond to the microeconomic effects (Greener et al. 2000).

# Part 3: Findings

## 3.1 Direct impact of HIV/AIDS on households

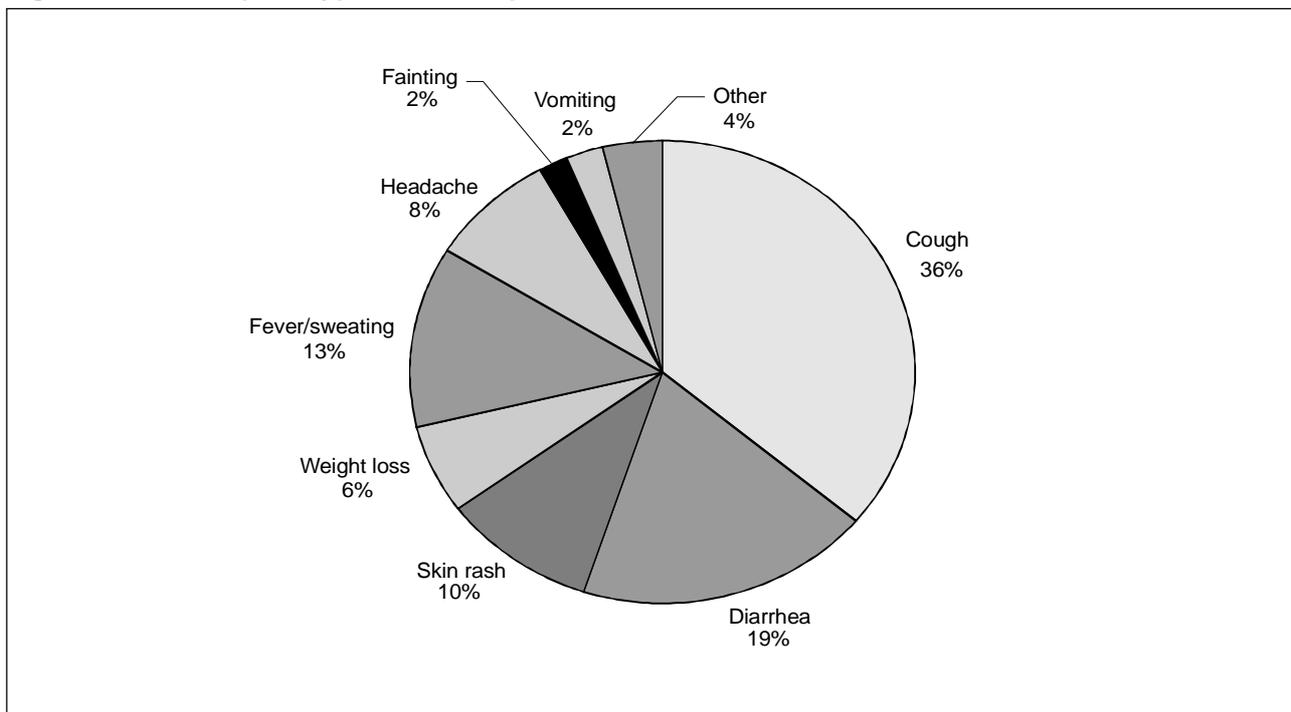
### 3.1.1. Impact channel I - expenditure effects

#### 3.1.1.1 Consumption of health services

The survey recorded all episodes of illness the PLHAs had experienced during the months preceding the survey or preceding death. Sixty percent of the sample used a health provider during the preceding month of the survey or death. The average for the total sample was 2.2 visits to a health care provider, ranging from zero to ten contacts for both living and deceased people with HIV/AIDS (PHAs). A third of PHAs reported at least one visit in the preceding month of the survey or death, and another third reported two visits in the same time period. Approximately 15 percent visited a health care facility more than four times in the preceding month. There was no difference in the average number of health care visits among those living with HIV/AIDS and those who had died. An average Vietnamese person has 4.2 outpatient contacts and 0.062 inpatient admissions a year<sup>22</sup>, resulting in a crude monthly average of 0.33. Service utilization by people with HIV/AIDS in the case study is more than six times higher than the national average.

The figure below shows the most frequent types of health problems experienced in the month preceding the survey or the month preceding death in the case of people who died from HIV/AIDS. The most frequent type of health problems indicated were coughing (36 percent), diarrhea (19 percent), fever and sweating (13 percent), and a skin rash (ten percent).

**Figure 4: Most frequent types of health problems**



Persons who had died from HIV/AIDS-related diseases, on average, were unable to perform their usual activities for 11 days (ranging from zero to 30 days). Unsurprisingly, this number is higher than among those living with HIV/AIDS, of whom only 50 percent reported having been unable to perform their usual activities for any day at all. Of those who reported a symptom of illness and did not seek health care, a third (34.1 percent) reported that the illness was mild and did not require professional attention. Slightly more than a quarter (27.3 percent) did not

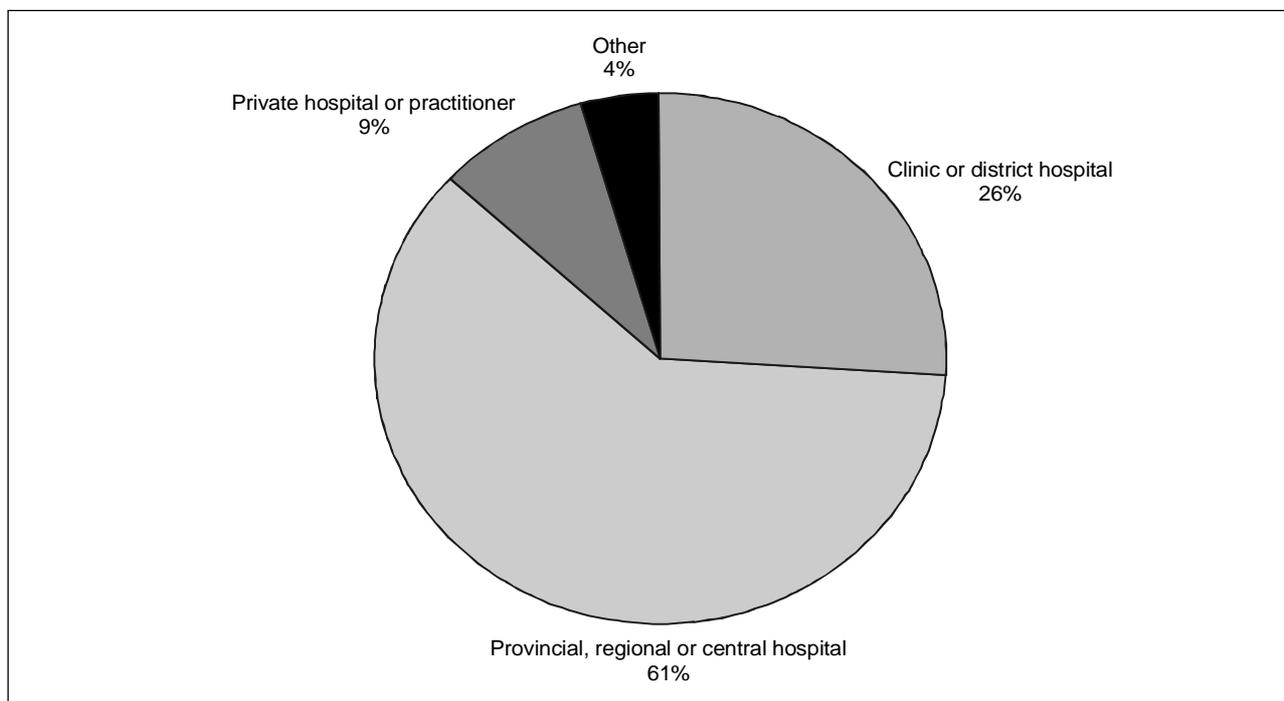
<sup>22</sup> 2001-2002 VNHS

have enough money, and approximately as many cited that the disease was incurable and hence did not seek care.

The figures below display the most common type of health facilities used by PLHAs. Of those who used health care in the four weeks preceding death or preceding the survey, the most common provider choice was the provincial or city hospital (40.5 percent) and district health centre (24.3 percent). Private providers accounted for approximately one tenth of health care services chosen. While this proportion is smaller, it is not trivial.

Not surprisingly, in the terminal stages of HIV/AIDS, people tend to use health care facilities more frequently than usual. Provincial hospitals accounted for 61 percent of all contacts which occurred one month before death, compared with only 33 percent in the group of people living with HIV/AIDS. PLHAs who are not terminally ill seemed to prefer health facilities in their proximity, such as communal health centres (CHCs) and private clinics.

**Figure 5: Health facilities used by PHAs before death**



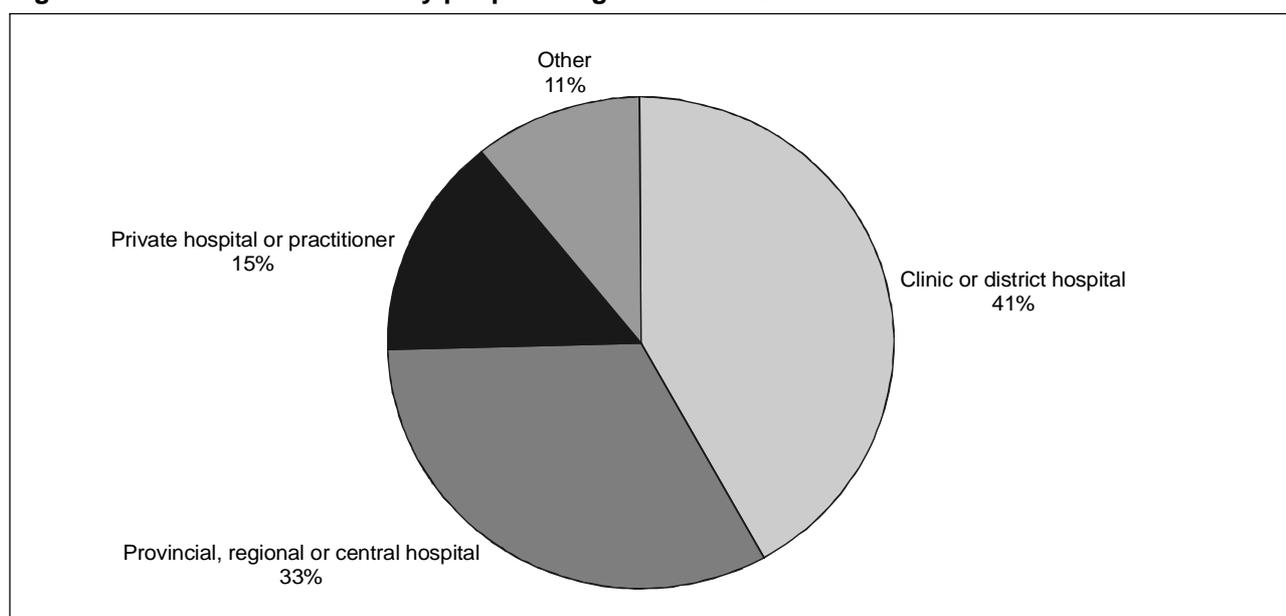
Respondents were asked about their reason for choosing a particular facility. The most frequently mentioned criteria were trust in quality, followed by convenience of time and location.

**3.1.1.2 Health care expenditure**

The presence of a PLHA can have multidimensional effects on the total household health expenditure. Inevitably, expenses for health care for the PLHA tend to increase total household expenditure on health-related items. Other household members, especially in households that are poor or otherwise financially limited, may have to sacrifice part of their own health care expenses for the infected person.

Household expenditure on health care was calculated and compared with the level of household health expenditure reported in national surveys. The information on health care expenditure covers health care-related expenses of all household members, including both inpatient and outpatient care, self-medication, general health check-ups, and purchase of medical supplies. Data was collected four weeks retrospectively.

The survey collected information on all types of health expenditure incurred by a PLHA in the month preceding survey or preceding death. On average, health expenditure per month was VND1,012,000 (US\$67) ranging from zero to more than six million VND (US\$400). The average expenditure by PLHAs who were alive (VND846,000;

**Figure 6: Health facilities used by people living with HIV/AIDS**

56 USD ) was lower than spending for those who had died (VND1,570,000; US\$105). This is not surprising given that the highest level of health care utilization often occurs before death. Furthermore, the fact that PLHAs in late stages of illness are more likely to use provincial or city hospitals also contributes to higher expenditure. More than half (52.5 percent) of people who died had used a provincial or city hospital compared to just over a quarter (26.5 percent) of those still living.

More than half (55.8 percent) of health care expenses were accounted for by medicines and 39.6 percent by out-of-pocket expenditure on consultation fees. Expenditure on transport is not trivial and added another VND125,000 (US\$8) to the burden facing the household. The average health expenditure per PLHA in the month preceding the survey or preceding death is shown in Table 5.

**Table 5: Average monthly health expenditure for PWHA during month preceding survey or death** <sup>23</sup>

|                 | Average health expenditure for PWHA in preceding month |     |
|-----------------|--|-----|
|                 | VND  | USD |
| Deceased PWHA   | 1,326,000  | 88  |
| Living PWHA     | 765,000  | 51  |
| Overall Average | 1,012,000  | 67  |

The Viet Nam National Health Survey 2001-2002 reported that, on average, Vietnamese people spend VND217,000 (US\$15) a year on out-of-pocket health care expenses. This would mean approximately VND18,000 (US\$1.20) in a one-month period <sup>24</sup>. If one household is assumed to have 4.4 members, as identified by the VLSS in 2002, annual household spending on health care would equal around VND954,000 (US\$64). This translates to approximately VND80,000 (US\$5.30) per month. In other words, health care expenses for a person living with HIV/AIDS are 13 times as high as health care spending by average Vietnamese households without an HIV-positive member.

<sup>23</sup> There was substantial variation across provinces. The small number of observations makes the average susceptible to outlying values and for this reason, the expenditures by province are not reported separately.

<sup>24</sup> The comparison needs to be made with caution since VNHS was based on 12-month recall, which is usually underreported.

Another question of interest is whether households calculated the cumulated household expenditure for people living with HIV/AIDS from the time of detection of HIV status until the time of survey, or until death. Recall bias is likely to play a role in answering such questions, especially when people have been living with HIV/AIDS for many years. Therefore, the data reported can only provide an indication of the relative magnitude of cumulated health care spending. The figures range from zero to VND300 million (US\$20,000) for households with persons living with HIV/AIDS and from VND50,000 (US\$3.33) to VND70 million (US\$4,667) for households with at least one member who died of AIDS. These are very significant amounts, even for households that are better-off.

**Table 6: Average cumulated health expenditure (in VND)**

|   | Thai Binh  | Ha Long   | HCMC       | An Giang  | All provinces |
|---|------------|-----------|------------|-----------|---------------|
| Deceased PHA                                      | 14,825,000 | 3,638,000 | 7,273,000  | 9,975,000 | 8,101,000     |
| Living PHA  | 5,334,000  | 2,207,000 | 20,542,000 | 4,126,000 | 9,013,000     |
| Average cumulated health expenditure per province | 8,146,000  | 2,827,000 | 16,003,000 | 5,739,000 | 8,704,000     |

The fact that households with a PLHA reported spending more than households where a member has already died of HIV/AIDS may seem counter-intuitive. Nevertheless, this might be due to the fact that many PHAs in the sample who had already died, had been diagnosed only during late stages of their disease, in some cases as much as nine or ten years after infection. Therefore, cumulated health expenditure is hard to estimate.

As awareness of HIV/AIDS increases and voluntary and confidential counseling and testing becomes more widely available, the time between diagnosis and death will increase and the true impact of HIV/AIDS on households will become more easily measurable and likely be found to be larger than currently recorded.

### 3.1.1.3. Funeral Expenditure

Families tend to bury their members who died from an HIV/AIDS-related disease soon after death and do not organize large funeral ceremonies, which is common practice in Viet Nam. This may be due to several factors, such as perceived and real stigma and discrimination from the community, as well as fear of infection in some cases. Households reported that they did not organize as big a funeral ceremony for the deceased PHAs as they would have done for another household member. It is therefore assumed that funeral expenditure for a person who died from HIV/AIDS would be less than that for a funeral for someone else. Nevertheless, data to confirm this assumption is not available.

The table below shows the range and average value of funeral expenditure for 44 household members that had died of HIV/AIDS in the study. Interestingly, the amount spent on the funerals for males was almost twice as high as the amount spent on funerals for females. The average amount spent was VND3,380,000 (US\$225) and can be considered a significant amount, especially for households whose resources might be exhausted after paying for medical care and treatment for the family member before death.

**Table 7: Cost of funeral ceremony for deceased PHA**

|                    | Average (VND) | Minimum value (VND) | Maximum value (VND) |
|--------------------|---------------|---------------------|---------------------|
| Female PLHA (n=11) | 2,012,000     | 0                   | 4,000,000           |
| Male PLHA (n=33)   | 3,836,000     | 100,000             | 8,000,000           |
| Total (n=44)       | 3,380,000     | 0                   | 8,000,000           |

### 3.1.2. Impact channel II - income effects

In this section, the impact of HIV/AIDS on household income is assessed. Income loss by PLHAs due to giving up a job or working less may be significant, especially if they are the major breadwinners in the household.

### The Case of Quang

If he were alive today, he would be 49 years old. But he died four months ago. His father and brothers decided to let him die at the hospital, despite his wish to die at home. He died in the TB hospital at 9 AM, and was brought to the hospital morgue by 9.30. By noon of the next day his remains and ashes were already in a small pot, laid to rest in a temple. The family chose to cremate him rather than bury him because cremation is a few million Dong cheaper. Few people came to his funeral besides his family.

When Quang got married, his wife asked his mother whether Quang was using drugs. His mother said she didn't know, out of fear that Quang would lose the chance to get married and have children. Their son was born a few months later. Although his wife got pregnant a few more times, she decided to have an abortion since she worried that they would not have money to raise their children properly given Quang's drug habits.

Quang was sent to drug detoxification centres three times. During his last and most arduous stay at a centre in Ca Mau, Quang lasted about one and half years and finally managed to give up his drug habits. But during that time, his wife left him. When Quang got out of the centre in Ca Mau, he returned to stay with his parents. This was at the age of 42. His mother didn't know the reasons that led him to go for testing when he returned from Ca Mau, but shortly thereafter he told her: "Mother, I will not be able to live for long because I got infected with HIV. I want to work and save some money. Since my wife has left me, I want you to keep my savings so that you can take care of me when I become ill."

He started working as a *xê om* driver and saving money. He worked very hard, and all clients liked him because he was very diligent and friendly. "He gave me all the money," his mother recalled. "And every month or so I bought one tenth of a tael of gold for him. That is how he made his savings." Besides saving money for his illness and death, Quang also saved money to pay for his son's tuition and other expenses.

It was a little more than two years ago that Quang first discovered a lump on his neck, and after testing they finally concluded that Quang had developed AIDS. This first hospitalization cost more than VND2 million US\$127. He was then transferred to the infectious disease hospital where there is a special unit for HIV/AIDS patients, and then to the tuberculosis hospital. Quang became a regular at these two hospitals. Every time he was discharged from the hospital, he would immediately return to work since he knew that his days were numbered. His tuberculosis got worse. At night, he often slept in the building hallway since he didn't want to wake up the whole family with his incessant coughing. Nobody in the building complained. After all, AIDS has claimed the lives of many young men in the neighbourhood.

His health started deteriorating rapidly and he started having diarrhea. His family brought him to the AIDS unit and he stayed there for a month. It cost him more than VND5 million. When his condition improved, it was Tet and Quang returned home for what was his last Tet with his family. Soon after, diarrhea and constant pain weakened him tremendously: He couldn't walk down the stairway by himself anymore. Another month of hospitalization cost another VND5 million. He was sent home again when his condition somewhat improved. But he had to return to the hospital once a week to get the medications prescribed. Three more months passed, which meant three more months of suffering for he and his family. Finally they brought him back to the TB hospital, this time with excessive coughing, diarrhea, a swollen stomach and fever. After three days, the doctors told his mother that his condition worsened severely and that there was no more hope. "I told my husband that the doctor gave up on him and asked us to take him home," his mother recalled. "But my husband and children didn't want that." She told me that they feared contagion and wanted to avoid the hassles that organizing a funeral in their small home would entail.

Quang's savings had dried up quickly since he first developed AIDS. His mother estimated that it cost more than VND30 million (almost US\$2,000) in two years to pay for his numerous hospital stays and medication. The five taels of gold that he managed to save in the last years of his productive life and the mother's own savings in gold and jewellery quickly disappeared. She still keeps the stack of medical bills, records of expenditures, CT scan film, X-ray films, prescriptions, and blood test records. She keeps them to show Quang's younger brothers and sisters how costly his medical care was. It was difficult for her to ask Quang's brothers and sisters to help out financially, both because they were not rich themselves but also because they couldn't imagine how costly his medical care was. They thought that Quang still had savings. It was only when the mother told them that she had used all her savings that they decided to make contributions to pay for his final days in the hospital and for funeral costs. His mother also borrowed VND2 million from her friends, who were kind enough not to ask for interest.

Quang's mother remembers him as a caring son and a loving father. She points out that, unlike the negative image of injecting drug users and people living with HIV/AIDS that one gets from the media, Quang had never stolen anything from the family or from neighbours. With these warm memories of her son, she and her family moved on with life, still continuing to pay for the debt of Quang's illness.

Similarly, income of caregivers may decrease or cease altogether if they have to give up a job or work fewer hours in order to care for the household member living with HIV/AIDS.

#### 3.1.2.1. Income loss of PLHA

Out of 129 infected persons sampled, 42 were employed at the time of the survey or prior to death. Out of the 87 remaining people, 22 had never worked before. The latter were mainly IDUs and relatively young people. Many survey participants had become addicted to drugs right after high school and never joined the workforce.

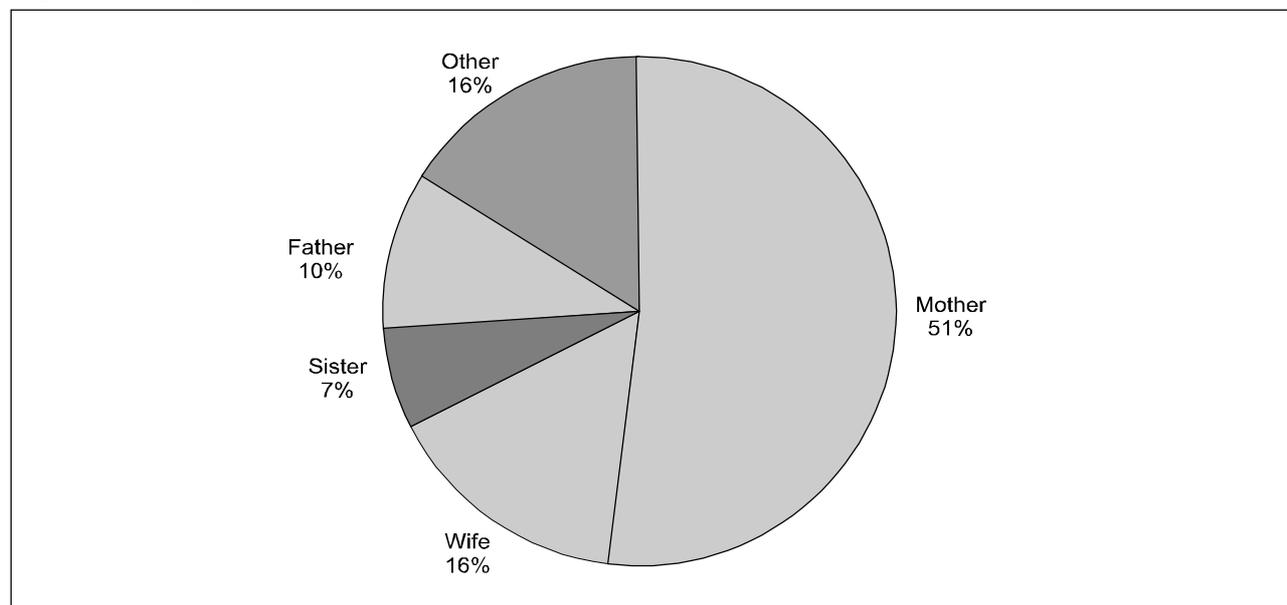
Sixty-five individuals reported giving up their job after becoming infected with HIV/AIDS. The majority attributed their job loss to being too weak to work (66 percent). Only a small number said that they were still healthy at the time they lost their job, but were not allowed to work due to their positive HIV status. In other words, stigma and discrimination did not seem to represent a major obstacle in the study’s sample. This may be due to two factors: in Viet Nam, most people are self-employed in agriculture, small-scale family-based production, or in service enterprises. The impact of job-loss can therefore be averted far into the illness. Furthermore, most survey participants discovered their HIV status very late, at a stage when their health status had already begun to deteriorate. Therefore, worsening health status or health concerns by the PLHAs and their families appeared to be the major reasons that PLHAs gave up their job.

The average monthly income of PLHAs who gave up their job had been VND750,000 (US\$50). Among 42 PLHAs who were working at the time of study or just before death, 23 said their income had reduced since their HIV status was detected. In most cases, the loss in income was attributed to worsening health status. For those who did not fully give up paid employment but reported to be earning less than before, the mean reduction in monthly income was almost what they had earned before (i.e., almost all their salary or on average VND618,000 or US\$40).

3.1.2.2. *Income loss by the caregiver*

Out of 129 PLHAs sampled, 31 persons did not require a caregiver. At the same time, several participants needed support and assistance from more than one household member. Therefore, the average number of caregivers per PLHA was 0.9, indicating that nearly one person was needed to care for one PLHA. In total, 116 main caregivers provided care for 98 PLHAs. On average, a caregiver spent close to five hours a day caring for the infected person. As the figures below show, in most cases the task of caring for the infected person fell on the women of the family. Mothers accounted for 51 percent of caregivers, followed by wives at 16 percent. Fathers accounted for ten percent and sisters for seven percent. Other caregivers include grandparents, brothers and children. It is interesting to note that children, neither daughters nor sons, appear to be the main caregivers for people living with HIV/AIDS. This may be at least partly due to the fact that nearly half of the PLHAs in the study have never been married, and hence have not had children.

**Figure 7: Caregivers of PLHAs**



Twenty-four percent of caregivers reported having had to give up a job in order to spend time with the infected person. The average loss in monthly income of these 28 people was VND488,000 (US\$33). In addition, 42 people (36.2 percent) experienced income reduction leading to a reduced average monthly income of VND478,000 (US\$31).

These figures indicate that those household members who earn less are the first to give up a job in order to care for sick family members. More than half of all caregivers said they did not have to take any days off work to care

for the infected family member. This may be due to the fact that many of the caregivers were mothers and wives who, while not sacrificing paid workdays, may have had to sacrifice time they would usually have spent on household chores or other activities.

The annualised income of caregivers who gave up their employment was VND5,856,000 (US\$396). Those caregivers who did not have to give up paid employment but experienced income reduction due to less hours worked, reported an annualized average income of VND5,580,000 (US\$372).

### 3.1.3. Impact channel III – Financial coping strategies and other impacts

The net impact of the expenditure and income effects is sometimes reversible. The extent to which a household manages risk to avoid transition to irreversibility of financial consequences depends on the success of risk reduction activities and the economic resources, such as land, labour, and capital, available to the household. Another key determinant is the level of community assistance.

#### 3.1.3.1 Coping with income loss

Most of the time, households start their financial struggles at the exact time when a family member's HIV/AIDS status is diagnosed. In the survey, distinctions were made between specific episodes when coping strategies became necessary, such as income loss, increased health expenditure, and funeral costs. Household efforts to cope are a persistent and continued process. It is often impossible to distinguish between coping strategies for the various impacts of HIV/AIDS on households.

The table below lists the different strategies households adopted to cope with the loss of income caused by the needs of the HIV-infected person, be it loss of income by the infected person or by the caregiver. Borrowing money is the most common form of coping, followed by various consumption smoothing strategies. These coping strategies are not very different from coping strategies used by households experiencing other economic shocks.<sup>25</sup>

**Table 8: Strategies adopted by households coping with loss of income**

| Coping strategies  | Proportion of households with PLWHAs |
|--|--------------------------------------|
| Borrowing money from friends and relatives               | 36.0%                                |
| Cutting down on food consumption                         | 28.8%                                |
| Borrowing money from moneylenders (with interest)        | 27.2%                                |
| Decreasing health expenditure of other household members | 25.6%                                |
| Selling assets, including production means               | 20.8%                                |
| Elderly going out to earn income                         | 17.6%                                |
| Selling land/house                                       | 5.6%                                 |
| Taking children out of school                            | 3.2%                                 |
| Sending children out for income-generating job           | 2.4%                                 |
| Sending children away for foster care                    | 1.6%                                 |
| Receiving a loan from credit programs                    | 1.6%                                 |

Source: Household Impact Case Study

<sup>25</sup> Examples of coping strategies in response to an economic shock in Viet Nam identified in participatory poverty assessments and various quantitative and qualitative surveys are: (1) borrowing rice or money from relatives, friends, neighbours or moneylenders; (2) increasing household labour inputs; (3) reducing consumption expenditure; (4) selling assets; (5) migration and household dissolution; (6) increased use of common property resources; (7) receipt of gifts and (8) social capital (World Bank/Poverty Working Group 2002: 17). Newly-formed households are particularly vulnerable because there are fewer working adults in the household. Borrowing money as well as selling land or other productive assets may lead to a debt trap (World Bank/Poverty Working Group 2000: 95).

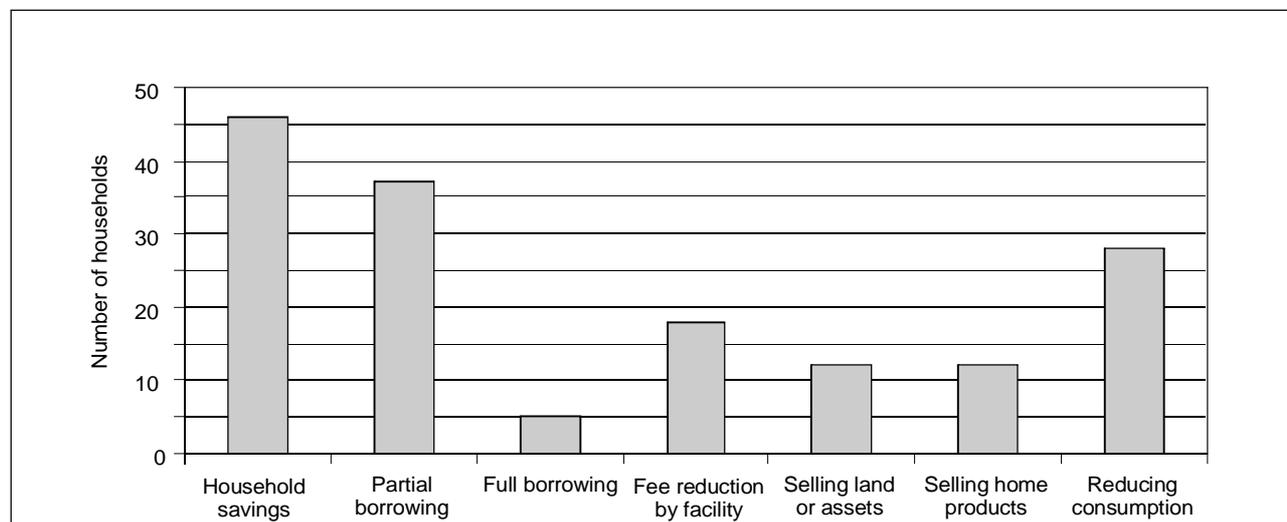
It is concerning that a number of elderly family members have to go out for paid employment to make up for the loss of income by prime-aged adults. Elderly men and women may sell vegetables or drive cyclos to cover the household’s basic expenses. The immediate impact on children was not clearly evident. Note that, not all households or infected people in the sample had children.

3.1.3.2. Coping with increased health expenditure

Forty-six households in the study used family savings to cover medical expenses for the PLHA. Borrowing and consumption reduction remained the most common response to decreases in disposable family income caused by the needs of a PLHA.

Almost 14 percent of households were granted fee exemption or reduction by health facilities. Only a third (35.7 percent) of households indicated that they could pay for medical expenses of the PLHA in full from family savings. Borrowing and decreased consumption expenditure remained the most common strategies to cope with increased health expenditure.

Figure 8: Main sources of payment for healthcare



These findings are consistent with the findings from the Viet Nam Health Financing Survey, which nevertheless concluded that households in the poorest quintiles rely more on borrowing and selling assets than on saving compared to households from higher quintiles.

Table 9: Sources tapped to finance healthcare for five population quintiles

| Source                          | Q1    | Q2    | Q3    | Q4    | Q5    |
|---------------------------------|-------|-------|-------|-------|-------|
| Savings                         | 43.0% | 51.7% | 62.5% | 72.5% | 86.7% |
| Borrowing                       | 46.0% | 39.0% | 29.5% | 19.9% | 9.2%  |
| Selling agricultural products   | 8.0%  | 6.0%  | 4.5%  | 2.7%  | 1.5%  |
| Selling assets                  | 60.0% | 0.3%  | 0.2%  | 0.0%  | 0.2%  |
| Reducing other expenditures     | 0.0%  | 0.1%  | 0.1%  | 0.0%  | 0.0%  |
| Support from relatives, friends | 2.0%  | 2.7%  | 3.1%  | 4.8%  | 2.5%  |
| Other sources                   | 0.3%  | 0.2%  | 0.1%  | 4.8%  | 2.5%  |
| Total                           | 100%  | 100%  | 100%  | 100%  | 100%  |

Source: Phuong (2003) in Knowles et al. (2003: 113).

Sixty percent of households that had a family member die of HIV/AIDS reported having difficulty paying for basic services such as food, education, health care, electricity, and transport. The economic recovery time after the death of the person with HIV/AIDS took up to 25 months. This shows that, while households are generally resilient, the direct economic impact of death may last a very long time.

It is important to note that the recovery time does not take into account the indirect longer-term impact of reduced food and education expenditure in the form of malnutrition and lower education achievement. Opportunity costs are therefore not fully reflected in this estimated recovery time. The estimated economic recovery time is likely to increase as diagnosis of HIV/AIDS is taking place increasingly earlier. This will lead to increases in the estimates of cumulative health care costs.

### 3.1.3.3. Coping with funeral expenses

As mentioned, average expenditure for funerals reported in this survey was VND3,380,000 (US\$255), representing a significant amount of money for households whose funds have been exhausted after a long period of caring for a PLHA. This one-off payment could create another economic shock for the household and draw the household more deeply into debt.

More than 90 percent of households received some support in cash or in-kind when their HIV-positive family member died. In most cases, support comes from neighbours and relatives attending the funeral ceremony. Donating a certain amount of money to the family of the deceased when attending funeral ceremonies is very common in Viet Nam. When a household member dies from HIV/AIDS-related diseases, the ceremony is likely to be smaller than when someone dies of other causes. Therefore, the contribution from attendees is likely to be smaller as well. The average amount households received for help with funeral costs was VND2,500,000 (US\$167). This equals about 74 percent of the average reported funeral expenses.

**Table 10: Main sources of funds to pay for funeral expenses**

| Coping strategies   | Number of households | Percentage of households |
|---------------------|----------------------|--------------------------|
| Help from relatives | 18                   | 40%                      |
| Help from friends   | 16                   | 36%                      |
| Borrowing money     | 20                   | 45%                      |

In eight cases, remittance from relatives living far away was reported. No insurance payment was recorded in the study. Retirement funds and employer's payment were recorded in three cases and one case respectively. The role of churches or other religious as well as government organizations was minimal in the study sample. Two households reported receiving some support in cash from the local women's union.

Some deaths left the remaining household members with immediate difficulty in paying for basic consumption needs. Eighteen out of 45 households did not report any difficulty in purchasing basic services such as education, health care, food, travel, and electricity. However, some of the remaining households had difficulty paying for more than one type of basic service.

**Table 11: Major needs households felt difficult to meet after death of PLWHA**

| Service    | Number of households | Percentage of households |
|------------|----------------------|--------------------------|
| Food       | 16                   | 36%                      |
| Education  | 8                    | 18%                      |
| Healthcare | 7                    | 16%                      |

#### 3.1.3.4. *Impact on nutrition and education*

The initial decrease in food expenditure is likely to have only a minimal impact on people's nutritional status because it involves switching to cheaper foods rather than eliminating certain food categories completely. Similarly, initial decreases in education expenditure may not affect children's school attendance, as only non-essential school-related expenditures are reduced. This stage is often referred to as reversible and having minimal impact. However, there is a point at which increased health expenditure leads to significantly reduced consumption expenditure in a way that impacts negatively on school attendance and nutritional status.

When it comes to caregiving, the household can make certain choices in order to minimize the level of overall loss. Caregiving activities may be performed by a child or an adult. Therefore, the household will likely compare the loss in income from reduced working hours by an adult with the foregone future earnings associated with the withdrawal of a child from school. Since the earning capacity of females is generally perceived as being lower than that of males, girls are more likely to be withdrawn from school than boys.<sup>26</sup> If there is an unemployed or under-employed adult in the household, the decision to withdraw a child from school may be delayed or avoided all together, depending on the willingness of the adult to take on caregiving responsibilities and the education expenditure associated with keeping a child in school.<sup>27</sup> The subjective value assigned to education plays a role in this equation as well.

Eventually, most households move from the reversible, minimal impact stage to a reversible, significant impact stage. Some then move to a stage where the impact becomes irreversible. Decreased school attendance as a means to maintain food consumption (i.e., either irregular school attendance or complete withdrawal) is usually found in the second stage. The withdrawal of a child may help the household save current expenditure, but it also results in reduced education investments that might be highly valuable in the longer-term. This is where the **irreversible impact stage** starts. Households may weigh the selling of productive assets against withdrawing a child from school.

Based on the case study data alone, it was not possible to quantify the responsiveness of food and education expenditure to increased health spending. Therefore, an econometric analysis, using data from the Viet Nam Living Standards Survey, was conducted. This analysis revealed that a 100 percent increase in per capita health expenditure leads to a decrease in education expenditure per school-aged child by almost a quarter with this relation being very similar across expenditure quintiles.

Furthermore, a doubling of total household health expenditure is associated with a decrease in food expenditure by between 12 and almost 20 percent, depending on the expenditure quintile. While households in the poorest quintile reduce their food expenditure by 19.4 percent, rich households cut their spending on food by only 12 percent.

#### 3.1.3.5. *Stigma and discrimination*

Stigma has consequences on a variety of levels. Stigma very often goes together with acts of discrimination and both worsen the impact of HIV/AIDS and hamper responses to the epidemic. At the national, provincial and local government level, stigma and discrimination lead to reduced access to formal support mechanisms for households in need. This is due to biased implementation of eligibility criteria and reduced budgetary allocations for HIV/AIDS-related interventions.

At the community level, stigma hampers informal support mechanisms that could help households cope with the consequences of economic shocks. Stigma therefore hinders the household's ability to respond to the economic

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<sup>26</sup> There is extensive evidence that children in HIV/AIDS-affected households are more likely to be withdrawn from school than non-affected households (Kelly 2000; UNFPA 2003: 42; Martin 2003). A study in India (Maharashtra) also found that children in an HIV/AIDS-affected household were less likely to attend school (and less likely to have access to health care services) (Verma 2002 in UNFPA 2003: 48).

<sup>27</sup> In Viet Nam, when children reach secondary school, and particularly upper-secondary school (i.e., grades 10-12) schooling becomes quite expensive and they often have to travel long distances or stay with relatives near the school. Thus, one would expect the cost of schooling also to be an important factor, as well as the need for children to help out with caregiving activities.

hardships associated with HIV/AIDS, and increases their vulnerability to poverty. Furthermore, it reinforces emotional suffering of people living with HIV/AIDS and their families and friends, and may significantly interfere with their daily lives.

The case study revealed that the consequences of stigma permeate all aspects of coping with HIV/AIDS. Borrowing from relatives and friends was the most often cited coping mechanism, however, most of the time, households did not disclose the reason for their increased financial needs to them for fear of being stigmatized and discriminated against. In many cases, where the HIV status is known, households have had to borrow from moneylenders, often at high interest rates.

The study also found that rural households suffer most from a highly stigmatized environment that negatively impacts on their access to formal and informal support mechanisms. Households with a PLHA often feel socially isolated and therefore, even avoid contact with health commune staff. Peer support networks appear to be instrumental in facilitating contact between PLHAs and their households on one side, and the health system on the other, especially in rural areas. Where such networks do not exist, commune health staff find it very difficult to gain access to PLHAs.

Stigma and discrimination often come from inside the household or family as well. Thus, people living with HIV/AIDS experience stigma and discrimination from the very people they need most and at a time when support would be crucial. For example, women who test positive for HIV are often blamed and rejected by their husbands' family members, even when it is known that their husbands were injecting drug users and were most likely to have infected their wives.

Stigma is also experienced at a meso or provincial level. In Thai Binh province for example, the commune of Vu Tay had to deal with the consequences of national attention after reports had highlighted problems relating to HIV/AIDS in the commune. As a result, young people from Vu Tay were turned down when applying for jobs or schools in other provinces. They were asked to undergo blood testing whenever they used provincial and district hospitals. Vu Tay officials working with HIV/AIDS also experienced stigma and discrimination.

The level of stigma and discrimination in Vietnamese society will partly determine whether efforts by the Government and others aimed at slowing down the spread of HIV/AIDS and mitigating its socio-economic impacts are successful.

#### **3.1.4. Formal support available and required**

While previous sections touched on common types of informal support (friends, relatives, moneylenders) to households, this section looks at the existence of more formal channels of support for households with a person living with HIV/AIDS.

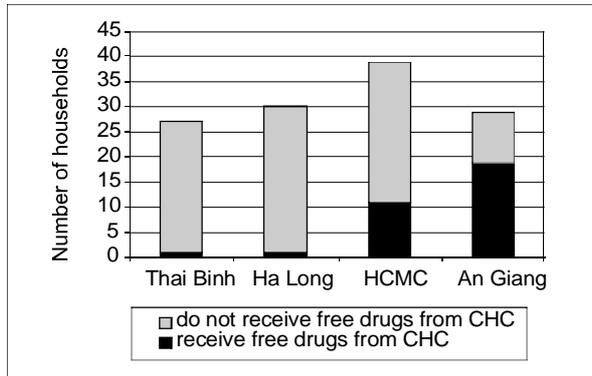
Support can be granted to the PLHA or to other household members. Only two examples of formal support were encountered in the study locations: poor household cards for households that fulfill certain criteria relating to poverty, and drugs provided free of charge to PLHAs.

In principle, all households in possession of a poor household card should be eligible for free health care and reduced education fees for all household members. Several households reported having had a poor household card at one time, but having it revoked and granted to other poor households in the community later on.

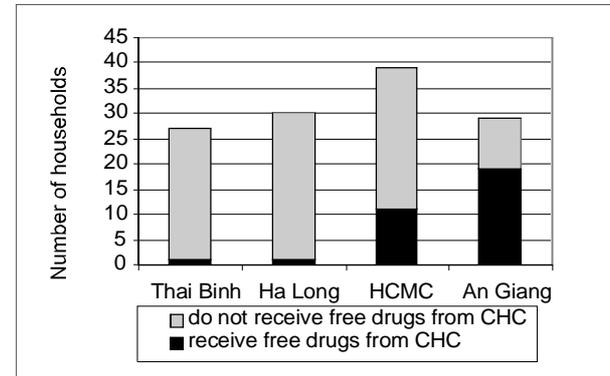
Figure 9 and Figure 10 provide information on the absolute numbers of households in the four provinces studied who reported having received a poor household card or free drugs for the PLHA at a communal health centre. The numbers were rather small, especially in the two northern provinces. In Thai Binh, some households claimed to be eligible for the card, but said that they had not actually received it. In all, 23 out of 125 households visited were in possession of poor household cards at the time of survey.

Most of the time, those who received free drugs through communal health centres came from households that were in possession of a poor household card. In Thai Binh, the only PLHA who reported receiving free drugs for HIV was a pregnant woman. An Giang appears to be the province that provides the highest coverage with free drugs. In all, 32 households reported receiving free drugs for an HIV-positive household member.

**Figure 9: Households with and without poor household card**



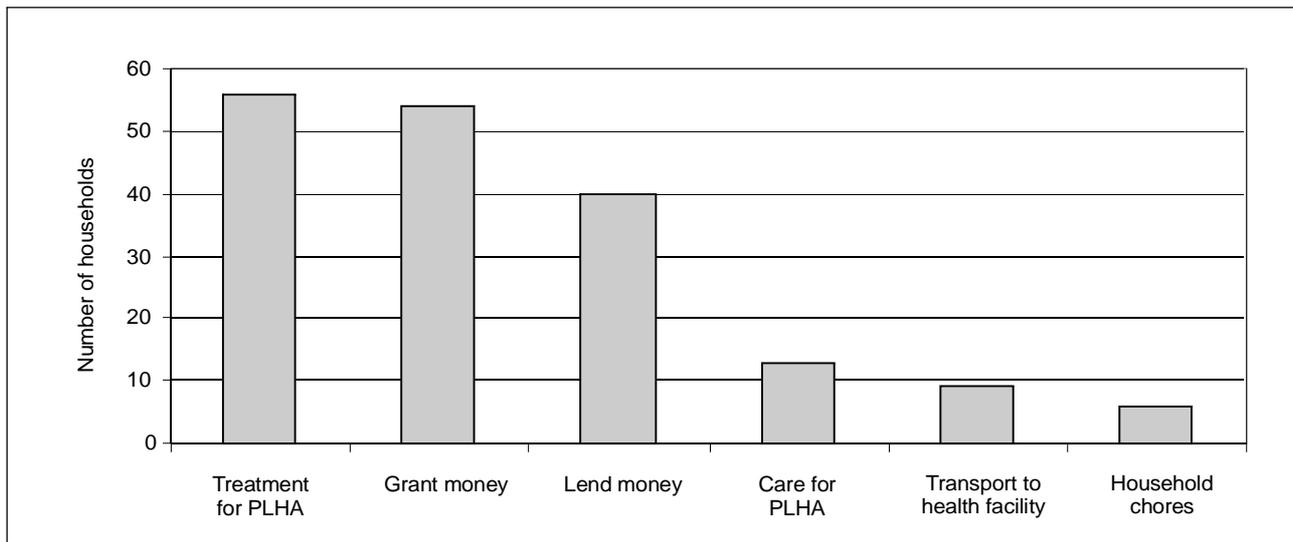
**Figure 10: Households reporting access to free drugs from CHC for PLWHA**



Many households appeared highly appreciative and grateful for the free drugs provided by the local CHC. In many cases, these drugs are simply vitamins and therefore very cheap. In HCMC, the price limit for each prescription is 30,000 VND (US\$2). For poor households, this represents significant material support because even small out-of-pocket payments often constitute significant financial barriers to health care access. Furthermore, households also appreciate the programme for its psychological support. PLHAs go to CHCs to receive drugs, either occasionally as is the case in HCMC, or once a month as done in An Giang. This fosters and facilitates regular counseling and exchange of information between the patient and health professionals.

The survey also included a question on the types of support household would appreciate most during the upcoming 12 months. It is not surprising that the biggest concern was help with health care for the PLHA. Most households wished to have access to drugs and treatment at hospitals. Since most households are facing financial difficulties, the majority expressed a need for money as well.

**Figure 11: Types of support most wanted by households**



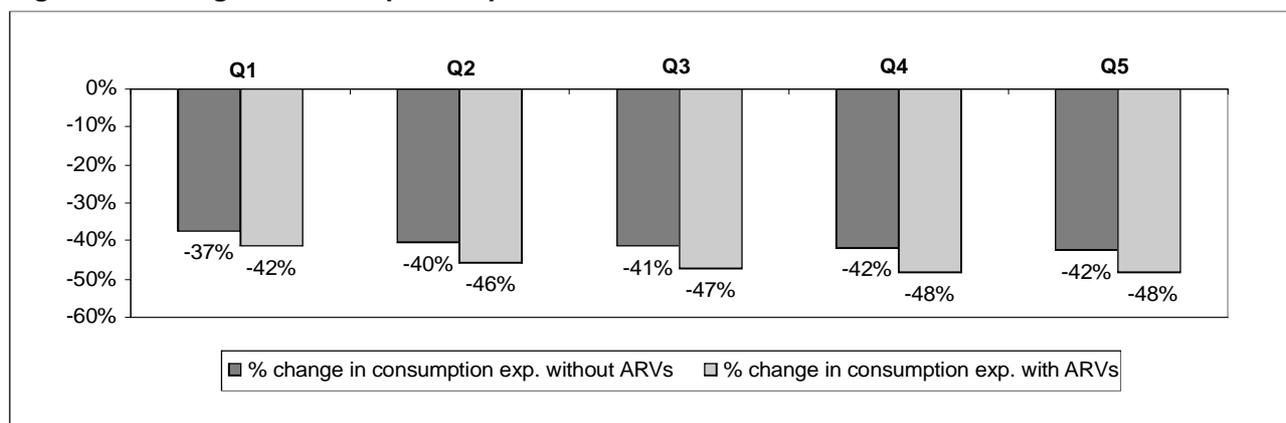
### 3.2. The impact of HIV/AIDS on poverty in Viet Nam

In order to analyze the impact of HIV/AIDS on poverty, it is necessary to understand how households respond to the epidemic by changing their consumption patterns. Therefore, the impact of HIV/AIDS-related income and expenditure effects on overall consumption expenditure of households with PLHAs was analyzed. The aggregate impact of HIV/AIDS on poverty in Viet Nam until the year 2015 was also projected.

### 3.2.1. The impact of expenditure and income effects on household consumption

The results of the modeling of the expenditure and income effects on households with a PLHA are shown in the figures below. The income and expenditure effects caused households with a PLHA to reduce consumption expenditure by between 37 and 48 percent, depending on the consumption quintile and whether or not ARVs were used.

**Figure 12: Change in consumption expenditure**

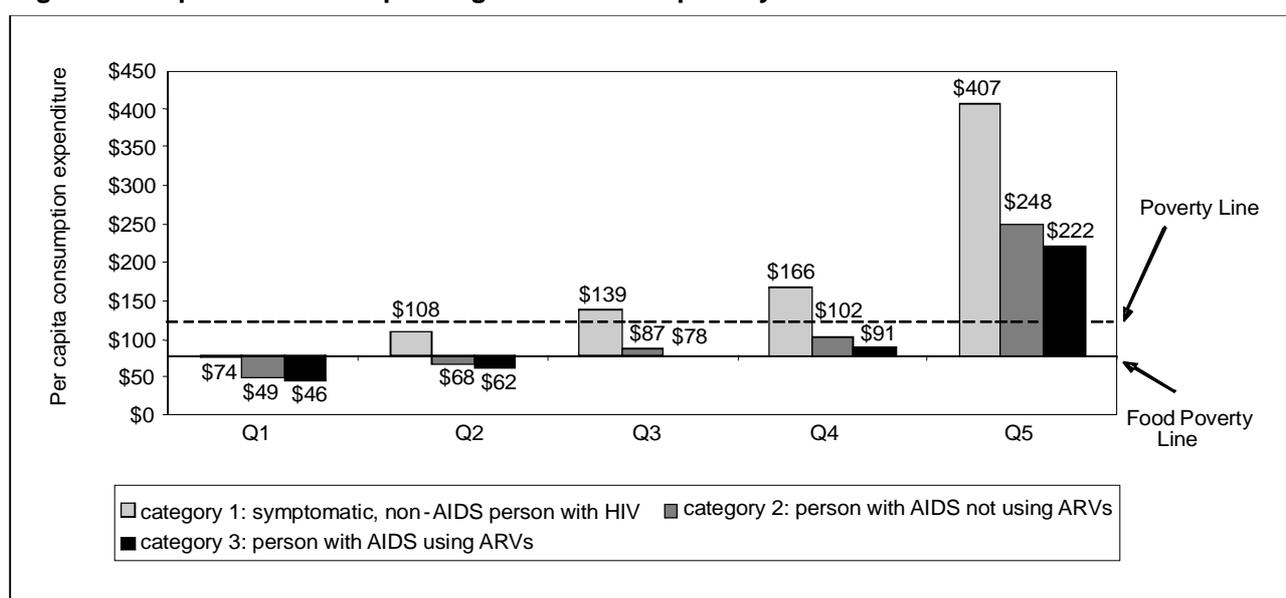


Households in the fourth and fifth quintiles show the largest decrease in per capita consumption expenditure: by 42 percent, if the PLHA in the household does not use ARVs, and by 48 percent if ARVs are used. In the poorest two quintiles, per capita consumption falls by 37 percent if ARVs are not used and by 42 percent if they are.

As a consequence, households with a PLHA are at greater risk of becoming poor or being driven more deeply into poverty. The figure below shows the impact of HIV/AIDS on per capita consumption expenditure relative to the poverty lines.

More detailed information on the simulation and relating figures are given in Technical Annex II.

**Figure 13: Impact on health spending relative to the poverty lines**



With the exception of households in the richest quintile, all households with a PLHA will fall below the general poverty line as a result of the income and expenditure effects of HIV/AIDS. This is illustrated in the figure above. Households in the third and fourth quintiles will become newly poor, regardless of ARV use. In addition, income and expenditure effects will cause many households in the poorest two quintiles to fall below the food poverty line. In other words, many of these households will not be able to meet the most basic food consumption needs of 2,100 calories per capita per day.

The difference between households using ARVs and those not using them is not as large as one might expect, given the high costs of ARVs. In this regard it is important to note that expenditure considered in this analysis is the actual spending, not necessarily equaling what a PLHA on antiretroviral therapy ought to be spending. Another limitation of the study is that relatively few PLHAs in the sample are on antiretroviral therapy.

The case study found that even when PLHAs are using ARVs, they do not follow the full treatment regimen due to factors affecting both the demand, such as affordability, and the supply, such as the availability of drugs. Furthermore, the impact on consumption expenditure is a combination of expenditure and income effects. Therefore, the negative income effect is reduced when people are able to remain economically active and contribute to the household income due to antiretroviral therapy.

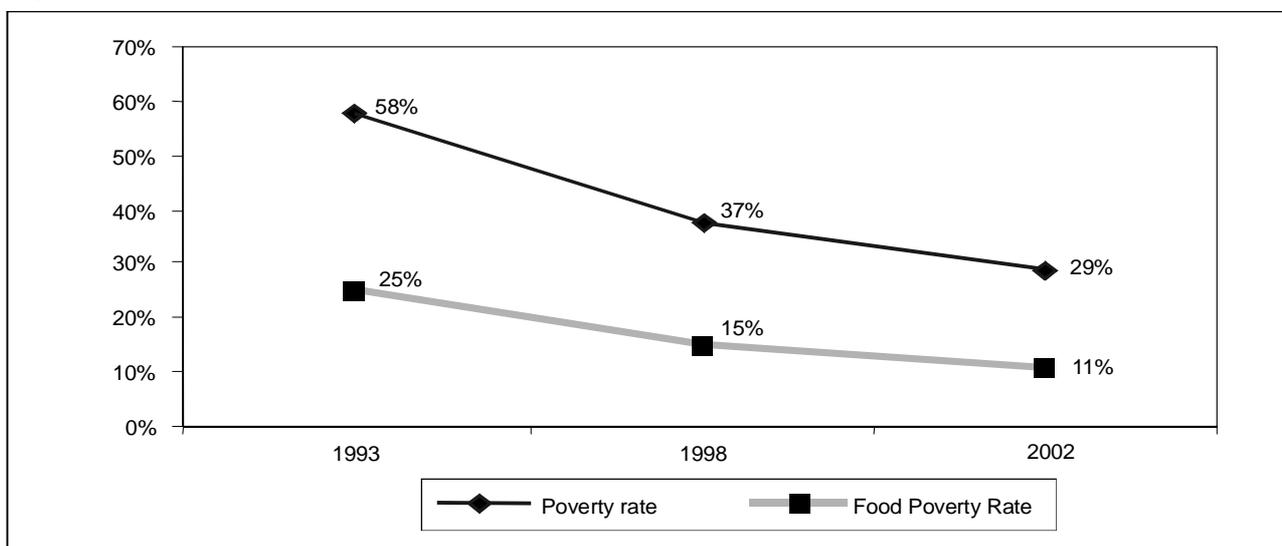
### 3.2.2. The aggregate impact of HIV/AIDS on overall poverty in Viet Nam

This section will analyse and project the aggregate impact of household-level effects on the overall level of poverty in Viet Nam. Viet Nam has made remarkable poverty reduction achievements in recent years and has already achieved the first MDG, which is to reduce by half the level of extreme poverty and hunger identified in 1990.

While large numbers of people still live in poverty today, significant gains have been made in reducing poverty in Viet Nam over the past decade. In 1990, 75 percent of Vietnamese people were considered to be poor (International Center for Economics 2003). Poverty rates decreased from 58 percent in 1993 to 29 percent in 2002. Similarly, 25 percent of households were below the food poverty line in 1993 and in 2002 this was reduced to 11 percent (World Bank 2003b: 9). In addition, Viet Nam has been able to reduce the proportion of its population living below one US dollar a day, which is another measure for poverty, from 51 percent in 1993 to 14 percent in 2002 (World Bank 2003b: 15).

Poverty rates decreased in all parts of the country. However, the urban-rural income differential has grown, suggesting that Government policies restricting rural to urban migration potentially counteract poverty reduction efforts. Non-Chinese ethnic minorities experienced much less significant reductions in poverty levels (from 86 percent to 75 percent) than the rest of the population (from 54 percent to 31 percent). There are indications that

Figure 14: Poverty in Viet Nam (1993-2002)

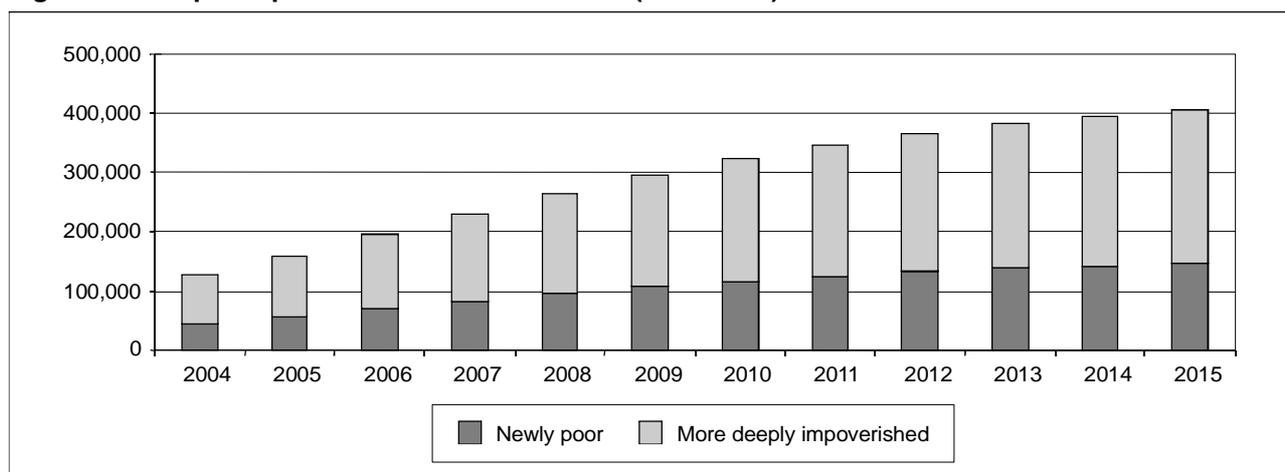


Source: World Bank 2003

the period of easy gains in poverty reduction is over and that further reductions in poverty rates will be very challenging, even if a robust growth rate is maintained.

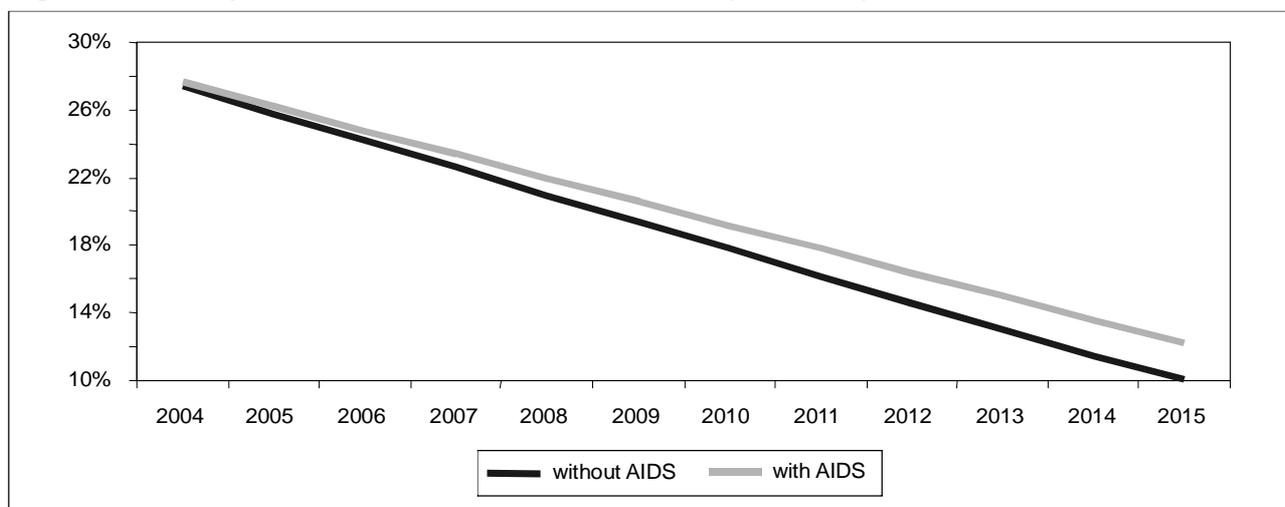
The poverty impact estimates were based on official Viet Nam estimates and projections.<sup>28</sup> The figure below shows the annual impact of HIV/AIDS on poverty between 2004 and 2015.<sup>29</sup> The year 2015 was chosen as the endpoint of the projection because the MDG targets are set for 2015. It is estimated that in 2004, 126,000 people in Viet Nam have either become newly poor or fell deeper into poverty because of HIV/AIDS. This number could potentially increase over the next decade to reach 404,000 in 2015 —of these 36 percent would be newly poor and 64 percent would be those falling deeper into poverty.

**Figure 15: People impoverished due to HIV/AIDS (2004-2015)**



As a next step, these findings were compared with Viet Nam's poverty reduction achievements reported to date. The figure below indicates the average annual change in poverty associated with poverty reduction achievements. Since 1993, the poverty headcount ratio decreased at an average annual rate of 3.2 percentage points. It is anticipated that HIV/AIDS will slow down poverty reduction efforts between 2004 and 2015 by between 0.1 and 0.2 percentage points annually. The figure below shows the potential impact of HIV/AIDS on poverty reduction between 2004 and 2015.

**Figure 16: Poverty reduction with and without HIV/AIDS (2004-2015)**



<sup>28</sup> Viet Nam Technical Working Group on Estimations and Projections 2004

<sup>29</sup> The methodology for simulating the impact of HIV/AIDS on poverty is described in detail in Technical Annex II.

An average of approximately 176,000 people falling annually into poverty due to HIV/AIDS appears relatively small. However, the underlying calculation uses the poverty headcount ratio as an indicator, which only considers those people who are falling newly into poverty. Those already poor before, who are driven more deeply into poverty by HIV/AIDS, are not included.

### 3.2.3. Lost education investments

Private and public investments in education are made, in part but not exclusively, with the vision that each student will eventually contribute productively to the economy. For each young person who dies prematurely of HIV/AIDS, the returns of investment in education will not be realized. Similarly, the sacrifices and investments families make at the household level do not materialize when a young household member dies prematurely.

The returns to the economy anticipated as a result of investments in education, are not realized when young people die from HIV/AIDS. The contributions to investments in education by local resources, whether it is from local government or from households, have been increasing over recent years. Since more than one third of education investments are borne by individual households, they represent a substantial burden.

The convergence of the income and expenditure effects identified previously, and the fact that education investments by households may never materialize, suggests that households with PLHAs are presently bearing the brunt of the epidemic.<sup>30</sup>

### 3.3. Pressure on the health sector to respond to HIV/AIDS

In the early stages of an epidemic, health sector responses mainly focus on the prevention of new infections. As more people become infected, the health sector feels the impact of increased demand for health services due to the morbidity and mortality associated with HIV/AIDS. It thus experiences the direct impact of HIV/AIDS, while other sectors are more likely to experience the indirect consequences of the epidemic. The health sector experiences the effects earlier into the epidemic than any other sector.

Health care costs are the largest burden on consumption expenditure of affected households. As was found in the Household Impact Case Study, households with a PLHA value assistance with health care costs the most. Therefore, the question of how much such support would cost the Government becomes important. A better understanding of the costs of care and treatment of HIV/AIDS is critical to inform policy decisions regarding greater sharing of HIV/AIDS-related health care costs by the Government. To this end, a case study of the hospital impact and broader health sector impacts of HIV/AIDS — “The Hospital Impact Case Study” — was conducted. The analytical framework and methodological details of the case study are provided in the Annex.

#### 3.3.1. Current HIV/AIDS-related expenditure by the Ministry of Health

In 2001, the Ministry of Health released expenditure data on HIV/AIDS prevention, diagnosis, care and treatment for 1996-2000.<sup>31</sup> More than half of the total HIV/AIDS expenditure was used for the purchase of equipment. Inpatient treatment services accounted for a tenth of the cumulative HIV/AIDS expenditure over that period.

Between 1997 and 2000, Government expenditure on HIV/AIDS consistently decreased from VND44.8 billion (US\$3.8 million) to VND33.4 billion (US\$2.4 million). It can be argued that the capital expenditure on equipment made at the beginning of this period mostly represented one-off investments that did not need to be repeated in subsequent years. However, even the non-equipment expenditure alone decreased between 1997 and 2000. Over this period, less than 0.5 percent of annual Government health spending was devoted to HIV/AIDS. Just over a

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<sup>30</sup> Another long-term education-related impact of HIV/AIDS has also been identified in the literature. A long-term impact identified by Bell et al. (2003) is that the income and expenditure effects of HIV/AIDS on the household also reduce lifetime resources available to a family, impacting negatively, for example, on education. Parents make allocation decisions between consumption in the present and investment in human capital accumulation of their children. If the probability that a child may be infected in adolescence or adulthood rises substantially, parents may under-invest in education in expectation of premature death. However, given the current incidence levels in Viet Nam, this consequence is not immediate.

<sup>31</sup> There may be omissions in this financial data, but this information was the best available at the time of compilation of this report.

**Table 12: HIV/AIDS-related expenditure by the Ministry of Health**

| Expenditure Item                                    | 1997         |              | 1998         |             | 1999         |              | 2000        |             | TOTAL      |  |
|---|--------------|--------------|--------------|-------------|--------------|--------------|-------------|-------------|------------|--|
|   | VND billion  | VND billion  | % change     | VND billion | % change     | VND billion  | % change    | VND billion | % of Total |  |
| Equipment   | 22.40        | 12.80        | -43%         | 5.90        | -54%         | 16.79        | 185%        | 57.89       | 50.10%     |  |
| Blood injection safety                              | 11.55        | 4.93         | -57%         | 2.24        | -55%         | 4.17         | 86%         | 22.87       | 19.80%     |  |
| Inpatient treatment                                 | 3.49         | 2.70         | -23%         | 1.31        | -51%         | 4.20         | 221%        | 11.7        | 10.10%     |  |
| Monitoring  | 4.12         | 3.69         | -10%         | 1.67        | -55%         | 3.69         | 121%        | 13.17       | 11.40%     |  |
| STI prevention                                      | 1.27         | 0.64         | -50%         | 0.30        | -53%         | 0.86         | 187%        | 3.07        | 2.70%      |  |
| Prevention of mother-to-child transmission          | 0.81         | 0.30         | -63%         | 0.13        | -57%         | 0.50         | 285%        | 1.74        | 1.50%      |  |
| Pediatrics  | 0.45         | 0.24         | -47%         | 0.12        | -50%         | 0.31         | 158%        | 1.12        | 1.00%      |  |
| Healthcare  | 0.71         | 0.26         | -63%         | 0.14        | -46%         | 0.27         | 93%         | 1.38        | 1.20%      |  |
| Prevention of transmission through medical services |              |              |              |             |              | 2.58         |             | 2.58        | 2.20%      |  |
| TOTAL (VND billion)                                 | 44.80        | 25.56        | -43%         | 11.81       | -54%         | 33.37        | 183%        | 115.52      | 100.00%    |  |
| Total (US\$ million)                                | 3.80         | 1.90         |              | 0.80        |              | 2.40         |             |             |            |  |
| <b>Non-equipment Total</b>                          | <b>22.40</b> | <b>12.76</b> | <b>-313%</b> | <b>5.91</b> | <b>-367%</b> | <b>16.58</b> | <b>181%</b> |             |            |  |
| Total (US\$ million)                                | 1.90         | 1.00         |              | 0.40        |              | 1.20         |             |             |            |  |
| TOTAL as % of MOH Expenditure                       |              | 0.35%        |              | 0.15%       |              | 0.39%        |             |             |            |  |
| MOH Expenditure (VND billion)                       |              | 7,303        |              | 7,873       |              | 8,556        |             |             |            |  |

Source: Ministry of Health (2001); Knowles et al. (2003).

tenth of HIV/AIDS expenditure was accounted for by health care, with the rest of non-equipment expenditure being devoted to HIV/AIDS prevention.

The costs<sup>32</sup> incurred for health sector staff living with HIV/AIDS, whether it is due to infection at the workplace or elsewhere, are beyond the domain of this report and not considered alongside the costs of care and treatment. Nonetheless, the impact of HIV/AIDS on health care workers is part of a more general concern about HIV/AIDS among public sector employees. This is worth emphasizing as the Government of Viet Nam prepares a scaled-up response to HIV/AIDS in the face of an expanding epidemic.

According to Ministry of Health records, the number of HIV/AIDS patients who received hospital services has been increasing consistently over time.

**Table 13: PLWHAs receiving diagnosis and treatment services**

| Category  | 1996 | 1997  | 1998  | 1999  | 2000  | Cumulative Total |
|---|------|-------|-------|-------|-------|------------------|
| PLHAs receiving diagnosis and treatment                   | 194  | 4,631 | 1,145 | 3,445 | 4,111 | 13,526           |
| Medical staff exposed to HIV/AIDS and receiving treatment | 0    | 0     | 22    | 47    | 88    | 157              |
| Pregnant women with HIV/AIDS who received treatment       | 0    | 0     | 3     | 7     | 51    | 61               |
| Children receiving treatment                              | 1    | 4     | 9     | 26    | 63    | 103              |

Source: Ministry of Health (2001).

<sup>32</sup> These costs would normally include the direct costs of treatment of opportunistic infections and antiretroviral drugs, as well as the indirect costs associated with reduced productivity, reduced working days, and loss of skilled labour that need to be replaced when a staff member dies.

### 3.3.2. Key findings about the impact of HIV/AIDS on hospital costs

The key themes emerging from the case study are that hospital care and treatment services for HIV/AIDS are very poor and severely limited by resource constraints in the health system. Health care-seeking behaviour by people living with HIV/AIDS is strongly influenced by stigma, with PLHAs reluctant to seek treatment for fear of exposing their HIV/AIDS status; and most of the costs for HIV/AIDS-related care and treatment are borne by households.

It is estimated that only a third of PLHAs are treated in health facilities (National AIDS Standing Bureau 1999). This may be due to supply-side constraints reflected in the low expenditure on health care highlighted in the previous table. However, evidence from the case study suggests that this utilization pattern is equally due to stigma and discrimination associated with HIV/AIDS and the fact that families do not want to declare the positive status of a family member in public. They fear that being seen at a hospital may lead to increased stigma and discrimination. Instead, households prefer to care for the person living with HIV/AIDS at home and, if they can afford it, have home visits by a health care worker.

In the study it was found that the majority of PLHAs who are admitted to hospital are those without a family able or willing to take care of them, prisoners, and those who are destitute and have no other option. Previous sections already discussed the impact of HIV/AIDS-related health care on households.

The Hospital Case Study also revealed that HIV/AIDS-infected inpatients usually receive hospital treatment for opportunistic infections, but they do not have access to antiretroviral therapy. This is largely due to the fact that they are unable to pay. Moreover, physical access to antiretroviral drugs such as Lamizidivir, Combivir, and Crixivan is extremely limited.

None of the inpatients included in the case study received free antiretroviral drugs from the hospital. Inpatients were usually poor and not able to pay for ARV treatment, and therefore they received only minimal palliative care and treatment for some opportunistic infections. In comparison with inpatient PLHAs, outpatients received more treatment of opportunistic infections and antiretroviral therapy, which they paid for themselves as an out-of-pocket expense. All outpatients included in the case study had used at least one dose of antiretroviral drugs during the year the survey took place. Furthermore, most outpatient PLHAs had CD4 tests conducted in order to monitor HIV/AIDS progression. As interviews with medical staff revealed, outpatient PLHAs generally saw their doctor once a month, which often coincided with the times they could afford to pay for antiretroviral drugs. People living with HIV/AIDS tend to interrupt the treatment at times they cannot afford it.

Hospital treatment costs of HIV/AIDS have not been studied in Viet Nam.<sup>33</sup> The detailed results of the costing exercise presented here are given in the Annex.

### 3.3.3. Projections of the costs of providing care and treatment

The projection of the health sector impact of HIV/AIDS combines information on the demographic impact of HIV/AIDS, the cost estimates of treating HIV/AIDS obtained from the case study of HIV/AIDS-related hospital costs in Viet Nam, and the Resource Needs Model developed by the Futures Group International.<sup>34</sup>

As mentioned before, the projections of the health sector impact, focus on the treatment and care requirements and do not include supply-side costs associated with health care staff contracting HIV/AIDS. A key consideration when planning for care and treatment of PLHAs is the adoption of universal precautions. The latter remains a challenge throughout the health sector and, in the absence of appropriate training and implementation of universal

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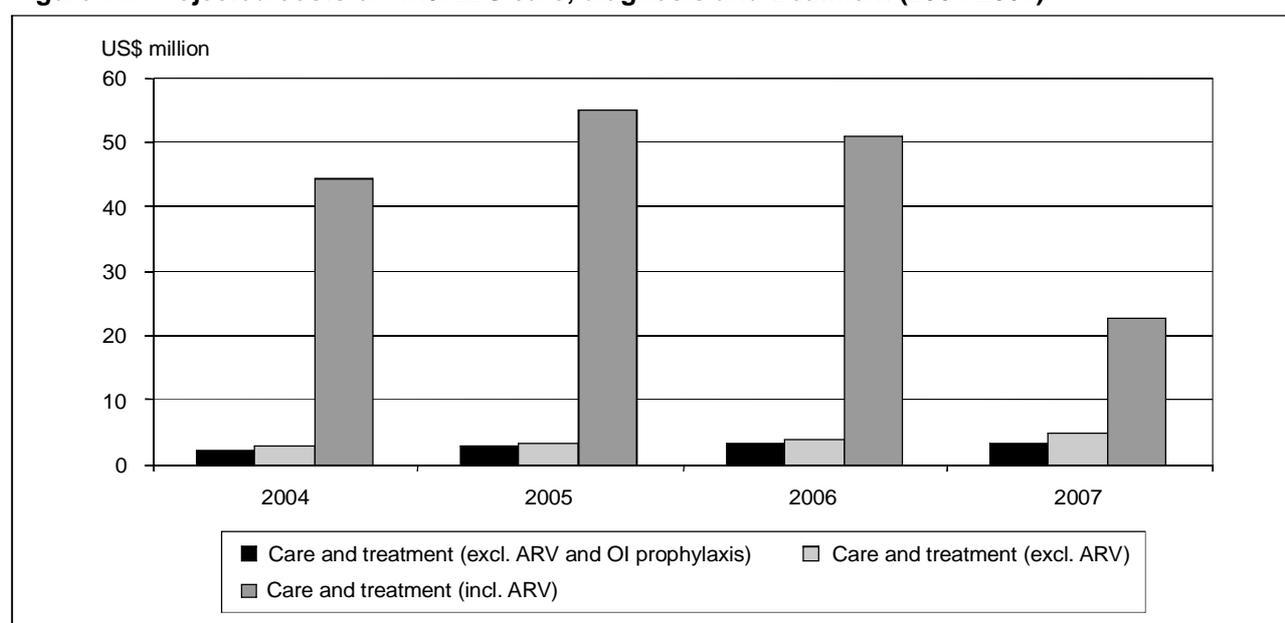
<sup>33</sup> The Ministry of Health initiated a study of the hospital costs of HIV/AIDS treatment and care which is currently under way. This study aims to (1) determine the major HIV/AIDS related opportunistic infections in Viet Nam; (2) estimate the average annual costs of treatment of HIV/AIDS opportunistic infections; and (3) recommend to the Ministry of Health the average inpatient treatment cost due to HIV/AIDS for budget planning purposes.

<sup>34</sup> In support of the UN General Assembly Special Session (UNGASS) on HIV/AIDS in June 2001, UNAIDS prepared estimates for total resource requirements for HIV/AIDS interventions in 2005 (Schwartlander, et. al., 2001). The Futures Group, a contributing partner to the UNGASS estimates, updated and extended projections to the year 2007 for 135 countries, including Viet Nam, based on a Resource Needs Model.

precautions, infections of staff are likely to increase over time as their exposure to HIV increases due to rising numbers of HIV-positive patients. Taking universal precautions to prevent HIV transmission, means handling blood and other specified body fluids of all patients as if they contain blood-borne pathogens. Universal precautions can be considered a part of prevention and therefore resulting costs are not considered in the care and treatment estimates presented here.

The projected costs of care and treatment are shown in the figure below. Three different scenarios explained by care and treatment tiers are being laid out. The first tier includes the cost of diagnosis, palliative care and treatment of opportunistic infections; the second includes the first tier plus opportunistic prophylaxis, and; the third comprises the second tier plus antiretroviral therapy. For 2004, the costs of the first tier are estimated at VND26.2 billion (US\$1.7 million) annually and projected to increase by 45 percent to VND37.9 billion (US\$2.5 million) by 2007. The costs for the second tier amount to VND30.7 billion (US\$2.1 million) in 2004, which represents 17 percent more than the costs for only the first tier in the same year. The inclusion of antiretroviral therapy substantially increases the costs to VND497.6 billion (US\$33.2 million) for 2004, which are projected to decrease to VND252.5 billion (US\$16.8 million) by 2007, mostly due to the expected reduction in ARV prices. As shown in the figure below, antiretroviral therapy is by far the largest driver of the projected costs.

**Figure 17: Projected costs of HIV/AIDS care, diagnosis and treatment (2004-2007)**



In 2004, over 90 percent of total costs were accounted for by antiretroviral therapy and ARV-related laboratory costs. This proportion is likely to decrease to approximately one half in 2007, based on the assumption that the price of ARVs currently available in Viet Nam will significantly decrease by 2007 to about US\$300 from a current level of US\$3,720 per year as identified in the case study. The number of PLHAs using ARV therapy will grow to 55 percent of those who require it.

Investment costs such as capital expenditures on laboratory equipment, etc. are not included in this costing. Nevertheless, laboratory capacity is a key dimension of the health sector's ability to respond to HIV/AIDS. An inventory of 494 laboratories in 2000 assessed the HIV/AIDS testing capacity of the Vietnamese health sector (National AIDS Standing Bureau 2001). Among the surveyed laboratories, a fifth were able to perform ELISA<sup>35</sup> tests and a quarter were able to perform Serodia<sup>36</sup> tests. Four out of 494 laboratories had CD4 counters,<sup>37</sup> but not

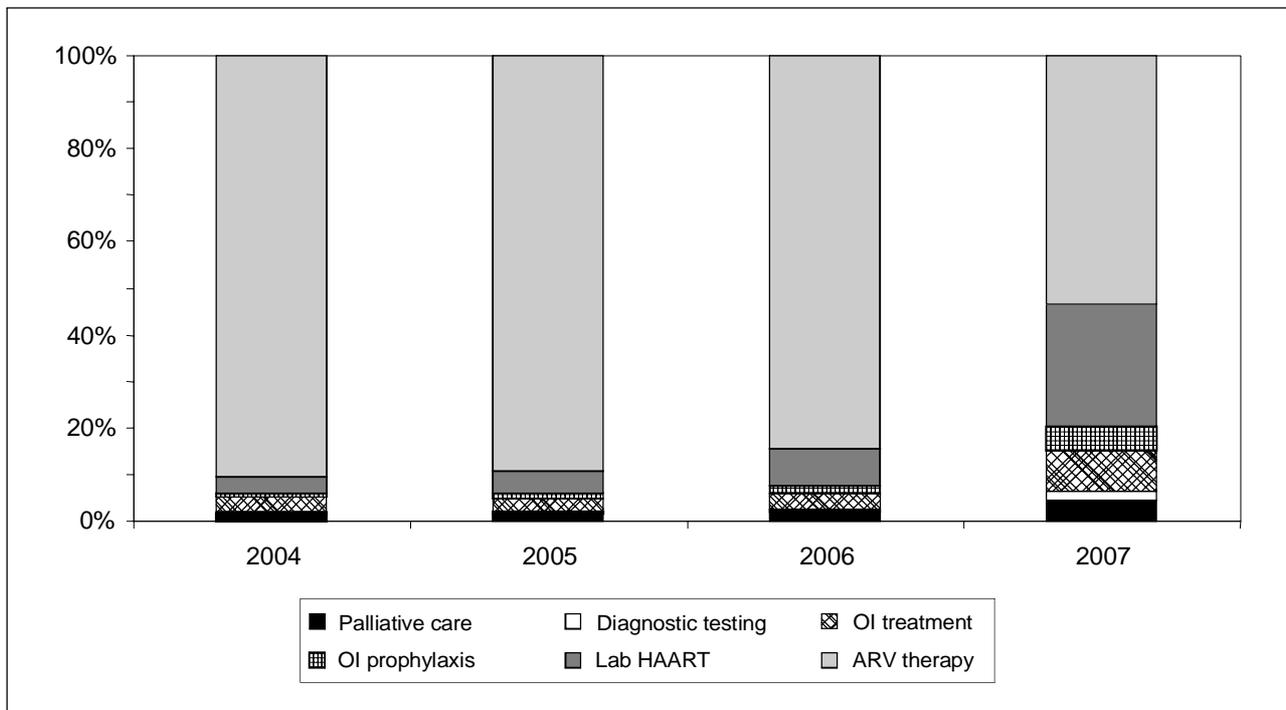
<sup>35</sup> The ELISA (Enzyme-Linked Immuno-sorbent Assay) method is a fundamental tool of clinical immunology, and is used as an initial screen for HIV detection.

<sup>36</sup> The Serodia test is an article agglutination test for determination of HIV infections.

<sup>37</sup> CD4 counters are used for the counting of immuno-labeled cells like CD4/CD8 cells for HIV screening and treatment follow-up.

all of those could operate at their intended capacity, as the costs of tests were too high for PLHAs, varying between the equivalent of approximately two and three USD.

**Figure 18: Cost composition of diagnosis, care and treatment (2004-2007)**



The cost for covering the basic two tiers of health care services for PLHAs (with and without opportunistic infection prophylaxis) is equivalent to only 0.3 percent of the total government health expenditure in 2000. When antiretroviral therapy is added, the proportion increases to approximately 5.6 percent of the total government health expenditure for that year. In other words, even if the Government decided to cover all HIV/AIDS-related health care costs, its total health expenditure would not increase dramatically.

Therefore, it becomes evident that covering the basic tiers of health care services for PLHAs, namely the costs for care and treatment including opportunistic infection prophylaxis, is within the range of affordability. Dialogue and discussion on the implementation of care and ARV treatment for PLHAs will have to be informed by a more thorough estimation of the additional costs based on the inclusion of ARV treatment into Government services. The decision whether or not to grant widespread access to antiretroviral drugs will entail considerable debates. It is important to remember that giving out ARVs to all PLHAs who need it is not only a question of financial resources but also a question of logistics and availability of qualified medical staff. Nevertheless, negotiating with the pharmaceutical industry in order to help Viet Nam benefit from price reductions that have been granted to some countries, will be a key element of the process.

## Part 4: Conclusions and Recommendations

The study has highlighted the convergence of the impacts of HIV/AIDS on households from several perspectives. Expenditure effects, income effects, and lost investments in education put a heavy burden on many households. The analysis of household effects clearly demonstrates that HIV/AIDS does not only affect PLHAs themselves, but that their condition has a much wider impact. The authors hope that by showing the broader consequences of HIV/AIDS-related impacts on children, siblings, spouses, parents, and grandparents of PLHAs, the study will help advance the discussion of HIV/AIDS in Viet Nam far beyond the social evil paradigm and its implicit victim-blaming ethical framework.

Very importantly, the study also highlights the links between HIV/AIDS, household vulnerability, and poverty and thus was also able to show the impact of HIV/AIDS at the macro-level. Nevertheless, it pointed to the flaws of exclusively focusing on macroeconomic and growth impacts of HIV/AIDS often leading to neglect of the epidemic's impact on household vulnerability. This has been the case for many HIV/AIDS impact assessments in the past. In addition, this section draws some key conclusions and makes practical recommendations on the potential response to the epidemic based on findings from the two case studies outlined previously.

Given the relatively early stage of the epidemic, Viet Nam has a unique opportunity to respond to, and stem the rapid spread of HIV/AIDS that so many countries have experienced. However, the window of opportunity is quickly closing and thus how well Viet Nam can prevent the spread of HIV/AIDS will depend on how quickly the Government can react. It is anticipated that the findings presented in this report will inform planning and, where necessary, policy reforms required to implement prevention and impact mitigation measures, in order to undo reversible outcomes and prevent irreversible consequences of the epidemic.

While a reduction of stigma and discrimination provides an important basis on which to build further measures, the fight against stigma and discrimination will be an ongoing process in the years to come. Importantly, HIV/AIDS needs to be formally considered in existing poverty reduction efforts, and measures to mitigate its socio-economic impact need to be included in formal strategies. Last but not least, the Government would be well advised to make all HIV/AIDS-related treatment and care available free of charge or at a truly affordable price.

### 4.1. Reduce stigma and discrimination

The extent to which households and individuals with HIV/AIDS can draw from informal and formal mechanisms of community support is strongly influenced by stigma. Stigma influences if and how households decide to seek outside help. This, in turn, influences the perceptions of others in the community as to whether HIV/AIDS-affected households really need help. The degree of stigmatization and marginalization of households with a PLHA also determines whether support from the community is forthcoming and ultimately influences the burden of HIV/AIDS on households. It is therefore important to link the community response with the household impact of HIV/AIDS.

HIV/AIDS-related stigma and discrimination has an effect on social cohesion at both the household and the community levels. On one hand, social cohesion constitutes the foundation upon which community-level mechanisms of support are built. It could be argued that only in those communities that have maintained a significant level of cohesion can internal resources be mobilized to develop support mechanisms for members in need. Such mechanisms are bound to break down in the presence of stigma and discrimination.

At the same time, diseases associated with a high level of stigma and fear, such as HIV/AIDS, often create new types of cohesion among those households and individuals with shared interests and problems in their daily lives. Thus, while shattering some aspects of family and community cohesion and bonding, new types of cohesion may be created from which new mechanisms of support could be developed.<sup>38</sup> This scenario depends largely on two factors. Firstly, the number of people infected and affected by the epidemic is important. Generally, stigma and discrimination decrease as prevalence rates are growing and community members are becoming used to the presence of people infected and affected by HIV/AIDS. Secondly, the level of financial and human resources that affected community members have at their disposal is crucial.<sup>39</sup> While infections among so-called low-risk groups

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<sup>38</sup> This is the kind of 'family of shared identity' (rather than simply of blood lineage) that was found among white gay men in North America and Western Europe when their community was heavily hit by the epidemic.

<sup>39</sup> PLHA of injecting drug users in North America and Eastern Europe were never able to organize themselves to the level seen among gay men living with HIV/AIDS, and this was due largely to their limited resources, including experiences with organizing themselves against stigma and discrimination in the mainstream societies.

are increasing, injecting drug users and sex workers still constitute the largest share of the HIV-positive population in Viet Nam. Due to their high level of marginalization and the fact that most of their members are socially and economically disadvantaged, these groups find it more difficult to organize themselves in ways that could foster alternative voices in society, let alone formal support mechanisms for fellow people living with HIV/AIDS.

Reducing stigma and discrimination is a crucial first step in implementing effective mechanisms to reduce the socio-economic impact of HIV/AIDS on Vietnamese households. As stigma and discrimination decrease, more and more PLHAs will go for testing and seek health services. Care, support and treatment provided will be of better quality, as more health sector workers will be willing and able to deal with HIV/AIDS. They will find it easier to access informal support channels and leaders will have fewer difficulties in fighting for PLHA rights and formal mechanisms of support.

The level of stigma and discrimination in Vietnamese society will partly determine whether efforts by the Government, its national and international development partners, and others aimed at slowing down the spread of HIV/AIDS and mitigating its socio-economic impacts will be sustainable and successful.

#### **4.2. Include HIV/AIDS considerations in poverty reduction efforts**

The participatory poverty assessments indicated that, in recent years, illness was the most common cause of poverty in Viet Nam. In 2004, approximately 126,000 people either became newly poor or fell deeper into poverty because of HIV/AIDS in Viet Nam. This number is likely to increase steadily over the next decade and reach almost half a million in 2015, 36 percent of whom will have become newly poor and 64 percent will have fallen deeper into poverty.

Even so, the 2004 Viet Nam Development Report gives only little recognition to the risk that HIV/AIDS poses to poverty reduction gains and related achievements. The Comprehensive Poverty Reduction and Growth Strategy does make numerous references to HIV/AIDS. Nevertheless, these references are made only in relation to health sector interventions and do not include HIV/AIDS in interventions that provide support for the poor and vulnerable. The modeling based on the case study findings showed that even if households were able to mitigate as much as half of the negative economic impact of increased health spending through various coping strategies, per capita consumption expenditure among households of PLHAs could still drop by between 40 percent and 50 percent. All households with a PLHA, except for the richest expenditure quintile, are predicted to fall below the overall poverty line. Moreover, the poorest two quintiles will also fall below the food poverty line due to the expenditure and income effects of HIV/AIDS.

HIV/AIDS is a risk that increases household vulnerability. This needs to be fully acknowledged in poverty assessments in Viet Nam, and taken into account as a factor that may potentially slow down the rate of poverty reduction in the future. Within this context, HIV/AIDS needs to be formally included in the Government's efforts to reduce poverty.

#### **4.3. Provide formal support to mitigate socio-economic effects of HIV/AIDS**

At the household level, HIV/AIDS exerts its influence mainly through very significant increases in health expenditure needs. Given the especially large burden that falls on households in Viet Nam, it is essential to emphasize the consequences of increased health spending. By showing that health care costs that are not borne by the health system are shifted to households, the study has very explicitly established a link between the household and health sector response to HIV/AIDS.

Given the impoverishing consequences of HIV/AIDS-related expenditure and income effects, informal support mechanisms need to be complemented by formal mechanisms of assistance. Some of the existing social assistance instruments in Viet Nam can be used to this end.

One example of these social assistance instruments is the household poverty card system through which poor households receive certain entitlements and benefits. Households classified as poor are eligible for free health care cards and vouchers, which entitle all household members to free health care at local institutions. Furthermore, poor households are entitled to other benefits such as reduction of, or exemption from, tuition fees and other school fees and loans at reduced interest rates.

Viet Nam's Comprehensive Poverty Reduction and Growth Strategy recognizes that it is not enough to make health care physically accessible to all segments of the population. Out-of-pocket costs and other barriers, for example, travel costs and the opportunity cost of time, often prevent the poor from using available health services. Institutional mechanisms for assistance with health care expenses to poor households, such as health care cards and provincial health care funds for the poor (created by the Prime Minister's Decision 139 on "Medical Examination and Treatment for the Poor" in 2002) need to be formally extended to near-poor and newly poor households of PLHAs. In general, ways to include households with a PLHA that are close to the poverty line in formal support mechanisms need to be devised. Furthermore, the removal of barriers such as travel and opportunity costs directly related to episodes of needed health care should be examined.

While these mechanisms are not without problems, they constitute a promising offer of support. It must be ensured that the mechanisms work efficiently and all eligible households actually receive the benefits they are entitled to in a timely manner. Common delays in accessing these social assistance instruments may cause households who have recently fallen into poverty not to be able to benefit from the support at a time when they are most in need. For those households of PLHAs who are not yet classified as poor and thus not legitimately eligible for social assistance instruments, but nevertheless at risk of becoming poor, require ways to be devised to assist with drug expenditures as well as inpatient hospitalization costs.

HIV/AIDS also must be included in social security systems. Currently, health benefits usually exclude treatment and care for HIV/AIDS. This issue needs to be urgently addressed.

#### **4.4. Make care and treatment affordable for all**

While the impact on individual households is large, the aggregate impact on poverty in the country is still relatively small. Therefore, the cost of assistance and prevention of further socio-economic impacts is likely to be affordable for the Government.

HIV/AIDS-related health expenditure of households with one or more PLHAs was found to be more than ten times higher than the average level of health spending in Viet Nam. Qualitative interviews revealed that the biggest concern of PLHAs was access to health care services and drugs. These findings were confirmed in interviews with clinicians who indicated that patients are currently receiving only sub-optimal levels of care, which is largely due to severe resource constraints in the health system.

For 2004, the costs of a basic care and treatment programme were estimated at VND26.2 billion (US\$1.7 million). If opportunistic infection prophylaxes were included, costs would amount to VND30.7 billion (US\$2.1 million). An additional inclusion of antiretroviral therapy would substantially increase the projected costs to VND497.6 billion (US\$33.2 million).

Covering basic needs of care and treatment would cost an equivalent of less than half a percentage point of Government spending on health care and is certainly within the range of affordability for Viet Nam. As a starting point, it could go a long way to address the current situation of under-treatment in the health system and reduce the burden resulting from expenses for care and treatment currently carried by households.

In the absence of Government support in making antiretroviral therapy affordable and accessible to a wider population, households will continue to spend substantial resources on antiretroviral treatment. Evidence from the two case studies suggests widespread irregular use of antiretroviral drugs in a manner that will contribute to drug resistance and therefore complicate the fight against HIV/AIDS in the long run. The annualized cost of antiretroviral treatment per person at current prices was found to be higher than VND 60 million (US\$4,000). Thus, while spending a large amount of money on antiretroviral therapy, and therefore putting a heavy burden on their households, some PLHAs are not able to fully benefit from the therapy due to drug resistance resulting from irregular use of antiretroviral drugs.

If the Government decides not to financially support costs incurred by households for antiretroviral therapy, it would be advisable for Viet Nam to assist households by negotiating overall price reductions with the relevant pharmaceutical companies. In this effort, the Government would be strongly supported by its many bilateral and multilateral development partners.

Several characteristics of Viet Nam may contribute to slowing down the rapid spread of HIV/AIDS. For example, the status of women in Viet Nam is better than in many other Asian countries. The better women's status in society, the less vulnerable they are to HIV/AIDS and its consequences. Nevertheless, the status of women still needs to be improved and Vietnamese women need to be further empowered with a variety of life skills as well as changed perceptions in society that help them gain greater control over their lives, including their sexual life. Moreover, Viet Nam has strong mass-based organizations and is able to organize effectively to address critical problems, as was illustrated by the success of the country's family planning programme. Furthermore, the Government is experienced in dealing swiftly and effectively with epidemics (e.g., SARS). In addition, given the country's level of development, the Vietnamese health system is functioning reasonably well.

# Appendices and Technical Annexes

## 5.1. HIV/AIDS in Viet Nam

### 5.1.1. An overview of HIV/AIDS in Viet Nam and beyond

To date, there are about 7.4 million adults and children living with HIV/AIDS in Asia, accounting for 19.5 percent of the 38 million HIV-infected people globally (UNAIDS 2004). In addition, Asia accounts for 22 to 29 percent of new infections globally. While average prevalence rates are below one percent in most countries in Asia, it is well above this threshold in many regions and population sub-groups.

The first case of HIV/AIDS in Southeast Asia was identified in Thailand in 1984. Three countries in the region, namely Thailand, Cambodia, and Myanmar, now have a generalized epidemic<sup>40</sup>. In the Asian region, prevalence has been on the increase for many years. It should be noted that some countries, especially Thailand and Cambodia, managed to curb the spread of the epidemic thanks to targeted and timely interventions. Nevertheless, continued commitment is needed if these achievements are to be maintained.

In Viet Nam, HIV/AIDS evolved in the early 1990s. Since then, HIV infections and AIDS cases have risen steadily. While the country's overall adult prevalence at 0.4 percent is still below the threshold that defines a generalized epidemic, HIV/AIDS has already spread to the general population in some cities, provinces, and sub-groups of the population. According to the Ministry of Health, 215,000 people were living with HIV or AIDS at the end of 2003.

HIV/AIDS is growing rapidly and poses special challenges in Viet Nam. So far, the epidemic has mostly been associated with intravenous drug users (IDUs) and commercial sex workers. Nevertheless, more and more people who do not belong to either of these groups are becoming infected by HIV/AIDS as well. This is not surprising since clients of sex workers and their sexual partners, as well as partners of injecting drug users, are also especially at risk of infection. More and more children are born to HIV-positive mothers.

### 5.1.2. Specific HIV/AIDS data for Viet Nam

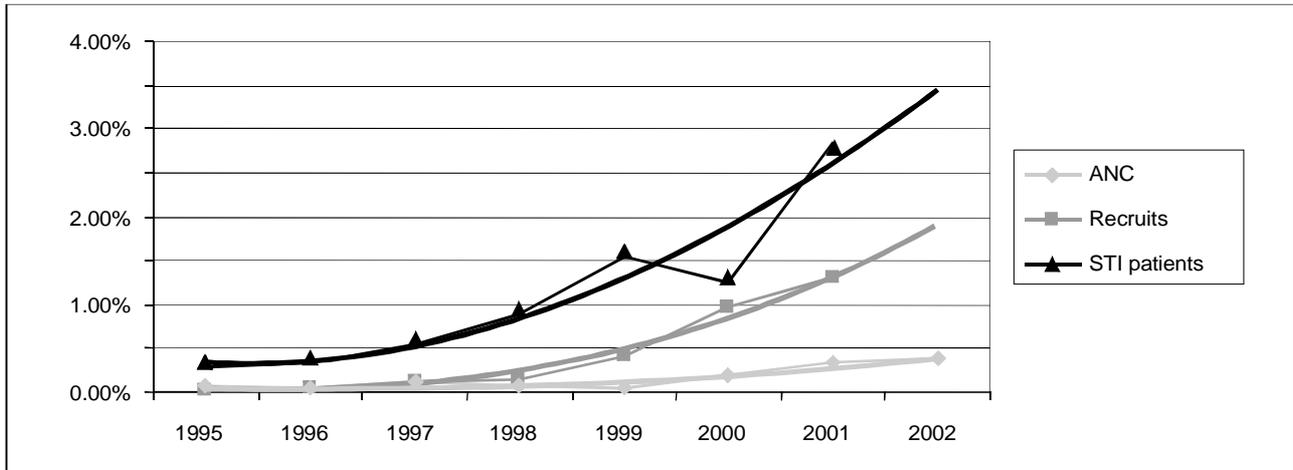
Viet Nam's first case was reported in December 1990 in Ho Chi Minh City. No HIV/AIDS cases were detected until 1992, when 11 new infections were reported. In 1993, there was an outbreak of HIV/AIDS among IDUs in southern and central provinces (e.g., in Ho Chi Minh City and Nha Trang Province). By 2001, each of the 61 provinces had reported HIV infections. The age distribution among the reported infections show an emphasis on young adults – more than half of all infections are among 20 to 29 year olds. Annual reported infections have roughly doubled each year since 1994 (Tran Hien 2002: 21).

Increasing rates of HIV infection are being detected among the general population in selected sub-national areas. Sentinel surveillance sites that capture prevalence among the general population are antenatal clinics and testing facilities for military recruits. Surveillance data from these sites shows a steady increase in prevalence in recent years (Figure 19), while sentinel sites for IDUs and sex workers show a stabilization of infections (Figure 20). National prevalence among women who attended antenatal clinics has risen from 0.02 percent in 1994 to 0.4 percent in 2002 (Tran Hien 2002: 42; MOH 2003a). In Ho Chi Minh City, An Giang Province, Hai Phong, and Quang Ninh, antenatal clinic surveillance data shows rates in excess of one percent, suggesting progression from a concentrated stage to a generalized stage of the epidemic. Similarly, evidence of increasing prevalence among the general population of men can be found among sexually transmitted infection (STI) patients. Despite the shortcomings of this data (e.g., the fact that it excludes all private providers who account for most treatments of STIs) there is evidence of an increasing trend from 0.46 percent in 1994 to 2.0 percent in 2002 (Tran Hien 2002: 42; MOH 2003a). In Ho Chi Minh City, the increase has been more rapid – from 0.3 percent in 1993 to 9.6 percent in 2001 (Le Truong 2003). However, despite increasing infections among low risk populations, Viet Nam's HIV/AIDS epidemic is fundamentally still driven by the more concentrated epidemic among IDUs as well as sex workers and their clients.

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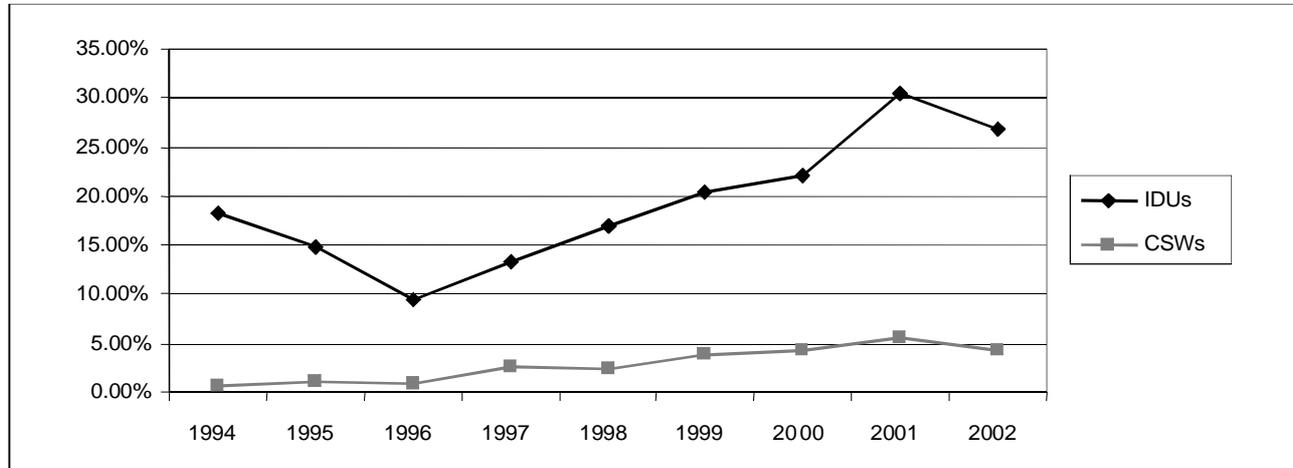
<sup>40</sup> Epidemics are categorized into low-level (adult prevalence not consistently exceeding 5 percent in any vulnerable group), concentrated (adult prevalence consistently exceeding 5 percent in vulnerable groups but below 1 percent in antenatal clinic attendees) and generalized (adult prevalence exceeding 1 percent in antenatal clinic attendees) (POLICYProject 2003: 14).

**Figure 19: HIV prevalence among the general population (1994-2002)**



Many Asian countries, whose HIV/AIDS epidemics were first confined to IDU populations, later experienced generalized epidemics after several years. In other words, the epidemic is likely to become generalized if IDU prevalence is not kept under control. Saidel et al. (2003: 63) found that once a heterosexual epidemic is under way, meaningful reductions in overall infection numbers can happen only if infections among IDUs are controlled as well. These research findings establish clear evidence that interventions targeted at IDUs are necessary in order to prevent the spread of HIV/AIDS to the general population. The practice of isolation of drug users has not proven effective in preventing transmission in the long-run.

**Figure 20: HIV prevalence among high-risk groups (1994-2002)**



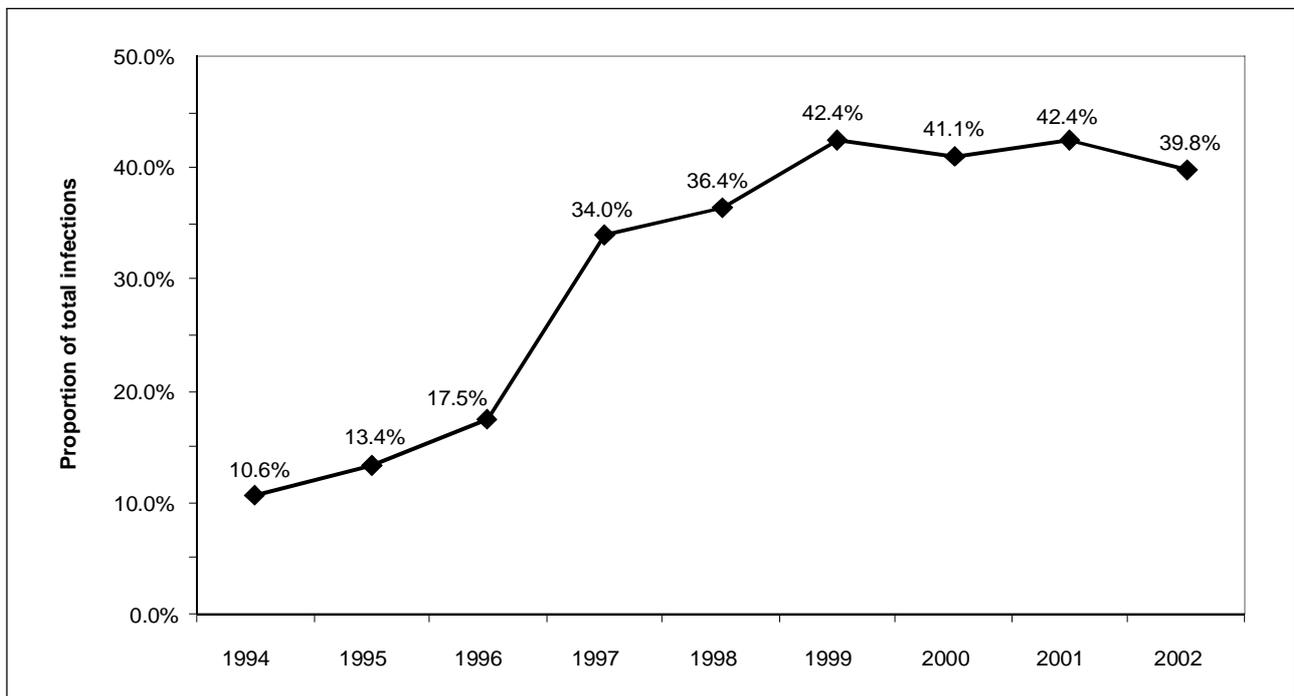
Another factor contributing to an accelerated spread of HIV/AIDS into the general population is mobility. Since 1988, Viet Nam's borders have progressively been opened, which has led to increased trade- and tourism-related mobility. Within the country, mobility has also been increasing due to the fact that people are moving to the cities to look for employment alternatives. These changes have been accompanied by increasing drug use and an expanding commercial sex sector in the late 1990s (Te 1995).

Given the stage of demographic transition and the fact that Viet Nam has reached replacement level of population growth, the current cohort of youth is the largest youth group ever. More than two decades into the epidemic, the vast majority of young people shows serious knowledge gaps with regard to sex and sexually transmitted infections. Although a majority have heard of AIDS, many do not know exactly how HIV is transmitted and do not believe they are at risk. Those young people who know about HIV/AIDS most often do not protect themselves for various reasons, such as a lack of life skills, support services, or the means to adopt safe behaviours. Nonetheless,

young people have demonstrated that they are capable of making responsible choices to protect themselves when provided with such support, and that they can educate and motivate others to make safe choices (Tung 2003).

The increasing prevalence and infection rates among youth are shown in Figure 21. Fifteen to 24-year-olds currently constitute a large proportion of reported HIV infections, well in excess of the share of the population they account for (about 20 percent). In 1994, this group accounted for 10.6 percent of infections and since 1999, the proportion has risen to about 40 percent. Behavioural surveillance studies show a lack of correct knowledge about HIV/AIDS<sup>41</sup> as well as widespread risk-taking behaviour among youth in relation to substance use and sex with non-regular partners<sup>42</sup> (UNDP 2003). There is now evidence suggesting that the average age of first sexual intercourse in Viet Nam is 18.9 years, with no significant difference between males and females.

**Figure 21: Proportion of reported HIV infections among youth**



Epidemiological and behavioural surveys have provided evidence that sex before marriage occurs and is on the increase, despite the fact that this reality is often denied. Adolescents who start having sex early are more likely to have sex with high-risk partners or multiple partners, and are less likely to use condoms (UNICEF 2002). Nevertheless, young people have only poor access to information on reproductive health. As a result, young Vietnamese were found to have incomplete knowledge and understanding of sexuality, HIV/AIDS transmission, contraception, and safe sex.<sup>43</sup> Furthermore, intravenous drug use among young people, especially young men, has increased dramatically in recent years. According to MOLISA, young people constituted 39.5 percent of the

<sup>41</sup> A study conducted among 15-24-year-old youth in 5 mountainous and border provinces, reported that only 26.3 percent of youth could correctly answer questions about HIV/AIDS transmission and prevention methods (ref).

<sup>42</sup> The study also found that 52.7 percent of young men and 33.3 percent of young women used a condom in their last intercourse with a non-regular partner (ref).

<sup>43</sup> Of 4,675 adolescents ages 10-19 in a 1998 survey of five provinces, 81.4 percent had heard about HIV/AIDS, but nearly 85 percent had never heard of gonorrhoea or syphilis (UNICEF 2002). The 1999 KAP survey of 1,005 young persons ages 15-24 in Hai Phong City on reproductive health issues showed that knowledge of STD prevention was still low. Using a condom was the most widely known method of STD prevention (68.9 percent), followed by not having sex with a prostitute (60.7 percent), having one sexual partner (57.8 percent), and not sharing a needle (35 percent). In their survey in 2002 of 2,379 unmarried youth ages 15-24 in five provinces (Lai Chau, Quang Tri, An Giang, Kien Giang, Dong Thap), Tuan et al. estimated that only 29 percent to 60 percent of youth have could cite correctly three methods of HIV prevention (Tuan et al. 2002)

drug-using population in 1994 and this proportion increased to 70 percent in 2001 (MOLISA 2001). Sexual activity among intravenous drug users occurs earlier in adolescence<sup>45</sup>, is more frequent, and more likely to be unprotected.<sup>46</sup>

**Table 14: Age distribution of injecting drug users**

| Study sites | Age distribution (%) |         |         |       |      |           |
|-------------|----------------------|---------|---------|-------|------|-----------|
|             | <15                  | 15 - 19 | 20 - 24 | 25-29 | >=30 | 15 - 24 * |
| Quang Ninh  | 3.2                  | 53.8    | 25.9    | 12    | 5.1  | 79.7      |
| Ha Noi      | 0                    | 6.4     | 35.3    | 20.3  | 38.1 | 41.7      |
| Hai Phong   | 0.3                  | 4.6     | 22.1    | 31.8  | 41.1 | 26.7      |
| Da Nang     | 0.7                  | 10.1    | 14.1    | 14.1  | 60.9 | 24.2      |
| Can Tho     | 1.8                  | 23.2    | 23.7    | 8.3   | 43   | 46.9      |

Sources: Tran Hien et al. 2002; Tung et al. 2001.

\* UN definition of youth

In Viet Nam, the average age of sex workers is about 25 years (Elmer and Tung 2001). Nevertheless, cases of sex workers under the age of 18 have been reported as well. These young girls and women are mostly unmarried, come from poor and often troubled families, and their social and economic status is very low. Research findings indicate inconsistent use of condoms by sex workers and their clients.<sup>45</sup>

### 5.1.3. Description of the HIV/AIDS situation in the four study sites

#### 5.1.3.1. Ho Chi Minh City

According to health officials in Ho Chi Minh City, the city is on the verge of a generalized epidemic with HIV infection rates among pregnant women attending antenatal care clinics approaching one percent. Prevalence is especially high among the traditional high-risk groups. Moreover, intermingling of unprotected sex and drug use among commercial sex workers creates an ideal environment for rapid spread of the virus.

According to the report of the City Preventive Health Centre on 15 September 2003, the city had recorded 13,849 cumulated HIV cases, among which 5,212 had developed AIDS, and 2,036 had died. HIV incidence is increasing, especially among young people. The city also sees the need for more attention and investment in home-based care for PLHAs, a relatively new field in Viet Nam.

At the end of 2002, District 10 of HCMC recorded 489 HIV/AIDS cases, of which 186 had died. The current number of HIV-infected people was 141, among which the district was able to manage and counsel 81 cases. The remaining persons were either sent to drug treatment centres or could not be found for follow-up (report of the District Health Centre, District 10).

District 10 was allocated some funds by the HCMC's People's Committee to provide medicines to PLHAs whose names are on the control list of the district health centre. These are simple medicines, in most cases vitamins.

<sup>43</sup> Tran Hien et al. (2002) found that 71 percent IDUs in Quang Ninh in 2000 had the first sexual intercourse before the age of 20 and 73.4 percent reported sex with sex workers. Tuan et al. reported that 53 percent of single IDUs in Hai Phong 1999 have had sex. Phi et al. (1999) found that about 50 percent of IDUs in five northern provinces (Ha Noi, Thai Nguyen, Hai Phong, Lang Son and Nghe An) in 1999 had sexual intercourse before marriage and 85.6 percent of them had their first sex experience with a female sex worker. These proportions are much higher than the corresponding proportion among non-IDUs youth in Viet Nam.

<sup>44</sup> Condom use is low among IDUs. From 28 percent to 56 percent IDUs in Ha Noi, Hai Phong, Quang Ninh, Da Nang, HCMC and Can Tho in 2000 reported consistent condom use with female sex workers in the past 12 months (Tung et al. 2001; Tran Hien et al. 2002).

<sup>45</sup> For example, more than 50 percent of sex workers in Nha Trang used condoms only "some" of the time; 65 percent of indirect sex workers (i.e., those not associated with brothels but rather working from karaoke bars, massage parlours, etc.) in three southern provinces reported using condoms only sometimes or never; and 70 percent of about 800 male STD patients sampled in two southern provinces indicated that they "never use condoms." (Elmer and Tung 2001).

The ceiling for each prescription is VND30,000 (US\$1.90) and one person can receive free medicines up to two times a year. In 2003, the amount allotted from HCMC's People's Committee to District 10 for this purpose was VND1.2 million (US\$76). The Health Centre may decide to add money from other sources to these funds.

In order to get their name included on the control list of the district health centre, people need to show HIV-positive test results. The majority of people on the list are men. Most commercial sex workers left the area after their HIV status was detected. The Health Centre does not keep a list of orphans from parents who died of AIDS. Attempts to compile such a list were abandoned since the Centre lacks means to provide for such orphans.

Apart from the modest amount of free drugs, the only form of assistance provided to PLHAs by local authorities and the Health Centre are occasional visits with gifts such as sugar and milk, thereby providing psychological support as well.

#### 5.1.3.2. *An Giang*

One special feature of An Giang is its location next to Cambodia. For years, the province has seen a large number of women crossing the border to Cambodia to work as commercial sex workers. Many of these women, upon returning home after several years, led a normal life, got married and had children, unaware of their HIV status. A pattern of transmission through intravenous drug use does exist in An Giang, but it is not as common as infection through sexual intercourse.

Official records from the Provincial Preventive Health Centre showed that from 1993 to 2003, the province had recorded a cumulative number of 4,405 HIV-positive cases. Among these, 1,904 had developed AIDS, and 1,572 had died. Infection rates are increasing: 526 new HIV/AIDS cases were reported in the first six months of 2003, compared to 503 new cases in the same period for 2002. Women accounted for 29 percent of all infections at the beginning of the epidemic in the area, but this proportion is increasing. In the first half of 2003, newly detected cases among women accounted for 31 percent of all cases. This is much higher than the average share for women in Viet Nam.

In An Giang, the study was conducted in four communes of Long Xuyen, the provincial city. The City Preventive Health Centre is currently holding a list of 126 PLHAs. The city once had a programme called QCT (managing care and treatment), initiated by the National AIDS Standing Bureau in 1996. One of the components of the programme was to provide free drugs for the prevention of opportunistic infections. While this initiative has been terminated, the city keeps a QCT programme running, using provincial funds.

Peer education groups for commercial sex workers in Long Xuyen are strong and engage in various activities. No peer education or "friends helping friends" groups currently exist for intravenous drug users.

#### 5.1.3.3. *Thai Binh*

Thai Binh is a rural province in the North of Viet Nam, well known for the substantial out-migration of adults who are looking for work. Although the HIV infection rate is not among the highest in the country, the number of new infections is increasing. By the end of 2002, 853 cases had been detected, of which 143 had developed AIDS and 81 had died.

The main route of transmission is intravenous drug use, responsible for 75 percent of all cases. However, transmission through unprotected sex is on the rise, increasing from 27 percent of all cases in 2001 to 31 percent in 2002. Males account for 88 percent of all infections.

Since out-migration for work is very common among men living in rural areas, the rate of infection in these areas is high. Seventy percent of reported HIV/AIDS cases are from rural areas.

Thai Binh does not have a programme to provide free drugs for PLHAs. Occasionally, pregnant women are provided with antiretroviral prophylaxis for the prevention of mother-to-child transmission. No official channel of financial support was reported. HIV/AIDS patients getting treatment at the commune health stations have to pay user fees and bear the drug costs themselves. Only patients who have tuberculosis are eligible for tuberculosis drugs subsidized by the national programme against tuberculosis.

#### 5.1.3.4. Quang Ninh

By the end of 2002, 5,954 HIV-positive cases had been detected, including 615 AIDS cases and 440 AIDS deaths. The majority of PLHAs are male, accounting for 92 percent of infections. IDU was responsible for roughly 70 percent of all infections. The province takes part in many support programmes by international organizations. These programmes focus especially on prevention as opposed to support and care for families with PLHAs. Subsidized drugs for opportunistic infections appear to be available in the hospitals. However, no drugs were provided to PLHAs at home as was the case in two provinces in the South.

The case study was conducted in two wards in Ha Long City with 157 (Yet Kieu) and 202 (Lam) cases/patients recorded on 30 July 2003. As of May 2003, Ha Long City had reported 1,958 HIV cases, of which 611 had developed AIDS and 681 had died.

One common feature of all the studied sites, especially An Giang, Thai Binh, and Ha Long, is that many people were not aware of their HIV status until they developed advanced symptoms of illness. This explains why people died very quickly after detection of the status, in some cases within just a week. The health care burden of HIV/AIDS therefore was not as great as it could have been had PLHAs been aware of their status earlier. This factor needs to be taken into account when assessing the economic impact of HIV/AIDS.

#### 5.1.4. Data availability and gaps

In Viet Nam, there are two main sources of data on HIV/AIDS: case reporting and sentinel surveillance. While the former only captures reported cases, the latter is used to estimate national HIV/AIDS prevalence and make projections for the future in order to provide a more realistic picture of the country's HIV/AIDS situation.

##### 5.1.4.1. Case reporting

As of August 2004, the Ministry of Health (MoH) recorded a cumulative total of 84,484 HIV infections along with 13,315 AIDS cases and 7,595 AIDS deaths. Due to the nature of HIV/AIDS and weaknesses generally associated with case reporting systems, under-reporting is a serious issue. In fact, it is estimated that less than 20 percent of HIV infections are reported in Viet Nam (Tran Hien 2002: 35). Since HIV/AIDS manifests clinically only five to eight years after infection, case reporting usually captures only symptomatic individuals. In Viet Nam, case reporting is mandatory for IDUs, sex workers, blood donors, and prisoners, and is voluntary for other groups (Tran Hien 2002: 35). This suggests a bias away from the general population in reported statistics.

##### 5.1.4.2. Sentinel Surveillance in Viet Nam

In 1994, Viet Nam started sentinel surveillance in eight provinces. This was expanded to 12 provinces in 1995 and 20 provinces in 1996. Several sources of sampling bias, participation bias, and reporting bias have been identified. Sentinel surveillance is confidential but not always unlinked and anonymous.<sup>46</sup> The sampling frame is biased toward urban sentinel sites but in estimations and projections calculations, data are assumed to be valid for rural areas as well (Tran Hien 2002). These issues are currently being addressed by several stakeholders.

## 5.2. Indicators to measure the socio-economic impact of HIV/AIDS

The analysis of the socio-economic impact of HIV/AIDS in Viet Nam helped identify key indicators that can be used to better assess and monitor the impact of the HIV/AIDS epidemic in general. The indicators, some of which were used in the present report, are categorized into six groups.

Indicators of household and individual welfare:

- Household and per capita consumption expenditure of households with at least one PLHA
- Dependency ratio of households measured using the income dependency ratio, which is the average number of people in a household who are supported by each household member earning an income

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<sup>46</sup> While unlinked anonymous methods were recommended to the provinces, some provincial and local authorities have insisted on identifying all HIV-positive individuals (Tran Hien 2002: 37, 43).

## Poverty indicators:

- Poverty head count and the percentage of individuals or households below the poverty line, in general and among households of PLHAs
- Proportion of population living on less than one USD per day in general and among households of PLHAS

## Indicators of expenditure:

- Per capita health expenditure
- Household health expenditure
- Health expenditure as a proportion of non-food consumption expenditure

## Indicators of social support:

- Support received from neighbours, friends and family

## Indicators of access to formal support:

- Access to formal support mechanisms in general and among households of PLHAs
- Access to exemption from health care payments in general and among households of PLHAs
- Waiving of school fees for HIV/AIDS orphans

## Indicators of health sector response:

- Percentage of resource gap financed through resource mobilization
- Coverage of PLHAs with opportunistic infection treatment
- Coverage of PLHAs with opportunistic infection prophylaxis
- Annual cost of antiretroviral drugs

### 5.3. Household impact case study

#### 5.3.1. Description of the study population

The table below provides a general profile of the individuals studied in the four provinces. The cases of 45 individuals who had died of an HIV/AIDS-related disease and 84 people living with HIV/AIDS were surveyed, for a total of 129 individuals. The majority of these people (i.e., 68 percent) were IDUs. This percentage is higher than the national average of 63 percent reported for the year 2000 (MOH, 2001). Commercial sex workers were probably underrepresented in the sample. The table below shows that the study team was able to interview households of HIV-positive Commercial Sex Workers (CSW) only in Ho Chi Minh City and An Giang. An Giang is the only province where the study team came across the case of an HIV/AIDS-infected individual who had died already and who did not belong to any of the so-called high-risk groups.

**Table 15: General profile of the study population**

| Location  | Living PWHAs |     |               | Deceased PWHAs |     |               | Total PLWHA | Total households |
|-----------|--------------|-----|---------------|----------------|-----|---------------|-------------|------------------|
|           | IDU          | CSW | Not high-risk | IDU            | CSW | Not high-risk |             |                  |
| Thai Binh | 16           | 0   | 4             | 9              | 0   | 0             | 29          | 27               |
| Ha Long   | 15           | 1   | 1             | 14             | 0   | 0             | 31          | 30               |
| HCMC      | 17           | 7   | 2             | 10             | 3   | 0             | 39          | 39               |
| An Giang  | 6            | 6   | 9             | 1              | 2   | 6             | 30          | 29               |
| Total     | 54           | 14  | 16            | 34             | 5   | 6             | 129         | 125              |

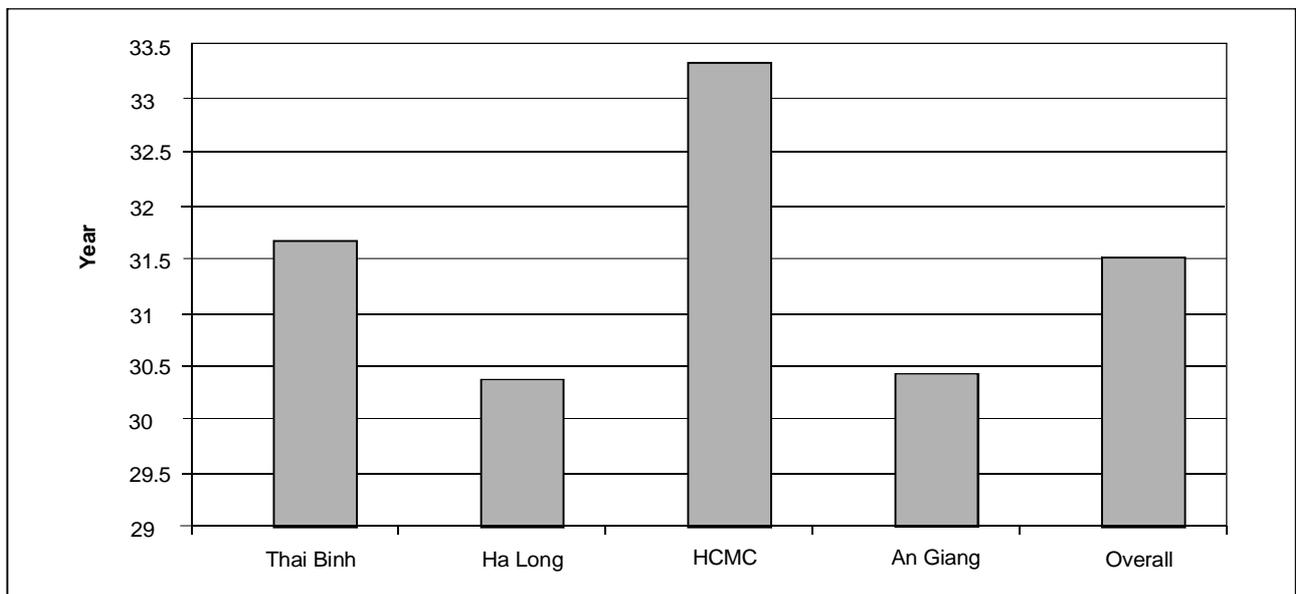
The 129 study subjects came from 125 households as some households had more than one infected member. However, not every case was recorded since some household members had died a long time ago, which made the recall of detailed information difficult. Such cases were not included in the sample. As the table below shows, the majority of study subjects were males. The proportion of females was 25.6 percent.

**Table 16: Sex of study sample**

|        | Thai Binh | Ha Long | HCMC | An Giang | Total |
|--------|-----------|---------|------|----------|-------|
| Female | 2         | 4       | 11   | 16       | 33    |
| Male   | 27        | 27      | 28   | 14       | 96    |

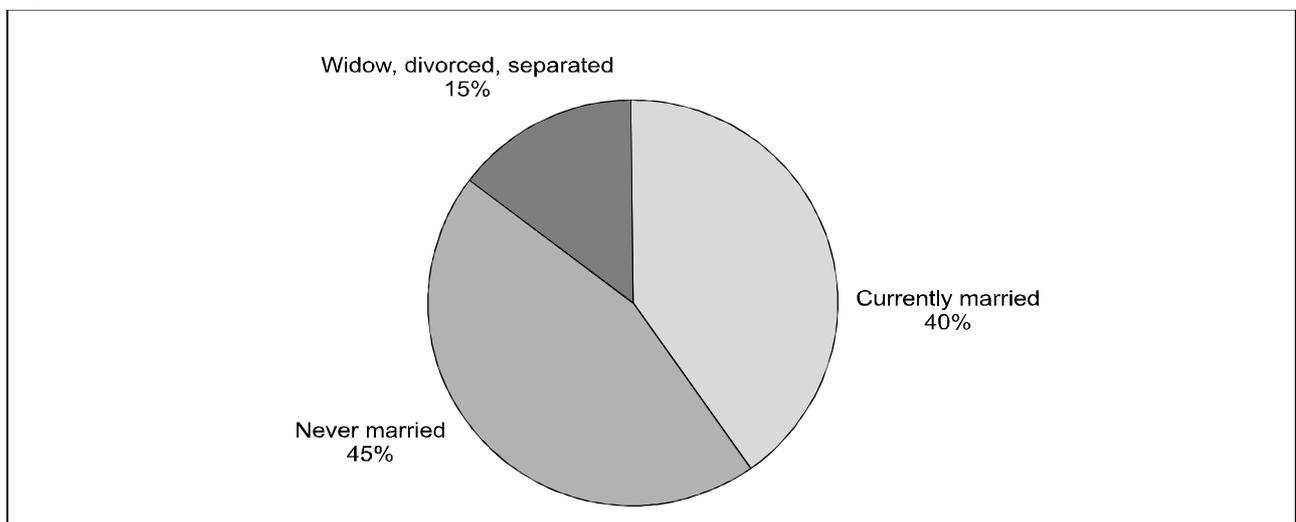
The age of PLHAs sampled in this study ranges from 13 to 50. Figure 22 below provides information about the mean age of PLHAs in the sample by province. The average age for study subject in all four provinces is 31.5 years. PLHAs in Ho Chi Minh City tended to be older than in other provinces. However, the difference in mean age across provinces was not very large.

**Figure 22: Mean age of PLWHA**



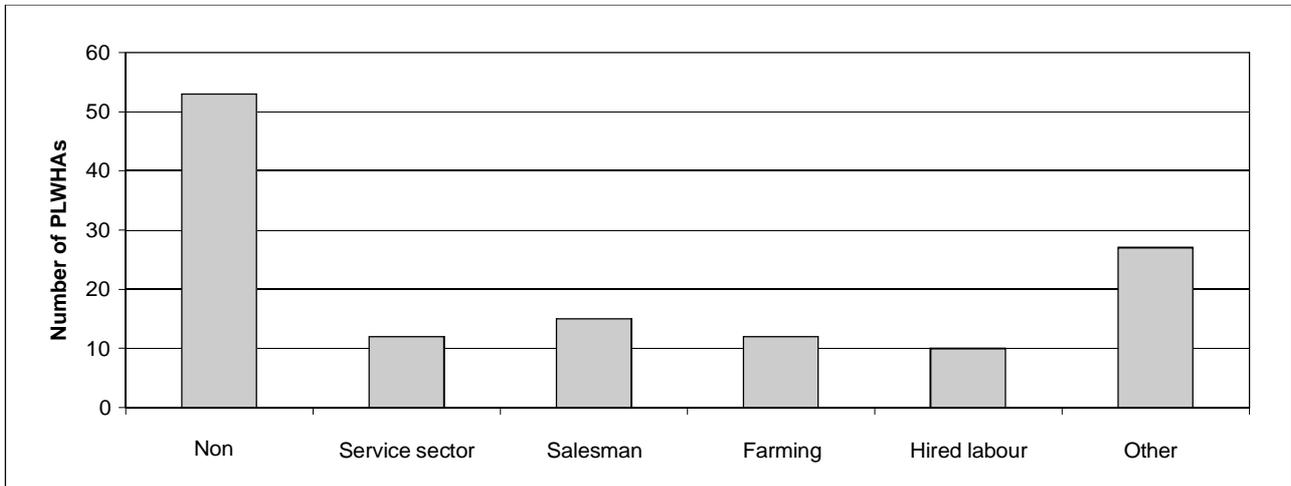
As the figure below shows, 40 percent of PLHAs are currently married or were married before death. There was a large number of people who had never been married and a significant number of people who had once been married and had since separated. Although no definite conclusions should be drawn here, it is worth mentioning that many PLHAs were abandoned by their spouses after they were found to be infected with HIV/AIDS.

**Figure 23: Marital status of the study sample**



About 50 percent of male PLHAs finished grade seven and 50 percent of female respondents completed grade five. The figure below shows the number of PLHAs by field of occupation<sup>47</sup>. Nearly half of all surveyed PLHAs had some sort of occupation. The most significant categories of occupation include work in the service sector (e.g., hairdresser), small trading (e.g., selling fruit or lottery tickets), farming, and short-term hired labour.

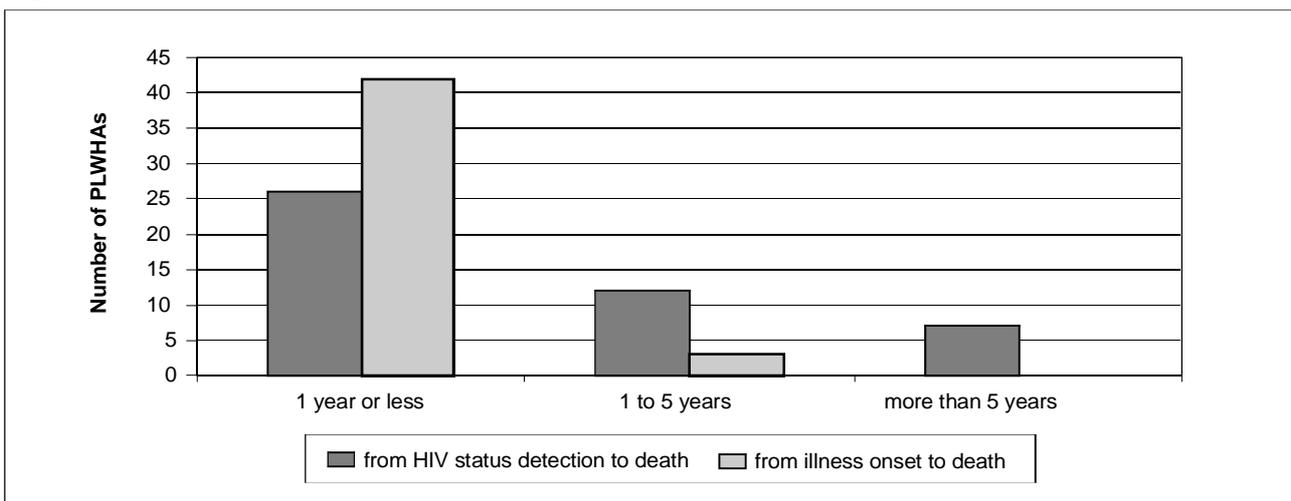
**Figure 24: Fields of occupation of the PLWHAs**



It is important to note that the majority of PLHAs who had no occupation were IDUs. Many had never worked before and many others lost their job even before contracting HIV. Therefore, the impact of HIV/AIDS on having an occupation in this analysis, is confounded by the presence of intravenous drug use, which is difficult to isolate in the analytical process.

The figure below illustrates that many individuals died very shortly after their HIV/AIDS infection was detected. Twenty-six out of 45 individuals in the sample who had died, died within one year after their status was detected. A vast majority of the sampled individuals died within one year after the onset of significant illness symptoms.

**Figure 25: Duration from HIV status detection and illness to death**



### 5.3.2. Limitations of the study and recommendations for further study

In assessing the magnitude of the impact of HIV/AIDS, there are several methodological challenges that need to be addressed. The first challenge is to isolate the direction of effects. Several studies show a negative association

<sup>47</sup> Occupation is defined as an activity that respondents spent most of their time on, whether it is paid or unpaid.

between income and having a person with HIV/AIDS in a household (Lundberg et al. 2000). This may be interpreted as showing that poor households are more likely to have a PLHA member or, alternatively, that HIV/AIDS causes households to become poor.

In other words, it is not clear whether poverty is the cause for, or an effect of, HIV/AIDS. The income and expenditure effects indicate that it is plausible for HIV/AIDS to have a negative impact on household income as well as on consumption expenditure. However, failing to isolate the potential reverse factor of poor households being more likely to have an HIV/AIDS-infected member, the impact of HIV/AIDS on household welfare may be overstated. These effects can only be evaluated and isolated if a survey methodology is applied. This limitation therefore remained largely unaddressed in this case study.

The study used a purposive sampling approach, which makes the study highly susceptible to selection bias. There are certain types of PLHA households which the study team could not gain access to. It was difficult to involve households of higher socio-economic status in the sample. With a highly sensitive and stigmatized issue such as HIV/AIDS, this problem is more pronounced. Although the study team tried to include households of various economic levels, higher income households were not reached to the desired extent. A further PLHA category that was hard to reach were, commercial sex workers. Sex workers often are highly mobile and do not usually work in their home provinces. Key informants in the field revealed that sex workers often move to live in a different place when their HIV/AIDS status is revealed and hence are lost when the study attempted to follow-up.

This is the first attempt to conduct a study of the household impact of HIV/AIDS in Viet Nam and it inevitably suffered from some shortcomings. For example, while the questionnaires were very detailed, there was insufficient time available for data collection. While the challenges of conducting a probability sample survey remain, it may be advisable to increase the sample size so that categories under-represented in this sample can be included.

#### **5.4. Case study of the impact of HIV/AIDS on hospital costs**

##### **5.4.1. Methodology**

###### *5.4.1.1. Data collection*

One hospital, Dong Da District Hospital, was selected for the study. The hospital is assigned to provide medical care and treatment to PLHAs in Ha Noi. While Dong Da is a district hospital, it is quite large and similar in size to provincial hospitals in other provinces. The necessary permission was sought well in advance. HIV testing was done at the Ha Noi Centre for Preventive Medicine with relevant staff of the Centre involved in the case study.

As the table below indicates, a preliminary review of data on HIV/AIDS patients from Dong Da District Hospital showed that the various opportunistic infections that occurred among PLHAs were distributed more or less evenly in terms of frequency. To capture direct cost variations across opportunistic infections, a record sample large enough to cover the whole range of opportunistic infections, and to reflect the frequency distribution of opportunistic infections was chosen. Taking into account resources available for the case study, 30 patients were considered to be a reasonable number for both the inpatient and the outpatient sample.

Preliminary discussions with Dong Da Hospital clinicians revealed that most PLHAs are hospitalized when they are in clinical stages three and four, as defined by WHO. Due to limitations in diagnosis equipment and resources, distinctions between stages three and four are often not made. In addition, cost implications for stage one and two are similar. The study therefore estimated the unit cost of an inpatient bed day and outpatient visit for two combined groups of HIV/AIDS patients: those in clinical stages one and two (early stage patients) and those in clinical stages three and four (advanced stage patients). Patients are usually not hospitalized when they are in stages one and two. Therefore, as shown in the table below, three groups of HIV/AIDS inpatients and outpatients were selected for costing.

**Table 17: HIV/AIDS-related opportunistic infections among inpatients**

| Distribution of HIV/AIDS-related opportunistic infections among sampled inpatients<br>(1998-2002 ) |           |
|--|-----------|
| Opportunistic infection  | Frequency |
| Pneumonia  | 15.20%    |
| Tuberculosis of lung   | 14.10%    |
| Fungal infection   | 13.30%    |
| Exhaustion   | 8.20%     |
| Chronic diarrhea   | 6.60%     |
| Bronchitis   | 3.50%     |
| Liver inflammation   | 3.10%     |
| Cirrhotic/degraded liver   | 2.30%     |
| Dysentery caused by bacillus   | 2.30%     |
| Fever caused by virus  | 1.60%     |
| Bubo tuberculosis  | 0.80%     |
| Other opportunistic infections   | 29.00%    |
| TOTAL  | 100.00%   |

Source: Report of the Department for Tropical Diseases, Dong Da District Hospital

**Table 18: Samples for data collection**

|           | Cost of daily inpatient bed rates<br>(USD) | Cost of outpatient visit<br>(USD) |
|-----------|--|-----------------------------------|
| Stage 1&2 | No inpatients for stage 1&2                | 15                                |
| Stage 3&4 | 30   | 15                                |

#### 5.4.1.2. Cost estimation

The direct costs of treating HIV/AIDS were estimated for a sample of inpatients and a sample of outpatients at different clinical stages. Due to time constraints, this study used existing information on indirect hospital costs.

##### *Direct Costs*

The categories of direct costs that were considered include, the cost of drugs and consumables such as fluids, blood, surgical gloves, etc., including drugs purchased by patients outside the hospital; direct personnel costs; and costs of diagnostic images and laboratory tests including materials and staff cost.

The costs of drugs and medical consumables were collected using inpatient records available at the General Planning Department and outpatient records kept at the Department for Tropical Diseases. Unlike the inpatient records, which contained comprehensive information on drugs and consumables provided by the hospital and purchased by inpatients elsewhere, the outpatient records only contained short notes on the patient's visits as well as major HIV/AIDS drug prescriptions. Therefore, it was necessary to conduct interviews with the responsible medical staff to get information on opportunistic infections treated and drugs indicated for each sampled outpatient. The cost for drugs and consumables were then included in the cost of inpatient daily bed rates and the cost of outpatient visits.

The direct personnel costs were derived from monthly departmental payment records of the Tropical Diseases Department that provides treatment of HIV/AIDS. Salary deductions for health and social insurance, employer contributions to social and health insurance (totaling 19 percent of the salary fund), and trade union membership

were added back to the total personnel cost of the department. Distributions to staff for user fee revenues (called “monthly bonus”) were also included. The total direct personnel costs were then converted into daily bed rates for inpatient costing.

Personnel costs of an outpatient visit were estimated based on the average staff time spent on a visit. According to interviews with responsible medical staff of Dong Da hospital, visits of HIV/AIDS patients normally take one hour, with some exceptions when they might last half a day. The Ha Noi Department of Health had fixed outpatient visit charges at the level of about 40 percent of staff costs for a bed day. This charge was used as an estimate of the staff costs of an outpatient visit.

Direct Unit costs of an image diagnosis or laboratory test include personnel cost and material cost. The annual costs of hospital staff in the paraclinical departments were estimated from monthly departmental payment records. Personnel cost of an image or test was obtained by allocating the annual cost of the paraclinical department staff to annual output of the department.

A previous study had suggested that the current billing prices for image diagnoses and laboratory tests are reasonably good estimates of the actual cost of diagnostic materials.<sup>48</sup> A list of billing prices for image diagnoses and laboratory tests was obtained from the relevant paraclinical departments of Dong Da hospital.

According to MOH regulations, all PLHAs have to be tested with three standard tests, including Quick test, Serodia-HIV, and ELISA tests at the Ha Noi Centre for Preventive Medicine. Many PLHAs also have CD4 tests done at the 108 Military Hospital. The costs of these tests were calculated separately based on interviews with the medical staff of the Ha Noi Centre for Preventive Medicine and the 108 Military Hospital. These were then added to the total unit costs of HIV/AIDS treatment. A review of existing data on laboratory equipment costs and depreciation was also done and incorporated into laboratory test costing.

#### *Indirect Costs*

Total indirect costs were estimated using the total direct costs as just described and cost structure obtained in the previous study at Xanh Pon Hospital.<sup>49</sup> The implicit assumption made here is that cost structures of the two hospitals are similar. The table below presents the cost structure assumed for Dong Da District Hospital.

**Table 19: Estimated total indirect costs**

| Cost items                | Xanh Pon Hospital*<br>% of total unit cost | Dong Da District Hospital<br>% of total unit cost |
|---------------------------|--|---|
| Drugs & consumables       | 44.00%                                     |   |
| Diagnostics**             | 11.30%                                     |   |
| Clinical staff            | 15.10%                                     |   |
| TOTAL DIRECT COSTS        | 70.40%                                     | 70.40%  |
| Indirect (overhead) costs | 17.50%                                     |   |
| Depreciation equipment    | 8.40%                                      |   |
| Depreciation buildings    | 3.60%                                      |   |
| TOTAL INDIRECT COSTS      | 29.60%                                     | 29.60%  |
| TOTALCOST PER CASE        | 100.00%                                    | 100.00%   |

\* Average unit cost of five diseases – bronchitis, diarrhea infections, brain injury in traffic accidents, appendectomy, and neonatal care.

\*\* Diagnostic costs include materials and staff costs.

<sup>48</sup> ADB Study 6 - Health Costing

<sup>49</sup> ADB-MOH Technical Assistance project Making Health care more Affordable for the Poor: Health Financing in Viet Nam, Study 6 - Costing of Health Services by Fabricant S.J. and Uyen V.N., 6-2003

### 5.4.1.3 Utilization rate estimates

The average number of inpatient bed days in 2002 was obtained using the inpatient registration records of the hospital. The average number of outpatient visits per year was estimated based on the outpatient sample of 30 patient records.

Registration of HIV/AIDS outpatient admission is not maintained systemically in Dong Da District Hospital. The Annual Report of the Department for Tropical Diseases estimated that it admitted about 100 outpatients per year. Most of the outpatients were in clinical stages three and four of disease progression.

### 5.4.2 Theoretical framework

The following steps describe the general approach that was used in the analysis:

1. The cost assessment started with a calculation of direct costs of an inpatient bed day and an outpatient visit. The direct unit costs were calculated by adding the most important cost categories,  $j$ , where  $j = 1$  for personnel costs,  $j = 2$  for equipment costs,  $j = 3$  for drug costs,  $j = 4$  for medical supplies, and  $j = 5$  for diagnostic costs per inpatient bed day ( $p = 1$ ).

$$DC_p = \sum_{j=1,2,3,4,5}^J DC_{p,j} = DC_{1,1} + DC_{1,2} + DC_{1,3} + DC_{1,4} + DC_{1,5}$$

The same calculation method was used for outpatient visits ( $p = 2$ ).

$$DC_p = \sum_{j=1,2,3,4,5}^J DC_{p,j} = DC_{2,1} + DC_{2,2} + DC_{2,3} + DC_{2,4} + DC_{2,5}$$

2. Indirect costs were inferred from the ratio of indirect to direct costs using data from previous hospital studies conducted in Viet Nam. This was done for inpatient bed day unit cost ( $p=1$ ) and outpatient visit unit costs ( $p=2$ ).

$$IDC_p = Ratio * DC_p = Ratio * DC_1$$

$$\text{For } p=2: IDC_p = Ratio * DC_p = Ratio * DC_2$$

3. Unit cost per inpatient bed day ( $C$ ) = direct unit cost per inpatient bed day + indirect unit cost per inpatient bed day for each opportunistic infection,  $i$ .

$$C_p = \sum_{i=1,2,3}^I (DC_p + IDC_p)$$

$$= (DC_1 + IDC_1) + (DC_1 + IDC_1) + (DC_1 + IDC_1)$$

where  $p=1$  per inpatient bed day.

4. Unit cost per outpatient visit = direct unit cost per outpatient visit + indirect unit cost per outpatient visit for each opportunistic infection,  $i$ .

$$C_p = \sum_{i=1,2,3}^I (DC_p + IDC_p)$$

$$= (DC_2 + IDC_2) + (DC_2 + IDC_2) + (DC_2 + IDC_2)$$

where  $p=2$  per outpatient visit.

## Unit cost per inpatient bed day

|            | Direct unit costs |            |            |                  |            | Indirect unit costs |                         |                      | Total in-patient unit costs |
|------------|-------------------|------------|------------|------------------|------------|---------------------|-------------------------|----------------------|-----------------------------|
|            | Personnel         | Equipment  | Drugs      | Medical supplies | Diagnostic | Total direct costs  | Ratio (Indirect/Direct) | Total indirect costs |                             |
|            | 7                 | 8          | 9          | 10               | 11         | 12                  | 13                      | 14                   | 15=12+14                    |
| $DC_{p,j}$ | $DC_{1,1}$        | $DC_{1,2}$ | $DC_{1,3}$ | $DC_{1,4}$       | $DC_{1,5}$ | $DC_{1,6}$          | Ratio                   | $IDC_1$              | $UC_1$                      |

## Unit cost per outpatient visit

|            | Direct unit costs |            |            |                  |            | Indirect unit costs |                         |                      | Total in-patient unit costs |
|------------|-------------------|------------|------------|------------------|------------|---------------------|-------------------------|----------------------|-----------------------------|
|            | Personnel         | Equipment  | Drugs      | Medical supplies | Diagnostic | Total direct costs  | Ratio (Indirect/Direct) | Total indirect costs |                             |
|            | 16                | 17         | 18         | 19               | 20         | 21                  | 22                      | 23                   | 24=21+23                    |
| $DC_{p,j}$ | $DC_{2,1}$        | $DC_{2,2}$ | $DC_{2,3}$ | $DC_{2,4}$       | $DC_{2,5}$ | $DC_{2,6}$          | Ratio                   | $IDC_2$              | $UC_2$                      |

## 5.4.3. Results

## 5.4.3.1. Direct and indirect costs

As alluded to before, the inpatient and outpatient costs apply to two different populations of patients. On the one side are those with the resources to care for the person at home, buy the medications, and periodically visit the hospital for outpatient care. On the other side are patients who have little resources or no home support and are admitted as inpatients. For this reason the distinction between inpatient and outpatient care is different from other studies that have costed the impact of HIV/AIDS on the health sector.<sup>50</sup> Consequently, the approach originally proposed had to be modified.

The results of the costing of HIV/AIDS treatment and care in Dong Da District Hospital are summarized in the table below. Total direct cost of daily treatment and care of a person with HIV/AIDS (WHO stages three or four) was VND116,000 (US\$7.70) excluding food. The average number of inpatient bed days required per year was 12.41. The total direct cost per outpatient visit was VND2,466,000 (US\$164.40) and the average number of outpatient visits was 4.97 per year.

A detailed previous hospital costing study had found that direct costs account for 70.5 percent of total cost (Asian Development Bank 2003). Using the same proportion, indirect costs were estimated to be VND48,500 (US\$3.20) a day and the total inpatient costs per bed day were therefore estimated at VND 164,000 (US\$11). For the outpatient sample, hospital overhead costs and building depreciation were assumed to be zero.<sup>51</sup>

<sup>50</sup> In other studies each PLHA is assumed to have a number of inpatient and outpatient visits, depending on the stage of the disease.

<sup>51</sup> However, we recognize that an outpatient visit should incur some overheads of the hospital such as registration, consumption of electricity and water etc. The equipment depreciation is estimated under the assumption that the cost structure of Xanh Pon Hospital holds for Dong Da District Hospital and equipment depreciation accounts for 8.4 percent of the total costs. Depreciation of equipment per outpatient visit is estimated to be VND 248,000 (US\$16.50), resulting in total outpatient costs per visit of VND 2,714,000 (US\$180.90).

**Table 20: HIV/AIDS inpatient costs per bed day and outpatient costs per visit**

| Cost items                 | Assumed structure of unit cost <sup>52</sup> | Inpatient costs per bed day VND | Outpatient costs per visit VND |
|----------------------------|--|---------------------------------|--------------------------------|
| Drugs & consumables        |  | 58,518                          | 2,125,261                      |
| Diagnostics                |  | 39,712                          | 333,581                        |
| Clinical staff             |  | 17,630                          | 7,000                          |
| <b>TOTAL DIRECT COST</b>   | <b>70.40%</b>                                | <b>115,860</b>                  | <b>2,465,843</b>               |
| Indirect (overhead) costs  |  |                                 | 0                              |
| Depreciation of equipment  | 8.40%  |                                 | 247,972                        |
| Depreciation of buildings  |  |                                 | 0                              |
| <b>TOTAL INDIRECT COST</b> | <b>29.50%</b>                                | <b>48,481</b>                   | <b>247,972</b>                 |
| <b>Total unit cost</b>     | <b>100.00%</b>                               | <b>164,341</b>                  | <b>2,713,815</b>               |

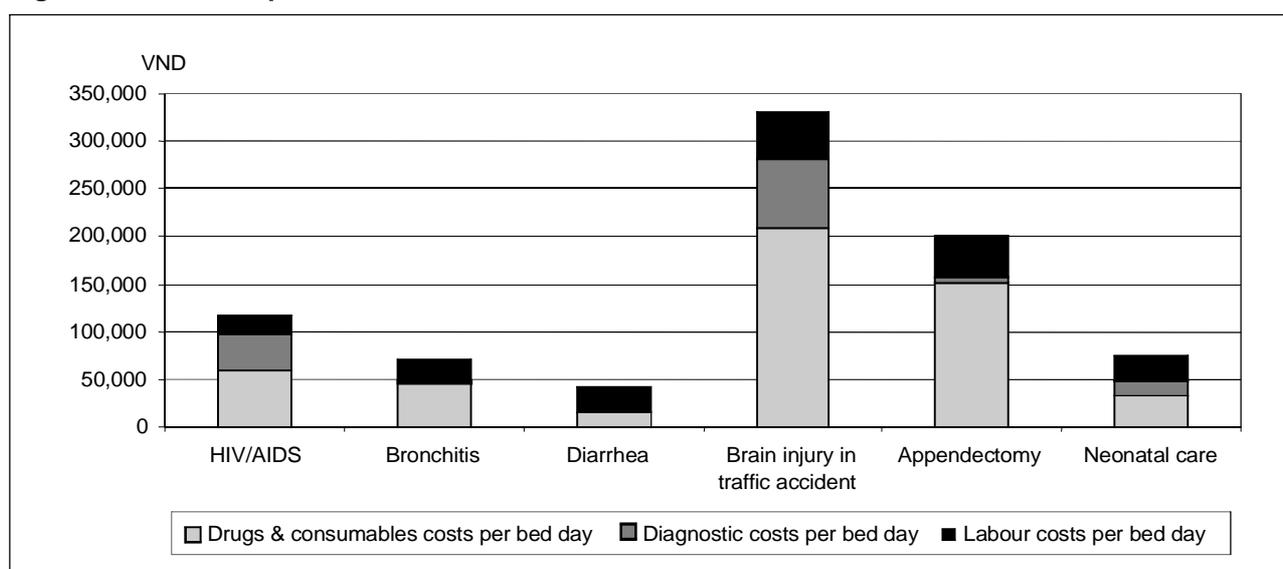
  

| Utilization Rates           | Number of inpatient bed days per year | Number of outpatient visits per year |
|-----------------------------|---------------------------------------|--------------------------------------|
| AIDS stage (WHO stages 3&4) | 12.41                                 | 4.97                                 |

In comparison with the cost of treating other diseases, the daily direct costs for HIV/AIDS inpatients are relatively high. This is illustrated in the figure below which compares direct costs of HIV/AIDS per day with costs of five other diseases studied in Xanh Pon hospital (Asian Development Bank 2003).

The direct costs for treating HIV/AIDS, excluding costs for antiretroviral drugs, were lower than for conditions involving surgery but higher than for three other medical conditions. A notable component of costs related to HIV/AIDS was costs for diagnosis, which mainly comprise of blood tests. Diagnostic costs per bed day accounted for 34 percent of total direct costs of HIV/AIDS care and treatment, whereas for all other conditions, diagnostic costs accounted for less than 22 percent, and in the case of the three non-surgical conditions studied, less than 5 percent.

**Figure 26: Cost comparison between HIV/AIDS and other diseases**<sup>53</sup>



<sup>52</sup> Based on the results of the Hospital Cost Study in Xanh Pon Hospital (Asian Development Bank-Ministry of Health 2003).

<sup>53</sup> Cost Study in Xanh Pon Hospital, ADB-MOH TA3877, 6-2003.

The results of the cost analysis of hospital care and treatment of HIV/AIDS in Dong Da District Hospital showed a large difference between inpatient and outpatient costs. As discussed earlier, the costs of drugs and consumables of the inpatient sample reflect the treatment of opportunistic infections only, in other words, they exclude the costs of antiretroviral drugs. To illustrate this difference more clearly, the annualized costs for inpatient and outpatient treatment are presented in the table below. The annualized cost for outpatients is 6.5 times higher than for inpatient care – VND13.5 million (US\$900) versus VND2.0 million (US\$133). This is largely due to the fact that the costs for inpatient care reflect mainly the cost of treating opportunistic infections while the outpatient care regimen includes antiretroviral drugs, even if the latter are only sporadically used.

**Table 21: Annualized costs of HIV/AIDS treatment**

| Cost items   | Inpatient costs<br>per bed day<br>VND | Outpatient costs<br>per visit<br>VND | Annualized<br>inpatient costs<br>VND | Annualized<br>outpatient costs<br>VND |
|--|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|
| Direct costs   | 115,860                               | 2,465,843                            | 1,437,507                            | 12,247,019                            |
| Indirect costs   | 48,481                                | 247,972                              | 601,510                              | 1,231,595                             |
| Total unit cost  | 164,341                               | 2,713,815                            | 2,039,016                            | 13,478,614                            |
| Utilization rates (inpatient bed days and<br>outpatient visits per year) | 12.41                                 | 4.97                                 |                                      |                                       |

Interviews with the medical staff of Dong Da District Hospital and the Ha Noi Centre for Preventive Medicine indicated that testing for HIV involves three compulsory HIV detection tests and consultation by specialists. In earlier stages of HIV infection, some PLHAs have CD4 counts done every six months for monitoring the development of the disease. However, the proportion of PLHAs receiving CD4 tests is insignificant compared with the total number of PLHAs in Viet Nam.

**Table 22: Direct costs of diagnostic tests**

| Type of test                           | Labour cost<br>VND | Material cost<br>VND | Direct cost<br>VND | Equipment<br>depreciation<br>(8.4% of direct<br>costs)<br>VND | TOTAL COST<br>VND |
|--|--------------------|----------------------|--------------------|---|-------------------|
| Quick test                             | 7,975              | 35,000               | 42,975             | 3,610   | 46,585            |
| Serodia                                | 7,975              | 25,000               | 32,975             | 2,770   | 35,745            |
| ELISA                                  | 7,975              | 25,000               | 32,975             | 2,770   | 35,745            |
| Consultancy in HIV-positive infections | 7,000              |                      | 7,000              | 588   | 7,588             |
| TOTAL 3 TESTS & CONSULTATION           |                    |                      |                    |   | 125,663           |
| CD4 count                              | 7,975              | 392,500              | 400,475            | 33,640  | 434,115           |

#### 5.4.3.2. Costs of HIV/AIDS treatment and care<sup>54</sup>

The estimated HIV/AIDS hospital costs analyzed in the previous section take into account only costs of care and treatment currently provided and are strongly influenced by the constrained supply of hospital services and very limited supply of HIV/AIDS-related care in Viet Nam. Furthermore, the patterns of demand for inpatient and outpatient care are strongly influenced by stigma and discrimination. Interviews with clinical staff at various settings suggest that the level of services provided is far from the level required by the treatment guidelines. In

<sup>54</sup> Annualized costs are calculated by multiplying inpatient costs per bed day and outpatient costs per visit by the corresponding utilization rate.

2001, the Ministry of Health estimated that only about ten to 20 percent of PLHAs received hospital services. Therefore, the study outlines the normative costs based on Ministry of Health guidelines for care and treatment of PLHAs with the purpose of more fully estimating the actual HIV/AIDS-related health sector resource requirements. According to the general Ministry of Health guidelines, two antiretroviral therapy options are being used. The first is a combination of the two drugs Lamizidivir and Crixivan for daily use with a vitamin mix. The second is a combination of three drugs, namely, Videx, Zerit, and Crixivan, also for daily use together with a vitamin mixture. The first option is not clinically indicated as an internationally-accepted practice and therefore only the second option was considered in the analysis. The costed items are listed below, including quarterly blood testing for patients with AIDS, defined as those whose CD4 indicator is below 500. The annualized total costs are summarized in the table below.

**Table 23: Normative and accounting costs for treatment of HIV/AIDS**

| Cost items                  | Annual estimated cost of antiretroviral therapy<br>VND | Annualized inpatient and outpatient costs at current level of services |                         |
|-----------------------------|--|--|-------------------------|
|                             |  | Inpatient costs<br>VND   | Outpatient costs<br>VND |
| Drugs & consumables         | 55,800,000   |  |                         |
| Diagnostics                 | 2,593,484  |  |                         |
| Clinical staff              | 84,000   |  |                         |
| <b>TOTAL DIRECT COSTS</b>   | <b>58,477,484</b>                                      | <b>1,437,507</b>   | <b>12,247,019</b>       |
| Indirect (overhead) costs   | 0  |  | 0                       |
| Depreciation equipment      | 1,927,899  |  | 1,231,595               |
| Depreciation buildings      | 0  |  | 0                       |
| <b>TOTAL INDIRECT COSTS</b> | <b>1,927,899</b>                                       | <b>601,510</b>   | <b>1,231,595</b>        |
| <b>TOTAL UNIT COST</b>      | <b>60,405,383</b>                                      | <b>2,039,016</b>   | <b>13,478,614</b>       |

To receive an estimate of the full costs of HIV/AIDS treatment per patient, the costs of antiretroviral therapy and the estimated costs of opportunistic infection treatment, derived from the inpatient accounting costs, were added. The results are represented in the table below. The annualized estimated cost of antiretroviral therapy is approximately VND60.4 million (US\$4,030). This amount is 4.6 times higher than the cost of care and treatment at the current level of care. These cost estimates were used to project the costs of care and treatment for patients with HIV/AIDS.

These cost estimates give insight into the inpatient and outpatient costs of care and treatment of PLHAs. Because of the unique pattern of utilization revealed in this case study, the inpatient and outpatient costs could not be used in the estimation of the health sector impact as originally anticipated. However, the costs of antiretroviral drugs were used to project the health sector impact of HIV/AIDS in Viet Nam, as these departed quite substantially from the costs at which ARVs are becoming available internationally. The projections of the cost of care and treatment used the Resources Needs Model and the Spectrum model (The Futures Group International 2002). The findings are reported in the main text of the report.

#### 5.4.4. Limitations and recommendations for further study

The case study relied on information from Dong Da hospital. While it is not unusual to use a single facility as the site for costing studies, it is important to assess the extent to which the facility is representative of other facilities. We chose Dong Da hospital because it was designated by the Ministry of Health as the location for people with HIV/AIDS to go to for treatment. However, it appears that those PLHAs who seek care at Dong Da hospital are generally more impoverished than those who do not. The peculiar pattern of inpatient and outpatient health care utilization may at least partly be related to the particular community who seeks care at Dong Da. Further costing studies will therefore be necessary to validate the findings of this cost analysis.

**Table 24: Estimated annualized costs of HIV/AIDS treatment and care**

| Cost estimates                     | Normative costs of AIDS treatment (VND) |            | Actual costs of HIV/AIDS treatment (VND) |
|------------------------------------|---|------------|--|
|                                    | Option 1                                | Option 2   |  |
| Direct costs:                      |   |            |  |
| Normative antiretroviral therapy   | 33,997,484                              | 58,477,484 |  |
| Opportunistic infections treatment | 1,437,507                               | 1,437,507  |  |
| TOTAL DIRECT COSTS                 | 35,434,990                              | 59,914,990 | 12,247,019                               |
| Indirect costs                     |   |            |  |
| Normative antiretroviral therapy   | 1,927,899                               | 1,927,899  |  |
| Opportunistic infections treatment | 601,510                                 | 601,510    |  |
| TOTAL INDIRECT COSTS               | 2,529,409                               | 2,529,409  | 1,231,595                                |
| TOTAL ANNUALISED COSTS             | 37,964,399                              | 62,444,399 | 13,478,614                               |

In the analysis, the ratio of the direct to indirect costs from previous costing studies was used, implicitly assuming that cost structures of Dong Da hospital and the other two hospitals are similar. This assumption was explored and it was concluded that there was no reason to believe that the ratio of direct to indirect costs would be substantially different.

A key limitation has been the fact that the level of care currently provided to PLHAs in the hospital studied fell short of the guidelines prescribed by the Ministry of Health. The costing of the current level of care provided to PLHAs thus gave a biased indication and underestimates the true treatment needs and cost requirements. In the study this shortcoming was addressed by complementing the case study findings with international costing evidence.

In the past year, substantial advances in the costing of care and treatment for PLHAs have been made, with particular emphasis on the costing of antiretroviral therapy. The most notable is the development of what is known as the Cape Town model by the University of Cape Town. The application of this model to the Viet Nam situation would be an important complement to the information reported in this study.

### 5.5. Technical Annex I – Simulation of the impact of increased health expenditure on consumption expenditure

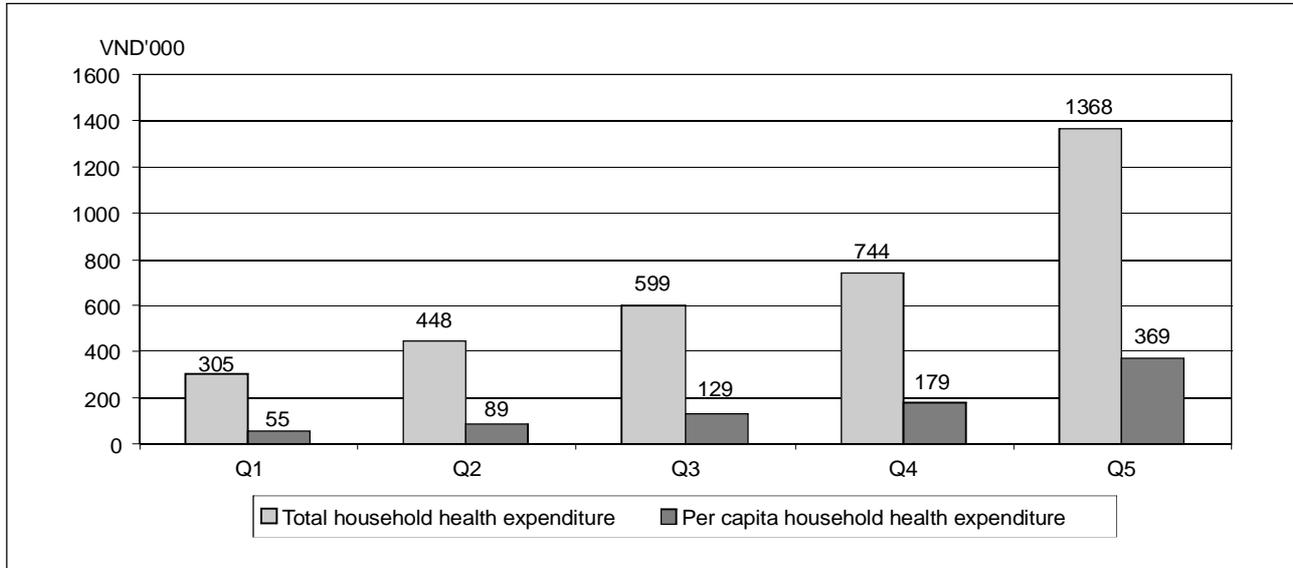
The average household spending on health care in Viet Nam in 1998 ranged from VND305,000 (US\$20) among the poorest quintile to VND1,368,000 (US\$90) among the richest quintile (Figure 27).

Data from the Household Impact Case Study suggest that households with PLHAs experienced 12- to 13-fold increases in health spending. The Case Study found that one of the ways households that respond to increased HIV/AIDS-induced health expenditure, is by reducing spending on other forms of consumption, such as food and education. However, it was not possible to quantify the responsiveness of food and education expenditure to increased health spending. Therefore, data from the VLSS was used to gain better insights.

#### 5.5.1. Theoretical framework and analytical strategy

The impact of increased health spending on education expenditure was assessed by using data from the 1998 VLSS to econometrically estimate the determinants of education expenditure and the relationship between household expenditure on health care and on education, as well as possible interaction effects. The change in education expenditure following an increase in health expenditure was then predicted.

**Figure 27: Annual household spending on healthcare from poorest to richest quintiles (1998)**



The following econometric model was estimated:

$$\begin{aligned}
 EDUC\_EXP_h = & \beta_j + \beta_j QUINTILES_h + \beta_j HH\_SIZE_h + \beta_j FEMALE\_HEAD_h + \\
 & \beta_j EDUC\_HEAD_h + \beta_j REGION + \beta_j HEALTH\_EXP_h + \beta_j FOOD\_EXP_h + \\
 & \beta_j FUNERAL\_EXP_h + \beta_j GIFTS_h + \beta_j HEALTH\_EXP * (QUINTILE) + \\
 & \beta_j HEALTH\_EXP * FOOD\_EXP + \beta_j FOOD\_EXP * (QUINTILE) + \varepsilon_h
 \end{aligned}$$

where h = household, and j = coefficient. Note that for this part of the analysis the household is the unit of analysis. EDUC\_EXP refers to education expenditure per school-age child (Table 25).

Similarly, the impact of additional HIV/AIDS-related health expenditure on food expenditure was estimated, using a similar approach as described in the model above as well as the determinants of food expenditure and the relationship between household expenditure on health care and food and possible interaction effects (Table 25). The change in food expenditure for an increase in health expenditure was predicted. The health expenditure and quintile variables were included in the model as interaction terms because poorer households had smaller health expenditures than households in upper expenditure quintiles. This is demonstrated in Table 26.

### 5.5.2. Results

As shown in Table 27, a doubling of per capita health expenditure was associated with a 24.2 percent decrease in education expenditure per school-aged child. This elasticity measure did not vary significantly by expenditure quintile.

Similarly, if total household health expenditure doubles, or in other words, increases by 100 percent, the increase is associated with a ten to 20 percent decrease in food expenditure, depending on the expenditure quintile (Table 28).

The analysis also revealed that education expenditure is more stable, while the elasticity of expenditure for food is higher.

The difference in elasticity by expenditure quintile was statistically significant, with the largest sensitivity among the poorest quintiles. For example, a 100 percent increase in health spending was associated with a 19.4 percent decrease in food expenditure for the poorest quintile, compared to a decrease of 12.0 percent for the

**Table 25: Regression analysis of determinants of education expenditure**

| Dep Var: educ. expenditure per capita | Coef.   | Std. Err. | t      | P> t  | [95% Conf. Interval] |
|---------------------------------------|---------|-----------|--------|-------|----------------------|
| Female-headed household               | -9.70   | 26.96     | -0.36  | 0.719 | -62.56 43.16         |
| Household size                        | 84.56   | 10.32     | 8.19   | 0.000 | 64.32 104.80         |
| Age of household head                 | 6.55    | 0.97      | 6.79   | 0.000 | 4.66 8.44            |
| Education of household head           | 10.53   | 3.12      | 3.38   | 0.001 | 4.42 16.64           |
| Region 2                              | -137.93 | 62.42     | -2.21  | 0.027 | -260.30 -15.56       |
| Region 3                              | -127.56 | 58.50     | -2.18  | 0.029 | -242.24 -12.88       |
| Region 4                              | 56.82   | 63.57     | 0.89   | 0.371 | -67.81 181.44        |
| Region 5                              | 81.65   | 61.95     | 1.32   | 0.188 | -39.79 203.10        |
| Region 6                              | 99.55   | 64.15     | 1.55   | 0.121 | -26.21 225.30        |
| Region 7                              | 107.65  | 68.39     | 1.57   | 0.116 | -26.42 241.72        |
| Region 8                              | 64.14   | 79.99     | 0.80   | 0.423 | -92.67 220.96        |
| Region 9                              | 231.27  | 68.67     | 3.37   | 0.001 | 96.63 365.90         |
| Region 10                             | 135.73  | 62.91     | 2.16   | 0.031 | 12.40 259.06         |
| Food expenditure                      | -0.05   | 0.00      | -9.93  | 0.000 | -0.06 -0.04          |
| Funeral expenditure                   | 0.00    | 0.01      | -0.23  | 0.821 | -0.02 0.02           |
| Non-health expenditure per capita     | 0.16    | 0.02      | 10.71  | 0.000 | 0.13 0.19            |
| Non-food expenditure                  | -0.18   | 0.01      | -23.57 | 0.000 | -0.19 -0.16          |
| Electricity expenditure               | -0.27   | 0.03      | -9.68  | 0.000 | -0.33 -0.22          |
| Rent expenditure                      | 0.53    | 0.02      | 22.23  | 0.000 | 0.48 0.58            |
| Q2                                    | 100.93  | 46.53     | 2.17   | 0.030 | 9.71 192.15          |
| Q3                                    | 181.80  | 47.38     | 3.84   | 0.000 | 88.91 274.69         |
| Q4                                    | 349.05  | 50.68     | 6.89   | 0.000 | 249.70 448.40        |
| Q5                                    | 702.70  | 60.75     | 11.57  | 0.000 | 583.60 821.79        |
| Health expenditure per capita         | -0.59   | 0.42      | -1.40  | 0.162 | -1.41 0.24           |
| Q2*health expenditure per capita      | -0.11   | 0.48      | -0.23  | 0.819 | -1.05 0.83           |
| Q3*health expenditure per capita      | -0.07   | 0.45      | -0.15  | 0.882 | -0.94 0.81           |
| Q4*health expenditure per capita      | -0.13   | 0.43      | -0.30  | 0.766 | -0.98 0.72           |
| Q5*health expenditure per capita      | 0.14    | 0.42      | 0.34   | 0.734 | -0.68 0.97           |
| Constant                              | -707.59 | 96.25     | -7.35  | 0.000 | -896.28 -518.90      |
| Number of obs.                        | =       | 4856      |        |       |                      |
| F( 28, 4827)                          | =       | 141.29    |        |       |                      |
| Prob > F                              | =       | 0         |        |       |                      |
| R-squared                             | =       | 0.4504    |        |       |                      |
| Adj R-squared                         | =       | 0.4472    |        |       |                      |
| Root MSE                              | =       | 725.36    |        |       |                      |

**Table 26: Regression analysis of determinants of food expenditure**

| DepVar: educ. expenditure per capita | Coef.    | Std. Err. | t      | P> t  | [95% Conf. Interval] |
|--------------------------------------|----------|-----------|--------|-------|----------------------|
| Female headed household              | -150.68  | 80.65     | -1.87  | 0.062 | -308.79 7.43         |
| Household size                       | 1377.50  | 23.97     | 57.48  | 0.000 | 1330.51 1424.48      |
| Age of household head                | -1.99    | 2.90      | -0.69  | 0.493 | -7.68 3.70           |
| Education of household head          | -47.16   | 9.31      | -5.07  | 0.000 | -65.40 -28.91        |
| Region 2                             | -694.48  | 186.59    | -3.72  | 0.000 | -1060.29 -328.67     |
| Region 3                             | -1201.28 | 174.26    | -6.89  | 0.000 | -1542.91 -859.66     |
| Region 4                             | -917.49  | 189.76    | -4.84  | 0.000 | -1289.50 -545.48     |
| Region 5                             | -1070.90 | 184.75    | -5.80  | 0.000 | -1433.09 -708.71     |
| Region 6                             | -1222.07 | 191.17    | -6.39  | 0.000 | -1596.86 -847.29     |
| Region 7                             | -1438.64 | 203.62    | -7.07  | 0.000 | -1837.83 -1039.45    |
| Region 8                             | -1392.53 | 238.51    | -5.84  | 0.000 | -1860.13 -924.94     |
| Region 9                             | -538.10  | 205.58    | -2.62  | 0.009 | -941.13 -135.08      |
| Region 10                            | -1379.31 | 187.28    | -7.37  | 0.000 | -1746.46 -1012.16    |
| Education expenditure per child      | -0.42    | 0.04      | -9.93  | 0.000 | -0.51 -0.34          |
| Funeral expenditure                  | 0.16     | 0.03      | 5.56   | 0.000 | 0.10 0.22            |
| Non-health expenditure per capita    | 1.47     | 0.04      | 36.12  | 0.000 | 1.39 1.55            |
| Non-food expenditure                 | -0.04    | 0.02      | -1.71  | 0.087 | -0.09 0.01           |
| Electricity expenditure              | -0.03    | 0.08      | -0.36  | 0.718 | -0.20 0.14           |
| Rent expenditure                     | -0.38    | 0.07      | -5.09  | 0.000 | -0.53 -0.23          |
| Q2                                   | 1432.94  | 137.76    | 10.40  | 0.000 | 1162.87 1703.00      |
| Q3                                   | 1913.27  | 139.29    | 13.74  | 0.000 | 1640.19 2186.35      |
| Q4                                   | 2477.43  | 148.15    | 16.72  | 0.000 | 2186.99 2767.86      |
| Q5                                   | 2911.27  | 179.45    | 16.22  | 0.000 | 2559.47 3263.06      |
| Health expenditure per capita        | -0.89    | 1.26      | -0.71  | 0.477 | -3.36 1.57           |
| Q2*health expenditure per capita     | -2.34    | 1.44      | -1.63  | 0.104 | -5.17 0.48           |
| Q3*health expenditure per capita     | -0.43    | 1.34      | -0.32  | 0.749 | -3.05 2.19           |
| Q4*health expenditure per capita     | 0.05     | 1.29      | 0.04   | 0.966 | -2.48 2.59           |
| Q5*health expenditure per capita     | 0.76     | 1.26      | 0.60   | 0.547 | -1.71 3.22           |
| Constant                             | -3347.52 | 285.56    | -11.72 | 0.000 | -3907.35 -2787.69    |
| Number of obs                        | =        | 4856      |        |       |                      |
| F( 28, 4827)                         | =        | 482.78    |        |       |                      |
| Prob > F                             | =        | 0         |        |       |                      |
| R-squared                            | =        | 0.7369    |        |       |                      |
| Adj R-squared                        | =        | 0.7353    |        |       |                      |
| Root MSE                             | =        | 2170.4    |        |       |                      |

richest quintile. Similarly, a doubling of per capita health expenditure was associated with a 24.2 percent decrease in education expenditure per school-going child. This elasticity measure did not vary significantly by expenditure quintile.

**Table 27: Responsiveness of education expenditure to health spending**

| Change in health expenditure | Change in education expenditure |
|------------------------------|---------------------------------|
| 100% <sup>55</sup>           | -24.2%                          |

*Calculation using VLSS 1998 data*

**Table 28: Responsiveness of food expenditure to health spending for five quintiles**

| Change in health expenditure | Change in Food Expenditure |        |        |        |        |
|------------------------------|----------------------------|--------|--------|--------|--------|
|                              | Q1                         | Q2     | Q3     | Q4     | Q5     |
| 100%                         | -19.4%                     | -18.4% | -16.5% | -14.9% | -12.0% |

*Calculation using VLSS 1998 data*

### 5.5.3. Limitations and further considerations

The analysis of the responsiveness of education and food expenditure to an increase in health spending suggests that responsiveness is elastic and that, in the case of food expenditure, this responsiveness varies across income. In the analysis, it was modeled that half of the expenditure and income effects were mitigated by households in the upper three quintiles. For households in the poorest two quintiles, zero mitigation was assumed. This differentiation by income is also consistent with the findings from other household surveys (e.g., the Kagera study reported by Lundberg et al, 2000).

The results from the Household Impact Case Study suggest that households with PLHAs experienced increases in health spending of approximately 1,200 percent. The elasticity identified in the econometric analysis was not applied to an increase of 1,200 percent in health spending because, by definition, the elasticity measures assume a marginal increase, and the increases of the magnitude observed in the case study far exceeds a marginal increase. Therefore, these results should be interpreted with caution and viewed merely as illustrative of the fact that even if HIV/AIDS-related health spending increased by a small fraction, non-trivial decreases in food and education expenditures in the household follow.

## 5.6. Technical Annex II: Simulation of the impact of HIV/AIDS on poverty

The aim of this part of the analysis was to model the impact of HIV/AIDS-related income and expenditure effects on the consumption expenditure of households with PLHAs, and to project the aggregate impact of HIV/AIDS on poverty in Viet Nam between 2004 and 2015.

### 5.6.1. Theoretical framework and analytical strategy

Empirical data from the case study and information from existing household surveys in other countries<sup>56</sup> were used to inform the modeling. Not all health spending adds to the household's consumption requirements since households use various coping mechanisms to reduce the impact of increased health expenditure. With the data available, it was impossible to empirically estimate by what proportion coping mechanisms mitigate the impact of increased health spending. Literature also indicates that the degree of impact mitigation varies by income (Lundberg et al. 2000). Lower income households are less likely and able to reallocate expenditure to lower cost expenditure items, whereas higher income households are more likely to switch to cheaper consumption alternatives or draw from savings or support from relatives and friends. In the absence of additional empirical data, the analysis assumed that none of the impact of the expenditure and income effects is mitigated among the poorest two quintiles, and ten percent of the impact is mitigated in the upper three quintiles. This is an area for future study to be informed by surveys of households with PLHAs, ideally based on a probability sample.

<sup>55</sup> As a percentage of the sample mean.

<sup>56</sup> NIS/MOH/ORC/Macro in Knowles 2003: 22; Palanigounder et al. 2003; Pitayanon et al. 1994; Kongsin 2000.

The analysis was started by dividing the total number of households into quintiles. Using the household size by consumption quintile, the number of individuals per expenditure quintile was calculated. It was assumed that households have only one PLHA, that is to say that the number of households with a PLHA is equal to the number of PLHAs. It was also assumed that the number of people affected is equal to the household size in each quintile multiplied by the number of PLHAs in that quintile. These assumptions can be justified by the fact that HIV/AIDS is still in a relatively early stage in Viet Nam and because of the predominant modes of transmission (i.e., injecting drug use and to a lesser extent, commercial sex). Heterosexual transmission within the household, which will result in the clustering of HIV infections in a single household, is still less likely in Viet Nam than it is elsewhere.

Another element of the basic setup was the division of households with a PLHA into consumption or income quintiles. There is a paucity of data on the income distribution of PLHAs. No household survey with probability samples in the region was found that tested for HIV. Moreover, income data is not collected in surveillance programmes. Therefore, the socio-economic distribution of PLHAs was inferred from behavioural information derived from DHS data<sup>57</sup> for Viet Nam (Bloom et al. 2002).

Essentially, there were three stages in the analysis. The first stage of the analysis estimated the magnitude of the expenditure effect, the second stage looked at the magnitude of the income effect, and the third stage estimated the impact of the expenditure and income effects on household consumption expenditure. This was used to identify the number of people who fall below the poverty line and deeper into poverty due to HIV/AIDS-related expenditure and income effects.

### 5.6.2. Key assumptions and considerations in the model

The impact of HIV/AIDS-related health expenditure on household welfare in Viet Nam was modeled using information gathered in the Household Impact Case study.

#### 5.6.2.1. Expenditure effects

The modeling considered only increased health expenditure. Spending for funerals was neglected since the case study had shown considerable variability in the level of funeral expenditure and the level of support for funeral expenses. The worst possible consequence of this procedure is that the expenditure effect as estimated in the model is a conservative estimate of the true expenditure effect.

Three categories of people with HIV/AIDS relevant to this analysis were identified. The three categories (*c*) are:

- $c = 1$  : People who are HIV-positive and symptomatic but have not yet developed AIDS, hereinafter called symptomatic, non-AIDS persons with HIV. These individuals experience a small increase in health care utilization. It was assumed that the per capita health expenditure by a PLHA in this category increases by 100 percent compared to average per capita health expenditure in a particular quintile. This was motivated by the fact that household survey data suggests that the average health expenditure by a person who has been hospitalized equals a bit more than two times the average health spending per capita. This is also consistent with the annual average cost of palliative care used in the GOALS model (The Futures Group International, 2003).
- $c = 2$  : People with AIDS who are not using ARVs. It was assumed that the per capita health expenditure by a PLHA in this category increases by 500 percent compared to per capita health expenditure in a particular quintile. This is roughly equal to the cost of six outpatient visits and a week of inpatient care.
- $c = 3$  : People with AIDS who are using ARVs. It was assumed that the per capita health expenditure by a PLHA in this category increases by 1,000 percent compared to per capita health expenditure in a particular quintile. This is motivated by information from the Household Impact Case Study and the finding that patients on ARV therapy spent twice as much as those who do not use ARVs (Palanigounder et al. 2003).

<sup>57</sup> Demographic and Health Surveys (DHS) are nationally-representative household surveys of large sample sizes.

It was also assumed that people with HIV/AIDS survive for two years if not on ARV treatment and that people with HIV/AIDS who are receiving antiretroviral treatment survive for an additional 2.5 years, for a total of 4.5 years<sup>58</sup>. Furthermore, it was assumed that only five percent of people with AIDS were on ARV treatment<sup>59</sup>.

To make the analysis tractable, only the impact of HIV/AIDS-induced increased health expenditure was considered in the estimation of the expenditure effect.  $HE_{cq}^{AIDS}$  represents the annual health expenditure by a PLHA in category c, quintile, q, and  $HE_q^{pc}$  represents the annual per capita health expenditure by other household members.  $HE_{cq}^{hh-AIDS}$  denotes total health expenditure in a household with a PLHA, and  $HE_{cq}^{pc-AIDS}$  denotes the per capita health expenditure in a household with a PLHA. A factor,  $a_c$ , was identified, which represents the proportion by which health expenditure of PLHAs in the three categories increases. This proportion does not vary by quintile and is different for each of the three categories.

$m$  represents the proportion of increased health spending by the PLHA that is mitigated<sup>60</sup>.  $m$  is assumed to vary across quintiles. Specifically,  $m$  was assumed to be zero for the first two quintiles and 10 percent in the other quintiles.

Health expenditure by the PLHA is given by:  $HE_{cq}^{AIDS}$ . Health expenditure by the PLHA after impact

mitigation is:  $(a_c * HE_q^{pc}) * (1 - m)$ . Household health expenditure in a household with a PLHA is:

$$\begin{aligned} HE_{cq}^{hh-AIDS} &= ((HHSIZE_q - 1) * HE_q^{pc}) + HE_{cq}^{AIDS} \\ &= ((HHSIZE_q - 1) * HE_q^{pc}) + ((a_c * HE_{cq}^{pc}) * (1 - m)) \\ &= HE_q^{hh} - HE_q^{pc} + a_c * HE_q^{pc} - a_c * m * HE_q^{pc} \end{aligned}$$

In this construction it is assumed that per capita health expenditure by other household members remains the same. Nevertheless, empirical evidence from household surveys suggests that health spending by other household members usually decreases. This evidence is captured in the factor  $m$ , because one of the ways of mitigating the impact of increased health spending is to decrease health care consumption of other household members. In order to avoid double counting, health expenditure of non-PLHA household members is kept the same.

Due to the paucity of information on HIV/AIDS-related health spending across various expenditure quintiles, a high and a low estimate of HIV/AIDS-related health expenditure was derived. The lower-bound estimate is described first.

### Expenditure effect for category 1 – symptomatic, non-AIDS person with HIV

|                     | Q1 | Q2 | Q3 | Q4 | Q5 |
|---------------------|----|----|----|----|----|
| $HE_{1q}^{hh-AIDS}$ |    |    |    |    |    |
| $HE_{1q}^{pc-AIDS}$ |    |    |    |    |    |

<sup>58</sup> This assumption was informed by a personal communication with Swarup Sarkar, UNAIDS-SEAPICT.

<sup>59</sup> Various scenarios of different proportions were also done, for example, 50 percent and 80 percent respectively (as per the targets set by WHO).

<sup>60</sup> This is also the proportion by which reduced income referred to in Income Effect is reduced.

**Expenditure effect for category 2 – person with AIDS not using ARVs**

|                     | Q1 | Q2 | Q3 | Q4 | Q5 |
|---------------------|----|----|----|----|----|
| $HE_{2q}^{hh-AIDS}$ |    |    |    |    |    |
| $HE_{2q}^{pc-AIDS}$ |    |    |    |    |    |

**Expenditure effect for category 3 with person with AIDS using ARVs**

|                     | Q1 | Q2 | Q3 | Q4 | Q5 |
|---------------------|----|----|----|----|----|
| $HE_{3q}^{hh-AIDS}$ |    |    |    |    |    |
| $HE_{3q}^{pc-AIDS}$ |    |    |    |    |    |

The upper bound estimate was informed by the results obtained from the Household Impact Case Study and existing household surveys or case studies of households with a PLHA (Viravaidya et al. (1992) and Palanigounder et al. (2003)).

5.6.2.2 *Income Effect*

Many Vietnamese PLHAs have never worked and therefore have never been productive household members, even before HIV infection. This is related to the fact that a majority of PLHAs are IDUs. It is assumed that only a third of PLHAs are employed. This is supported by epidemiological studies in Viet Nam (Hien 1999; Tung 2001) and by the Household Impact Case Study.

$CE_{cq}^{hh-IE} = I_{cq}^{hh-IE} = I_q - w_{cq}^{AIDS} = [WHSIZE * w_q + NWI_q] - w_{cq}^{AIDS} * (1 - m)$   
 $w_q$  denotes average wage of working household members in quintile, q. The number of working household members is given by  $WHSIZE$ .  $I_q$  denotes the total household income, where  $I_q = WHSIZE * w_q + NWI_q$  and  $NWI_q$  denotes non-wage sources of income.  $w_{cq}^{AIDS}$  denotes the wage of the PLHAs prior to illness and  $I_{cq}^{hh-AIDS}$  represents the household wage and non-wage income after the income effect, i.e., the loss of income due the illness of the PLWA. As before,  $m$  is the proportion of increased health spending by the PLHA that is mitigated.

The lost household income due to the time caregivers are forced to spend away from their jobs, is not included here, and consequently the income effect is likely to be a conservative estimate of the true income effect. The income effect is likely to be different depending on whether the PLHA uses ARVs or not. For this reason the magnitude of the income effect is moderated by the probability (r) that the person will not be economically active. In the modeling it was assumed that r = 100 percent if the PLHA does not use ARVs and 80 percent if the person is using ARVs. The income effect is only applied to PLHAs with AIDS (i.e., categories 2 and 3) because it is assumed that people who are HIV-positive and symptomatic but have not developed AIDS do not experience a decrease in working capacity. Therefore, if c=1, then r=0; if c=2, then r=1; and if c=3, then r=0.8.

Household consumption expenditure after income effect:

Per capita consumption expenditure after income effect:

$$C_{cq}^{pc-IE} = CE_{cq}^{hh-IE} / HHSIZE_q = [WHSIZE * w_q + NWI_q - w_{cq}^{AIDS} * (1 - m)] / HHSIZE_q$$

### 5.6.3 Impact on consumption expenditure

$CE_{cq}^{AIDS}$  represents the annual consumption expenditure by a PLHA in category c, quintile, q, and  $CE_q^{pc}$  represents the annual consumption expenditure by other household members.  $CE_{cq}^{hh-AIDS}$  denotes total consumption expenditure in a household with a PLHA, and  $CE_{cq}^{pc-AIDS}$  denotes the per capita consumption expenditure in a household with a PLHA.

The combined impact of the expenditure and income effects on annual household consumption expenditure is given by:

$$CE_{cq}^{hh-AIDS} = CE_q^{hh-IE} - HE_q^{pc} + HE_{cq}^{AIDS}$$

$$= [WHSIZE * w_q + NWI_q - w_{cq}^{AIDS}] - HE_q^{pc} + [a_c * HE_q^{pc}]$$

The combined impact of the expenditure and income effects on annual per capita consumption expenditure is given by:

$$CE_{cq}^{pc-AIDS} = [WHSIZE * w_q + NWI_q - w_{cq}^{AIDS} - HE_q^{pc} + (a_c * HE_q^{pc})] / HHSIZE_q$$

If  $CE_q^{pc} > PL$  and  $CE_q^{pc-AIDS} < PL$ , then the household with the PLHA will fall into poverty, i.e., newly poor. If

$CE_q^{pc} < PL$  and  $CE_q^{pc-AIDS} < PL$  then the household with the PLHA will fall deeper into poverty. This is used to determine the impact of the income and expenditure effects on poverty.

### 5.6.4. Impact on poverty

The impact on poverty for the period of 2004 to 2015 was estimated based on projections for 2004 until 2015 obtained from UNAIDS. 2015 was chosen as an end date because it coincides with the target year for the HIV/AIDS-related MDG to be achieved.

No information is available on the socio-economic status of households of PLHAs. Therefore, the socio-economic distribution of PLHAs was inferred from behavioural information by quintile derived from DHS+ data for Viet Nam (Bloom et al. 2002). Based on this data, the number of households with a person with HIV/AIDS is

$AIDS_q = p(AIDS)$  where  $pq$  is the proportion of total HIV/AIDS cases in quintile q. Based on Bloom et al (2002) the inferred values of  $p_q$  are:  $p_1=29\%$ ;  $p_2=25\%$ ;  $p_3=20\%$ ;  $p_4=17\%$  and  $p_5=9\%$ .

Let  $v$  denote the proportion of HIV infected people who are experiencing elevated health expenditures.

$$HIV_q = v(HIV).$$

Number of already poor people =  $PHR * POP$  where  $PHR$  = poverty headcount ratio.

Number of newly poor people:

$$HIV / AIDS^{hh} = \sum_{q=5} (HIV / AIDS_q * HHSIZE_q) = \sum_{q=5} [(p(AIDS) + v(HIV) * HHSIZE_q)] , \text{ if } CE_q^{pc} > PL$$

and  $CE_q^{pc-AIDS} < PL$ .

Number of poor people who fall deeper into poverty:

$$HIV / AIDS^{hh} = \sum_{q=3} (HIV / AIDS_q * HHSIZE_q) = \sum_{q=3} [(p(AIDS) + v(HIV) * HHSIZE_q)] \text{ if } q=4 \text{ or } 5, \text{ if}$$

$CE_q^{pc} < PL$  and  $CE_q^{pc-AIDS} < PL$ .

**5.6.5. Results**

The findings of the simulation are reported in the main text of the report. Additional results from the Household Impact Assessment that are referred to in the main text are shown in Figure 28 and Figure 29.

**5.6.6. Limitations and recommendations for further study**

Given the deterministic nature of the simulations used here, the analysis could be substantially enhanced by applying the theoretical framework to household survey data. This was a key limitation, related largely to the absence of household data from PLHA households based on a probability sample.

Another limitation related to the inability to use household survey data is the fact that only one poverty indicator, the poverty headcount ratio, was considered in the analysis. As mentioned previously, the poverty headcount ratio underestimates the true impact of HIV/AIDS on poverty because it is only influenced by newly poor people. Another poverty indicator, the poverty gap, is more data intensive, and if used, could result in a better estimate of the true impact of HIV/AIDS on poverty.

As stated in the methodology description, numerous assumptions had to be made. This was due to a lack of information and because the analysis was supposed to be tractable. Hence the findings reported in this document should be considered to be a first attempt at quantifying the impact of HIV/AIDS on poverty in Viet Nam.

**Figure 28: Impact of HIV/AIDS on Consumption Expenditure**

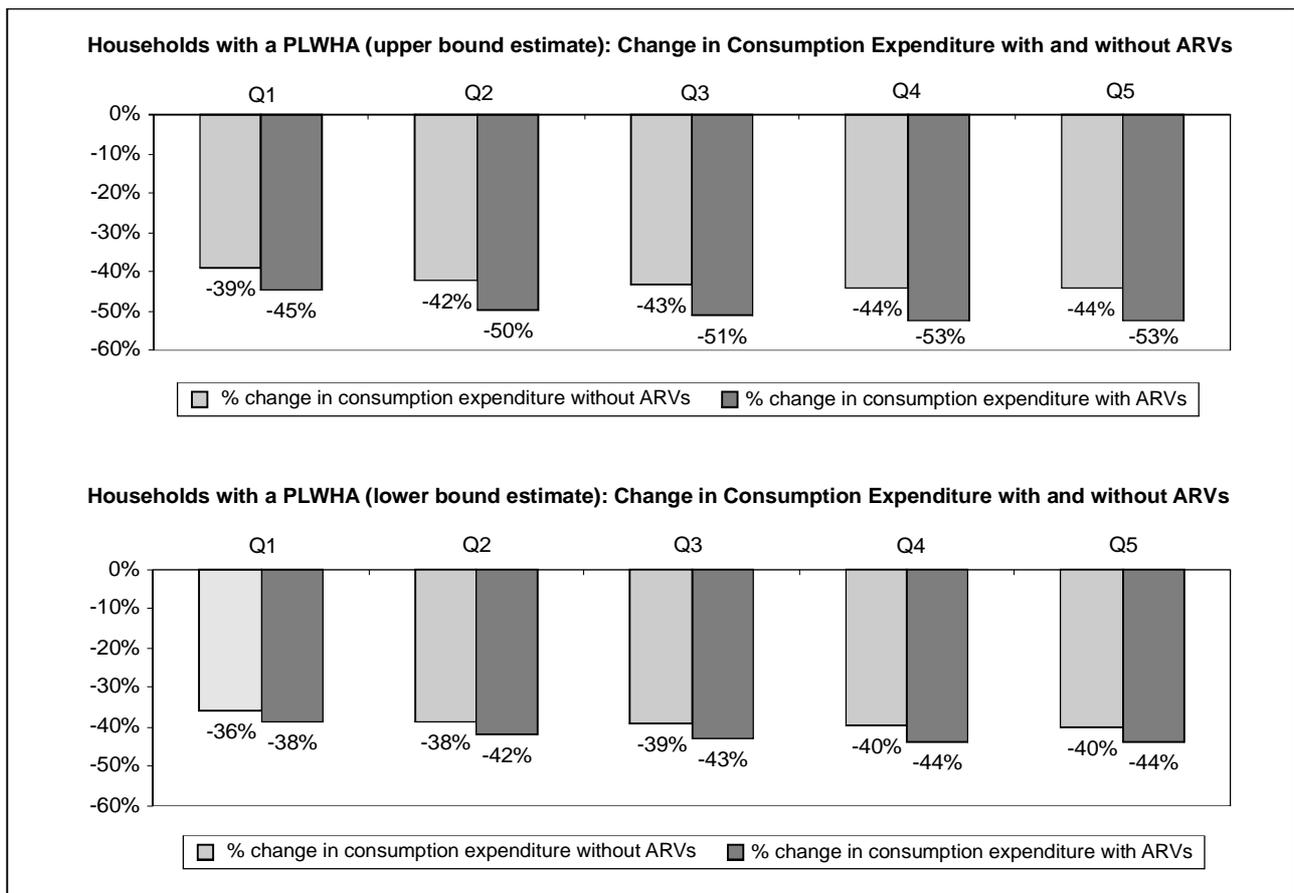
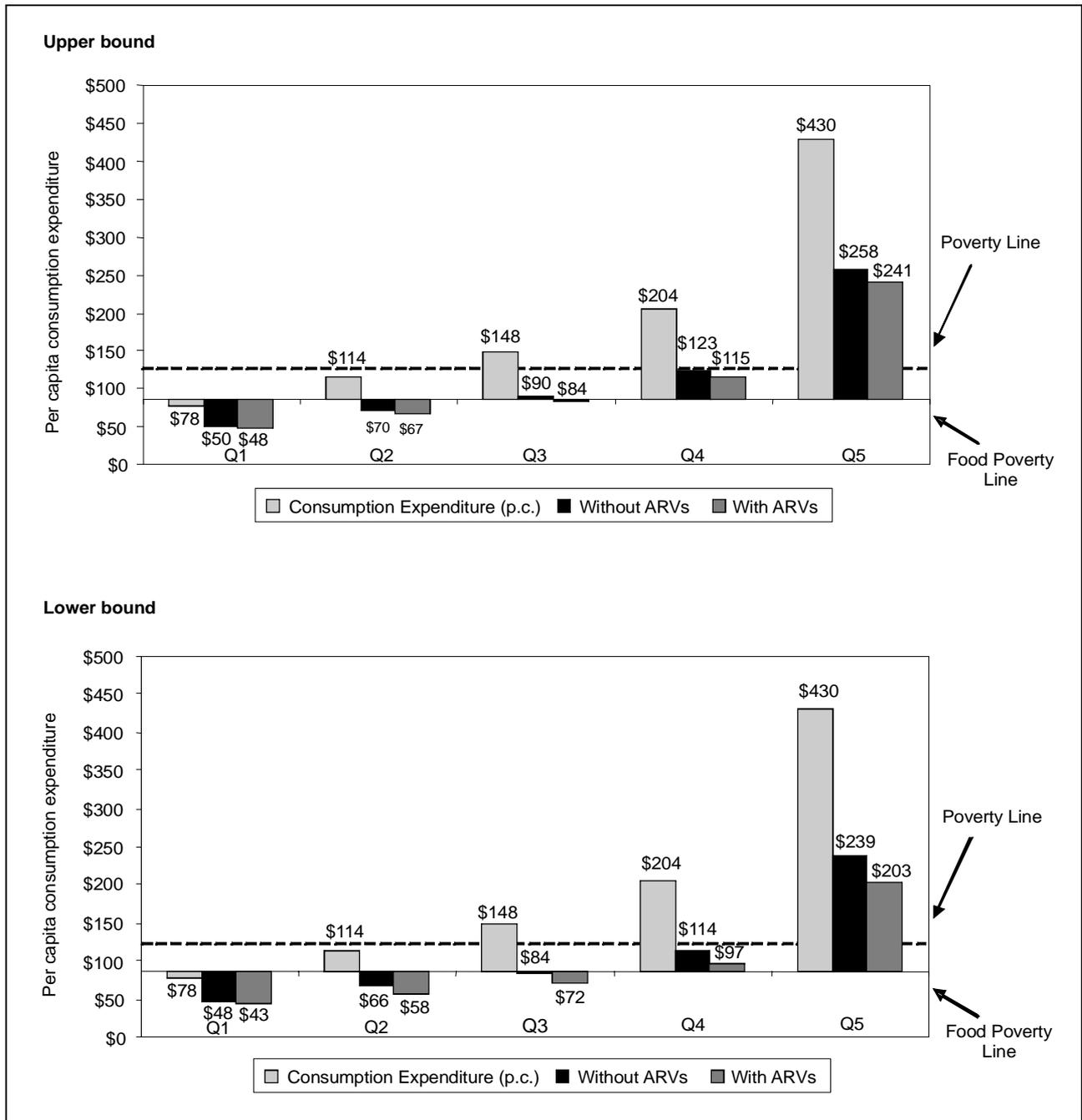


Figure 29: Impact of HIV/AIDS on consumption expenditure and poverty



# Bibliography

1. Action Aid Viet Nam: *Ha Tinh Province Participatory Poverty Assessment Report*, Action Aid Viet Nam in collaboration with Ha Tinh Province Committee for NGO Affairs, Ha Noi Research and Training Center for Community Development, Ha Noi, 1999.
2. Arndt, C. and Lewis, J.: "The Macro Implications of HIV/AIDS in South Africa: A Preliminary Assessment", *South African Journal of Economics*, 68(5), 2000, 856-887.
3. Asian Development Bank-Ministry of Health: *Hospital Costing Study – Xanh Pon Hospital*, Asian Development Bank, TA 3877, 6, 2003.
4. Bachmann, M.O. and Booyesen, F.L.R.: "Health and Economic Impact of HIV/AIDS on South African Households: A Cohort Study", *BMC Public Health*, 3, 2003, 14-21.
5. Bell, C., Devarajan, S. and Gersbach, H.: "The Long-run Economic Costs of AIDS: Theory and an Application to South Africa." *Unpublished Manuscript*, University of Heidelberg, Heidelberg, 2003.
6. Bloom, D.E. and Mahal, A.S.: "Does the AIDS Epidemic Threaten Economic Growth?" *Journal of Econometrics*, 77(1), 1997, 105-124.
7. Bonnel, R.: "HIV/AIDS and Economic Growth: A Global Perspective", *South African Journal of Economics*, 68(5), 2000, 820-855.
8. Center for International Economics: "Viet Nam Poverty Analysis", *Report prepared for the Australian Agency for International Development*, Center for International Economics: Sydney, 2002.
9. Chong, S.F.: "A Critical Review of Household Survey Methodology: Assessing the Cost-Effectiveness of Household Responses to the Economic Impact of HIV/AIDS", *Dissertation*, School of Development Studies, University of East Anglia: 1999.
10. Cuddington, J.T.: "Modeling the Macroeconomic Effects of AIDS with an Application to Tanzania", *World Bank Economic Review*, 7(2), 1993, 173-189.
11. Dahlgren, G.: "The Medical Poverty Trap," in Dong, T., Pham, T., Dam, V., Duong H., and Nguyen Hoang L. (eds.), *User Fee, Health Insurance and Utilization of Health Services*, Viet Nam – Sweden Health Cooperation Program, Ha Noi, 2002.
12. Deaton, A.: *The Analysis of Household Surveys*, Johns Hopkins University Press: Baltimore, MD., 1997.
13. Do, K.T., Le, D.M., Lo, T.D., Nguyen, N.M., Tran, Q.: "Inequality", *Living Standards during an Economic Boom – The Case of Viet Nam*, Houghton, D., Houghton, D. and Nguyen, P. (eds), Statistical Publishing House: Ha Noi, 2001.
14. Donahue, J.: 'Community-Based Economic Support for Households Affected by HIV/AIDS,' Discussion Papers on HIV/AIDS Care and Support No.6, Health Technical Services Project, United States Agency for International Development: Washington, D.C., 1998.
15. Ensor, T. and San, P. B.: "Access and Payment for Health care: The Poor of Northern Viet Nam," *International Journal of Health Planning and Management*, 11, 1996, 69-83.
16. Gallup, J.L.: "The Wage Labor Market and Inequality in Viet Nam in the 1990s" *World Bank Policy Research Working Paper 2896*, World Bank, Washington D.C., 2002.
17. Greener, R., Jefferies, K. and Siphambe, H.: "The Impact of HIV/AIDS on Poverty and Inequality in Botswana", *South African Journal of Economics*, 68(5), 2000, 888-915.
18. Houghton, J.: "Introduction: Extraordinary Changes", *Living Standards during an Economic Boom – The Case of Viet Nam*, Houghton, D., Houghton, D. and Nguyen, P. (eds), Statistical Publishing House: Ha Noi, 2001.
19. Holzmann, R. and Jorgensen, S.: *Social Protection as Social Risk Management: Conceptual Underpinnings for the Social Protection Sector Strategy Paper*. Social Protection Department, World Bank: Washington, D.C., 1999.
20. Hunter S. and Williamson, J.: *Responding to the Needs of Children Orphaned by HIV/AIDS*. A report produced by the Health Technical Services Project of TvT Associates and The Pragma Corporation for the HIV/AIDS Division of the USAID, Discussion paper 7, 1998.
21. Kambou, G.S., Devarajan, S. and Over, M.: "The Economic Impact of AIDS in an African Country: Simulations with a General Equilibrium Model of Cameroon", *Journal of African Economics*, 1(1), 1992, 109-130.

22. Kelly, M.J.: *The Encounter between HIV/AIDS and Education*, UNESCO, Harare, 2000.
23. Knowles, J.: "Presentation to the faculty of Ho Chi Minh Academy – 27 June 2003", Ha Noi, 2003a.
24. Knowles, J., Nguyen, T.H.H., Dang, B.H., Nguyen K., Trans, T.M.O., Nguyen, K.P. and Vu, N.U.: "Making Healthcare More Affordable for the Poor — Health Financing in Viet Nam", Asian Development Bank, Ha Noi, 2003.
25. Knowles, J.: "Health Nutrition and Infectious Disease and Economic Growth in Cambodia", Bangkok, 2003.
26. Kongsin, S.: "The Economic Impact of HIV/AIDS Morbidity on Households in Upper-North Thailand: Phayao Case Study". Thesis submitted in fulfilment of the requirements of the degrees of Doctor of Philosophy in Faculty of Medicine, University of London. Health Policy Unit, Department of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, 2000.
27. Le Truong, G.: "HIV/AIDS Situation in Viet Nam and Ho Chi Minh City" Presentation, Ho Chi Minh City AIDS Committee, Ho Chi Minh City, 2003.
28. Loewenson, R. and Whiteside, A.: *HIV/AIDS: Implications for Poverty Reduction*, United Nations Development Programme Policy Paper. UNDP, New York, 2001.
29. Lundberg, M., Over, M., and Mujinja, P.: "Sources of Financial Assistance for Households Suffering an Adult Death in Kagera, Tanzania", *South African Journal of Economics*, 68(5), 2000, 947-984.
30. McGreevey, W., Bertozzi, S., Gutierrez, J., Opumi, M. and Izazola, J.: "Current and Future Resources for HIV/AIDS", *State of the Art: AIDS and Economics*. POLICY Project, The Futures Group International: Washington, D.C, 2002.
31. Ministry of Health: "HIV/AIDS in Viet Nam" Presentation, AIDS Division, Ministry of Health, Ha Noi, 2003a.
32. Ministry of Health: Report: HIV/AIDS – The Challenge in Social-Economic Development. Report of Ministry of Health at the Consultative Group Meeting 2003, Ha Noi December 2003b.
33. Mohr, P.: *Economic Indicators*, UNISA Press: Pretoria, 1998.
34. Monitoring the AIDS Pandemic: "The Status and Trends of HIV/AIDS/STI Epidemics in Asia and Pacific", Provisional Report October 4, 2001, *Monitoring the AIDS Pandemic*, Washington, D.C., 2001.
35. National AIDS Standing Bureau: "HIV/AIDS Country Profile – 1999", National AIDS Standing Bureau, 1999.
36. National AIDS Standing Bureau: "Assessment of Capacities and Needs of Laboratories in Viet Nam", National AIDS Standing Bureau, Centers for Disease Control and Prevention and Military Medical Institute Department, Public Health, 7: 2001.
37. National Institute of Hygiene and Epidemiology: "Epidemiology of HIV/AIDS in Viet Nam", Presentation by National Sub-Committee for HIV/AIDS Surveillance, National Institute of Hygiene and Epidemiology: Ha Noi, 2003.
38. Nicholls, S., McLean, R., Theodore, K., Henry, R., Camara, B. and team: "Modeling the Macroeconomic Impact of HIV/AIDS in the English speaking Caribbean", *South African Journal of Economics*, 68(5), 2000, 916-932.
39. Over, M., Ainsworth, M., Beegle, K. et al.: "Coping with AIDS: Summary of Research Results on the Economic Impact of Adult Mortality from AIDS and Other Causes on Households in Kagera, Tanzania", Prepared for a discussion at a workshop in Bukoba, Tanzania. Unpublished Manuscript, World Bank: Washington D.C., 1996.
40. Palanigounder, D., Costello-Daly, C., Homan, R.K., Ganesh, A.K., Kumarasamy, N., Priya, P.S., Castle, C., Varma, P., Mahendra, V., Solomon, S.: "Economic Impact of HIV/AIDS on Patients and Households in South India – Cost and Burden on Households, and Coping Strategies", *Horizons/YRGCare*, India, 2003.
41. Pitayanon, S., S. Kongsin and W. Janjareon (1994) 'The Economic Impact of HIV/AIDS Mortality on Household in Thailand,' in Bloom, D. and P. Godwin (eds.) (1997) *The Economics of HIV and AIDS: The Case of South and South East Asia*. Oxford University Press, New Delhi.
42. POLICY Project: *HIV/AIDS in the Mekong Region: Cambodia, Lao PDR, Thailand and Viet Nam. Current Situation, Future Projections, Socioeconomic Impacts, and Recommendations*. POLICY Project, Washington, D.C., 2003.

43. Roy, N.C. et al: "Socioeconomic and Health Implications of Adult Deaths in Families of Rural Bangladesh", Working Paper No. 132, Center for Health and Population Research, Dhaka 2000.
44. Rugalema, G.H.R.: Coping or Struggling? A journey into the Impact of HIV/AIDS in Southern Africa, Review of African Political Economy, 28, 2000, 86.
45. Sachs, J. (2001) Macroeconomics and Health – Investing in Health for Economic Development, Report of the Commission on Macroeconomics and Health, Commission on Macroeconomics and Health. World Health Organization: Geneva.
46. Saidel, T., Des Jarlais, D., Peerapatanapokin, W., Dorabjee, J. Singh, S. and Brown, T.: "Potential Impact of HIV among IDUs on Heterosexual Transmission in Asian Settings: Scenarios from the Asian Epidemic Model", International Journal of Drug Policy, 14, 2003, 63-74.
47. Segall, M., Tipping, G., Lucas, H., Truong, V., Nguyen, T. Dao X. and Dao, L.: "Healthcare seeking by the poor in transitional economies: the case of Viet Nam," Institute for Development Studies Research Report 43, University of Sussex, Brighton, 2000.
48. Stockwell, E.G. (ed): Studies in Population: The Methods and Materials of Demography, Academic Press, Inc: San Diego, 1976.
49. Stover, J., Bollinger, L.: GOALS Model, The Futures Group International, Glastonbury CT, 2002.
50. Stover, J. Bollinger, L., Bertozzi, S.; Gutierrez, J.P.: Resource Needs Model. Resource Needs for HIV/AIDS: Model for Estimating Resource Needs for Prevention, Care and Mitigation, The Futures Group International, Glastonbury, CT./Instituto Nacional de Salud Publica, Mexico, 2002.
51. Futures Group International, The: Spectrum Policy Modeling System, Washington D.C., 2002.
52. Strauss J. and Thomas, D.: "Health, Nutrition and Economic Development", Journal of Economic Literature, 36: 766-817.
53. Te, N.M.: Fighting against Social Evils: a Complicated Battle. Journal of Social Evils Control, 1, 1995, 12-14.
54. Thomas, D.: "Health, Nutrition, and Economic Prosperity: A Microeconomic Perspective", Commission on Macroeconomics and Health Working Paper Series, Paper No. WG1:7, World Health Organization: Geneva, 2001.
55. Tipping, G.: "The Social Impact of User Fees for Healthcare on Poor Households." Report to InDevelop Uppsala AB, Uppsala, 2000.
56. Tran Hien, N.T.: "Epidemiology of HIV/AIDS in Viet Nam" Doctoral Dissertation, Vrije Universiteit, Amsterdam, 2002.
57. UNAIDS: Report on the Global HIV/AIDS Epidemic. UNAIDS, Geneva, 2000.
58. UNAIDS: Report on the Global HIV/AIDS Epidemic. UNAIDS, Geneva, 2002a.
59. UNAIDS: Report on the Global HIV/AIDS Epidemic. UNAIDS, Geneva, 2004.
60. UNAIDS: Epidemic Update December 2002. UNAIDS, Geneva, 2002b.
61. UNAIDS, UNICEF and USAID: Children on the Brink: A Joint Report on Orphan Estimates and Program Strategies. USAID, Washington, D.C., 2002.
62. UNFPA: "The Impact of HIV/AIDS: A Population and Development Perspective", Population and Development Strategies Series No. 9, UNFPA, New York, 2003.
63. United Nations Country Team Viet Nam: Millennium Development Goals – Bringing MDGs Closer to the People, United Nations Country Team, Ha Noi, 2002.
64. United Nations Country Team Viet Nam: Millennium Development Goals – Closing the Millennium Gaps. United Nations Country Team, Ha Noi, 2003.
65. UNAIDS: "A Review of Household and Community Responses to the HIV/AIDS Epidemic in the Rural Areas of Sub-Saharan Africa", UNAIDS Best Practice Collection, UNAIDS: Geneva, 1999.
66. UNAIDS: Report on the Global HIV/AIDS Epidemic – June 2000, UNAIDS: Geneva, 2000.
67. UNAIDS: Report on the Global HIV/AIDS Epidemic – 2002, UNAIDS: Geneva, 2002.

68. UNAIDS: Presentation to the Consultative Group Meeting 2003, Ha Noi, December 2003.
69. UNAIDS: Report on the Global HIV/AIDS Epidemic – 2004, UNAIDS: Geneva, 2004.
70. United Nations Development Programme: Human Development Report 2003, United Nations Development Programme: New York, 2003.
71. United Nations (2001). Declaration of Commitment on HIV/AIDS. United Nations General Assembly - 27 June 2001, Paragraph 80. United Nations: New York.
72. Verma, R. K.: “HIV/AIDS and Children in the Sangli District of Maharashtra (India)”, in Cornia, G.A. (ed) AIDS, Public Policy and Child Well-being, UNICEF-Innocenti Research Center, Florence, 2002.
73. Viet Nam Technical Working Group on Estimations and Projections 2004: “Briefing Paper on Viet Nam Estimates and Projections 2003” Ministry of Health, Ha Noi, 2004.
74. Wagstaff, A. and van Doorslaer, E.: “Paying for Healthcare: Quantifying Fairness, Catastrophe, and Impoverishment, with Applications to Viet Nam, 1993-98”, World Bank: Washington, D.C., 2001.
75. Wagstaff, A.: “Poverty and Health”, Commission on Macroeconomics and Health Working Paper Series, Paper No. WG1:5, World Health Organization: Geneva, 2001.
76. Wagstaff, A. and van Doorslaer E.:, “Catastrophe and impoverishment in paying for healthcare: With Applications to Viet Nam 1993-98”, Health Economics, 2003.
77. Woolcock, M. and Narayan, D.: “Social Capital: Implications for Development Theory, Research and Policy”, World Bank Research Observer, 15(2), 2000, 225-249.
78. World Bank: Confronting AIDS: Public Priorities in a Global Epidemic, World Bank: Washington, D.C., 1997.
79. World Bank: Viet Nam: Consultations with the poor. A synthesis of participatory poverty assessments from four sites in Viet Nam: Lao Cai, Ha Tinh, Tra Vinh and Ho Chi Minh City, Washington, The World Bank, 1999.
80. World Bank: World Development Report – Attacking Poverty, Oxford University Press: New York, 2001.
81. World Bank: World Development Indicators, World Bank: Washington, D.C., 2002.
82. World Bank: World Development Indicators, World Bank: Washington, D.C., 2003.
83. World Bank/Poverty Working Group: Viet Nam Development Report 2000 – Attacking Poverty, World Bank: Ha Noi, 2000.
84. World Bank/Poverty Working Group: Localizing MDGs for Poverty Reduction in Viet Nam: Reducing Vulnerability and Providing Social Protection, Ha Noi, 2002.
85. World Bank: “Regional Updates: East Asia and Pacific Region”, [www.worldbank.org/ungass/eap.htm](http://www.worldbank.org/ungass/eap.htm) , 2003: 1.
86. World Bank: Poverty – Viet Nam Development Report 2004, World Bank, Ha Noi, 2003.
87. World Health Organization: “Macroeconomics and Health – Investing in Health for Economic Development”, Report of the Commission on Macroeconomics and Health, Commission on Macroeconomics and Health. World Health Organization: Geneva, 2001a.
88. World Health Organization: “Report of the Health, Economic Growth and Poverty Reduction Working Group”, Report of the Commission on Macroeconomics and Health, Commission on Macroeconomics and Health. World Health Organization: Geneva, 2002.
89. World Health Organization: “Removing Obstacles to Healthy Development”, Report on Infectious Diseases, World Health Organization: Geneva, 1999.
90. Weniger, B.G., Limpakarnjanarat, K. and Ungchusak, K. et al.: “The Epidemiology of HIV Infection and AIDS in Thailand”, AIDS, 5 (suppl 2), 1991, 71-85.





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