

Spring 2006

The Human Ecology of a Disease: Dissemination of Resources and Information on HIV and AIDS in Can Tho City and An Giang Province

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The Human Ecology of a Disease:
Dissemination of Resources and Information on HIV and AIDS
in Can Tho City and An Giang Province

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Independent Study Project
World Learning
SIT Study Abroad
Mekong Delta: Natural and Cultural Ecology
Spring 2006

advised by Le Ngoc Cua M.P.H.
Secretary of the HIV Community Clinics Network
through the Can Tho City Department of Health

for all people living with HIV and AIDS

1 - Abstract

HIV has spread worldwide. This virus, resulting in as-of-yet incurable destruction of the human immune system, has caused the death of millions in the last two decades through opportunistic infections manifest as AIDS. Though development of prevention and treatment measures have greatly improved in recent years, because of lack of resources, incidence of infection continues to increase annually in nearly all parts of the world including southeast Asia. This paper looks at how the disease has affected people's lives in Can Tho City and An Giang Province in Vietnam's southern Mekong Delta. This paper offers an epidemiological and biological argument for studying HIV and AIDS. It evaluates the players working to test for, treat, prevent, and provide counseling on this disease. It measures the flow of resources and dissemination of information from international, national, provincial and local levels in remediation of the effects of AIDS.

This paper presents these findings through the lens of human ecology. Human interactions with environment and resources in response to a nascent epidemic is complex and multifaceted. An ecological perspective of such an issue sheds light on solutions presented in community-based care.

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3 - Acknowledgements

This project would not have been possible without the support of many people. I would first like to thank my advisor, Le Ngoc Cua MPA, Secretary of the Can Tho HIV Community Clinics Network through the Can Tho Department of Health. Also the organizational and technical support of academic director Duong Van Thanh Ph.D. and program assistant Nguyen Thu Huong. Many interviews and transcripts were translated by Tran Xuan Dao, Vu Thi Diu, Huynh Ngoc Thao, and Tran Phuoc Thien. Also thanks for special help from Ms. Mai Thi Kim Hoang, Dr. Pham Van Nang, and Dr Tran Van Nguyen.

Thanks also to the cooperation and support of the staff at the World Bank Development Library in Hanoi, the An Phu Communal Health Clinic, the Can Tho and Chau Thanh HIV Community Clinics Network, the Can Tho Center for HIV/AIDS Prevention, the Can Tho Department of Health, the Can Tho Youth Union, the Can Tho School of Medicine and library, and the Nguyen Viet Hong High School in Can Tho City.

I would like to thank the benefactors of the Bristol Scholarship and Freeman Asia Scholarship that made studying in the Mekong Delta possible.

Finally, I would like to thank most of all, the many informants referenced or not referenced in this paper whose personal insights made the experiential learning process most worthwhile.

4 – Abbreviations

AIDS – Acquired Immuno-Deficiency Syndrome

ARD – anti-retroviral drugs

ART – anti-retroviral therapy

CDC – Centers for Disease Control and prevention

CHAI – William J. Clinton Foundation HIV/AIDS Initiative

DNA – deoxyribonucleic acid

HCCN – HIV Community Clinics Network

HIV – Human Immunodeficiency Virus

FSW – female sex worker

IDU – injecting drug user

MOLISA – Ministry of Labor, Invalids, and Social Affairs

MOH – Ministry of Health

NGO – non-governmental organization

PLWHA – people living with HIV and AIDS

STD – sexually transmitted disease

RNA – ribonucleic acid

UNAIDS – Joint United Nations Programme on HIV/AIDS

UNFPA – United Nations Population Fund

UNICEF – United Nations International Children’s Education Fund

VAPPD – Vietnam Association of Parliamentarians for Population and Development

VCHAP – Vietnam-CDC-Harvard AIDS Partnership

5 - Introduction

Since its discovery in humans in 1981, Human Immunodeficiency Virus (HIV) has spread worldwide (Fay, Conner & Villareal 1994). By 2004, there were 36-44 million people living with HIV globally (UNAIDS 2005). Transmitted primarily through sex, birth, and injecting drug use, most of those people infected with this lentivirus develop Acquired Immuno-Deficiency Syndrome (AIDS), a disease that destroys the immune system. As there is no cure for AIDS, all people living with HIV and AIDS die through opportunistic infections within a few years.

95% of the world's new HIV infections are in developing countries (*ibid*). While HIV/AIDS has ravaged sub-Saharan Africa for the last two decades, the epidemic in Asia has only developed recently. Vietnam's first confirmed case of HIV infection was identified in Ho Chi Minh City in December, 1990. By May 2005, there were 95,871 confirmed HIV infections (15,618 had progressed to AIDS, of which 8,975 had died as a result)(*ibid*). However, the Vietnam Technical Working Group using the Center for Disease Control and prevention's *Estimation and Projection Package*, estimated that by 2003 there were 215,000 people living with HIV in Vietnam (0.44% of the general population)(*ibid*). As infection seroprevalence rates are projected to increase, "in the absence of stronger prevention programs, more than 40,000 people per year will contract HIV"(*ibid*).

The primary groups at risk for HIV infections are female sex workers, their clients, and injecting drug users. While these sub-populations are located mostly in the large cities (Ho Chi Minh City and Ha Noi), epidemic centers are growing in other parts of the country. Northern coastal provinces of Quang Ninh and Hai Phong are experiencing above average infection of 1.1% of the general population. In 2003, the Mekong Delta surpassed Ho Chi Minh City in number of infections (*ibid*). Further, the relatively rural province of An Giang, where is found the main border crossings with Cambodia, is ranked in the highest bracket for

infection density (>100-500 per 100,000)(UNAIDS maps 2005). The HIV/AIDS epidemic in Vietnam, though relatively new, has grown dramatically in the last 3-5 years. So in terms of prevention measures, "the time to act is now" (UNAIDS 2005).

This project is in response to the above mentioned concerns towards HIV and AIDS. I spent one month conducting research in Can Tho City and An Giang Province gathering as much information as was available on the disease in terms of epidemiology, testing, diagnosis, treatment, prevention, and ultimately information dissemination. All of this led to looking at community-based care in these relatively rural areas of the Mekong Delta. My goal in this project was to understand all components of a disease within a culture and measure in some way, the people's response to it, and that response's effectiveness based on human and fiscal resources. I was able to talk with doctors, nurses, counselors, public health officials, high school teachers, students, and AIDS patients themselves. What follows is a piecing together of the information collected in interview as well as extensive literature research presented through the lens of human ecology. I present my results as a natural experiment in a culture's experience with a nascent epidemic and project my findings towards the future with recommendation for community-based care.

6 - Methodology

Information for this paper was collected in a number of ways. Much of the information on HIV and AIDS as a disease was collected from medical texts. General epidemiology and information from case studies in Vietnam was collected from numerous reports published by the government and non-governmental organizations. The majority of site specific information was collected from questionnaires for and interviews with administrators, physicians, counselors, students, teachers, and patients who were in some way connected to testing, treatment, care, or prevention of HIV and AIDS in the Mekong Delta. Several of these

interviews were conducted in English and others were conducted in Vietnamese with the help of a translator.

7 - A Disclaimer

This paper is presented first as an argument for studying AIDS in Vietnam as a review of the biology of AIDS and the principles of epidemiology. This first part serves to assist the reader in following the second interpretive human ecology review with an educated point of view. I disclaim that studying a sensitive issue in a country such as Vietnam is, at once, difficult. But despite setbacks and limitations as they are, through this paper I attempt to look at AIDS in a culture rich in traditional thought and practice with a balance between Western scientific critique and cultural sensitivity and respect. I concede that it has been difficult to find my voice as one who has not been an expert in public health or anthropology yet strives to think and work as one.

8 - Part One: Why Study HIV?

The Human Immunodeficiency Virus has proved to be different from other pathogens found throughout history. Epidemiology shows that population density has a significant effect on the spread of disease. Early in history, when populations were diffuse, disease was able to spread only within isolated groups of people. From the time of the Roman empire through modern times, diseases were able to survive in an endemic state, spreading throughout populations and continuously fueled by new infections from the general population. The globalized world has provided opportunity for diseases to spread to every continent. HIV has achieved the status of such a pandemic (Fan, Conner, & Villareal 1994). The ability to spread to all human populations is a primary reason for studying its effect around the world.

The nature of human's response to disease has changed throughout history. The discovery of antibiotics in the last century has drastically improved our ability to fight many disease causing agents including bacteria and protozoa. However, viruses present another

problem. Viruses are not classified as living organisms as they do not grow or reproduce outside of their host's cells. A virus is made up of genetic information and a protein coat which helps the particle be recognized by potential host cells where it is taken up. Viruses exploit their host's biochemical machinery in order to reproduce and spread. As a result, viruses cannot easily be stopped once infection has occurred because restricting their reproduction would in turn restrict the host's ability to function normally. Viral infections are prevented through vaccines which build up an individual's immune system against a pathogen before it is exposed to the pathogen itself. Because of the nature of HIV, development of a vaccine has not been successful (*ibid*).

Another characteristic of HIV that sets it apart from other pathogens is that it is a retrovirus. Retroviruses' genetic information is stored in ribonucleic acid sequences. Some of their genes encode for the enzyme *reverse transcriptase* which allows their genetic material to be converted to a deoxyribonucleic acid sequence which is then inserted into the host's genome. Once part of the host's genome, the virus has the ability to become latent, or silent for extended periods of time. HIV can infect cells called macrophages and remain part of the cell's gene sequence for several years without causing disease (*ibid*). As we will see, this is a quality of HIV that makes AIDS very difficult to manage. This quality of viruses categorizes them as lentiviruses. There are only a few lentiviruses that infect humans. Among those that do, infection may be followed by a primary immune response prior to the production of antibodies. After this time, once the viral DNA has been inserted into the host genome, it may only be reactivated from another compromising infection. This explains why the health and security of asymptomatic HIV+ individuals is very important.

Other qualities unique to HIV that make it different from other pathogens include its diverse genome. Whereas most viruses are relatively simple, HIV has more genes which allow

it to mutate frequently and leads to avoidance of humoral immune response (*ibid*). This has proved to be the primary reason that there is no successful vaccine for HIV.

There are important social reasons that HIV has a unique role in modern disease. Since macrophages and T-helper lymphocytes are found only in blood and a few other bodily fluids including semen and on mucous membranes, modes of infection are limited. HIV's primary modes of infection are through blood, sex, and birth. As a result, those most at risk for infection with HIV are those who have unprotected sex with multiple partners and those who are injecting drug users. This means that risk for infection of HIV, unlike many other diseases, is correlated to lifestyle. Sex and drug addiction are both connected strongly to human desire, thus dealing with HIV and AIDS prevention is intrinsically charged and as such demands consideration. Discovering effective ways of managing human desire as it relates to lifestyle is one of the greatest challenges faced by the public health profession.

As we have seen, because of the unique characteristics of the HIV pathogen, studying its effect among human populations is a worthwhile endeavor. Further evidence arises in the syndrome that develops in individuals infected with HIV. To understand why Acquired Immuno-Deficiency Syndrome (AIDS) is devastating to human health, we must first understand its effect on the immune system. The two cells directly responsible for the defense of the body against disease causing agents are T-killer lymphocytes which control cell-mediated immunity and B lymphocytes which control humoral immunity. The main cofactor for these two cell types is the T-helper lymphocyte. Because of its characteristic surface proteins, it is T-helper lymphocytes (as well as macrophages) that become infected by HIV (*ibid*). Because of direct damage to T-helper lymphocytes, the entire immune system is compromised in a way that no other disease attacks to body. This immune destruction leads to, after an asymptomatic period, increasing numbers of opportunistic infections and the development of cancers until the body is overcome by full-blown AIDS and dies. Primary

infections include lymphadenopathy, wasting syndrome, and neurological infections which cause dementia. Later on in the progression of the syndrome, AIDS patients suffer from *Cryptosporidium* gastroenteritis, Kaposi's sarcoma, and pneumocystic pneumonia, along with a wide number of other bacterial, protozoan, and fungal infections and carcinomas (*ibid*). I argue here that the study of HIV is justified because of its capability of such complete destruction of human health and life.

Finally, I argue that the study the effect on humans and their response to HIV in a place such as the rural Mekong Delta is justified because each region of the world has particular conditions that make an epidemic unique. While sub-Saharan Africa is home to only 10% of the world's people, it has 60% of the world's HIV and AIDS cases (UNAIDS 2005b). Because of this, the way in which Africans as well as epidemiologists, doctors, counselors, and international aid workers deal with the AIDS epidemic is intrinsically different from those same players in a place like southeast Asia. While HIV prevalence in Asia is comparatively low, because of the region's very high population density, deceptively high numbers of people are living with HIV and AIDS on this continent (*ibid*). As was seen before, the density of human population has a direct effect on the outcome of an epidemic. Though Asia's current infection prevalence is low, incidence is increasing and this region's potential for high rates of infection is great (*ibid*). Vietnam's current estimated 0.51% prevalence (2005) is relatively low. However, populations of high infection rates are grouped among epidemic centers in a few cities and regions. According to study's by The Joint United Nations Programme on HIV/AIDS (UNAIDS), the epidemic in Vietnam is in a rapid growth phase with far more people becoming infected each year than dying (2005a). Additionally, the Mekong Delta has been identified as a nascent epidemic center. In 2003, the number of infections in this region surpassed those in Ho Chi Minh City (*ibid*). For these reasons, it is valuable to study HIV and its emergent effects according to region as the inherent causes and resulting changes in human

life are particular to place. Knowing how HIV will affect the rural Mekong Delta can serve as a model in success or failure for future nascent epidemics elsewhere in the world.

9 - Part Two: The Human Ecology of a Disease

Ecology deals with the distribution and abundance of organisms in their natural environment because of availability of and competition for resources and space as well the flow of energy and the changing conditions of habitat. The study of human ecology looks at the interaction of humans with their environment in the same way. It treats the manmade world as a part of the natural world and subject to the same laws of competition and resource use. I chose this perspective for my examination of HIV and AIDS as a disease for several reasons. First, a fundamental law of ecology is that no event is caused or influenced by a single other factor. The interconnectivity of organic and inorganic things in an ecosystem means that each one thing is absolutely related to another thing by a network of influences. As I began research on HIV in Vietnam, I found that there was a particular complexity to the idea of disease. A disease is not fixed in time or place, it is caused by one thing and responded to by another. Because of HIV's enormous social and economic consequences, the list of possible influences is essentially limitless. If only because of this, an ecological point of view seemed most appropriate. Further, by measuring a place's response to such a sensitive topic as disease, the balance of an ecological perspective is the least value-free while still allowing for interpretation and critique.

Discourse on natural ecosystems is categorized. In order to make sense of the enormity of a particular aspect of an ecological system, we focus in on such topics as natural conditions, species, trophic interactions, competition for resources, and communities. I have borrowed these subject headings as descriptive tools in my analysis of HIV and AIDS in Can Tho City and An Giang Province.

9.1 - Place

In examination of a new ecosystem, scientists often first describe their subject in terms of place. Who, what, when, and where are all questions to be asked in painting a picture of a place so that more sound and detailed questioning can follow. In 2005 an estimated 8.3 million people were living with HIV in Asia (UNAIDS 2005b). Though this is a staggering number, compared with the world's estimated 36-44 million infections, it is clear that the disease is has only recently begun to spread throughout this continent. Some countries in Asia, however, are experiencing more serious epidemics. The Joint UN Program on HIV and AIDS has strongly recommended that countries such as Thailand, Cambodia, Pakistan, and Indonesia step up their prevention strategies now to prevent the devastation of serious epidemics experienced elsewhere (*ibid*). Because HIV transmission occurs mainly through lifestyles of mobile and young people, much of Asia's rural population has not been exposed to the disease at all despite their population density. For now, the disease is mainly found a problem in Asia's larger cities. However, large groups of unexposed but at-risk populations have the potential to become serious epidemic centers upon exposure.

In 2005, Vietnam had a mean estimated 263,000 HIV infections nationwide. This is a national prevalence of 0.51% (UNAIDS 2005). While the virus continues to spread in large cities, as mentioned above, the Mekong Delta is a nascent epidemic center for HIV in Vietnam. This is of interest for two reasons. First, the Mekong Delta is more rural than the other epidemic centers in Ho Chi Minh City, Hanoi, and Hai Phong. Second, changes in a nation wide epidemic raises questions about the cause of increased incidence in a particular area.

Can Tho is the newly named national city and capitol of the Mekong Delta, the southern agricultural "rice bowl." With a combined rural and urban population of 1.1 million, Can Tho City is undergoing rapid change through development, urbanization, and industrialization (Truong & Murray 2006). The city has been included among 10 cities in

Vietnam with the highest HIV infection prevalence. Being the economic and population center of the Mekong Delta, it is likely a major contributor to the nascent epidemic. In August of 2005, the reported number of people living with HIV and AIDS in Can Tho City was 3,575. Of these, 1,084 had developed AIDS and 575 had died as a result (*ibid*).

Documentation of reported HIV infection rates, however, has been shown to be less than accurate. The actual number could be higher and estimations or projections will provide more realistic data (UNAIDS 2005a).

An Giang Province lies upstream along the Hau River between Can Tho City and the border of Cambodia. An Giang province's population is distributed among the vast agricultural landscape and the two major city centers, Long Xuyen and Chau Doc. In Chau Thanh District, the average annual income is only \$290 USD per capita and level of education, particularly among women is very low (Hoang 2001). An Giang province is ranked among three provinces with the highest HIV prevalence rate of greater than 100-500 per 100,000 of the general population (UNAIDS maps 2005)

What is most significant about this region and most unique about its developing epidemic is that the primary mode of infection is different from most other parts of the country. While both commercial sex work and injecting drug use have been shown to be the main modes of infection in Vietnam, the vast majority of HIV cases in Hanoi and Ho Chi Minh City are among injecting drug users (IDU's) (33.7% of IDU's versus 16% of commercial sex workers (CSW's) nationally are HIV+)(UNAIDS 2005). However, in Can Tho City and An Giang province, the majority of HIV infections are among female sex workers (Cua, personal communication 2006; Hoang, personal communication 2006). This means that strategies for prevention, testing, and treatment in this region will differ from elsewhere in Vietnam.

9.2 - Natural Conditions

The functioning of a community of organisms is subject to the natural conditions of the area. Abiotic factors such as climate, soil type, temperature, moisture availability, and sunlight determine the make-up of the flora communities which in turn allows for the presence of particular fauna. Likewise, we must look at the cultural and historical conditions of place in order to understand why its characters behave in a particular way.

Vietnam's history has been influenced historically by both its individual spirit and the cultures from which its people descend. The Vietnamese, having first cultivated the Red River Delta nearly two millennia ago, have shared Chinese traditions ever since. This eastern traditional knowledge, along with the influence of Hindu, Khmer, and hill tribe cultures has shaped the way the Vietnamese people think about health and medicine. David Craig describes Vietnam's modern culture as molded by colonial power and post-colonial relations as well as trends surrounding globalization, nationalist and Communist resistance, self-sufficiency, and the new free-market economy (2002). These new, and the aforementioned old influences exemplify what is described as the "two faces" of Vietnam. According to Craig, there is simultaneous conflict and balance between the official and formal government and the popular and informal public. There are similar dichotomy trends between Eastern and Western thought, Confucianism and Taoism, and most importantly in our case, the holism of Oriental medicine versus the individuality of the Occident. Craig writes that the Vietnamese discourse and practice of everyday health and medicine is, "strongly influenced by classical Chinese medicine, in practice it depends on local *materia medica*, self-management, household care, and the passing on of oral traditions and home-remedy recipes through family and neighbors." He later says that, "local health discourse has reflected the conditions of its making: the need to be internally strong, to resist and balance harmful environmental influence, and to know and develop trust in local resources and authorities" (*ibid*). Though HIV is a new phenomena in Vietnam, these traditional characteristic attitudes about how to

prevent and deal with disease are helpful in understanding the way in which AIDS has and will affect the Vietnamese people.

One important reason to discuss traditional health knowledge among the Vietnamese with respect to HIV and AIDS is that as a disease it is naturally connected to the people and culture on a local level. From an ecological perspective, we cannot separate a disease and its economic implications from the cultural reactivity towards it. Not only is HIV spread through characteristic lifestyle choices, but the way an individual locates testing and treatment, and is counseled and supported by their family and community is directly linked to how those people perceive the disease. Likewise, the way that information on prevention is passed throughout the education system and to the general public depends on that health knowledge and perspective. Hence this is a “natural condition” that cannot be overlooked.

In terms of the distribution of modern drugs in Vietnam, Craig writes that, “the gap between biomedical and local reason has proved difficult to bridge, and few interventions have built on existing local practice” (*ibid*). This suggests that in developing effective health care systems, working in concert with local health knowledge is most beneficial. This will prove useful in our examination of community-based care systems.

Another characteristic condition of Vietnam’s culture that relates to our topic is the familiarity of Vietnamese people with each other. Somewhat through the influence of Confucianism’s precepts of filial piety and caste of elders, I have seen first hand how the Vietnamese people are much more aware of their interrelatedness and dependence on community. I became more aware of how this influences a group’s response to HIV and AIDS through several interviews. In one instance, an informant described to me how her neighborhood responded to a young man who had AIDS. In a short amount of time, all the people living near this man’s home knew about his disease. Unfortunately, the neighborhood’s response was a negative one and the family ultimately was ostracized because

of their son's condition (Thao, H.N., personal communication 2006). What is most notable is in this case is that the two groups that could have helped this young man with his condition the most, the drug rehabilitation clinic he had been attending and his home neighborhood, both shunned him. The reason for this, in the end, was the importance of raising a child well. Thao told me that the family stood to lose face because of their son's disease. The people of Vietnam value raising children well, and the lifestyle choices made by this young man that led to the disease were reflection of his parents' abilities (*ibid*). In a place where a family's stance in society is related to lifestyle choices the consideration of the role of community gains greater importance in the ecology of this disease.

A third and crucial natural cultural condition is the relationship between men and women in Vietnamese society. When looking at HIV transmission, it is important to understand how sexuality is communicated between men and women. According to several counselors that I spoke with, a difficulty in HIV prevention is that condom use and safe sex methods is not easily introduced to or accepted by Vietnamese men (Diep, personal communication 2006). Men are generally dominant in sexual interactions, and so it is difficult for a woman who is interested in practicing safer sex procedures to convince her partner of the benefits. As we will see, this unevenness in sexuality communication has a strong influence on the spread of HIV through the area of study.

9.3 - Species

The most succinct way to categorize the roles of individuals in a natural community is by definition of species. The biological species concept groups organisms according to those individuals that can interact with each other to reproduce. This idea is important in defining populations and how changes with those populations comes about. Defining a set of winged creatures as "birds" says little of their dynamics as a group. It is the ability to reproduce, such as among all red-winged blackbirds, that describes the rates of change and

role in a community of individuals. Likewise, in human ecology, we must identify which groups of humans share emergent properties in order to predict changes in a phenomena such as disease. Unlike in the study of biology, humans can belong to more than one ecological “species.” Here, I describe those species that I found to play an important role in the HIV/AIDS epidemic in Can Tho City and An Giang Province. They include at-risk groups, care, support, and prevention institutions, and governmental and non-governmental organizations.

9.3.1 - At-Risk Groups

As was mentioned before, commercial sex work has been shown to be the primary mode of HIV infection in our area of study. Though impossible to know for sure, it is estimated that there are about 10,000 commercial sex workers in Can Tho City (Cua, personal communication 2006). Their numbers are difficult to estimate for several reasons. First of all, prostitution and all related activities are illegal in Vietnam. This means that sex workers tend to be mobile, moving from rural to urban areas and vice versa from home to work (*ibid*). But also, sex workers avoid communicating with the legal system so there is no way to know the demographics of sex work in the area. What is known about prostitution in the Mekong Delta is that there is a lot of sex traffic with neighboring Cambodia.

A large number of prostitutes in Can Tho City and An Giang Province have worked in the past in Cambodian cities such as Phnom Penh (Hoang, personal communication 2006; Cua, personal communication 2006). Because of their mobility and also because of the poverty and unemployment issues in An Giang province, young people move back and forth across the border with Cambodia to find work. Young women often find work in prostitution and young men often find work in construction or other labor and also are clients of sex workers (Hoang, personal communication 2006). This trend has become a mechanism for the spread of HIV from Cambodia, where the prevalence is higher, into the Mekong Delta. The

river and communities along it serve as a corridor for the movement of sex work from Phnom Penh to Can Tho. This is a main reason for studying An Giang and Can Tho together as a single unit.

In order to understand how prostitution operates in this area, it is important to know how the law interacts with sex workers. Because all activities relating to prostitution are illegal, the police regularly seek out brothels to make arrests. For this reason, there are a large number of sex workers near the border Can Tho City and An Giang Province. This makes it possible for sex workers to escape Can Tho authorities by fleeing into An Giang and vice versa (Cua, personal communication 2006). Because authorities from neighboring provinces do not cooperate, much prostitution goes on unhindered in this area. When sex workers are arrested, they are usually sent to rehabilitation centers for one to five years. I learned, however, that there is a discrepancy in legal consequence between sexes. While owners of brothels receive prison terms upon incarceration, clients of sex workers are generally not prosecuted at all (*ibid*). Because demand for prostitution is a main reason that sex work is an option for so many impoverished women (Diep, personal communication 2006), this legal discrepancy does little to prevent prostitution from occurring at such a high scale.

Prostitutes come generally from poor families where there is not a family business for them to work in. These families are often struggling (*ibid*), where there may be separation or bickering amongst family members. Because of the stigma related to sex work, sex workers often live alone, away from the support of their families. A counselor that I spoke with said that women chose prostitution for a number of reasons, one is that it is readily available and a relatively good income (*ibid*).

Prostitution in Can Tho and An Giang occurs in two ways. A lot of women walk the streets or are “call girls.” They are not associated with a particular establishment and are mobile. Another type of prostitute works at a “bia om.” These are cafés, bars, or karaokes

where drinks are served by girls that later offer sex to guests. These sex workers do not depend as heavily on the rigours of the “street.” I was told by another counselor that those sex workers who work in “bia oms” are more resentful of their clients and are eager to spread disease such as HIV or sexually transmitted.

Another at-risk group for HIV transmission in this area is men, particularly those that are mobile and frequent bars, karaokes, and “bia oms.” These men are often clients of sex workers but may also have families of their own. Many of these men are motorbike taxi drivers or from low income trades. As was mentioned before, the gender discrepancy in prostitution law enforcement makes sex work a favorable market. According to a report of the Men’s Health Project in Can Tho, “men are seen as a bridge in the transmission of HIV as they can carry HIV infection from a high risk group, such as sex workers, to a low risk group, such as their wives or regular sexual partners” (Truong & Murray, 2006). Husband-to-wife transmission has been identified, through estimations of the current epidemic, to be an increasing contributor to HIV infection in the general population. Male clients of sex workers have become an essential link in the infection from sex workers to wives and families (UNAIDS 2005a). A difficulty with this situation is that condom use is an essential breakage in this avenue of infection and it is still least accepted by men in Vietnamese society (Diep, personal communication 2006).

Injecting drug use is not a primary mode of infection in the comparatively rural Mekong Delta, but in Vietnamese cities, it comprises the highest infection rate of all at-risk groups. The sharing of needles among drug users has led to an estimated 33.7% infection rate (UNAIDS 2005a). Injecting drug users have proved to be a difficult group to access because of their avoidance of authorities and resistance to prevention education. Also, many injecting drug users are known to also be clients of sex workers, thus connecting a high prevalence population with multiple low prevalence populations. The development and urbanization of

Can Tho City could lead to increased use of injecting drugs, forming a population with high potential for infection.

Early research in AIDS around the world focused on homosexuals as an at-risk group for HIV infection. Because anal sexual intercourse is the most effective means of sexual transmission, this epidemic was at first associated almost exclusively with gay men. It has since been shown that unprotected heterosexual intercourse is also a very high-risk activity, so though all humans are prone to sexual transmission, stigma associated with this particular group has remained, particularly because of high infection prevalence. Homosexuality in Asia is different from other parts of the world. Dr. Donn Colby has said that, “gay identity is not well established in Vietnam. A man could have sex with another man and not consider himself gay” (AEP, 2003). The number of homosexuals in Vietnam is increasing though, and a serious problem has developed such that the “omission of homosexuals from public HIV prevention messages has encouraged men who have sex with other men to underestimate their vulnerability to infection” (*ibid*). Homosexuals in Vietnam live almost exclusively in large cities such as Ho Chi Minh, Ha Noi, and Nha Trang. But as Can Tho becomes a more metropolitan region, population of gays will likely increase as well and prevention communication will need to be accommodating despite engrained stigma.

A final group of people that is directly affected by HIV infection, particularly in Can Tho and An Giang, are the children affected by the disease. Vulnerability of children is a serious issue in Vietnam. Mainly through poverty, children often end up working to support their families instead of being in school and getting an education that can help them out of poverty (Hoang, 2003). While the number of children infected from birth is relatively low compared to the total number of people living with HIV and AIDS, many more are affected through the infection of parents or other family members. Because most infants infected with HIV die by age 1, approximately 1.7% of those children in Vietnam affected by AIDS

actually have the disease. The remaining 98% are affected through the infection or death of a family member (MOLISA/UNICEF 2005). These vulnerable children need most the support of social safety nets and protection. Unfortunately, the institutions that are available to support orphans or children from homes broken apart by HIV and AIDS are typically inadequate. Institutions are supposed to receive 100,000 to 150,000 VND per month from the government to support children, but according to the Ministry of Labor, Invalids, and Social Affairs and the United Nations International Childrens Education Fund, that amount is less than half of what is needed. Additionally, many institutions available to support these vulnerable children have been designed around areas with small needs, such as in the US. As a result, a few highly visible children in need receive adequate support while many vulnerable but less visible children receive none (MOLISA/UNICEF 2005). As we will see, community-based care for people affected by and living with HIV and AIDS offers solutions to the vulnerability of affected children that has not been solved by institutionalization.

9.3.2 - Care, Support, and Prevention Institutions

The high number of HIV infections and AIDS cases in Vietnam has elicited a response by certain “species.” These species are organisms that work against the devastation of HIV and AIDS in society. My goal is not to enumerate these species but rather describe and evaluate them so we can better understand how this disease influences the lives of the people of the Mekong Delta. To begin, we must understand how the Vietnamese health care system works.

Vietnamese health care is based on a layered institutions. In order to receive modern quality care at a city or provincial hospital, a patient must receive papers of referral from a lower level of care such as a general practitioner or clinic (Tu, personal communication 2006). While the state provides nominal health insurance for some of those that cannot afford it, there are many people who cannot obtain state insurance and must find more care that they

can afford. This is an important issue to the study of HIV and AIDS in Vietnam because many of those people affected by or living with the disease are impoverished. There are a number of clinics throughout Vietnam that provide alternatives to visiting private practitioners. One such is the An Phu Communal Clinic in Can Tho. It staffs one physician, a midwife, and several nurses and staff to offer affordable or free care 24 hours a day. Much of the services relate to maternity and women's health. Though it only has access to minimal equipment, this government funded clinic makes it possible for patients to access entry level healthcare and be referred to hospitals in an affordable way (*ibid*). Because of its access to lower income women, this site was paired with the HIV Community Clinics Network (HCCN) opened in Can Tho in 2003.

The HCCN is sponsored by the Canadian Centers for Disease Control and prevention. There is a high prevalence of sexually transmitted diseases (STD's) among sex workers and their clients. It is also known that those who have a genital infections associated with STD's are at a higher risk of being infected with HIV in sexual intercourse (Hoang, personal communication 2006). Thus treatment and prevention of STD's is an effective weapon against the spread of HIV among sex workers. The HCCN in Can Tho has the capacity to test for most STD's and has budgeted money to test and offer free drugs to 16 sex workers per month (Tu, personal communication 2006). The HCCN in Can Tho is located in the same building as the Communal Health Clinic so that sex workers will not be excluded from the general public in receiving treatment. For the most part, patients of the HCCN are reached through peer educators. These are volunteers, some of whom are former sex workers, who communicate with current sex workers in the area about condom use, HIV prevention, and schedule appointments at the center for treatment.

In addition to the An Phu clinic, there is a clinic in Vinh Thanh district in order to access the high population of sex workers there. The HCCN is based in Ho Chi Minh City

and oversees clinics in Can Tho as well as in An Giang and Kien Giang Provinces in the Mekong Delta. The clinic that I visited in An Giang province was in Chau Thanh District. It offers a more complete regimen against HIV and AIDS than the HCCN in Can Tho. This may be because in this area, there are a number of more rural and less mobile people living with HIV/AIDS who cannot access the facilities available in larger urban centers. The HCCN in Chau Thanh provides access to about 15% of known AIDS cases in the district with home visits by a physician and access to free Anti-Retroviral Therapy (ART) provided through government money which is supplemented by the international organization Global Fund (Tuan & Hien, personal communication 2006).

However, this coverage is only minimal. In order for AIDS therapy to be effective, particularly for asymptomatic patients, regular lymphocyte testing is necessary. To access this, patients need to travel to Ho Chi Minh City where there is facility for such testing (*ibid*). This expensive and unrealistic for many patients. One patient that I spoke with that is able to afford it, spends 275,000 VND per month on testing. In total, however, he spends about 1.2 million VND to cover travel expenses each time he makes the trip to Ho Chi Minh City.

The testing and treatment services not covered by the HCCN in Can Tho are covered by the Center for HIV/AIDS Prevention. This center has been operating since the early 1990's and offers free access to testing, counseling, and affordable drug regimes to PLWHA's in Can Tho (Anh, personal communication 2006).

An important sector in dealing with HIV and AIDS is treatment. In fact, since the epidemic in Vietnam is in a rapid growth phase, the number of AIDS related deaths is nearly doubling every few years (UNAIDS 2005a). However, because in Vietnam, there are many more people at-risk than those that have already been infected, prevention is a top priority. The system of clinics discussed above do not have the capacity to handle to load of broad

prevention outreach among at-risk groups or the general public. The following are several groups that attempt such a daunting task.

In Can Tho, the Club for Women's Health, sponsored by Family Health International, works to spread prevention information to sex workers in the area. It is a place that welcomes prostitutes during the day when they are not working and provides them with a number of services. There is food and activities to provide cultural and entertainment support not that sex workers lack by being separated from their families. They can take classes on lifeskills, handicrafts, tailoring, and other occupational skills which hopefully serves as incentive to find alternate employment (Diep, personal communication 2006).

During one of my visits to the Club, I was able to sit in on a HIV/AIDS prevention class for sex workers. The class consisted of a young female instructor and about 18 students. In mostly group-style discussion, the class covered details of the importance of testing, safer sex techniques, communication with sexual partners, and also the general dangers of the disease. Based on my knowledge of HIV and AIDS and compared with other outreach programming that I examined during this project, the prevention information offered to these women was accurate and up-to-date. In addition, the sex workers participating in the class seemed intent on learning and fairly knowledgeable about particular risks.

The Club for Women's Health uses a similar approach in communicating with the sex workers in Can Tho. They have a group of paid health professionals who go out nightly and talk with sex workers in "bia oms" and on the street. These health professionals try first to make a friendly relationship with prostitutes to foster trust and slowly integrate discussion about HIV prevention and facilities for testing and treatment as well as education and the like. Because the Women's Club is the only facility of its kind in Can Tho, the health professionals also travel to places within the City such as O Mon, Vinh Thanh, and That Mot to make contact with sex workers there. A struggle facing the Club for Women's Health and their

health professionals is understaffing. The qualifications for being a peer educator who works with prostitutes are rigorous and the work is difficult, hours are long, and pay is relatively low (Thu, personal communication 2006). Another serious difficulty is that funding from Family Health International is not permanent. In June of 2006, the project fund ends and the Club will be forced to appeal to the government for funding and will have to cope on their own funds in the mean time. As this is a valuable service to the city of Can Tho and the surrounding districts and wards in their fight against the spread of HIV and AIDS, full funding and expansion of this program is needed.

In An Giang Province, there are a number of different HIV prevention programs that vary from those in Can Tho. It is important to contrast programming between regions because of the more rural nature of An Giang compared with Can Tho's developing urban infrastructure. In Chau Thanh District, two programs are organized through mass organizations.

The Volunteer Group of Youth is a collection of about 15 to 25 students and young professionals in Chau Thanh district who work together in prevention of HIV and AIDS. Their objective is to, "disseminate knowledge related to HIV and AIDS to young people in the community, especially to those who have a high risk of infection" (Hoang, 2003). They also work to provide home care to people living with HIV/AIDS and help reintegrate them into the community by supporting them with minor businesses and reducing discrimination (*ibid*). Their activities vary from communication with AIDS patients to community outreach and prevention education. One of their most successful projects has been the opening of a "Life Skills Coffee Shop" where young people can come to learn about HIV prevention in a social environment as well as providing employment for people affected by the disease (Hoang 2003; Hoang, personal communication 2006, Hien, personal communication 2006).

The Women's Union in this district has spearheaded a program to help people living with HIV and AIDS. A secondary effect of their outreach will be the spread of prevention information. In an article about the Women's Union's work, Mai Thi Kim Hoang writes that, "support here (in Chau Thanh) is to entice unfortunate people to help themselves instead of relying on others" (2001). This approach to service is aimed at sustainability. It integrates charity donation with opportunities for finding employment and poverty reduction which in turn reduces harm in that person's family. The program, "considers concrete cases with concrete people with diverse requirements to create good conditions for them to make decisions on coping with their own problems" (*ibid*).

As is discussed in more detail below this program is a model for community-based care. It integrates service to the community with support for the people living with HIV and AIDS. The goal is to ultimately alleviate the poverty of those living with the disease while offering emotional support. The emotional stress of living with HIV and AIDS causes people to lose the drive for life and success, despite their inability because of the disease. This program offers such things as loans so that people can open small businesses to keep them busy and employed while still healthy. It is best for an asymptomatic HIV patient to be occupied and mentally well so that the tax on their immune system does not overwhelm them quickly. This program offers good solutions to some real problems faced by the more impoverished and rural people of An Giang Province. However, the Women's Union is limited in its ability to reach all people living with HIV and AIDS. As an example, one AIDS patient that I spoke with had been diagnosed with HIV for six years, in which time she had been visited by a Women's Union representative once who brought her sugar, milk, and a small amount of food. The programming in An Giang for support and prevention seems to be well intentioned and community centered, but lacks resources to access the majority of people who need help the most.

In Can Tho, prevention programming is vastly different from that discussed above. As in Chau Thanh, a majority of the prevention communication with the general public occurs through the projects of mass organizations. I spoke in detail with Ms. H.T. Thao, the director of HIV programming in through the Can Tho Youth Union who described the groups activities. The three main branches of the Youth Union's outreach activities include; 1st Media, such as through meetings, marches, performances, television programming and camping 2nd Funding, or the distribution of loans to people affected by HIV or at-risk of infection to open businesses and alleviate poverty; and 3rd Personal Outreach, through peer education, life skills education, and performance programming (Thao, H.T., personal communication 2006). This broad and general programming is crucial to the dissemination of prevention information in high population area. Ms. H.T. Thao however, conceded that their ability to directly address people directly in a personal way is limited. The size of their programs is usually large, so people can join the activities but cannot get direct information from counselors (*ibid*). Whereas the programming in An Giang focuses on a personal and community level but lacks resources to reach the entire population, in Can Tho the programming is broad and extensive but lacks the effectiveness of personal communication.

A final prevention outreach organism that I will discuss is the Program for Men's Health also through the Can Tho Youth Union. This project is funded by Family Health International and according to Mr. Ngoc Tain, it works to improve the knowledge of counselors for men in HIV awareness and to communicate with as many shop at-risk men in Can Tho as possible (personal communication, 2006). The primary of goal of this project is to, "promote behaviors to reduce the sexual risks of HIV transmission among male clients of FSW through effective communication and access to services and products" (Truong & Murray, 2005). As demonstrated above, the issue of men's knowledge of and role in HIV prevention is critical, particularly in a place where intercourse with clients of sex workers and

their wives is a primary route of infection. This project is still in the planning phases and the first investment period will end in June of 2006. The success of this project is contingent upon sufficient funding and its effectiveness is yet to be seen.

9.3.3 - Governmental and Non-Governmental Organizations

HIV and AIDS are first and foremost a development problem. Currently, 95% of the world's HIV cases are in developing countries (UNAIDS, 2005a). With a disease as powerful and widespread as AIDS, financial, human, material, academic, and structural resources are all necessary for treatment and prevention. In places where those resources are lacking, the disease is able to have a stronger foothold. Further, the spread of the disease can reduce a country or region's amount of treatment and prevention resources. It is ultimately the task of national governments and international aid organizations to carry the burden of the potential and current destruction caused by AIDS. The effectiveness with which officials bring power and resources from the national and international level to the local and individual level is an indicator of their success in treatment and prevention.

On the national level, Vietnam's elected officials have an obligation to tackle the HIV/AIDS epidemic before it becomes uncontrollable as it has in other parts of the world. Elected officials are responsible for the implementation of law, policies, strategies, and decisions regarding HIV/AIDS treatment and prevention. They decide on resource allocation and monitor the effectiveness of its utilization. They are also responsible for communicating with the general public about their insights on the disease as well as setting a precedent against stigma and discrimination (UNFPA, VAPPD & UNAIDS 2005).

Recently, the Vietnamese government published the report on "Scaling Up Towards Universal Access to HIV/AIDS Prevention, Treatment, Care, and Support in Vietnam" (Hanoi 2006). This denotes important and timely actions of the government some of which include the expansion of a network of clinics for testing and treatment of AIDS. There are however,

two important problems in this report. First, the government continues to not budget sufficient funds for HIV/AIDS prevention and care. The estimated need for adequate epidemic prevention is \$1 USD per capita, however in 2005, only \$0.24 USD per capita was spent in this sector and only \$0.06 USD of this came from the Vietnamese government. The remaining \$0.18 USD was covered by international aid (Hanoi 2006). It was estimated that the total funds allocated in this sector are only sufficient to cover the mandatory testing implemented in the country (UNFPA, VAPPD & UNAIDS 2005). It is understandable that Vietnam, as a developing country, would not be able to cover the entire financial need of prevention and care. However, according to Craig, with the incidence of Doi Moi in 1986 and the opening of a free market in Vietnam, “officials channeled money not into public health and education but into civic construction projects, where kickbacks are easier to conceal” (2002). If that trend continues today in light of the pending AIDS epidemic, it should be turned around quickly to avoid destruction to impoverished and upperclasses alike.

The other unfortunate item in this year’s report is the lack of the national government’s support of community-based care. It is mentioned in the report briefly and is stated as the responsibilities of local authority and private groups. The government should not avoid developing a program that is the most cost-effective of its type and gets at the root of the problem as is seen below.

According to the recommendations of MOLISA and UNICEF, the government desperately needs to standardize its response to HIV and AIDS. It is necessary to have a national registry HIV infection so that data-gaps can be filled. Also there needs to be a standard protocol for testing and treatment nationwide (2003). Using models from countries with similar epidemics or more sophisticated national registries would be a progressive solution to many of Vietnam’s problems in controlling the disease.

There are too many international NGO's working on HIV/AIDS prevention and treatment in Vietnam to describe or enumerate. However, because until recently, the epidemic has been centered in large cities, only a few NGO's have branched out to the Mekong Delta. Those few have had critical roles in prevention thus far and will continue to be a foundation of support to those healthcare facilities and counseling centers that are still in growth stages. Family Health International (FHI) works extensively in the areas I studied in promoting community-based care with local leadership. They support the Club for Women's Health and the Men's Health Project in Can Tho which have been shown to be the most promising prevention programs in the area. They also produce publications for young adults on prevention that are up-to-date, and are culturally concise and yet sensitive. Many of FHI's activities are supplemented by money from CARE, Life-Gap, Global Fund, and others.

Another NGO of interest is the Vietnam-CDC-Harvard AIDS Partnership (VCHAP). As opposed to implementation of prevention programming or funds for infrastructure or operating costs, VCHAP works to train medical professionals in up-to-date testing and treatment procedures. This is crucially important because as AIDS is a modern disease with no cure, the most effective treatment regimes are constantly changing. Vietnam, as a developing country needs to keep up with the biomedical and pharmaceutical world provide the most effective care possible.

The Sangha Metta Project is novel NGO that has had a strong influence in the amelioration of the AIDS epidemic in Thailand. Implemented and run by Buddhist monks, the Project follows the Buddha's teachings in the belief that a core aspect of HIV/AIDS condition is ignorance about the condition among both sufferers and the general public (Maund 2005). This stance addresses what I would argue is a fundamental problem in Vietnam's epidemic. Those people that are not infected, through stigma and distance, do not invest themselves in the well being of those people who are infected with HIV. Because the swiftest and smoothest

path to amelioration of the disease is through the work of those who have health and resources to address problems, the Sangha Metta Project can serve as a model for community-based prevention and care in An Giang and Can Tho. The Project has spread to other southeast Asian countries, but has very low profile in Vietnam.

A third type of NGO that has proven to be effective in alternative means of support is the social marketing sector. DKT International works in general family planning, but treats HIV and STD prevention as one of its main objectives. They serve as a distributor of family planning products which, in Vietnam, means primarily condoms to the private sector. The idea behind these initiative is that, “the public sector distribution of (family planning) products is usually much less efficient than the private sector...and social marketing makes products and services affordable by subsidizing the price” (DKT International 2005). DKT sells OK and SuperTrust brand condoms to 10,000 pharmacies in Vietnam at subsidized prices so that they can be sold to the general public at favorable prices and still reap a profit for the merchant. DKT estimates that since beginning distribution in Vietnam in 1993, that their products have prevented 85,000 HIV infections (*ibid*). However, these products are relatively useless unless the general public uses them.

9.4 – Trophic Interactions

The study of ecology must look beyond a single species or population in order to understand how the ecosystem works. Identifying trophic levels and measuring the interaction between them illuminates the function of the organism that make up those levels and aids in analysis of whole communities. An example of a simple trophic interaction is the primary production of plants which feed higher level herbivores which in turn are consumed by carnivores.

In human ecology, people group themselves into social structures that fit well into trophic level systems because of the services they provide or the resources they consume. I

have chosen this category to examine formal information dissemination in Can Tho and An Giang. The national government and higher authorities who write and publish prevention information

I was first interested in examining HIV prevention education in the Vietnamese public schools after an informant expressed to me the lack knowledge of safer sex and HIV prevention gained through secondary school (Thao, H.N., personal communication 2006). She said that they learned briefly the symptoms of AIDS and modes of infection but because of the conservative curricula, they learned very little about condom use and prevention measures. During a visit to Nguyen Viet Hong High School (grades 10 through 12) in Can Tho City, I was able to speak with several teachers about health, sex, and HIV education. At this school, there are no health teachers. The curriculum for HIV prevention is published in a pamphlet by the national government which includes guidelines for teaching the material. Since there is no formal time in the yearly curriculum for health education, this school sets aside four 45 minute periods each year in the month of December to cover the topic. One of these periods is devoted to safer sex education (Muoi, personal communication 2006). Because of the lack of time devoted to this type of education, a 15 page portion of the pamphlet is photocopied and given out to students. The material from this pamphlet is supplemented with plays, songs, and visits by doctors on the subject of HIV prevention at different times of the year.

I was told by teachers as well as the above informant that students were generally not given details on prevention methods because it is best for students to learn about it on their own as personal motivation is the best way to learn the material (Muoi, personal communication 2006; Thao, H.N., personal communication 2006). This attitude reflects the difficulty with conservative curriculum in that many students will not pursue independent learning about safer sex methods and HIV prevention. Thus the curriculum designed for

secondary schools in health education is severely lacking and leaves many mobile youths vulnerable to poor lifestyle choices.

9.5 – Competition for Resources

Ultimately, the makeup of an ecosystem is determined by competition between organisms for such resources as light, water, nutrients, and space. Likewise, human society is subject to such constraints as natural resources and in modern society the global economic system. As is mentioned above, HIV and AIDS are a problem related to degree of development and poverty. In Vietnam, money allocated for HIV/AIDS treatment, prevention and care competes with funds for poverty alleviation, infrastructure growth, and expansion of export capacity. Unfortunately, this disease, because of its devastating effect on the immune system and diverse types of opportunistic diseases, is very expensive to treat. And as with any chronic or terminal syndrome, costs are continuous and long term.

Current treatment of AIDS involves complex drug regimes contingent upon the stage of the syndrome's progression and individual patient's condition. This regime is coined anti-retroviral therapy (ART) and includes drugs which work to maintain immune function as well as ameliorate opportunistic infections and cancers. These drugs are effective and modern ART has extended the lives of AIDS patients to ten or fifteen years after development of symptoms. This is a great improvement over treatments offered twenty years ago. Because ART is readily available in many parts of the developed world, the epidemics in Europe and North America are under control and incidence is declining. However, in Vietnam, like in other developing countries, only 12-18% of known AIDS cases have access to ART (Hanoi 2006). This is a serious problem because treatment of AIDS patients decreases the likelihood that they will infect others (Fan, Conner & Villareal 1994).

There are solutions to this resource competition problem. The William J. Clinton Foundation HIV/AIDS Initiative (CHAI) has worked since 2002 with generic drug

manufacturers to reduce production costs and ensure a high-consumption market in countries where AR drugs are needed the most (Soni & Magaziner 2005). CHAI began distribution in Africa and the Caribbean, but since 2004 has begun expanding to other parts of the world. In March of 2006, CHAI began a 48 billion VND project with the Vietnamese MOH and the Australian Agency for International Development to help bring affordable drugs to Vietnam (Saigon Times 2006). This investment is coming at a crucial time because in rural areas like Chau Thanh District, only about 15% of AIDS patients are receiving treatment, many of whom cannot receive all components of ART which includes lymphocyte testing (Hien & Tuan, personal communication 2006). Other serious issues hinder pricing agreements such as that between CHAI and drug producers because many countries cannot afford the high-demand orders that are required to make the low-pricing possible. Additionally, most of the ARD's purchased through CHAI are part of first-line treatment. In order for ART to be effective, second-line treatment drugs are necessary though they cost at least ten times per regimen more than first-line ARD's (Soni & Magaziner 2006). Similar social marketing methods and greater investment is needed deliver access to ART for all PLWHA's.

10 – Discussion: Communities

In natural science, the community is the fundamental building block of an ecosystem. It is all those organisms in a unique place at any given time that interact through flows of energy, competition, and facilitation. Why is community a critical aspect of our look at the human ecology of HIV and AIDS? I close this paper with an argument for community-based care as the most diverse and effective solution to the HIV/AIDS epidemic.

Community-based care uses the synergy of human communities, such as those found in Vietnam's more rural villages to address multiple difficulties associated with disease. Community-based care relies first and foremost on reduction of stigma and discrimination among the neighbors and families of PLWHA's. Once this is accomplished, individuals and

groups in the community can offer counseling, support, and financial assistance. Another critical component of community-based care is the locality of medical facilities. If a patient can receive treatment at or near home, it is far less expensive than institutionalization because it reduces travelling costs and doesn't require that a patient pay for hospital stays.

MOLISA/UNICEF have advocated for the implementation of community-based care in 10 provinces with the highest HIV prevalence (2003). These programs are just beginning to bet off the ground and they will need more support from the government and NGO community if they will end up being effective in time.

I end finally on a note of optimism. Though HIV/AIDS is a devastating disease, and its effect on human health and ability is unprecedented, the progress made in the world's fight against it has been successful in a lot of ways. ARV's and other drug therapies are able to extend the lives of AIDS patients well beyond what was possible only 15 years ago. Because of far reaching strategies in prevention education and condom use, many parts of the world have seen decreases in prevalence. It is a matter of time only; that those solutions can permeate the developing world. Thus, there is much to hope for and plenty of work to be done.

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12 - Appendix

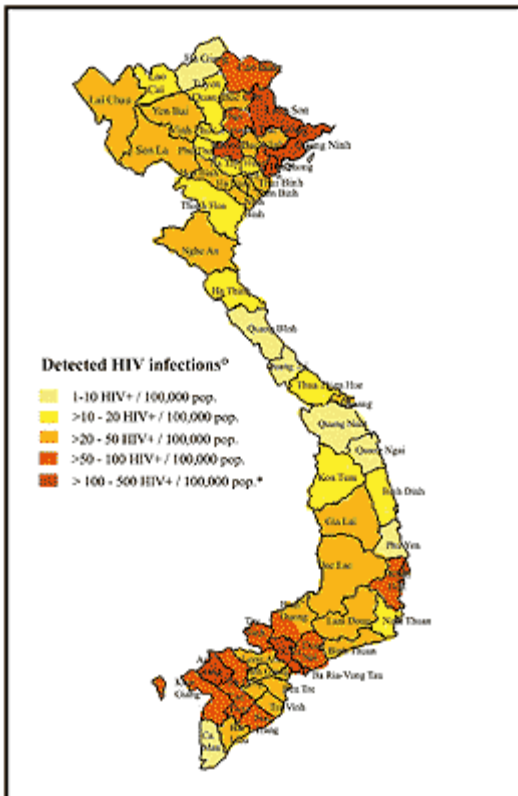


Figure 1: Map of recorded HIV prevalence by province in Vietnam (UNAIDS maps 2005)

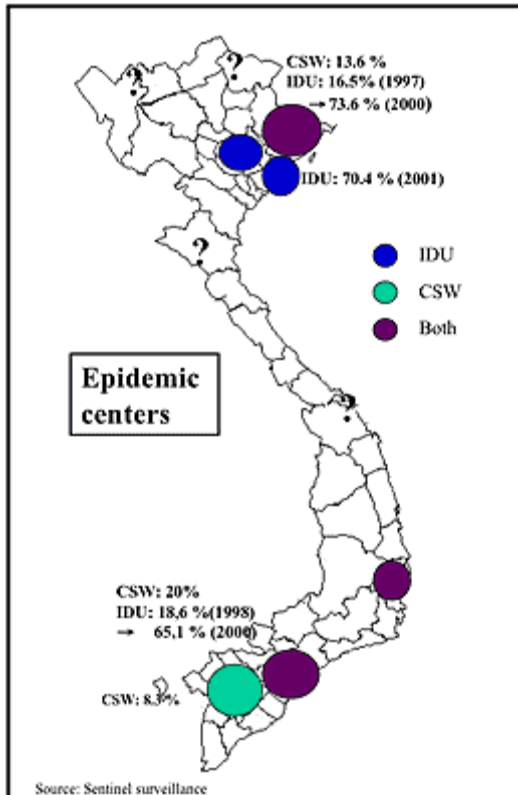


Figure 2: HIV estimated epidemic centers in Vietnam by type (UNAIDS maps, 2005).