

ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS): PUBLIC  
UNDERSTANDING, OPINION AND RESPONSE

by

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ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS): PUBLIC UNDERSTANDING,  
OPINION AND RESPONSE

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## Abstract

Acquired Immune Deficiency Syndrome (AIDS) is discussed in an historical, medical and social context, describing major factors influencing public understanding and opinion. Emphasis is devoted to AIDS issues involving cause, transmission, antibody testing, available resources, and recommended solutions. This study undertook to examine public understanding and opinion in order to assist in establishing a focus for future AIDS education material.

A telephone survey was conducted with 268 adults selected randomly from a stratified sample of the fourteen cities/municipalities comprising the Greater Vancouver Regional District. An equal number of male and female respondents were questioned, ranging in age from 19 to 87.

The data collected from the telephone survey reveal that while the majority of the selected sample are not worried about contracting AIDS, over half of the sample have an understanding of AIDS that is not consistent with current medical information. The data reveal relationships between understanding, opinion, and demographic characteristics, with uninformed respondents expressing opinions based upon fallacy, fear and discrimination.

Based upon the data obtained in the survey, recommendations are made for AIDS education material with respect to the following: demystifying the data; personalizing the instruction; and increasing awareness of personal risk and susceptibility.

To my mom and dad

## QUOTATION

... We cannot plead that we must wait "until all the facts are in," because we know full well that all the facts never will be in. Nor can we argue that "the facts speak for themselves" and leave it "to the politician and the citizen to draw the practical conclusions." The facts are much too complicated to speak an intelligible language by themselves. They must be organized for practical purposes, that is, under relevant value premises. And no one can do this more adequately than we ourselves.

Gunnar Myrdal

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## Chapter I

### Introduction

#### The Need for the Study

Since the first mention of Acquired Immune Deficiency Syndrome (AIDS) in the medical literature in 1981 (Centers for Disease Control, 1981a, 1981b), AIDS has gradually become a pandemic at the centre of scientific, medical, and social attention and controversy. AIDS is both a natural phenomenon and, potentially, the greatest natural tragedy in human history (Gould, 1987).

There are currently 83,292 reported cases of AIDS in the world (Federal Centre for Disease Control, April 5, 1988) and an even larger number of individuals who are infected but not experiencing the symptoms that fulfill the criteria for an AIDS diagnosis. And since for every person with AIDS, according to one health official's estimate, there is an average of eight emotionally affected relatives and intimates (Walker, 1987), that comes to hundreds of thousands of lives already disrupted directly by the disease. That is just today. The incidence of AIDS may even be greater considering the possibility that some cases may go undiagnosed and unreported. At present there is no

cure and the pool of infection is widening. Batchelor (1984) suggested AIDS has become a psychological emergency, with the emotional impact of a modern-day black plague.

In 1982-1983 world attention was only beginning to be directed towards AIDS, while simultaneously the science of immunology was initiating great advances. During the past three years scientists have collected more data on the nature of AIDS than they have during forty years of research on polio (Gallo, 1988). A virus agent has been isolated and its mode of transmission determined, all in record time (Suzuki, 1987). Furthermore, antibody tests have been established and blood banks in North America cleaned-up.

Despite this five year period of intensive research, the disease remains shrouded in rumor and misinformation. It is suggested that as the field of medicine has progressed in its understanding of the disease, the general public has been slower at keeping abreast of the developments in research. As the number of people with AIDS has increased and the public has become more aware that members of specific groups (ie. homosexuals) are not the only individuals at risk, media attention has increased (Baker, 1986). The general public cannot escape the almost daily mention of the syndrome on the radio, television, or in newspaper or magazine articles. Almost daily, doctors report that no cure has yet been discovered, and the media

assure us that AIDS carries with it a certain death sentence.

Unfortunately, inconsistencies in newspaper articles, misleading statements and biased reporting, in conjunction with the sometimes complicated medical information, have contributed to the general public's inability often to understand the AIDS issues. It was inevitable that the media would try to capitalize upon the highly controversial nature of some of the AIDS issues. Much of the reporting has been sensationalistic, promoting widespread fear and even panic among the public (Albert, 1986). At the same time the media has also tried to communicate to the public what people should "do" or "not do" to protect themselves. With a vaccine and a cure for AIDS both probably years away (Leishman, 1987b), prevention of the disease through public education is considered crucial if lives are to be saved.

On April 5, 1988 the Federal Centres for Disease Control reported 1,663 cases of AIDS in Canada. In Canada, Ontario, Quebec and British Columbia are the hardest hit provinces, with British Columbia having the highest AIDS rate of 115.4 cases per million of population, far in excess of the 73.2 and 74.6 cases per million of population in Ontario and Quebec respectively. A most disconcerting fact about the numbers of cases per million in British Columbia is our relative small population when we consider that there

are 65.5 cases per million of population in Canada and 228.1 cases per million of population in the United States all told. It is very evident that British Columbia, and particularly Vancouver, is in serious trouble.

### Statement of the Problem

As the number of people with AIDS in Vancouver increases most individuals agree that the general public should be informed about the disease's etiology, epidemiology, and prognosis. However, in Vancouver different groups and organizations have been slow to respond, possibly because AIDS has been predominantly associated with male homosexuals and intravenous drug users, two stigmatized groups within society. It has been suggested that how AIDS information is disseminated and what type of AIDS education programs are offered depend to a large extent on an organization's or individual's understanding of the disease. In Vancouver, and across North America, religious groups, health agencies, community groups and governments have been unable to come to a consensus on what should be done for the public because they all differ in their philosophical and moral beliefs.

The general public have also been unable to agree on a number of AIDS related-issues because among the public exists a wide spectrum of differences in philosophical

beliefs and opinions. Recognizing that a lot of the public's beliefs and opinions are at least partially based in fear and ignorance it has been assumed that the provision of factual information will inform opinions about the disease. However, after constant media attention that has brought awareness to the vast majority of the public since at least 1985 (Gallup Canada, October 21, 1985) there has not been any formal attempt to determine extent and kind of understanding as well as opinions held by the Vancouver general public. Determining public understanding and opinion and whether there is a relationship between the two would assist future AIDS education programs in deciding how best to instruct the public.

### Objectives of the Study

The present study has 5 objectives:

1. To examine the level of concern about AIDS among a selected sample of the Greater Vancouver Regional District (GVRD) population.
2. To examine what is understood by the selected sample of the GVRD population in the areas of AIDS cause, transmission, testing, and resources.

3. To examine the opinions the GVRD sample have towards AIDS related-issues dealing with transmission, testing, cause, and solutions.

4. To examine any relationships between understanding about AIDS and the opinions about AIDS related-issues as held by the selected sample of the GVRD population.

5. To examine any relationships in the selected GVRD sample according to demographic characteristics with respect to what is understood and opinions about AIDS.

#### Definitions of Terms

The following definitions of key terms are used in the study:

Acquired Immune Deficiency Syndrome (AIDS) - An acquired defect in immune system functioning which reduces the affected person's resistance to certain types of infections and cancers.

Antibody - Protein molecules that are produced and secreted by certain types of white cells in response to stimulation by an antigen.

Antigen - Any substance that provokes an immune response when introduced into the body.



Bisexual - One who is attracted sexually towards both genders.

Communicable disease - Any disease that can be transmitted from one person to another.

Contagious disease - A communicable disease with transmission occurring through a disease carrier, or by spread of infected droplets coughed or exhaled into the air.

Enzyme Linked Immuno Sorbent Assay (ELISA) - A chemical test designed to detect HIV antibodies; the chosen test for screening blood supplies because it is less expensive than other tests. However, its hypersensitivity often causes it to detect antibodies where there are none, entailing the destruction of uncontaminated, along with contaminated, blood.

Epidemic - A sudden outbreak of infectious disease that spreads rapidly through the population, affecting a large proportion of people.

Epidemiology - The study of epidemic disease, with a view to finding means of control and future prevention.

Gay - Often used interchangeably with male homosexual; however, it has a wider application referring to a total lifestyle, rather than sexuality.

Heterosexual - One who is attracted sexually toward someone of the opposite gender.

Homosexual - One who is attracted sexually toward someone of the same gender.

Human Immunodeficiency Virus (HIV) - The organism believed to cause AIDS, perhaps in concert with other as yet unknown factors. Formally called LAV, ARV and HTLV-III.

Immune Response - The activity of the immune system against foreign substances.

Infectious disease - A communicable disease with transmission occurring through direct physical contact.

Kaposi's Sarcoma (KS) - A tumor of the walls of blood vessels. Usually appears as pink to purple spots on the skin but may also occur internally in addition to or independent of the skin lesions. Kaposi's Sarcoma is frequently fatal in its course.

Lymph - A transparent, slightly yellow fluid containing primarily lymphocytes. Lymph is composed of tissue fluids collected from all parts of the body and returned to the blood via the lymphatic vessels.

Lymphadenopathy - Swollen, firm and possibly tender lymph glands. The cause may range from a temporary infection such

as the flu, mononucleosis or lymphoma which is cancer of the lymph nodes (disease of the lymph nodes).

Lymph Nodes - Small bean-sized organs of the immune system, distributed widely throughout the body.

Lymphocytes - Small white cells, normally present in the blood and in lymphoid tissue, that bear the major responsibility for carrying out the functions of the immune system.

Opportunistic Diseases - Those diseases that are caused by agents that are frequently present in our bodies or environment but which cause disease only when there is an alteration from normal healthy conditions, such as when the immune system becomes depressed.

Pandemic - An epidemic so widely spread that vast numbers of people in different countries are affected.

Person With AIDS or People With AIDS (PWA) - The politically correct phrase for people who are living with an AIDS diagnosis. This is the more correct term and should be used in place of AIDS victim, patient, or sufferer.

Pneumocystis Carinii Pneumonia (PCP) - A lung infection seen in immuno-suppressed people. It is caused by an airborne parasite present almost everywhere but which is normally destroyed by healthy immune systems. Once persons develop

PCP they are susceptible to reoccurrence of the disease and the outcome is often fatal.

Safe or Safer Sex - Any sexual practice that reduces the risk of transmitting the AIDS virus. Sexual activities are often classified by whether they are Safe, Probably Safe, or Unsafe.

T Cells - White blood cells that are processed in the thymus. They are responsible, in part, for carrying out the immune response. They are also called T lymphocytes.

Suppressor T Cells - Subset of T cells that "turn off" antibody production.

Virus - Submicroscopic microbe causing infectious disease. Can reproduce only in living cells.

Western Blot Assay - The standard test for detecting HIV antibodies. It is more accurate, but too expensive to be used to weed out false, positive ELISA results.

### Organization of the Thesis

This chapter has included background information, statement of the problem, objectives, and definition of terms. Chapter Two provides a review of the related literature. Chapter Three articulates the methodology of the study. It describes the sample group and the instrument

and methods used to collect the data. Chapter Four presents the findings of the study, and Chapter Five discusses the results, and makes recommendations for AIDS education programs.

## Chapter II

### Selected Review of the Literature

Like other diseases in history, AIDS has unique and common characteristics, both medically and socially. This study is concerned more with the impact of a disease upon individuals and communities, than with the medical identity of the disease itself. The literature review in this section covers two main areas: (1) a description of two major diseases in history in terms of their cause, symptoms, route of transmission, and public reaction; and (2) a description of AIDS explaining the cause, symptoms, route of transmission, and public reaction. Public reaction to illness is discussed in terms of discrimination, stigma, and fear of death and dying.

#### Two Major Diseases in History: Plague and Leprosy

##### Plague

After an absence of about 600 years, the plague struck Europe with devastating force in the middle of the fourteenth century and returned periodically thereafter until modern times (Barnes, Quan, & Poland, 1985). Commonly known in European history as "the Black Death" (Gottfried, 1983), "the Great Mortality or the Great Pestilence" (see

Shrewsbury, 1970, p. 37), this pandemic disease had a marked effect on all society. While it is difficult to determine the precise degree of depopulation caused by the plague, the mortality rate was certainly extraordinary, with estimates by Polzer (1982) of about one-fourth to one-third of the western European population.

We have an enormous advantage over our predecessors in knowing the true nature of the plague. Not only can we now control plague infection, but we can also find meaning in what once seemed to be incoherent patterns of plague epidemics.

The human disease of plague is caused by the invasion of the body by a bacterium, *Pasteurella pestis*, which is primarily an internal parasite of rodents and particularly of the rat (Shrewsbury, 1970). The transmission of the bacterium from rat to rat and from rat to human is by a rat-flea, because *Pasteurella pestis* can only invade the human and rodent body through certain routes (Campbell, 1966; Dols, 1977; Gottfried, 1983; Shrewsbury, 1970). A bacteriologist, J.F.D. Shrewsbury (1970), explains that when a flea lands on an afflicted rat it ingests the plague bacilli from its host. The plague bacilli multiplies rapidly and becomes blocked in the esophagus of some types of fleas, making the flea increasingly hungry. The "blocked" flea seeks a host, any host, and attempts to feed.

However, because the flea's esophagus is blocked it is unable to feed and instead regurgitates the bacilli back into its host. Fleas are also known to defecate at the same time they feed. Therefore the bacillus can be excreted in the flea's feces. *Pasteurella pestis* is then inoculated, through the wound made by the flea, into the circulatory system as the person scratches to relieve the irritation. Fleas usually hibernate in winter, and therefore, in medieval England, epidemics of plague usually erupted towards the end of spring, and rose rapidly to peak intensity in late summer or early autumn (Mullett, 1956).

The progress of plague is affected by the habits of people and the nature of their commerce and communications, as well as by the density of population and behavior of a vast variety of species of rodents and their parasites. Rodents and parasites are influenced by climate, harvest, and natural ecological changes (Bean, 1982; Dols, 1977; Shrewsbury, 1970). The long distance transmission of plague is usually not the result of the active migrations of rats, but the result of the passive transportation of rats or their fleas by humans (Mullett, 1956). Modern research has shown that infected fleas can survive for a prolonged period in grain and clothing such as blankets and furs. A blocked flea, in favorable conditions, can remain alive and



infectious for up to fifty days, even without food (Gottfried, 1983; Shrewsbury, 1970).

Plague may take three clinical forms in animals and humans: bubonic, pneumonic, and septicaemic (Gottfried, 1983). One major difference between these three forms of plague concerns whether they are contagious or infectious. Contagion means the transmission of the disease by an agent while infection implies the lack of such an agent and the communication of the bacilli directly. Bubonic plague is contagious, depending almost entirely on flea bites, and affects the lymphatic system of the body. The observable symptom is the appearance of buboes, or inflamed nodes, which appear early in the illness, usually during the second or third day (Campbell, 1966). They are located in or near the groin (Greek boubon: hence "bubonic"), in the armpits, or behind the ear in the neck (Dols, 1977). The typical case may be accompanied, at first, by shivering followed by a rise of temperature with vomiting, headache, giddiness, and intolerance to light; pain in the abdomen, back and limbs; and sleeplessness, apathy, and delirium (Campbell, 1966; Gottfried, 1983; Mullett, 1956). The severity of the bubonic form varies greatly in different epidemics and at different stages of the same epidemic, with almost 90 percent of the people afflicted with the disease dying within the first two weeks (Shrewsbury, 1970). Being insect

borne, bubonic plague depends directly on flea population density and the persistence of the infection in rodents.

Unlike bubonic plague, primary pneumonic plague is infectious. Bubonic plague may produce a secondary pneumonia, and consequently an epidemic of pneumonic plague may arise. In some conditions, plague may take a primary pneumonic form from the outset (Dols, 1977). The onset of the infection is marked by shivering, with difficult and hurried breathing, coughing, and spitting (Dols, 1977). The spitting shows a mixture of blood containing plague bacilli, indicating a massive infection of the lungs. The bacilli are sprayed into the air each time the person coughs and are transmitted aurally to others (Campbell, 1966). The physical signs are those characteristic of bronchopneumonia (Gottfried, 1983). In contrast to the bubonic type of plague, therefore, pneumonic plague is not as dependent upon rodent and flea infection. Prostration is great, and the course of the illness is rapid; death usually occurs within three days and the mortality rate is almost 100 percent (Campbell, 1966; Dols, 1977; Shrewsbury, 1970).

Septicaemic plague results from the introduction of the bacillus into the bloodstream and is invariably fatal. This form of plague may be caused by the injection of bacilli from a flea directly into the bloodstream of the person or by the failure of the bacilli to be localized in the

lymphatic regions of the body (Ziegler, 1969). The course of this form of the disease is very acute, and the person may die within a few hours without any visible symptoms. This type of plague is often found in the bloodstream of those with advanced cases of bubonic and pneumonic plague (Campbell, 1966).

As a rule, if the disease is bubonic or septicaemic, plague does not spread directly from one person to another. Rarely are there enough bacilli in people to infect the fleas that ingest their blood. However, when the bacilli become localized in the lungs, as in pneumonic plague, they can be eliminated in large numbers when a person coughs. The disease can then be easily transmitted when the environmental and climatic conditions favor respiratory transmission among humans. Therefore, during the wet winter months in England, pneumonic plague would often replace bubonic and septicaemic plague as the main form of disease (Shrewsbury, 1970).

The origin of the plague disease did not become known until late in the nineteenth century and was not suspected by our medieval ancestors. Ignorant of the actual nature of plague, communities were completely vulnerable to the disease. The medieval response to plague may convey to us their sense of confusion and desperation; with medical

explanations based upon ignorance, and religious and magical beliefs attempting to allay justifiable fears.

The plague was considered by most Europeans to result directly from a miasma, or corruption of the air (Dols, 1977; Shrewsbury, 1970). The miasmatic theory is a combination of Hippocrate's and Galen's writings presupposing the world is composed of four elements: fire, air, water, and earth. These elements in turn are linked with one of four principal body fluids and assume certain qualities (Dols, 1977). In relation to miasma, it was believed that air is associated with blood, and blood is hot and moist. When individuals with pneumonic plague developed symptoms of spitting blood, a body fluid associated at the time with air, it seemed logical to believe in corrupt air as the causative factor.

With the transport and exchange of goods from a plague stricken town with a plague-free town, it was observed that cases of bubonic plague would suddenly appear within a few days of the reception of the goods. The causative agent was believed to be miasmatic but we now know that clothes, blankets, and furs can transport blocked fleas, and these starving fleas would, immediately upon being released, attack the people handling the goods (Shrewsbury, 1970). Following this observation, most Europeans believed the disease was contagious and set up protective measures to

keep out of the city infected persons or goods. As the plague advanced some cities prohibited the entry of anyone from outside and by doing so stopped the merchants from travelling from city to city (Campbell, 1966). Some Italian cities appointed guards at the city gates to prevent the entry of anyone who was not well known (Dols, 1977).

The miasmatic theory also developed from beliefs in natural causations of the disease; such as an unfavorable alignment of the planets or by earthquakes. The astronomical/astrological cause of the plague postulated the change of air through heavenly rays, heavenly lights, and heavenly bodies (Gottfried, 1983). Earthquakes, while probably believed dependent upon astrology, also received emphasis as a miasmatic force. It was believed that an earthquake was caused by the earth forcing fumes, shut up in its inner core, to the surface. In support of this hypothesis was the association of earthquakes followed by plague outbreaks in cities or towns, especially when they sometimes seemed to be downwind from the source of corrupt air (Dols, 1977; Ziegler, 1969).

The plague was believed to be so contagious that it was considered dangerous to have any dealings with those who suffered from the pestilence. Not only was it believed fatal if one breathed the same air as an infected person but

it was also believed by a fourteenth century medical authority, Guy of Chauliac, to be contracted visually:

... instantaneous death is when the aerial spirit going out of the eyes of the sick strikes the eyes of the well person standing near and looking at the sick, especially when they are in agony; for then the poisonous nature of that member passes from one to the other, killing the other. (Campbell, 1966, p. 61)

Visual transmission of the plague made sense at the time because visitors to a plague infected home did not realize the bacilli was actually being transmitted by the fleas in the roofs and under the floors. In medieval Britain the house-rat lived, bred, and died in the thatch roofing materials; while from its nests starving blocked fleas fell directly upon the humans below (Shrewsbury, 1970).

There were no cures for the pestilence and most people tended to die rather than recover. A variety of remedies were tried, from burning fires and incense, bleeding the sick, to magical beliefs and frequent praying (Campbell, 1966). In general the practices indicate a common need to supplement or replace inadequate medical knowledge with supernatural devices for protection and relief from plague. Whatever the remedies were, however, they were unsuccessful, and the best advice given by European doctors was to flee; to flee from the sick and whatever had belonged to them:

Father abandoned child, wife husband, one brother another, for the plague seemed to strike through breath and sight. And so they died. And no one could be

found to bury the dead, for money or friendship.  
(Gottfried, 1983, p. xiii)

Besides what was explained to be the physiological causes of the plague there were also beliefs in mental and moral factors. The real cause of the plague pandemic was believed to be a moral one; the European Christian viewed the plague as an overwhelming punishment from God for their own sins and those of their fellow Christians (Lerner, 1982). The common moral justification for disease was that God inflicted disease on the unrepentant sinner as punishment (see Exodus 9:8-12, Sixth Plague: the Boils). This supernatural explanation was propagated by the Church as a reaction from God for pure sin. Many Western Europeans also believed the plague to be a sign of a final judgment (Lerner, 1982). With medieval Christians believing that the world would end after certain culminating events, such as the reign of Antichrist, common belief was that the plague signaled God's displeasure and in some way predicted an end to the world (Dols, 1977). In general, European Christians reacted to plague with profound guilt and fear.

One European communal response to the plague took the form of persecution of alien groups, particularly the Jews. Lepers were also persecuted but on a much smaller scale (Dols, 1977). The image of the Jew in Europe during the later Middle Ages was as Antichrist. This image was fostered by the Roman Catholic Church and gained popularity

among its followers. It was probably founded on the need to seek a weak, unpopular, and easily identifiable scapegoat as the source of evil - the enemy of Christian religion (Lerner, 1982). The massacres of the Jews during the plagues were unprecedented in their extent and ferocity until the twentieth century. Attacks on cities inhabited by Jews were common, with one city of over 3,000 Jews being attacked twice until all the people were killed and burned (Lerner, 1982). The first attacks on the Jews resulted from their being accused of poisoning the water in wells. Eventually all European Jews were implicated after ten Jews in Chillon were forced to confess (Dols, 1977; Lerner, 1982).

In terms of a social response to plague there was a noticeable distinction between the European Christians and the Middle East Muslims. Most Muslims and Christians interpreted the plague quite differently because of their strong religious orientations (Dols, 1977, 1982). Unlike Christians the Muslim society never developed an apocalypse belief and there was no evidence for the appearance of a Messiah. The various minority groups were tolerated in medieval Muslim society and were not held responsible for the plague. There was no relationship, as found in Europe, between plague and the active persecution of minorities (Dols, 1982).



Three assertions followed by Muslim society regulated their behavior and help to explain their more tolerant responses during plague years:

- (1) a Muslim should not enter or flee a plague-stricken land;
- (2) plague is a mercy and martyrdom from God for a Muslim and a punishment for an infidel;
- (3) there is no infection. (Dols, 1982, p. 66)

By obeying the first tenet regarding flight the Muslims acted to preserve order in their cities and attempted to assist those afflicted with plague. A Muslim was not to violate civil responsibilities. The second tenet goes beyond European Christian beliefs of punishment and places Muslims inflicted with plague in positions of martyrdom. The inconsistency in this assertion between mercy and punishment possibly arose to explain why many children and good and pious people were dying. Instead of taking the role of a victim the Muslim was to trust God's will, and to believe in the rewards of an afterlife (Dols, 1982, 1977). The third and final tenet claims no interhuman transmission of plague because disease comes directly from God. By holding this belief the Muslim society did not blame others for the plague but instead accepted the disease as only another common disaster. This acceptance of disease from God as a part of life was contrary to European Christians' reaction of deep pessimism magnified by the preoccupation with death.

## Leprosy

Unlike the explosive epidemic plague disease, leprosy had no national economic or political importance; its burden was personal and local.

Leprosy is an infectious disease caused by *Mycobacterium leprae*, a first cousin to tuberculosis bacteria (Brody, 1974). Unlike tuberculosis, leprosy bacteria cannot be grown outside living animal cells, and even within them they multiply very slowly, remaining dormant for a long time. Leprosy bacteria probably spread from person to person as readily as tuberculosis, but disease follows less often, both because the bacteria are less virulent and because most people have a high degree of natural resistance to the disease (Cochrane & Davey, 1964). It is possible that leprosy often causes an infection which eventually heals and is never recognised. When symptomatic leprosy does develop, its incubation period is longer than in most other infectious diseases, often being measured in three or more years (Brody, 1974).

The precise form and progress of leprosy depends partly on the degree of natural resistance to infection, and particularly on both the intensity of the production of antibodies and the reaction of the body cells against the bacteria (Cochrane & Davey, 1964). A strong antibody response often eventually overwhelms the infection, but only

at the expense of widespread tissue destruction. Natural resistance does not depend upon antibodies but upon obscure, probably inborn, genetic and familial factors. Therefore, the clustering of leprosy in families has more significance than repeated exposure to infection (Brody, 1974).

The spread of leprosy is still not well understood (Reich, 1987). Bacteria are shed from infection in the nose, throat, and skin, and these are probably the sites to which they are first transmitted to others. Skin can only be invaded through cuts, scratches, or insect bites (Cochrane & Davey, 1964). No evidence supports the medieval belief that leprosy is commonly spread by venereal infection (Richards, 1977; Brody, 1974). Most compelling of all the arguments against sexual transmission of leprosy is the fact that although leprosy shows a strong family incidence, both husband and wife are affected in less than five percent of couples (Richards, 1977).

About nine in every ten people infected with leprosy bacteria do not show any signs of disease; some of the remainder have a mild and self healing infection; a few have more active and extensive disease (Brody, 1974). If the body reacts strongly to the infection (high resistance to leprosy), the skin is not severely disfigured, but nerves are damaged because of an intense reaction around bacteria lodged within them. It is common for fingers and toes to

become paralysed and they may eventually become easily injured, infected and mutilated (Brody, 1974). When, at the other end of the spectrum, there is a lack of response to bacterial invasion (low resistance to leprosy), the disease progresses unchecked, causing large lumps or patches on the skin (Brody, 1974). The voice becomes hoarse because of infection in the throat. Nerves are destroyed by invasion with large numbers of bacteria, but later than in the high resistance form of the disease. The eyes are often damaged in both forms of resistance, resulting in blindness (Richards, 1977). Between these two extreme expressions of the disease there are many shades of both.

Leprosy was incurable until about forty years ago. Drugs can now both minimize tissue destruction and eventually cure the disease (Richards, 1977). Deformities can often be corrected surgically. The key to successful management is early diagnosis and prompt treatment. However, what the twentieth century has only recently appreciated, the Middle Ages could not have been expected to know.

The physicians of the Middle Ages had very little training in diagnosing leprosy, and therefore, even in countries where leprosy was endemic, the disease was frequently misdiagnosed. Leprosy was often diagnosed as other diseases, likewise other diseases were often diagnosed

as leprosy (Brody, 1974). One hypothesis advanced to explain this error in diagnosis is that the medieval physician was deeply influenced by tradition, so what he brought to the sick bed was a mental set or bias based upon faulty medical writings (Brody, 1974; also see Gould, 1982). Medical writings of leprosy gave simple and strikingly similar accounts of signs and symptoms for the disease based upon what the previous "authorities" had written rather than upon each physician's personal investigation.

Medical writings based upon tradition helped perpetuate the idea of a leper being spiritually corrupt. The moral associations of leprosy are commonly found in medical literature during the Middle Ages (Brody, 1974; Richards, 1977). Whatever the writing at the time, one is likely to find in it that leprosy is spread through sexual intercourse or, more particularly, illicit sexual intercourse (Brody, 1974). The medical writers were generally agreed that lepers threatened society not only through infection but also through their corrupt and evil behavior. They nearly always warn that lepers burn with desire for sexual intercourse. Furthermore, most writers describe leprosy itself as a venereal disease. Such views of leprosy may have been due to the diagnosis of any disfiguring skin condition, including those caused by venereal diseases, to be leprosy. In addition, since lepers in asylums were

sexually segregated and therefore prevented from having normal sexual relations, it might have appeared that they showed unnatural sexual drives. On the other hand, the common physical condition of leprosy would weaken the person to the point where he or she would rapidly lose any sexual desire, or at least not contribute to a heightened sense of arousal. The idea that sexuality was enhanced by disease of leprosy was most likely a myth that is commonly attached to "sinners".

In short, the medieval physician was conditioned by authority and theory to describe leprosy inaccurately and unempirically. This situation was significant because it helped shape the attitudes of society, to create an atmosphere in which a disease, sufficiently horrible in itself, was viewed with unnecessary fear, loathing, and condemnation. It is reasonable to suspect that if the lepers had not been condemned for their "moral impurity", they would have nevertheless been thought of with distaste because of the physical disfigurement. The fear of the disease is probably natural. However, medieval medicine helped turn that fear into an unnatural horror, in which a multitude of diseases were diagnosed as leprosy (Richards, 1977). If someone merely had gross skin lesions or psoriasis they could be declared a leper. In a period when even the most aristocratic lived in filth and bathed

infrequently, infection and disfiguring skin conditions were commonplace, and as a result so were diagnoses of leprosy.

To medieval society leprosy was more than just a disease. It was terrifying to a person with leprosy not only because its inevitable end was death, but also because death would likely involve lengthy suffering and great social ostracism. Contemporary Government/Church laws had a substantial influence upon the person with leprosy because they also directly shaped society's attitudes.

Just as the physician viewed the leprosy patient as being morally corrupt, the church bishops and priests saw the leper as sinful and punished by God. There was however, an inconsistency in the church teachings because they simultaneously taught that a leper was given special grace from God but also that a leper was unclean and needed to be separated from others (Richards, 1977). When one balances this inconsistency, the disease was for the most part considered a stigma, and the leper's existence was more often a living hell rather than the purgatory which religion promised.

The stigma attached to leprosy created a climate where a person with a skin infection would be reluctant to seek help because s/he would fear the accusation of being a leper. As Richards (1977) explains, suspicion of a person

was often enough to arouse rumours of leprosy. For example, "evasive behaviors" such as not attending church for a long time were cause enough for investigation. Formal assessment followed with a physical examination (often superficial) conducted by someone who was considered an expert on leprosy. Such examinations were normally called by the parish and took place outside of the church. If leprosy was confirmed, the person would be told that s/he had to be separated from the healthy population. Separation of lepers was passed by law, a law founded upon fear of infection, not upon religious law. Such law instructed that a leper not mix with others, share their church, or be buried with them. As only the wealthy could afford home isolation, most lepers were forced to seek shelter and support in an institution.

The law specifying separation of lepers from society was also accompanied by ceremony and rituals, although these were not accepted universally (Brody, 1974). In removing the leper from the world the ceremonies treated the person with leprosy as if s/he was dead. The Church recognized that the steps it took were severe, even cruel; but out of fear of contagion, it set out to enforce isolation. During the ceremony, depending upon where and when it occurred, the person accused of having leprosy knelt before the altar or stood in a cemetery grave (Brody, 1974; Richards, 1977). The leper's face was covered by a black veil as mass was



said. The officiating priest threw a handful or spadeful of earth on the head or feet of the leper three times, explaining that the ritual symbolizes the death of the leper to the world. The priest said: "Be dead to the world, be reborn to God," and the leper replied, "O Jesus, my redeemer, you formed me out of earth, you dressed me in a body; let me be reborn in the final day." (Brody, 1974, p. 66). Then the priest would read the prohibition that explicitly segregated the leper:

I forbid you to ever enter the church or monastery, fair, mill, marketplace, or company of persons. I forbid you to ever leave your house without your leper's costume, in order that one recognize you and that you never go barefoot. I forbid you to wash your hands or any thing about you in the stream or in the fountain and to ever drink; and if you wish water to drink, fetch it in your cask or porringer. I forbid you to touch anything you bargain for or buy, until it is yours. I forbid you to enter a tavern. If you want wine, whether you buy it or someone gives it to you, have it put in your cask. I forbid you to live with any woman other than your own. I forbid you, if you go on the road and you meet some person who speaks to you, to fail to put yourself downwind before you answer. I forbid you to go in a narrow lane, so that should you meet any person, he should not be able to catch the affliction from you. I forbid you, if you go along any thoroughfare, to ever touch a well or the cord unless you have put on your gloves. I forbid you to ever touch children or to give them anything. I forbid you to eat or drink from any dishes other than your own. I forbid you drinking or eating in company, unless with lepers. (Brody, 1974, p. 66-67)

The leper was then given clothing (usually a long robe), utensils, an instrument such as a rattle or bell for warning people of his or her approach, and then taken to a leprosarium for isolation (Richards, 1977). In general this

was the ceremonial procedure used for segregating lepers in a large portion of Europe. Of course deviations from these ceremonies sometimes occurred, with the leper sometimes being dealt with brutally:

Several highly placed leprophobes, including Henry II of England, his great-grandson Edward I, and Philip V of France, took the position that the recommended ritual was unnecessarily symbolical. The revisions instituted by Henry and Philip were similar. Both chose to replace the religious service with a simple civil ceremony. It consisted of strapping the leper to a post and setting him afire. Edward adhered a trifle more closely to the letter of the ecumenical decree. Lepers, during his reign, were permitted the comforts of a Christian funeral. They were led down to the cemetery and buried alive. (Brody, 1974, p. 69)

The legal status of the leper, similar to but even more appalling than that of an infant or lunatic, placed the leper at the mercy of the law (Richards, 1977). Based upon the premise that lepers were declared dead by the Church, they were not allowed to make a will or inherit anything. The leper lost all rights of ownership and had to turn all of his or her property over to the leprasorium (Richards, 1977).

The leper's physical suffering was compounded by the anguish of being excluded from the world and having no legal rights. The leper suffered abuse, abuse which had its origin in the terror that the disease inspired in others. The leper was condemned, humiliated, and excluded. In return the response from lepers was often of shame and dejection (Brody, 1974). The shame was a moral response to

society's moral condemnation of leprosy. A person accused of being leperous could believe they were truly being punished by God.

To further justify the terror and fear felt by the public, lepers were often accused in Europe of purposely spreading disease by mingling with the rest of the population and/or using prostitutes (Richards, 1977). As the public's blaming and fear increased the leper's mobility had to be restricted further. Severe laws were often implemented to guarantee the isolation of the leper. Nevertheless, such severe laws were often not enforceable, and the lepers were not always isolated effectively (Richards, 1977).

Despite many European cities not enforcing laws to restrict lepers' mobility, the knowledge that such laws existed because of the supposed physical and moral corruption of the leper contributed to society's attitudes. Such laws contributed to and publicized an attitude toward lepers expressed by the Church and physicians (see Waxler, 1981, for similar descriptions of stigma and its confirmation by leprosy organizations in Sri Lanka).

## Conclusion

By attempting to understand the manner in which the public responded to both plague and leprosy, it has been necessary to examine the social and historical contexts in which the diseases existed, as well as the biological qualities of the diseases themselves. Public response to plague or leprosy could not be explained simply in terms of the biological nature of the diseases, for public attitudes went far beyond the presenting illnesses toward the more moral and social notions of sin and damnation.

There are distinct parallels between the public's response to plague, leprosy, and AIDS because similar historical and social factors have persisted over the years. Therefore, in attempting to understand public response to AIDS, it will be helpful to examine the historical, cultural and social circumstances in which AIDS is embedded, as well as the biological nature of the disease. The conditions considered important for understanding the public's response to AIDS are discussed in the next section of this chapter.

Influences Upon the Recognition  
of a New Disease - AIDS

In the past two decades medical science was able to boast about its conquest of infectious disease, at least in the wealthy industrialized countries. The general belief that modern medicine had "control" of all diseases was promoted by the effective treatment of many previously fatal infections. However, faith in the medical profession's ability to conquer all diseases was shaken when a new and apparently fatal illness appeared that was neither understood nor treatable.

The medical profession became aware of the possibility of a new disease when puzzling cases were reported of lung infections and a particular cancer. The lung infections were cases of *Pneumocystis carinii* pneumonia (PCP) found in five previously healthy, sexually active, young homosexual men from Los Angeles, California (Centers for Disease Control, 1981a). The reporting of PCP in these men was very unusual because PCP, which is caused by a parasitic organism, is seen almost exclusively in immune-suppressed individuals. These five men had no history of immune suppression. However, follow up of three of the five males showed abnormal decreased functioning immune systems

(Gottlieb, Schroff, & Schanker, 1981; Masur, Mischelis, & Green, 1981).

Another sign that a new disease was developing was the appearance of a rare cancer called Kaposi's Sarcoma among people that usually did not present with the disease. Kaposi's Sarcoma is a tumor of blood-vessel tissue in the skin or internal organs that had been known mainly among older Italian and Jewish men or in recipients of kidney transplants (Strigle, 1985). In the late 1970's, however, a more aggressive form of the same cancer began to appear among young white middle class males, a group in which it had been extremely rare. Many of the new Kaposi's Sarcoma patients turned out to have a history of homosexuality, and 26 of these young men provided the basis for the first reports of a new syndrome found in Los Angeles as well as New York City (Centers for Disease Control, 1981b).

With time, other types of unusual viral, fungal, and parasitic infections were being diagnosed among the homosexual/bisexual population. With the number of cases growing it was believed that these findings were not coincidental. The fact that the first reported cases were exclusively among gay men was to affect the whole future conceptualization of AIDS. It was suspected that some aspect of the gay lifestyle was the probable cause of the immune deficiency, opportunistic infections, and cancer

(Strigle, 1985). Soon the term "gay-related immune deficiency" (GRID) was popularized (Altman, 1986). Early research into GRID shifted the emphasis from looking for a specific organism as the cause of disease, to searching for factors in the "gay lifestyle" to explain what was happening. At this time it did not seem appropriate to look for a specific organism as the cause of GRID, since the patients did not know each other and they had no known common contacts with sexual partners who had similar illnesses (Centers for Disease Control, 1981a, 1981b).

Hypotheses about the gay lifestyle cause of GRID developed rapidly. One of the first theories pointed to the use of amyl and butyl nitrites, commonly referred to as "poppers". Although sold as room deodorizers poppers were widely used by gay men as stimulants (Altman, 1986). While studies were able to determine that nitrate inhalants were widely used in the gay world, their connection to disease and their effect on the immune system remained unclear and controversial (Fettner & Check, 1984). Similarly, steroid creams, lubricants and marijuana were all considered possible causes but none were substantiated (Strigle, 1985).

Another theory searching for the connection between gay lifestyle and GRID involved an immediate emphasis in research and writing on "homosexual promiscuity". Although the term promiscuity was rarely defined the belief was that

promiscuity by itself was the cause of GRID (Altman, 1986). Unfortunately, not only did writers communicate to the public that promiscuity was a risk factor but also that everyone with GRID (later also associated with AIDS) had necessarily been very promiscuous.

It was also proposed that GRID had no specific etiological agent. It was hypothesized that the patients' immune systems had simply broken down under chronic overexposure to foreign proteins carried by other peoples' white blood cells, or by infectious agents, or by sperm, especially if received anally (Gallo, 1987). These immune overload theories were derived from the belief that overindulgence in sex and drugs by promiscuous homosexuals could undoubtedly hamper their ability to resist common infections. Variations on this theme continued to resurface and prove important in the debate about the cause and prevention of AIDS.

The tendency to identify and refer to a certain group as being at risk for GRID reflected the scientific community's lack of understanding about the disease. It was believed helpful to identify these groups of people because it supposedly assisted in describing the particular behaviors that transmitted disease. Therefore, the attributing of particular behaviors to certain groups of



people continued as more cases were identified (Altman, 1986; Gallo, 1987).

In mid-1982 there was a major shift in the medical understanding when the disease was discovered among other groups. It became apparent that the same symptoms were present in another population - heterosexual intravenous (IV) drug users (Gold, Thomas, & Garrett, 1982). This group had similar immune abnormalities and were hypothesized to have overloaded their immune systems similar to homosexual men. With the recognition of this new group it became apparent the acronym GRID was no longer appropriate. Instead, the medical community gave the new disease the name Acquired Immune Deficiency Syndrome (AIDS). The term "acquired" is used because people with AIDS are known to have normal immune system function prior to the onset of the syndrome. "Syndrome" refers to a collection of conditions that are often seen together and which may have a common underlying cause (Mayer & Pizer, 1983).

As cases of AIDS continued to be reported in these first two groups, it was not long before more high risk groups were identified. As doctors became more aware of AIDS, they recognized similar cases among heterosexual hemophiliacs (Centers for Disease Control, 1982a) and Haitian immigrants (Vieira, Frank, & Spira, 1983). At this time it was believed that all cases of AIDS could be linked,

in some way, to four major high risk groups:  
homosexual/bisexual men, intravenous drug users,  
hemophiliacs, and Haitian immigrants.

The connection between the men with hemophilia and AIDS suggested that they contracted the disease through hospital blood banks. This seemed logical because the blood clotting products that hemophiliacs use are derived from pooled donated blood (Jones et al., 1985). This hypothesis was eventually shown to be correct when other blood transfusion recipients contracted AIDS (Centers for Disease Control, 1982b). This finding resulted in adding to the list of high risk groups those people who had received blood transfusions. As cases of AIDS possibly related to blood transfusions were reported it unleashed the first major scare over AIDS in connection with contamination of the blood supply.

In reaction to this fear there was an immediate effort to continue identifying population groups that were suspected as being carriers of AIDS, to prevent them from further contaminating the blood supplies (Leibowitch, 1985). Hemophiliacs and blood transfusion recipients were mostly excluded from this process, since they were viewed as being recipients of contaminated blood, rather than having contributed to spreading AIDS by donating blood. This viewpoint helped to popularize the term "the innocent

victims". Excluding blood product recipients, there remained the perception of three high risk groups: homosexual/bisexual men, intravenous drug users, and Haitians.

Haitian people were singled out initially because of the prevalence of AIDS diagnoses in immigrants to the United States. Later, researchers suggested the high rate of AIDS infection was a result of specific socio-cultural practices. Some theories implicated Voodoo ritual practices involving animal sacrifice and blood ingestion as well as Voodoo priests taking on transexual roles and engaging in anal intercourse with Voodoo believers (Moore & Le Baron, 1986). However, such theories were not accepted by the Haitian Government and researchers entering the country met with great resistance. The Haitian Government took exception to Haitians being characterized as being in the same high risk position as homosexuals/bisexuals and intravenous drug users. Eventually, researchers also recognized that there is nothing particular about being Haitian that put Haitians at risk (Collaborative Study Group, 1987). Haitians as a high risk group was therefore withdrawn from official documents of the World Health Organization.

The histories of those individuals who had developed AIDS helped support the hypothesis that two major factors were involved in the transmission of AIDS: exposure to

infected blood, or sexual contact with a person who either had or might be carrying AIDS. The development of AIDS in intravenous drug users, hemophiliacs, and recipients of blood transfusions suggested that some "agent" was being transmitted through blood. The development of AIDS in homosexual/bisexual men and in female sexual partners of men with AIDS also indicated AIDS could be sexually transmitted from men to men or women (Gallo, 1987). Likewise, it soon became clear that AIDS could be transmitted by women, both to their sexual partners and to fetuses by way of the placenta (Altman, 1986). These factors of contaminated blood and sexual contact, were becoming more clearly understood before any etiological agent was found.

In early 1983, clinicians in Brussels (Clumeck, Mascart-Lemone, De Maulbeuge, Brenez, & Marcellis, 1983) and Paris (Brunet, Bouvet, & Chaperon, 1983) reported AIDS-like illnesses among African patients without any known lifestyle risk factors for AIDS. These observations led to investigations in Rwanda and Zaire, the countries of origin of many of the African patients seen in Belgium, and similar illnesses and immunological abnormalities were readily found (Perre, Rouvroy, & Lepage, 1984; Piot, Quinn, & Taelman, 1984). These initial findings gave direction for researchers trying to determine the origin of AIDS. Although speculative at the time, theories were developing

to determine the origin of AIDS as pressure mounted to find the etiological agent. It was believed that factors responsible for the development of this agent would likely be found if searched for where AIDS originally developed.

North American investigators hypothesized African as well as Haitian origins for AIDS (Gallo, 1987; Moore & Le Baron, 1986), resulting in the African and Haitian governments distrusting the motives of the investigators. Neither government favored the possible implication that their country or continent was to blame for the epidemic spreading quickly around the world. One strongly debated theory suggests AIDS originated in Africa, spread to Haiti, and then to North America by visiting homosexual tourists (Suzuki, 1987).

Interestingly, these theories often seemed more concerned with accusing certain groups of spreading AIDS than with a medical understanding of the disease itself (Stinton & Eaton, 1987). The crucial point is: what practices or situations facilitate the transmission of AIDS? In the interest of avoiding stigmatization, stress needs to be placed on this question rather than on particular identities (De Gruttola, Mayer, & Bennett, 1986). However, during the brief history of AIDS there has been a consistent focus upon the identification of groups of people with AIDS, and in turn this has had profound influences upon both the

medical and educational practices, and the opinions of the general public world wide.

### Medical Explanation of AIDS

#### Searching for the Cause of AIDS

The epidemiology of the disease AIDS indicated that it was transmitted by either blood or by sexual routes. It was also known that once infected, an individual has a depletion of T4 cells, which are necessary for regulating the immune system. This knowledge strongly indicated that AIDS was caused by the involvement of an infectious agent (Gallo, 1987). However, infectious agents such as bacteria and fungi were ruled out as possible causes because they could not have been transmitted via blood products to hemophiliacs. This is because plasma, which is used for preparing Factor VIII for hemophiliacs, is filtered through a membrane fine enough to prevent fungi and bacteria from passing through (Gallo, 1987). However, membranes used for filtering plasma are not able to eliminate the passage of viruses; therefore the concept of a virus as the possible cause of AIDS became widely accepted (Barre-Sinoussi & Chermann, 1986; Gottlieb, Schroff, Schanker, Weisman, et al., 1981; Siegal, et al., 1981).

Several researchers suggested AIDS was caused by known viruses such as cytomegalovirus (CMV), Epstein-Barr virus (EBV) (both members of the herpes virus family), and hepatitis B virus (HBV). These three well-known viruses were considered prime etiological candidates because they have been frequently found in people with AIDS (Barre-Sinoussi & Chermann, 1986; Gallo, 1987; Lang, 1985). In addition the routes of transmission, by oral secretions, sexual contact, or blood transfusions (Noble, 1982), were consistent with the pattern of spread for AIDS. Furthermore, both CMV and EBV affect the immune system by causing infections similar to mononucleosis, with fevers, sweats, loss of appetite, sore throat, lymphadenopathy and severe fatigue lasting for several weeks (Noble, 1982). Despite these observations, it was also true that a number of persons with AIDS do not have CMV infections; that many healthy individuals are infected by CMV and EBV without adverse consequences; and that neither virus has a substantial effect on T cells, those cells depleted in a person with AIDS (Gallo, 1987). It was also determined that AIDS was diagnosed in men who had received hepatitis B virus vaccine. That appeared to rule out HBV, along with CMV and EBV, as the primary cause of AIDS (Barre-Sinoussi & Chermann, 1986; Gallo, 1987)

Another type of viruses, called retroviruses, were also considered logical candidates as the primary cause of AIDS. While most living creatures pass genetic information from deoxyribonucleic acid (DNA) to ribonucleic acid (RNA), to protein (Curtis, 1975), RNA viruses keep their genetic information in molecules of RNA (Gallo, 1986). The retroviruses are one group of RNA viruses. Retroviruses carry a particular enzyme called reverse transcriptase, which allows them to copy their genes backwards from RNA to DNA. When a copy of a retrovirus' genes has been transferred to a DNA double helix, that genetic information is passed on in the usual manner, from DNA to RNA to protein (Gallo, 1986). Another important component to retroviruses is their ability to insert themselves into the DNA of the host cell. After this happens the cell is forever infected because every time the cell divides, it replicates not only its genes, but also viral genes. Therefore, a cell that contains a retrovirus will reproduce that virus everytime it divides (Gallo, 1986).

Retroviruses were considered logical etiological candidates for AIDS because of their recognized ability to cause immune suppression and T-cell replication (Barre-Sinoussi & Chermann, 1986). It was also known that one of these viruses, feline leukemia virus, causes a disease in cats which is similar to AIDS (Gallo, 1986;



Trainin, Wernicke & Ungar-Waron, 1983). The first recognized human retrovirus was found in 1978, and was named Human T-cell Lymphotropic Virus (HTLV) because it has an attraction for T lymphocytes, the white blood cells with a critical role in modulating the immune response (Gallo, 1986). This virus, as well as the second recognized human retrovirus (HTLVII), causes cancer by entering a T-cell and initiating the events leading to leukemia. For that reason it is sometimes called Human T-cell Leukemia Virus (Barre-Sinoussi & Chermann, 1986; Gallo, 1986, 1987).

Several factors supported the possible role of this virus in AIDS. HTLV-I and II seem to be transmitted by blood and intimate contact (Gallo, 1986). As described previously, they also have a substantial affect on T-cells, particularly T4 cells, the lymphocytes affected in AIDS. Also, the primary effect of HTLV-I and II in some people is mild immune deficiency (Gallo, 1987). Furthermore, HTLV-I was found to be widespread in both Central Africa and Haiti, two areas with a high incidence of AIDS (Barre-Sinoussi & Chermann, 1986).

However, there were circumstances that made the connection between HTLV-I and II, and AIDS questionable. For example, while HTLV-I infections have been frequently reported in southwest Japan, only a few cases of AIDS were initially found (Barre-Sinoussi & Chermann, 1986). HTLV-I

and II were also only occasionally isolated from persons with AIDS (Gallo, Sarin, & Gelmann, 1983) and the immune response specific to HTLV-I and II was not detectable in the majority of persons with AIDS (Tedder, Shanson & Jeffries, 1984). Furthermore, AIDS was found to be depleting T-cells, and therefore crippling the immune system, whereas cancer (leukemia) causes the uncontrolled increase of T-cells (Gallo, 1976). On the basis of these observations, HTLV-I and II were ruled out as potential etiologic agents of AIDS.

In 1983 another distinct retrovirus was discovered by French investigators who believed it was responsible for AIDS (Barre-Sinoussi, Chermann, & Rey, 1983). They had isolated the virus from swollen lymph nodes in infected patients and therefore called the virus Lymphadenopathy-Associated Virus (LAV). In 1984 American investigators also announced they had found a new retrovirus responsible for AIDS, and in keeping with the nomenclature for previous retroviruses, named it Human T-cell Lymphotropic Virus-III (HTLV-III) (Popovic, Sarngadharan, Read, & Gallo, 1984). At this same time a different group of American investigators isolated a retrovirus also believed to cause AIDS, and named it AIDS-Related Virus (ARV) (Levy et al., 1984). It was eventually determined that all three viruses were, in fact, the same, and the

generic name Human Immunodeficiency Virus (HIV) was decided upon by the World Health Organization.

The Human Immunodeficiency Virus (HIV) has been isolated from a large number of patients with AIDS or AIDS-related syndromes and from healthy persons believed to be at risk for the disease (homosexuals, hemophiliacs, intravenous drug users, Zairians, Haitians, recipients of blood and bonemarrow transplants) (Barre-Sinoussi & Chermann, 1986). Similarly, early tests for HIV on healthy individuals outside of the "risk groups" found almost no one to carry the virus (Popovic et al., 1984).

However, the discovery of HIV was not an endpoint in understanding the etiology of AIDS. HIV-related viruses have also been isolated in a variety of monkeys and were originally called Simian T-lymphotropic Virus III (STLV-III), later renamed as Simian Immunodeficiency Virus (SIV) (Desrosiers & Letvin, 1987). It is not clear yet whether the viruses isolated from the variety of monkey species are all the same virus or whether they are distinctly different. Although SIV is the closest animal retrovirus to HIV, the similarity between them is still less than 75 percent (Desrosiers & Letvin, 1987).

Another retrovirus, that is closely related to SIV but does not cause immunodeficiency, was found to infect humans

and was labelled HTLV-IV (Gallo, 1987). Robert Gallo (1987), hypothesizes that HTLV-IV is the intermediary step between SIV and HIV. It is suggested that the lethal virus we know as HIV resulted from viral mutations. Such mutations have been consistent, as it has been shown that substantial structural variation exists among HIV isolates, even those from the same geographic region (Benn et al., 1985; Wong-Staal et al., 1985).

In 1986 the Pasteur group of researchers announced that they had discovered yet another new human retrovirus closely related to HIV (Clavel et al., 1986). They reported the isolation; from two West African patients, of a new virus related to but distinct from both HIV and SIV. This new retrovirus was also found to be distinct from the newly discovered HTLV-IV as it caused an immune deficiency. In all cultures of this newly discovered virus, a typical cytopathic effect was detected, very similar to that of HIV.

This new virus was later named HIV-2 (human immunodeficiency virus type 2) by the International Committee on Taxonomy of Viruses. The Pasteur group of researchers further attempted to assist in the reporting and monitoring of the virus strains by suggesting that HIV-1 include all the isolates from Central Africa, the United States, and Europe that produce common antibodies when introduced into the blood and that differ by less than 30

percent in their "nucleotide sequences" (Clavel et al., 1986, p.346). It is hypothesized that HIV-1 and -2, along with SIV, have originated from a previous common virus, and through mutations have acquired their different pathological characteristics (Clavel et al., 1986; Gallo, 1987). However, the exact extent of the relatedness of these viruses and the possible genetic events causing them to mutate is not presently understood. Further attempts to understand how these viruses are related in their biological reactions will be necessary if blood testing for virus is to be effective.

Although there are several methods of testing blood for the AIDS agent, all of them rely on the reaction between viral proteins and antibodies in the infected person's blood. Part of the body's immune response to the AIDS virus is the production of antibodies which recognize and attach to specific proteins on the virus, called antigens. The antibodies are tailor-made for particular antigens, and therefore, tests have been designed to detect these specific antibodies. The detection of specific antibodies indicates the presence of the virus. Tests for antibodies include the ELISA (enzyme-linked immunosorbent assay), the IFA (immunofluorescence assay), and the Western Blot.

Antibody tests are depended upon around the world for blood screening, diagnosis of patients, and epidemiological

research. These tests use antigens from HIV-1, and therefore are only capable of detecting HIV-1. With the discovery of HIV-2 and the possibility of further mutations within the present viral pool, it may be necessary to use antigens from HIV-1, HIV-2, and possibly a number of other viruses (Clavel et al., 1986).

Antibody tests have also been utilized for determining the previous incidence of HIV-1. Frozen serum samples collected in Uganda in 1972 and 1973 and stored for other clinical purposes have since been tested and found to have a high incidence (50 of 75) of HIV-1 infection (Saxinger, Levine, & Dean, 1985). The earliest antibodies to HIV-1 that appear to have been detected have been 1959 in Central Africa (Gallo, 1987; Suzuki, 1987). No antibodies to HIV-1 have been detected outside of Central Africa in serum samples from the 1960s and 1970s (Gallo, 1987).

Earliest indications of HIV-1 antibodies in North America come from stored Hepatitis B blood samples from a San Francisco cohort study, with antibodies being detected from as early as 1978 (Holmberg, 1987).

### The Immune System and Human Immunodeficiency Virus-type One (HIV-1)

The immune system does not have a central location in the body (Curtis, 1975). Rather, it is a co-operative

system with the lymphocytes (white blood cells) playing the central role. The defending white blood cells are produced in the bone marrow and fall into three groups: the phagocytes, or "cell eaters", of which the macrophage is one, and two kinds of lymphocytes, called B cells and T cells (Suzuki, 1987). All three have one common objective: to identify and eliminate all substances that are not recognized as part of the human body, that are "not self". Likewise, there are four critical phases to each immune response: recognition of the enemy or foreign substance, increasing of defenses, attack, and slowdown (Jaret, 1986).

Macrophages (scavenger cells that develop from monocytes, a kind of white blood cell) are often the frontline defenders of the immune system. They are found in the bloodstream, skin and other tissues (Laurence, 1985). When our skin is cut, cells near the wound chemically stimulate nearby blood vessels to dilate, causing inflammation. Macrophages flow in through these dilated blood vessels to combat invading organisms and engulf the fragments of damaged tissue (Curtis, 1975; Jaret, 1986).

Macrophages are referred to as antigen-presenting cells because they usually engulf a virus or other foreign matter, break down its proteins with enzymes and then display these antigenic protein fragments on the cell membrane along with its own host cell protein combination (Jaret, 1986;

Laurence, 1985). This process prepares the antigen to be recognized by a specific type of T cell. Macrophages therefore serve to stimulate the immune response by presenting the antigen in a form that the T cells can identify as an enemy (Jaret, 1986).

In the specific case of HIV-1, studies have shown that macrophages can be infected by this virus (Ho, Pamerantz, & Kaplan, 1987), but not easily killed (Gallo, 1987). The explanation for this is based on the virus' preference for infecting cells with a specific antigen receptor on their surface, the CD4 receptor molecule (Dalglish et al., 1984). Certain populations of macrophages (and monocytes) express this CD4 receptor molecule, but it is also hypothesized that the CD4 receptor molecule plays a role in the death of cells (Ho et al., 1987). It seems macrophages (and monocytes) have a limited number of CD4 receptor molecules, enough to cause infection by HIV-1, but not enough to contribute to their own death (Gallo, 1987). Ho et al. (1987) have therefore suggested that macrophages (along with other monocytes) may serve as an important reservoir for the persistence of HIV-1 in the body.

Macrophages may also serve as one of the routes of HIV-1 infection when a person has an inflamed cut or sore and comes in contact with HIV-1 contaminated fluid (Mathias, 1987b). As macrophages flow in through dilated blood



vessels to combat invading organisms, they may provide the necessary CD4 receptor molecule site for the virus to gain entry into the bloodstream.

B cells are concentrated in lymph nodes and are one of the main components for lasting immunity (Curtis, 1975). One particular type of B cell, called plasma cells, produces antibodies. Antibodies are proteins that bind to antigens for neutralizing or directly destroying the cell (Laurence, 1985). The cells become neutralized when antibodies bind directly to their surface, preventing them from attacking other cells, while the death of the cell results from the antibody damaging the cell membrane (Jaret, 1986; Suzuki, 1987). Antibodies also attach to invading cells to aid in their recognition and attack by other T cells (Jaret, 1986). Other, longer-lived B cells become memory cells, and remain in circulation for years. These memory cells are prepared to respond more quickly to subsequent infections by the same antigen (Laurence, 1985).

The visna virus, a retrolintivirus found in sheep (Barre-Sinoussi & Chermann, 1986) mutates during infection and thereby makes the initial antibodies produced by B cells ineffective (Laurence, 1985). HIV-1, which resembles the visna virus in some genetic material, is also not neutralized by the produced antibodies (Gallo; 1987; Laurence, 1986). HIV-1 is known to undergo steady genetic

change, called antigenic drift, which may account for the lack of antibody success against the virus (Laurence, 1986).

Like other cells in the immune system (i.e. macrophages), B cells are dependent upon a certain subclass of T cells (called helper/inducer T4 cells) for stimulation to first replicate and then produce antibodies (Ho et al., 1987). However, as HIV-1 infects and destroys these T4 cells, B cells are not alerted to produce adequate quantities of specific antibody to HIV-1 or, for that matter, to any other infection (Laurence, 1986; Suzuki, 1987). A small fraction of individuals believed to be HIV-1 carriers have been found not to produce detectable amounts of antibody to the virus (Laurence, 1986), possibly because their B cells are not stimulated enough.

Another hypothesis explaining why the production of antibodies by B cells is ineffective against HIV-1 involves the limited length of time the virus is in the bloodstream. HIV-1 can pass from cell to cell without entering the bloodstream, continuing to hide in what the immune system determines are healthy T cells, and therefore escapes detection (Jaret, 1986).

Presence of antibody to HIV-1 is the primary way of establishing whether a person is carrying the virus. Antibody detection depends upon the quality of tests used

(Fahey, Taylor, Korn, & Nishanian, 1986) and the individual's immune response (B cell stimulation). Antibody to HIV-1 is reported to appear as early as four to six weeks after infection with the virus, while full antibody production is not always an immediate response and can stretch out over one year (Fahey et al., 1986) or, as already mentioned, not be detectable at all in some people (Laurence, 1985).

The other lymphocyte, called T cells, also originate in the bone marrow with B cells, but complete their development in the thymus gland, which is just under the upper part of the breast bone (Suzuki, 1987).

There are two types of T cells: T4 cells and T8 cells. The T4 cells have what are commonly termed helper and inducer roles, while the T8 cells have suppressor and killer functions (Laurence, 1985). Most important to the immune system responding to foreign organisms are the helper and inducer T4 cells. Without their influence neither the suppressor T cells nor killer T cells could function (Jaret, 1986). Similarly, when the body is infected both the macrophage cells and the B cells depend upon the T4 cells for stimulation. In essence, the T4 lymphocytes are crucial to the immune system.

In a non-HIV infection, when the T4 cells detect foreign antigens (often on the surface of an antigen presenting microphage) they become activated and in turn send chemical signals to the killer T8 cells to multiply (Suzuki, 1987). The killer T8 cells are capable of destroying the body's infected cells by a chemical process that punctures cell membranes (Jaret, 1986). The T4 cells also stimulate macrophage cells and B cell antibody production as a further defense both for the immediate infection as well as for future infections (Laurence, 1985). As the infection stabilizes, suppressor T8 cells are instructed by T4 cells to halt the entire range of immune responses, preventing the stimulated cells from going out of control (Suzuki, 1987).

HIV-1 kills the one lymphocyte most critical to the immune response: the T4 cell. HIV-1 enters the body as a passenger in body fluids such as blood or semen. In the invaded person's body, the HIV-1 infected cell may be engulfed by a macrophage cell or be detected by the T4 cells.

The T4 cells are especially targeted by HIV-1 because of their surface molecules. The surface molecule directly involved in T4 cellular functions also acts as the receptor for HIV-1 (Klatzman et al., 1984). The receptor molecule acts as the initial attachment point for the virus, allowing

the viral antigen to fit and bind to the receptor as a key fits into a lock (Marrack & Kappler, 1986; Suzuki, 1987). This receptor molecule has been called both the CD4 antigen and the T4 antigen (Dalglish et al., 1984; Fahey et al., 1986; Hoxie et al., 1986; Klatzman et al., 1984; Sattentau et al., 1986), as well as simply the T-cell receptor (Marrack & Kappler, 1986) or T4 marker (Laurence, 1985).

As already explained, the expression of the CD4 receptor molecule is not restricted entirely to T4 cells. The monocyte-macrophage cells also express the CD4 receptor and have been implicated as serving as reservoirs of the virus (Dalglish et al., 1984; Ho et al., 1987). It is further suggested by Laurence (1985) that other cells outside of blood may also serve as reservoirs of the virus: the endothelial cells lining the blood and lymphatic vessels, the cells of epithelium (skin and related tissue), the glial cells of the nervous system and even nerve cells themselves. These cells may not have the appropriate CD4 receptor expressed on their surface to enable the virus to invade them directly, but it is hypothesized that they could become infected when diseased T4 cells fuse with them or by phagocytosis of the virus by the cell (Laurence, 1985; Wainberg, Rooke, Roy, & Kendral, 1987).

It is necessary to further characterize the CD4 receptor molecule (Dr. H. Wass, personal communication,

October 29, 1987; Mathias, 1987a). The location and extent of cells carrying the receptor remains to be clarified, as well as its exact function. Ho et al., (1987) as well as Gallo (1987), have suggested that the CD4 receptor molecule is not only important in determining HIV-1 infection but also plays a role in the destruction of infected cells.

After specific binding to the CD4 receptor molecule, HIV-1 enters the cell. However, the mechanism of virus entry into the cell has not yet been fully defined (Ho et al., 1987). Although Wainberg et al. (1987) refers to "absorption" of the virus, Suzuki (1987) explains that the virus is "swallowed" into the cell, and Gallo (1987) discusses active fusion of the virus and cell membrane. In any case, once inside the cell, the virus is uncoated; the proteins that surround the viral RNA are digested or stripped away, exposing the viral RNA to the cell cytoplasm (Suzuki, 1987). The next step, reverse transcription, as described previously, is unique to retroviruses. As a retrovirus, HIV-1 reverses the sequence of RNA and DNA, with the genetic code, carried on RNA in the virus, copied "backwards" into DNA. The host cell (i.e. T4 cell) then copies this newly formed DNA again and transfers it into the nucleus of the cell (Laurence, 1985; Wainberg et al., 1987). At this point, enzymes in the nucleus splice together the DNA from the virus with the T4 cell DNA, thus guaranteeing

the cell is permanently infected (Suzuki, 1987). Once activated to reproduce, the infected T4 cell treats its new chromosome combination as if it were its own. The cell copies the viral genes into viral messenger RNA and then into viral proteins. These viral proteins and viral messenger RNA are then combined at the cell surface, and fully formed virus (HIV-1) are released (Ho et al., 1987). This process of viral replication may occur virtually immediately, with thousands of new viruses being quickly released (Suzuki, 1987; Wainberg et al., 1987), although Barre-Sinoussi & Chermann (1986) believe that replication occurs only after stimulation of the infected cell.

It has been observed that the HIV-1 replication cycle is often restricted at the step where the viral DNA is spliced together with the T4 cell DNA in the nucleus (Ho et al., 1987). The cell often lies dormant at this time, a time referred to as the latency period (Suzuki, 1987). Similarly, previous research on uninfected T4 cells and B cells has found that they can be quite long-lived, capable of going for many years without dividing (Marrack & Kaplan, 1986). In response to antigenic stimulation, however, these lymphocyte cells enlarge considerably and divide rapidly.

What causes the HIV-1 infected cells to continue their cycle of multiplying is still undetermined. Suggested hypotheses range from a variety of possible stimulating

infections (Wainberg et al., 1987), to genetic factors (Suzuki, 1987). Potential activators, sometimes referred to as cofactors, include other pathogens such as viral or bacterial infections (some previously thought to be the cause of AIDS): chlamydia, syphilis, cytomegalovirus, Epstein-Barr virus, hepatitis B virus, herpes simplex virus, and repeated infection with HIV-1 in semen or blood (Barre-Sinoussi & Chermann, 1986; Ho et al., 1987; Wainberg et al., 1987). Abrams (1987), also suggests that a stimulated immune system is susceptible to HIV-1 infection, adding that adrenalin effects the reproduction of T lymphocytes. Under conditions of stress, the body releases more adrenalin, and in general, adrenalin raises blood pressure, stimulates respiration, dilates the respiratory passages, and stimulates the general metabolic activity of cells (Curtis, 1975). Furthermore, Abrams adds that most drugs are detected by the immune system as foreign particles in the body, and therefore stimulate an immune response. Therefore, the ingestion of drugs (prescription as well as illegal) or any activity that results in an increased production of adrenalin (i.e. a rise in stress) may act as a stimulant for HIV-1 replication (also see "Scared Sick", 1987)

With HIV-1 replication, the newly formed viruses leave one T4 cell by a process called "budding" (Ho et al., 1987),



to only infect other nearby T4 cells. However, as HIV-1 emerge from the original T4 cell, the cell is killed. The exact mechanism for this cell death is at this writing still unclear (Gallo, 1987; Ho et al., 1987). One hypothesis proposed by Gallo (1987) is based on the number of CD4 receptor molecules on the membrane of the infected cell. Cells such as monocytes and macrophages have a limited number of CD4 receptor molecules and also are not killed by HIV-1 infection (Ho et al., 1987). However, T4 lymphocytes have a high concentration of CD4 receptor molecules and are regularly destroyed by HIV-1 infection (Gallo, 1987). Gallo suggests that these CD4 receptor molecules on the surface of T4 cells interact with the virus' protein coat as the newly formed virus particles bud from the cell. As each virus emerges, the cell membrane is punctured, leaving a hole in the membrane that requires repair. Since the HIV-1 replication occurs so quickly, approximately one thousand times faster than any other known virus (Suzuki, 1987), the T4 cell is unable to repair all of the holes as quickly as they are made. In essence, the T4 cell is blown up with its inner contents forced to leak out (Gallo, 1987).

The loss of such T4 cells from the blood, lymph nodes, spleen and other tissues in which they are normally concentrated is one of the most striking and consistent findings in people infected with HIV-1 (Fahey et al., 1986).

Ordinarily, T4 cells make up from 60 to 80 percent of the circulating T-cell population; while in people with AIDS they can become too rare to be detected (Laurence, 1985). While T4 cells are reduced in number, the majority of HIV-1 positive people also show a rise in their T8 killer and suppressor cells (Fahey et al., 1986). Similarly, there is a rise in the number of B cell products. These stimulated cells usually persist throughout the illness, and contribute to the enlarging of the lymph nodes; often termed Persistent Generalized Lymphadenopathy or PGL (Fahey et al., 1986).

### Complications and Symptoms

#### Arising from HIV-1 Infection

With the destruction of the body's T4 cells, there is a depletion of the very cells that should be alerting the rest of the immune system to infections. Lacking T4 cell guidance, B cells are unable to produce adequate quantities of specific antibody to HIV-1 or to any other infection. An appropriate killer T cell response is similarly hampered, along with suppressor T cells and macrophages. Therefore, the selective depletion of the T4 cell population results in the body becoming immune compromised, sometimes leading to life-threatening opportunistic infections characteristic of AIDS (Wainberg et al., 1987). Individuals may develop one or more symptoms associated with the disease, such as Pneumocystis carinii pneumonia, Kaposi's Sarcoma, and, as

discovered later, neurological dementia (Gallo, 1987). In some cases, effective therapies are available for these conditions but not yet for the underlying immunodeficiency (Fischinger, Gallo, & Bolognesi, 1986; Resnick, 1986; Rothenberg et al., 1987; Wainberg et al., 1987; Weisburd, 1987).

Pneumocystis carinii pneumonia (PCP), caused by an airborne parasite, is one of the most frequently diagnosed life-threatening opportunistic diseases found in AIDS (Lang, 1985). PCP infects the lung, one of the most frequent sites of infection for persons with AIDS (Lawson, 1987). It is the most common cause of lung infection, occurring about 50% of the time, with the remaining 50% of lung infections being caused by half a dozen other bacteria or viruses (Lawson, 1987). There are usually three symptoms of PCP: cough, fever, and a difficulty in breathing. Despite PCP being fatal if untreated, it responds well to therapy (over 90% of cases) if the therapy is initiated early (Lawson, 1987). Therefore, it is vital that PCP be diagnosed promptly. Unfortunately, one-third to one-half of the patients develop the disease again within 12 months, often in a more severe form with each successive bout (Lawson, 1987). PCP is treated by antibiotic therapy.

The second most common condition seen in AIDS is Kaposi's Sarcoma. Kaposi's Sarcoma (KS) is a type of cancer

with tumors (brown/purplish lesions) occurring anywhere on the body, both externally and internally (Mitsuyasu, 1985). KS has been found to be involved in major complications with the lung (Lawson, 1987) as well as with complications of major organs (Mitsuyasu, 1985). Organ functions may be interrupted when internal tumors burst, causing bleeding and considerable pain (L. Wagman, January 6, 1988, personal communication). Similarly, internal bleeding from tumors can effect the flow of blood to the brain, causing serious neurological complications and debilitating symptoms. Externally, skin lesions may not be uncomfortable, although lesions that are easily seen, such as on the face, can have a negative effect on the psychological well-being of some individuals. Such external skin lesions may also progress to bleeding and risk painful infection.

Other cancerous growths in the mouth and/or rectum, called carcinomas, and B cell lymphomas, which are tumors originating in B lymphocytes have been seen regularly in persons with AIDS (Gallo, 1987). It is suggested by Fahey et al. (1986), that stimulation of B lymphocytes and T8 lymphocytes may contribute to the progression of such cancers.

The other main type of disease caused by HIV-1 replication is seen in the brain and central nervous system. Initially, the symptoms some persons with AIDS were

expressing suggested brain and possibly spinal cord involvement, but whether HIV-1 was directly involved was questionable because of the properties of the blood-brain barrier. The blood-brain barrier is comprised of brain capillaries with special properties which enable the capillaries to serve as a screen between the blood and brain (Goldstein & Betz, 1986). The brain has to be kept isolated from the common transient changes in the composition of the blood. If the brain is subjected to such changes, it results in uncontrolled nervous activity (Goldstein & Betz, 1986). This blood-brain barrier, therefore, allows lipid-soluble solutions (fat molecules) to pass through while other substances are either denied entry or require being carried across by some form of a transport system (Goldstein & Betz, 1986).

Repeatedly, persons with AIDS of all age groups have experienced abnormalities that suggest deterioration of brain functioning (Kermani, Drob, & Alpert, 1984; Koppel, 1985; Loewenstein & Shanfstein, 1983-84; Ultman, 1985). Evidence of viral infection came in 1985, when Shaw et al. isolated HIV-1 in brain cells from some persons with AIDS, suggesting a possible role of the virus in the central nervous system dysfunctions (often referred to as HIV dementia).

Since the isolation of HIV-1 in brain cells, substantial evidence has been gathered supporting a direct role of HIV-1 in AIDS dementia (Carne & Adler, 1986; Ho et al., 1987). The cells predominantly infected by HIV-1 in the brain appear to be monocytes and macrophages, and it is suggested by Ho et al. (1987) that these cells may become HIV-1 infected outside of the central nervous system, only to later transport the virus across the blood-brain barrier into the brain. It is further hypothesized that these cells release neural-toxic enzymes once HIV-1 replication is activated (Fahey et al., 1986; Ho et al., 1987). Recent research has also suggested that the human brain cells may also have CD4 receptor molecules on their membranes, therefore making them susceptible to HIV-1 infection (Ho et al., 1987).

Neurologic dysfunction and resulting symptoms occur between 30% (Carne & Adler, 1986; Wolcott, Fawzy, & Pasnau, 1985) and 60% (Clarke, 1987; Ho et al., 1987) in persons with AIDS. Furthermore, up to 95% of patients are found to have abnormal neural cells during autopsy (Clarke, 1987). Clarke (1987) suggests that this will likely result in an increase in the number of people with AIDS experiencing neurological disease as treatment of other infections improve and patients live longer.

There are approximately one dozen neurologic syndromes or problems associated with AIDS (Ho et al., 1987). The HIV dementia complex is one of the most feared and unfortunately, also one of the most common of the neurologic syndromes (Clarke, 1987). In its final stages, HIV dementia often results in unconsciousness and/or blindness.

Clinically, it is characterized by:

... a loss of concentration, slowness of thought, and often confusion. Unlike Alzheimer's disease, there is frequently motor impairment early on, including difficulty walking or failure to use the hands well in precise activity. Behavior is affected and the patients will often become withdrawn, and in some cases develop an actual psychosis. These symptoms tend to progress over a matter of months and are often severely exacerbated by intercurrent illness such as an attack of Pneumocystis pneumonia. Depending on the length of survival the dementia may become profound with severe slowing, and ultimately a mute and quadraparetic state develops.

(Clarke, 1987, p.22-23)

Unfortunately, there is no proven therapy to prevent or cure HIV dementia, although some of the other neurologic syndromes such as fungal infections of the brain respond more favorably to treatment (Clarke, 1987).

Organic mental disorders - including HIV dementia - are frequent in AIDS and can have devastating consequences. Severe psychological distress and functional psychiatric syndromes such as anxiety and depression are also common (Hirsch & Enlow, 1984; Wolcott et al., 1985). The psychsocial effects of AIDS for patients, family, friends and lovers compound to a level of stress that challenges all

individuals either diagnosed with AIDS or with the virus (Fred Marshall, October 1986 to July 1987, personal communication).

About one-third of persons with AIDS in British Columbia have been referred for psychiatric assessment (Smith, 1987). The treatment options presently used by psychiatrists include psychotherapy, psychotropic medication (administered 35% of the time), and if required, hospitalization (Smith, 1987).

Psychotherapy generally is supportive, attempting to help individuals adjust to their diagnosis and the accompanying difficulties experienced with the disease (Loewenstein & Sharfstein, 1984; Smith, 1987)

Specific reactions of anxiety, depression, and psychosis may be treated with medication, while hospitalization may be used for behavioral control, to either protect the patient or others (Smith, 1987). Hospitalization may provide a safe and stable atmosphere for a person who is suicidal.

A contributing factor to stress experienced by a person with AIDS involves fears projected by others. Since a majority of persons with AIDS are male homosexuals (approximately 83% in Canada) irrational prejudice against homosexuals (homophobia) can often be a contributing dynamic



(Conlin, 1987). Self-directed homophobia in the person with AIDS may further contribute to psychiatric illness (Conlin, 1987; Smith, 1987).

### Progression of HIV-1 Infection

The complex immunological response of individuals to HIV-1 is still being defined. HIV-1 infection does not result in just one illness, but rather a collection of diverse symptoms and infections. The term AIDS actually refers to the final stage of HIV-1 infection. It is clear that the present number of people diagnosed with AIDS represents only a minority of the people infected with the virus (Redfield, Wright, & Tramont, 1986).

The first category or starting point involves the initial infection with the virus (HIV-1). At this point the person may experience no problems or symptoms; however, it has been noticed that a number of people develop mild signs of illness immediately following infection (Abrams, 1987). This illness may resemble the flu or a mono-like fever, lasting anywhere from a few days to a couple of weeks. Usually these short lasting symptoms go unquestioned and the person does not suspect they have been infected by HIV-1. It is only when a group of symptoms present themselves over a substantial period that a person (perhaps along with his or her doctor) may begin to suspect that the cause may be the virus.

As previously discussed, when HIV-1 infects a person, the body may react by producing specific antibodies to that virus, a process called seroconversion. The length of time before a test can detect antibody (sometimes referred to as the "window period") can take anywhere from four weeks to a year (Suzuki, 1987), and may possibly even stretch out over one year (Fahey et al., 1986). Commonly used tests for antibody detection are the ELISA (enzyme-linked immunosorbent assay) and the Western blot. The ELISA test is usually used to screen blood supplies, while the more expensive Western blot test is considered the "gold standard" test and relied upon for confirmation of previous test results (Sheps, 1987; Fahey et al., 1986). In Canada, all positive tests are supposed to be confirmed before any result is reported.

In British Columbia, if persons want to find out their antibody status they can have their blood tested either through their doctor or by visiting the testing clinic in Vancouver. However, if a person is tested after recently being infected with the virus, a negative result may be meaningless because not enough time has passed for antibody production to occur. This is referred to as a false negative test result. In a situation like this it is possible that a person has not produced any antibodies at all to the virus, and therefore test negative, while it may

also be a result of the sensitivity of the ELISA test itself. Fahey et al. (1986) found that the arbitrary cut off point of these tests determined if a person's antibody status was declared positive or negative. Since these cut-off points varied among different commercial ELISA tests it is possible for one type of test to show a person has produced antibodies while another test may require the production of more antibodies before it will indicate a positive test.

Another reason for a false negative antibody test result occurs when a person is too immune compromised (Sheps, 1987). This generally occurs in the later stages of HIV-1 infection when the person's immune system is unable to produce antibody to the virus (Laurence, 1985; Sheps, 1987).

A third and most alarming possible reason for a false negative antibody test result has to do with poor quality control of test materials (Sheps, 1987). Fahey et al. (1986) evaluated a number of different ELISA commercial test kits and found that the accuracy of detection was not consistent; three systems showing accuracies of 95%, 94%, and 85%. One reason for this discrepancy is because the body produces two types of antibodies to HIV-1 (8 types in total), and many people will produce one of these types before the other. However, some ELISA tests only recognize

one of the antibodies and therefore are not effective until the second type of antibody is produced.

False positive antibody test results occur when a person tests positive for the antibodies but does not actually carry the virus. Reasons for false positives vary from poor quality control of test materials, liver disease, multiple Myeloma, autoimmune phenomena (when the body attacks its own cells by mistake, therefore producing a variety of antibodies - see Jaret, 1986), to passive transfer (Sheps, 1987). Passive transfer refers to a pregnant woman who carries both the virus and antibodies, but the virus is not transferred to her baby in utero while the antibodies are. Once the baby is born it tests positive for the antibodies but it does not actually carry the virus.

Some people find it very emotionally upsetting while they are waiting for their antibody test results. Depending on how busy the testing clinic is, a person may have to wait over three weeks before they can find out their antibody status (Vancouver AIDS Testing Information). During this waiting period the emotional stress a person experiences may contribute to furthering any symptoms they already have.

Finally, finding out if the antibody test was positive or negative can be a relief, very upsetting, or a combination of both. Being told you tested negative for

antibody production can be very relieving because it indicates you do not have the virus, although some people also realize they may have to wait and be retested at a later time to be more certain that enough time has elapsed for the body to have produced antibodies.

Being told you have tested positive for the antibodies (seropositive) can of course be very upsetting for the person who understands it may precipitate a number of infections. It can also be a confusing and uncertain time for a person who is unclear about the meaning of testing positive. Ironically, some persons may also feel a bit relieved to find out they test positive because they may have been suffering from a number of symptoms and not known the cause. As strange as it sounds, for these people, it may almost be a relief to know what they are dealing with.

If progression of HIV-1 infection occurs a person may experience any one or combination of symptoms. One of these symptoms may be Persistent Generalized Lymphadenopathy (PGL), which refers to persistently swollen lymph glands (Lang, 1985). Swollen lymph glands are a result of active B cell production, with the glands being found in the neck, armpits and groin. The swelling may persist for months, eventually disappear, and may or may not reappear.

Other symptoms that may appear are: fever, drenching night sweats, unexplained weight loss, diarrhea, fatigue and thrush (Lang, 1985). Thrush is defined as "creamy-white, curd-like patches on the tongue or other oral mucosal surfaces, which are removable by scraping" (Redfield et al., 1986, p.132). These symptoms are sometimes referred to as constitutional symptoms -- meaning a wide spectrum of generalized, non-specific symptoms (Suzuki, 1987). In combination with Persistent Generalized Lymphadenopathy these symptoms are used to describe a person who has what is often referred to as AIDS Related Complex, usually shortened to ARC (Lang, 1985; Suzuki, 1987).

ARC is a convenient term that helps people label the intermediate stage of infection they are at; however, it is difficult to define clearly. The problem with a definition, especially a clinical definition, can be partly explained by the subjective nature of some of its symptoms: malaise or fatigue and long-term lymphadenopathy (Fahey et al., 1986). Furthermore, because of the wide spectrum and varying intensity of possible symptoms no two individuals with ARC present with the same disease (Wass, 1987).

Another clinical presentation of HIV-I infections involves T4 lymphocyte depletion (Redfield et al., 1986). As the T4 lymphocytes are depleted it indicates that the immune system is being overwhelmed by the virus. At the

same time as the T4 cells are being depleted, the majority of people also show a rise in their number of T8 cells. The average reduction of T4 cells has also been shown to become more severe after the first year of seroconverting (testing positive) and those people who have a more rapid loss of T4 cells have a greater likelihood of advancing to an AIDS diagnosis (Fahey et al., 1986).

One of the best predictors of whether a person progresses to another stage of infection relates to their T4 cell level and their T4:T8 cell ratio (Fahey et al., 1986; Redfield et al., 1986). T4 cells are counted and expressed as the number of cells per cubic millimeter, with a cell count below 400 indicating abnormality. Data reported by Fahey et al. (1986) indicate that when a person's T4 level has fallen below 200 and the T4:T8 ratio is less than 0.2 (indicating the T8 cells largely outnumber the T4 cells), the likelihood increases that they will advance to an AIDS diagnosis.

Estimates of the likely percentage of individuals who will progress from an HIV-1 infection to an AIDS diagnosis have suggested different, and sometimes conflicting data. However, data collected by Mathias (1987b) indicates about 5 percent of HIV-1 infected individuals will progress annually from one stage of infection to the next. Similarly, Redfield et al. (1986) found that over an 18 month period

the seropositive people they followed had a slow but progressive course from the stage in which they began the study to a subsequent stage. Similar findings, reported in Gallo (1987), found 90 percent of the people followed for 36 months progressed to a subsequent stage. However, it remains uncertain whether the people who are seropositive and are in the earlier stages will have progressive disease or will remain asymptomatic (Fahey et al., 1986; Gallo, 1987; Redfield et al., 1986; Rothenberg et al., 1987).

Interestingly, Rothenberg et al. (1987) sampled 5833 seropositive people in New York and found large differences in their progression of disease. Evaluation of their data indicates that progression of disease is dependent upon a number of different lifestyle variables, suggesting that there are still many questions about clinical progression currently unanswered.

The final stage of clinical progression of HIV-1 infection results in an AIDS diagnosis. However, the course of AIDS also varies and has many stages; people struggling with infections at one time and perhaps later having the infections in remission. A description of the infections and diseases necessary for an AIDS diagnosis may seem like a description of people who must be on their death bed. However, this impression can be far from the truth for their



are many people who are learning, loving and definitely living with AIDS, rather than dying with AIDS (Vancouver PWA Coalition, 1985 - present).

On August 14, 1987 the Centers for Disease Control (CDC) published a revised definition for AIDS that attempts to fully include all of the disabling conditions associated with the disease. Similar to any immune deficiency found associated with HIV-1 infection, an AIDS diagnosis must first rule out other possible causes. This means that the person must have no other cancers or malignancies other than the ones specific to AIDS. Furthermore, the person must not be receiving any medication or treatment which suppresses the immune system.

A diagnosis of AIDS takes into consideration antibody test results, T4 lymphocyte count, and both definitive and presumptive evidence of disease (CDC, August, 1987). To be diagnosed with AIDS a person must have one or more of the following conditions: one of the life-threatening opportunistic infections (Pneumocystis carinii pneumonia being one of over a dozen) and/or specific types of cancers (such as Kaposi's Sarcoma) and/or the HIV wasting syndrome and/or HIV encephalopathy (dementia).

Of these four criteria the HIV wasting syndrome is the only one that has not been previously discussed. This wasting refers to:

... profound involuntary weight loss >10% of baseline body weight plus either chronic diarrhea (at least two loose stools per day for >30 days) or chronic weakness and documented fever (for >30 days, intermittent or constant) in the absence of a concurrent illness or condition other than HIV infection that could explain the findings ...

(CDC, August, 1987, p.12s)

Both the HIV wasting syndrome and the HIV encephalopathy (dementia) are new additions to the revised definition of AIDS. They were added after it became apparent that they were both progressive, seriously disabling, and even fatal conditions by themselves (CDC, August, 1987).

To avoid confusion, the Centers for Disease Control recommends the term AIDS only refer to conditions which meet the above criteria.

### Transmission

#### Obstacles to Gathering Data on Transmission of HIV

The initial questions asked by researchers, doctors and patients regarding a new disease involve its cause, transmission and treatment. Since AIDS has been shown to be a fatal disease there has been a lot of attention upon transmission, because of the need to prevent further spread

of the virus. One field of study relied upon for understanding the routes of transmission of diseases is epidemiology. Epidemiologists study the incidence of disease and the factors responsible for its frequency and distribution. Behavioral epidemiology is the study of the relationship between behavior and disease.

From the beginning of their work on AIDS, researchers have had to sort out a barrage of new information in an attempt to understand HIV infection. As new information has been reported, researchers have found themselves reformulating their theories and clarifying misconceptions and contradictions in the data. This process of regularly gaining new information and refining the understanding of HIV infections continues today.

One way researchers try to determine how the virus is transmitted is by asking HIV infected people about their specific behaviors, especially enquiring about sexual practices and drug use. Since homosexual men make up a large percentage of those initially infected with HIV, they have also been involved in a lot of the studies to determine transmission routes (see Boyko et al., 1986; Winkelstein et al., 1987). To a lesser degree information has also been gathered from the hemophiliac population (see Hilgartner, 1987; Jones et al., 1985). The cooperation of these groups and others has enabled the compilation of data that helps

determine variables associated with HIV transmission. Scientific studies such as these have been conducted for years and have resulted in the collection of substantial amounts of information.

John Blatherwick, the medical health officer of Vancouver, has said that before any epidemiologic studies on AIDS were performed people were routinely living their lives without fear of contagion. That is, when the virus was initially being spread and no one knew it existed, people continued to have close contact without a second thought. Ambulance drivers continued to administer mouth-to-mouth resuscitation, surgeons performed operations, children played together, and people had sexual relationships. Of course these activities occurred in cities such as New York and San Francisco where a lot of people were carriers of HIV. By using retrospective evaluation researchers can determine what effects such behaviors had on transmitting the virus and which behaviors were key routes for transmission of HIV.

Any study about HIV transmission must consider a number of possible variables that may influence the reporting of behavioral data. One variable is the effect of time on people's memory. It may take years between the time a person became infected and the time they learned they were infected with the virus. After such a long period it may be

difficult for the person to remember accurately which behaviors they engaged in that could have contributed to the transmission of the virus.

The stigma of homosexuality and intravenous drug use present additional problems in data gathering. Not only are there social mores against these behaviors but quite often laws which expressly forbid them. When a person is asked whether he or she uses drugs that person may be reluctant to answer honestly if he or she thinks the truth could have a negative consequence. Both a professional career person and a person living off the street may be resistant to disclosing such information with a researcher.

Similarly, difficulty arises when a person has an extramarital affair and contracts the virus. This person may wish to hide the real cause of his or her infection for fear that the information might get back to the spouse.

The stigmatization of homosexuality also influences the accuracy of data gathering. Some married men may have sex with other men, but because of the stigma attached to this behavior, they may avoid considering themselves as homosexual or even bisexual. They may deny identification with these populations if they are convinced that they are primarily attracted to women or believe their homosexual behavior is only a matter of convenience or practicality. A

man may find it easier and/or less expensive to have sex with another man. Also, in some circumstances a male may prostitute himself to other men, not because he considers himself homosexual but because he finds it monetarily rewarding. When questioned about homosexuality these men may find it easier to deny such feelings.

Since it can be very difficult for a man to admit to having had sex with another man, he may find it easier to try to explain that his infection has resulted from other behavior, such as visiting prostitutes. This variable can skew the reporting of behaviors, to the extent that some researchers trying to collect accurate information have found, "...many men will say they've had sex with a dog before they'll admit to having sex with another man." (J. Wallace, cited in Leishman, 1987, p.46). This may be especially true for army personnel. If a member of the armed forces is found to engage in any homosexual behavior (or intravenous drug use) he or she is subject to discharge. Therefore, it would not be surprising to expect a person in the armed forces to attribute HIV infection to exposure to prostitutes (for a possible example of this see Hazeltine, 1986). When someone is unable to remember or when a person chooses to lie about his/her behavior, such conditions naturally influence the accuracy of the data on transmission.

Despite these influences on accurate data gathering researchers have collected substantial evidence that outlines how the virus is transmitted. Based upon these data a person can decide which behavior is "safe" or "safer" and which is "unsafe". Since the research and understanding about HIV infections and AIDS is relatively new, and since new information is being gathered all the time, the theories and recommendations may change. That means that our definitions of "safe behavior" is also likely to change. Looking back over the last few years one realizes that the only constant about the disease is the continual change of information. This will undoubtedly continue, making any definition of "safe" behavior qualifiable, by saying that it is "safe" to the best of medical knowledge as of today. What is safe behavior today may not be safe tomorrow. However, despite this rather uncertain statement, it is also worth noting that the behaviors described as being safe a few years ago are still considered safe. The routes of transmission are more clearly delineated considering the brief period the disease has been under investigation.

#### Routes of HIV Transmission

HIV infection is considered a bloodborne disease. This means that for infection to take place, the virus must enter the bloodstream. It is believed that transmission occurs when the virus is carried in the cells of certain body

fluids, and these fluids find their way into another person's body. The successful transfer of HIV may be dependent upon the type of body fluid, the quantity of virus present, the conditions of transfer, and the site of entry into the body.

HIV has been isolated from blood (Curran, Lawrence & Jaffe, 1984), semen (Ho, Schooley & Rota, 1984; Stewart et al., 1985), vaginal and/or cervical secretions (Vogt et al., 1986; Wofsy et al., 1986), saliva (Ho, Byington et al., 1985), breast milk (Thiry, Sprecher-Goldberger & Joncheer, 1985), tears (Fujikawa et al., 1985), urine (Levy, Kaminsky & Morrow, 1985), serum (Michaelis & Levy, 1987) and cerebrospinal fluid (Ho, Rota & Schooley, 1985). However, the isolation of virus from a body fluid does not necessarily mean that the fluid is important in transmission. For instance, cerebrospinal fluid is important in the circulation of HIV within a person but is not anticipated in playing a role in transmission between people. Furthermore, except in blood (including serum and plasma) and cerebrospinal fluid, the level of virus detected in body fluids is extremely low (Levy et al., 1985). Although HIV has been isolated from saliva, the rate of isolation of virus from the fluid has not been high. For example, Ho, Byington et al. (1985) studied 71 men infected with HIV, and found the virus could be detected in 28 of 50



samples of blood but in only 1 of 83 specimens of saliva. Similarly, Fujikawa et al. (1985) could only isolate HIV from the tears of one person with AIDS or ARC, and Wofsy et al. (1986) had to use special procedures because HIV was hard to detect in vaginal and/or cervical secretions.

Besides the type of fluid and the quantity of virus present in the fluid, it is also important to understand the conditions under which the virus is transferred. HIV is considered a very fragile virus when it is outside of its host environment. It is easily killed by washing surfaces that have had blood or other body fluids spilled on them. HIV is inactivated by both simple physical and chemical agents such as household bleach mixed in a ratio of one part bleach with ten parts water; alcohol; hydrogen peroxide; paraformaldehyde; Lysol and/or other average household disinfectants. It is also inactivated by increases in temperature (Martin, McDougal & Loskoski, 1985). Martin et al. (1985) showed HIV to be inactivated after ten minutes at a temperature of 56 degrees Celsius. Even without a rise in temperature, HIV becomes inactivated once exposed to air because the virus cannot survive for more than one or two hours outside of the body (Suzuki, 1987). Besides foreign materials and heat inactivating the virus, the length of time of survival would also depend upon the amount of body

fluid present; with a lot of fluid helping to isolate and protect some virus from the environment.

For HIV transmission to occur, the virus must gain entry into the body, and even more specifically, into the bloodstream. The most effective route of HIV transmission seems to be by direct infusion and/or inoculation into the bloodstream. Such direct routes into the bloodstream can occur through transfusion of contaminated blood and blood products, by needle sharing among intravenous drug users, and by accidental needle-stick exposure associated usually with health-care workers.

Persons who have acquired HIV through the transfusion of infected blood or blood products represent a small but important proportion of the total number of cases. It was determined that a single HIV infected donor could transmit infection to multiple recipients of blood components from a single unit of blood (Lange et al., 1986). Therefore, it was learned that infection rates may be very high if a large enough amount of HIV infected blood is inoculated into an appropriate route such as the vein. Fortunately, in North America the screening of donated blood and plasma for antibody to HIV began in April 1985, and heat treatment of clotting-factor concentrates in conjunction with donor screening have substantially reduced the risk associated with transfused blood products (Buskard, 1987). With these

precautions it is currently estimated that the risk of infection from a transfused unit of blood is between 1 in 100,000 and 1 in 1,000,000 (Friedland & Klein, 1987). However, since 70 to 80 percent of persons with hemophilia and another 12,000 or more persons in the United States are HIV positive after receiving blood transfusions, we can expect additional cases of transfusion-associated AIDS diagnosis in the next few years as these infected persons may become ill (Friedland & Klein, 1987).

Needle sharing among intravenous drug users is another direct route of HIV inoculation into the bloodstream. Although transmission via sharing of unsterilized needles and syringes contaminated with blood containing HIV is supported by anecdotal and epidemiologic studies, the direct documentation of transmission in this manner has not been possible (Friedland & Klein, 1987). It is believed that the injection apparatus, or "works", becomes contaminated when blood is withdrawn to mix with the drug. These contaminated needles, syringes or "cookers" are then shared, allowing the remaining contaminated blood in the works (sealed in a vacuum-like environment) to be transmitted from person to person (Des Jarlais, Friedman & Strug, 1986). The amount of infected blood shared during drug use is probably very small and similar to the amount in accidental needle-stick inoculations (Napoli & McGowan, 1987). It is believed that

the frequency of injections, by individual drug users which likely number in the thousands, contribute to eventual HIV infection (Des Jarlais et al., 1986; Friedland & Klein, 1987).

A third direct route of blood inoculation into the bloodstream involves accidental needle-sticks. Information about accidental needle-stick inoculations is derived from studies among health-care workers, for they are commonly pricked with uncapped needles. The estimated amount of blood usually involved in these accidents, according to Napoli and McGowan (1987), is extremely small.

Friedland and Klein (1987) provide a summary of five published studies that evaluated a total of 770 health-care workers who received accidental needle-stick or mucous membrane inoculation. When subjects at risk for HIV infection through nonoccupational exposure were excluded, only three subjects tested positive for HIV antibodies. Out of these three people, one of them had documented blood samples to indicate they were seronegative before the known exposure. This case involved seroconversion after the person accidentally stuck herself severely with a needle containing a substantial quantity of blood (Stricof & Morse, 1986).

These studies on single exposures to HIV infected blood via needle-sticks point out that forty percent of the injuries could have been prevented if existing precautions for hospital and laboratory staff had been followed. Despite the large number of health-care workers who do not routinely follow these guidelines, the occupational risk of infection through needle-stick injuries was still demonstrated to be low (Friedland & Klein, 1987).

Other than by direct inoculation, the virus must find another way of being passed into the bloodstream. One commonly accepted hypothesis is that the virus gains entry into the bloodstream through cuts on the skin. It is believed that cuts on external skin surfaces, inside the mouth, vagina, rectum and urethra may allow passage of the virus (Wass, 1987).

A further clarification of the role cuts play in allowing HIV access to the bloodstream came when cells with CD4 receptor molecules were found to be target cells for the virus. It is believed that cells with the CD4 receptor molecules transfer the virus into the bloodstream. Therefore, it is important to know the location of these cells. Although not fully characterized, it is believed cells with CD4 receptor molecules are found in the rectum, the female cervix and in the urethra of the male penis (Mathias, 1987b). Such cells are not found on external skin

surfaces, nor are they found in the mouth or the throat (Mathias, 1987a).

A qualification of this is necessary. Even though the external skin surface may not have appropriate receptor cells for the virus, the circumstances change when the skin is cut. When skin is cut the blood flows outwards and is therefore mechanically unlikely to be an effective means of transmitting the virus (Wass, 1987). At the same time blood vessels dilate and macrophage cells circulate to engulf foreign material and skin particles. As previously discussed, these macrophage cells are able to act as receptors for HIV, thereby transmitting the virus into the bloodstream. It is therefore suggested that once bleeding is stopped, it may be possible for HIV to gain entry into the bloodstream through inflamed cuts or wounds (Mathias, 1987b). Even though this route of transmission makes sense biologically, it is not known how likely it would be in a natural setting.

After direct inoculation of blood by needles, the next most efficient means of HIV transmission is believed to be by receptive anal intercourse (Winkelstein et al., 1987), followed by receptive vaginal intercourse. The differences in the effectiveness of viral transmission between anal and vaginal intercourse can possibly be explained by the different tissue structure of the vagina and the rectum

(Shearer & Rabson, 1984). The vagina is lined with multiple layers of cells called stratified squamous epithelium. During vaginal intercourse this type of cell lining is less likely to be ulcerated to the extent that semen could penetrate to the underlying blood cells. In contrast, the rectum is lined with a single layer of cells called simple columnar epithelium. These cells can be easily ulcerated during anal intercourse thus allowing semen to be exposed to the surrounding blood vessels. Both forms of intercourse are considered effective routes for transmitting HIV (Curran, 1985; Redfield, 1986), although the rectum (in either male or female receptive partners) seems to be more susceptible to ulceration and in turn HIV infection than the vagina.

The difference in the effectiveness of viral transmission between anal and vaginal intercourse may also be explained by the number of cells expressing the CD4 receptor molecule on their surface. It is believed that the cells lining the rectum are comprised of more cells with CD4 receptor molecules than the cells lining the vagina/cervix (Mathias, 1987b). Despite the vagina/cervix having a lower quantity of receptor cells for the virus, vaginal intercourse has been recorded as an efficient transmitter of HIV, indicating that infection in women does not require the practice of receptive anal intercourse (Redfield, 1986). In

fact, Stewart et al. (1985) found that the virus can be successfully transmitted by semen artificially implanted in the vagina without trauma/ulceration and without other bodily contact.

HIV is also efficiently transmitted bidirectionally; besides male to male and male to female, the virus has been transmitted from female to male (Calabrese & Gopalakrishna, 1986; Redfield, 1986; Redfield, Markham et al., 1985). Although the precise methods remain undefined, female to male transmission is based on HIV being isolated in vaginal/cervical secretions, and from data from studies of heterosexual men, from observations in Central Africa where the male-to-female ratio approaches 1:1, and from spouse studies where women with transfusion-acquired AIDS infected their husbands (Redfield, 1986). The suggested route of female to male transmission of HIV is either through the urethra or through small cuts or infections on the penis surface (Wass, 1987; Wofsy et al., 1986). The epidemiologic evidence suggests that this route of transmission has been rarer in North America than in Central Africa, and Wofsy et al. (1986) believe the virus may be transmitted more easily by women who have venereal infections that would result in inflammatory secretions containing a higher concentration of HIV infected lymphocytes. If these high density HIV secretions come in contact with an infected penis with



inflamed urethra, the likelihood of female to male transmission increases.

Besides the means of infusion or inoculation of blood, and the means of sexual intercourse, another demonstrated means of HIV transmission is from mother to child during pregnancy or the perinatal period -- defined as being three months before to one month after birth (Quinn, Mann, Curran & Piot, 1986). The precise risks and routes of perinatal HIV infection are unclear, but it is believed that the virus may be transmitted from mother to child in three possible ways: to the baby in utero through the mother's circulation, to the baby during delivery by ingestion of blood and other infected fluids, and to the baby after birth through infected breast milk (Friedland & Klein, 1987). Although the rate of perinatal transmission has not been clearly established, Friedland & Klein (1987) believe a 40 to 50 percent rough estimate of potential transmission is reasonable based on preliminary information from other studies.

Despite the continual spread of HIV infection and disease worldwide, three routes or activities have persistently been demonstrated to account for the transmission of the virus. Again, these routes of transmission involve: infusion or inoculation of blood containing the virus, sexual contacts involving anal and/or

vaginal intercourse with an HIV-infected partner, and perinatal events which allow the virus to be passed from mother to child.

Not only have the routes of transmission been clearly demonstrated, it is also clear that certain measures can be followed to prevent these routes from being successful transmitters of the virus. One practice already in place in North America is the screening of blood and blood products that are used for transfusions and treatment. Another preventive practice already operating is aimed at health-care personnel. The Centers for Disease Control (vol 36 N.2S, 1987) have established detailed recommendations to prevent accidental HIV transmission to health-care workers.

A further preventive measure that is not being widely practiced is the stoppage of needle sharing among intravenous drug users. Shooting intravenous drugs in sterile needles does not transmit HIV, and therefore, by eliminating the sharing of needles, the virus would not be transmitted. However, there are clear social, ritual, and economic reasons why needles are shared, which in turn lessen the likelihood of a behavior change by users (Des Jarlais et al., 1986). Because of this, the likelihood that prevention of transmission in these cases can be effective is very poor. Similarly, in some developing countries such as in Central Africa, injections for medical purposes are

not done with disposable equipment, and sterilization practices are often inadequate (Quinn et al., 1986).

There are also measures available to prevent the spread of HIV through either vaginal or anal intercourse. Since it is necessary for either semen or vaginal secretions to be transmitted into the other person's bloodstream, any practice that prevents this from happening would also prevent transmission of the virus. Obviously, the only way to be certain not to transmit the virus in this way is to refrain from having sex with others. A problem with this strategy is that it does not work for everyone because suppressing sexuality is virtually an impossibility for some people. Furthermore, the recommendation of abstinence is often a simplistic reaction and a way of not "thinking" or "talking" about sex. For people who choose to have intercourse but also want to protect themselves from contracting the virus, the most effective barrier protection are condoms. When used properly, condoms provide protection against HIV transmission by acting as a barrier between vaginal secretions and the penis, between semen and the vagina, or between semen and the rectum (Henry et al., 1986). Fischl et al. (1987) evaluated 45 adults with AIDS and their heterosexual spouses. They reported that 12 of the 14 spouses in their study who continued to have sexual intercourse without condoms seroconverted during the study.

This was in contrast to the single conversion in the ten spouses who used condoms.

The success of preventive measures, such as condom use, depends on the choices people make about using them. There are a number of reasons or excuses a person may use to justify not using a condom, from complaining about the texture of the product to denying any risk to themselves. Furthermore, although most prostitutes continue to use condoms for protection, some even choosing to "double-bag", it is often their male customers who insist on not using condoms (Arrington, 1987). In such cases, the prostitute most desperate for money is more likely to give in to pressure and forego condom protection for extra dollars (J. Wallace, cited in Leishman, 1987).

Although it is believed specific protective behaviors are likely to prevent the transmission of HIV, it is also known that persuading people to change their behaviors is difficult. Doctor Constance Wofsy, an authority on AIDS, comments from experience on the difficulty encountered when trying to change peoples' behaviors: "With intense education efforts and extraordinary motivation you can affect the behavior of some people -- in most cases only temporarily." (cited in Leishman, 1987, p.41).

## Activities Demonstrated Not to Transmit HIV

### 1) Oral behaviors

Before the discovery of HIV, another retrovirus was known to be commonly transmitted among sheep via saliva. Therefore, the possibility of HIV being transmitted by oral contact was considered. The oral behaviors reported on to determine the likelihood of HIV transmission involve kissing (exchange of saliva), oral sex (including ingestion of semen or vaginal secretions), and biting.

Not only is HIV present in saliva in low concentrations (Ho, Byington et al., 1985), but the virus also seems to be inactivated by a common protein in saliva called immunoglobulin A (IgA) (Archibald, Zon, Groopman, McLane & Essex, 1986). Therefore, it is believed that IgA in saliva decreases the likelihood of oral transmission of HIV. However, the same group of researchers later found that not all people have IgA in their saliva, that 1 in 450 does not. Therefore HIV may be transmitted by saliva that lacks IgA (Zon et al., 1986).

Nevertheless, even if persons lack IgA in their saliva the virus would still have to survive in the toxic surroundings of the mouth and stomach. Both the mouth and stomach secrete gastric juice containing hydrochloric acid and the enzyme pepsin, which contribute to chemical

digestion (Martin, 1987). Considering the virus' sensitivity to foreign material it is likely that it would be inactivated by such gastric juices (Wass, 1987).

Furthermore, the mouth and throat lack appropriate receptor cells for the virus to attach onto and gain entry into the bloodstream (Mathias, 1987b). This may explain why a chimpanzee used in a study was able to be infected by HIV when researchers applied virus to the vaginal mucosa but not when they applied virus to the oral mucosa (Fultz, McClure & Daugharty, 1986). It still remains uncertain whether cuts in the mouth could provide an entry site to the bloodstream and therefore allow transmission of HIV.

Even though the medical explanation against salivary transmission of HIV is widely accepted by epidemiologic researchers, it is not clearly substantiated by studies. The reason there is not any definitive study on salivary transmission of HIV is because of a natural difficulty in separating kissing behaviors from other high risk behaviors. Kissing is often followed by genital contact, and it is then assumed that infection results from the genital contact rather than from the oral contact. Despite this presumption being more likely, most, if not all of the time, there is at present no study on transmission that has isolated kissing behaviors. Likewise, there is no study that implicates kissing with HIV transmission.

By studying the patterns of spread of HIV, epidemiologists also argue that if HIV is transmitted by saliva then the epidemic would be much more widespread in the general population.

Oral sex is similar to kissing as a behavior for transmitting HIV. These fluids, whether saliva, semen or vaginal secretions have to find their way into the person's bloodstream. As discussed above, saliva does not have a high quantity of active virus, and neither does vaginal secretions. Semen and vaginal secretions have been implicated in the transmission of HIV in both anal and vaginal intercourse; however, it still remains difficult for the virus in these fluids to gain entry into the bloodstream via the mouth for the same reasons as it is difficult for saliva to transmit the virus in the mouth -- the presence of gastric juices which inactivate the virus and the absence of cells with the CD4 receptor molecules on their surface. However, if a person has cuts in the mouth there may be a greater opportunity for the virus to be passed into the bloodstream.

An epidemiologic study supporting the lack of transmission by oral sex was performed from St. Paul's Hospital in Vancouver (Schechter et al., 1985). Researchers there reported finding no indication of HIV being transmitted by oral sex (including the swallowing of semen)

in a study with more than 700 homosexual males. This finding was based upon subjects who reported their main sexual activity as oral sex without receptive anal intercourse. Not only does this study suggest oral sex is safe, but it may also be inferred that kissing would likewise be safe.

A third investigated route of oral transmission of HIV that has not been substantiated involves biting. The fear associated with biting as a possible route of HIV transmission often originates from individuals who are concerned that a person with the virus may lose control. Some people imagine the worst scenario involving a person with HIV purposefully biting others out of revenge, or perhaps biting someone after becoming neurologically impaired. Also, since there are children who have the virus, there are parents concerned about the safety of their own children in case the HIV infected child lashes out and bites them.

To date there have not been any cases of HIV transmission linked to biting. In 1986 at the International Conference on AIDS in Paris, Tsoukas et al. (cited in McIlvenna, 1987) presented a case study on bites and scratches representing the "worst scenario". They reported that a male hemophiliac who had ARC, as well as brain damage due to an automobile accident, inflicted numerous bites and



scratches to thirty health-care workers during a two year period. The patient was reported as having fingernails soiled with semen, feces and urine, as well as often having extensive quantities of saliva and blood in his mouth. No personnel who had contact with this patient contracted the virus.

## 2) Close personal contact/casual contact

To date there has been no documentation of casual spread of the virus. Casual contact refers to such behaviors as shaking hands, hugging, social kissing, sneezing, coughing, face-to-face conversation, touching or sitting close to a person infected with HIV. If casual contact did transmit the virus it is likely that the distribution of the disease would be much different.

To substantiate the non-HIV transmission by casual contact researchers have studied people in very close personal contact. Such research has studied families that have one or more members infected with HIV, thereby allowing an opportunity to assess the spread of the virus to sexual partners, children, and other household members (Fischl et al., 1987). Of the families studied, all reported having close personal interactions including hugging, kissing and sharing of kitchen and bathroom facilities -- such as the toilet, bath, shower, towels, combs, nail clippers,

toothbrushes, drinking glasses, eating plates, knives, forks and even razors (Friedland et al., 1986). Friedland and Klein (1987) summarize the findings of five North American and European family studies on risk of HIV infection among household contacts of people with AIDS. These five studies found that from nearly 500 family members, not one household member tested positive for HIV who did not have additional exposure to the virus through blood, sexual activity, or perinatal transmission. The combination of these data support the hypothesis that HIV is not spread through close contact other than by intimate sexual or blood exposure.

Further confirmation of these results was presented by Mann et al. (1986) when they reported on the prevalence of HIV in household members of 46 persons with AIDS and another 43 HIV seronegative persons acting as controls. This study was conducted in Zaire, Africa, where the researchers reported that the living conditions in households were likely to include environmental factors favoring person-to-person transmission of infectious agents. Some of the living conditions reported included crowding and lack of modern sanitary systems. Despite these living conditions the data indicate that with the exception of spouses, the rate of HIV seropositivity did not differ significantly between case and control households. Therefore, this study

provides further evidence against HIV transmission as a result of close personal contact.

### 3) Insects

Transmission of HIV by insects has been postulated by both professional and layperson alike. Some of the reasons for trying to implicate insects in HIV transmission come from the observation that there are common insect-transmitted diseases in areas such as Central Africa, where AIDS is also widespread, the knowledge that other retroviruses can be transmitted by insects, and the desire people have to account for all of the AIDS cases classified as "no-known risk factor".

The insect studied the most to determine if there is any possible link to HIV transmission has been the mosquito. A variety of other insects have also been investigated, including lice -- head, body and pubic -- ticks, bedbugs, lion ants, ants, tse-tse flies, black beetles, and bees (Leishman, 1987; Lyons, Jupp & Schoub, 1986; Norman, 1986; Zucherman, 1986).

Insects have been known to biologically and/or mechanically transmit disease in a number of ways (Leishman, 1987). Biological transmission occurs after the insect ingests an agent, the agent continues to reproduce, and the

insect carries it for life in its gut and salivary glands. Later, while taking a blood meal from a new host, certain insects are then capable of transmitting the disease-causing agent while other insects remain infected but are not able to transmit the agent.

Mechanical transmission occurs when an insect takes a blood meal and its mouthparts become contaminated with a disease-causing agent. When this insect continues on to a new host it is capable of transmitting the agent mechanically when it draws a new blood meal and/or regurgitates.

In relation to mechanical transmission of HIV, J. Maunder (cited in Zuckerman, 1986) explains that fleas and bedbugs would be ineffective carriers because of their habits, including host fidelity and infrequent feedings. However, this explanation is not consistent with the knowledge that fleas have been very effective at transmitting disease such as plague, despite their habits. Furthermore, Lyons et al. (1986) found HIV survived in bedbugs for up to one hour, suggesting that this could allow the bedbug to mechanically transmit the virus. Zuckerman (1986) continues by saying lice are very unlikely to transmit HIV "...because of the effective one way valves of the mouthparts, partly because the mouthparts are unwettable and are emptied and cleaned after use, and partly because

lice have not been implicated in the transmission of viral diseases." (p. 1095).

Nevertheless, a contrary belief is held by David Taplin (cited in Leishman, 1987) who suspects lice may be able to mechanically transmit HIV. Since mosquitoes can exist for weeks between blood meals, Taplin does not think they are likely candidates for HIV transmission. However, "lice feed six or seven times a day -- steadily sipping. A louse can move from one head to another within minutes, and resume feeding. ...Moreover, as the louse feeds, it immediately excretes the meal in blood form on the host,..." (p.65).

To gather more data on the likelihood of insects as transmitters of HIV, researchers have conducted laboratory experiments. These experiments have tried to determine if HIV can be detected in insects after the insects have sucked on contaminated blood, as well as attempting to determine if once infected, insects can transmit the virus to another host. As laboratory experiments, these studies have been criticized because they have limited generalization to natural settings (Leishman, 1987; Wass, 1987). Often experiments consist of injecting or allowing the insects to feed on extremely high concentrations of HIV contaminated blood, and then after waiting a certain period of time, the insects are crushed and examined for virus. Unfortunately, these experimental conditions are extremely artificial. In

a natural setting there may be a variety of factors which may increase or decrease an insect's ability to transmit a viral agent (Leishman, 1987).

So far, such laboratory experiments have not demonstrated insect transmission of HIV. Likewise, there are specific observations made by epidemiologists which indicate insects do not play a role in transmitting the virus.

One observation that vindicates insect transmission of the virus is the age-specific rates of HIV infection and disease. In those geographic areas in which AIDS has been reported, most cases are found in persons between 20 to 40 years old, suggesting sexual transmission as the more likely means of HIV transmission. Friedland and Kein (1987) cite this as major evidence against insect transmission because insects do not discriminate between their hosts by age. Yet R. Shope (cited in Leishman, 1987) contradicts the age distribution argument citing that "...in Thailand dengue causes disease in infants from three to twelve months of age and then there is a gap and another peak at about age eight. St. Louis encephalitis, a mosquito-borne virus, causes disease mainly in people over sixty." (p.59).

Epidemiologic research in Belle Glade, Florida also provides evidence against HIV transmission by insects. This

area has been a focus of attention because insect transmission was suggested to account for the extremely high ratio of AIDS cases and because cases there are primarily heterosexual (CDC, 1986, Oct.3). This research, nevertheless, provided substantive data indicating that sexual activity and intravenous drug use were responsible for the observed patterns of infection. It was also reported that seronegative people had been infected with common mosquito viruses more than seropositive people, further ruling out insect involvement.

More evidence against insect transmission is found in a family study (previously discussed) in Zaire, Africa (Mann et al., 1986). These researchers studied family members (one of whom had AIDS or HIV infection) living together with environmental factors including overcrowding and a substantial number of mosquitoes and other arthropods. Such conditions normally include lice infestations and the potential of lice-carrying infection in all members of a household. Insects move from one household member to the next without much difficulty. Despite these conditions, HIV transmission remained limited to sexual partners within households and to children newly born to infected parents.

Although HIV has not been demonstrated to be transmitted by insects in laboratory experiments, and most researchers insist there is no insect involvement, the

question of insect transmission remains a popular issue among a variety of people. With so many counter arguments available to most points, it is difficult for some individuals to feel confident with any blanket statement. Despite the appearance that insect transmission seems unclear, there may be another reason that some people persist in questioning researchers on the issue. Some people argue that researchers can not explain satisfactorily whether insects are involved, and therefore suggest that everything is not known about transmission. Such people may then use this line of reasoning as an excuse for not having to face the real issue of intimate behavior change (Smith, cited in Leishman, 1987). This same argument could hypothetically be used by someone as a justification for isolating/quarantining HIV infected people.

#### Basic Premises of Transmission Data

Both the laboratory experiments and the epidemiologic studies on HIV infection and transmission are dependent upon a few basic premises. Since the accuracy and confidence of any interpretations of these data are heavily based on these premises, it seems necessary to identify and discuss three of the more germane ones.



- 1) The etiological agent of AIDS and related disease is the virus HIV.

There are a number of observations about the virus and disease spread that have prompted some researchers to question whether HIV is the primary etiological agent. All along, some researchers, as well as laypersons, have been skeptical about HIV being heralded as the cause of AIDS, although they do not necessarily doubt that the presence of the virus is associated in some way with the disease. If it is found that HIV is not the primary etiological agent then the majority of the research and understandings to date would be discredited.

In the 19th Century the German physician and bacteriologist Robert Koch followed in the steps of Louis Pasteur in discovering the methods of separating mixtures and organisms. His classic work led to the discovery of the etiological agents involved in Typhoid, Tetanus, Plague and Dysentery (Book of Knowledge, 1941). The criteria Koch developed and relied upon in his work is called Koch's postulates. Koch's postulates define the steps required to establish a microorganism as the cause of a disease: (a) it must be found in all cases of the disease; (b) it must be isolated from the host and grown in pure culture; (c) it must reproduce the original disease when introduced into a

susceptible host; and (d) it must be found present in the experimental host so infected (Duesberg, 1987).

These criteria are examined by Duesberg (1987) who argues HIV is not the primary cause of disease. Since the virus has only been isolated from about one-half of the persons with AIDS that have been sampled, Duesberg thinks this indicates the first, second and fourth of Koch's postulates are not entirely met. Furthermore, he explains that proviral DNA (which results from viral infection) is detectable in only 15 percent of persons with AIDS and then in only a small number of lymphocytes. Duesberg does acknowledge that antibody to the virus is found in about 90 percent of persons with AIDS. If this is the criteria for meeting Koch's postulate, however, Duesberg concludes we would still have to assume that the remaining 10 percent of persons have false negative test results, based upon the requirement that the virus be present in each person.

Duesberg further argues that Koch's third postulate is also in question for it seems that not all individuals infected with the virus go on to an AIDS diagnosis. Since there are more asymptomatic carriers with the virus than there are symptomatic carriers, Duesberg goes so far as to suggest that the virus may not even be necessary at all to cause AIDS or any of the related diseases. Acknowledging that the difference in the greater number of people who are

asymptomatic than symptomatic is supposedly due to the virus staying dormant for years, Duesberg suggests there must be another explanation. He explains there is no demonstrated mechanism for triggering the virus after, say, a five year latency period. There is no viral gene with a late reproduction/cytopathic function, since all viral genes are believed to be essential for replication.

Other researchers have implicated cofactors which stimulate the reproduction of viral infected cells, and therefore promote disease. Duesberg does not think this is a justifiable explanation for concluding HIV is the cause of disease.

Once they said that HIV alone causes AIDS ... Now they say it is HIV plus co-factors. Well, if you say that AIDS is caused by HIV plus something else, until you know what the something else really is, you are only speculating about both of them as the cause.

(cited in Leishman, 1987, p.71)

Duesberg's objections to the claim HIV is the primary cause of disease are not validated by the vast majority of researchers who no longer question the etiological agent (Gallo, 1988).

A further point to be made regarding the premise that HIV is the cause of disease has to do primarily with the variability of the virus. As previously discussed, HIV has been demonstrated to go through antigenic drift, both between individuals and within the same person.

Furthermore, with the isolation of another virus called HIV-2, which has only about 40 percent of its genetic structure in common with HIV-1 (Monmaney, Marshall & Hager, 1988), there is the possibility that studies on transmission have erroneously been checking for a viral strain that was undetectable by the tests being used.

In the United States the Centers for Disease Control have tested approximately 10,000 blood samples from blood banks and sexually transmitted disease clinics by using an experimental test for HIV-2 antibodies (Monmaney et al., 1988). These tests did not detect any blood infected with HIV-2.

But despite HIV-2 not being found in the United States, the HIV-2 infection rate in West African nations has been high, based upon studies testing more than 4,000 men and women (Monmaney et al., 1988).

These data suggest that clinical findings in Africa (in the past and future) may not be entirely valid if HIV-1 antibody tests were used when in fact HIV-2 was the etiological agent. This difficulty could eventually generalize to future studies in North America and Europe as it is highly probable that HIV-2 will become internationally spread (Monmaney et al., 1988).

2) The seroconversion period is known.

All of the studies on transmission, whether between household members, health-care workers, sexual partners or children born to HIV infected mothers, have used a follow-up antibody test to determine if the persons became infected. These tests have often been repeated after time intervals of 2-3 months, or sometimes years after initial exposure.

For these tests to reliably report whether viral transmission has occurred, researchers have to wait a long enough period before testing for antibody production to the virus. Generally, studies on perinatal transmission, personal contact, and needle-sticks to health-care workers often wait as long as six months to a year before the final antibody test is administered. The belief is that a sufficient amount of time has elapsed for the body to react with an immune response.

If the length of time it takes for an individual to seroconvert is longer than the period waited for by the researchers, then the results would not be accurate. Furthermore, if some individuals do not produce antibodies at all (Laurence, 1985), the reliability of these data would be questionable.

In the specific case of perinatal transmission, there may be a number of variables that could influence studies

dependent upon antibody test results. As previously discussed, a false positive test may result from passive transfer of antibodies from the mother to child. Such a possibility would need to be determined if the results of such studies are to be reliable.

Furthermore, since babies are born with undeveloped immune systems (G. Immega, personal communication, March 2, 1988), they may not be able to produce an antibody response to the virus for a much longer period than is believed it takes for adults. It may therefore be necessary for studies on perinatal transmission to do repeat testing over a number of years to determine more precisely whether the child is HIV infected. If this delayed antibody response does occur in babies, then any estimates to date on rates of perinatal transmission would probably be underestimations of the true rate of transmission from mother to child.

### 3) Routes of transmission are consistent

The interpretation of data on transmission of the virus often leads to announcements of what is safe and unsafe behavior (see McIlvenna, 1987). The accuracy of such statements depend upon the stability and predictability of the virus. The virus does show variability between and within different individuals (Newmark, 1985). It is believed that this antigenic drift has not been great enough

to have any effect on changing the routes of transmission (Gallo, 1988; Monmaney, Marshall & Hager, 1988). A change in transmission routes could occur if the virus mutated to find new receptor sites where it presently is believed none exist (Seale, cited in Leishman, 1987). If this presumption is inaccurate then it would not be possible to detect such a change in transmission until after people started to either seroconvert or become symptomatic. Since it takes time (anywhere from a month to years) for seroconversion to occur or for symptoms to develop, any changes in viral transmission would not be recognized immediately.

The Centers for Disease Control and other researchers have been retesting and carefully studying the routes of transmission isolated so far, and have consistently found the same activities involving blood, sexual intercourse and perinatal events to account for the majority of cases. These findings, however, are not satisfactory for everyone because there still exist cases with no reported risk factor. Some researchers and laypersons alike think that the inability to account for these cases reflects the possibility of changes in the routes of transmission (Leishman, 1987; Norman, 1986).

There are various and legitimate-sounding explanations to account for the cases that have no reported risk factor. First of all, the data are collected on risk factors through

interviews and the fallibility of these data has already been discussed in an earlier section of this review. Nevertheless, there are cases where interviews were not conducted because the person reported as having AIDS or an HIV infection had already died. For instance, in Belle Glade Florida, ten of the thirteen cases with no reported risk factors died before an epidemiologic case study was completed (Norman, 1986). Furthermore, interviews are sometimes difficult to complete because the person may relocate to a new city, making it difficult to contact them. It also needs to be restated that some people who are unable to account for their infection may be withholding information that they perceive might stigmatize or harm them in another way.

The Centers for Disease Control has attempted to account for the "no reported risk factors" by performing follow-up interviews. Seventy-three percent of persons with AIDS nationwide who were available and were initially reported to have no known risk factors were reclassified when follow-up interviews were conducted (Norman, 1986).

#### Cultural Differences in Epidemiologic Data

Epidemiologic inferences about HIV transmission often refer to differences observed between and within countries. These distinct differences in epidemiologic data (mostly



restricted to reported cases of AIDS, excluding other people who are seropositive with or without symptoms) warrant further consideration.

Although both Canada and the United States are similar in that the majority of reported cases of AIDS are among men, Canada's rate of male cases of AIDS is 94 percent whereas the United States is less at approximately 75 percent (Holmberg, 1987). There are even greater differences between the countries in their reported cases of AIDS among intravenous drug users. In Canada, the rate of incidence attributed to intravenous drug use has been under one percent. In the United States 25 percent of all cases of AIDS have occurred in persons who use intravenous drugs, and 17 percent have occurred among those in whom intravenous drug use is the only factor. The substantially lower incidence of intravenous drug users with AIDS in Canada has been attributed to the differences in the availability of needles; in Canada needles are sold without prescription, unlike in the United States (De Gruttola, Mayer & Bennett, 1986). A second hypothesis is that in Canada there is a delayed rate of infection for intravenous drug users (Mathias, 1987b). The difference may also be due to large differences between the two countries' pattern of inner-city poverty and health-care systems (Friedland & Klein, 1987).

This last hypothesis is based upon the incidence of AIDS and HIV infection among intravenous drug users in the United States being clustered predominantly in New York City. Friedland and Klein (1986) report that approximately 82 percent of cases of AIDS among intravenous drug users have occurred in the New York City metropolitan area, where it is estimated that half of the country's intravenous drug users are believed to live. However, a city with a high incidence of intravenous drug users does not necessarily have a high incidence of HIV infection within that same population. Chaisson, Moss, Onishi, Osmond and Carlson (1987) found intravenous drug users in San Francisco had consistently lower rates of HIV infection when compared to New York City.

If the high rate of HIV infection in the American drug using population continues, and there remains a much lower rate of infection in Canada, it is likely that the differences in the two country's epidemiologic data will increase. Friedland and Klein (1987) suggest that a high incidence of HIV infection within an intravenous drug using population has the potential to substantially change the distribution and frequency of transmission.

Intravenous drug use is believed to be tied closely to poverty and minority ethnic and racial status. As a result, AIDS is a serious problem for people of color, being almost

twice as common in the United States among people of color as it should be, given their proportion in the American population. It is also strongly associated with the poor (ACHA, 1987).

Furthermore, since perinatal transmission depends on the mother being infected, its demographic distribution in the United States is similar to that of women with AIDS and is closely tied to intravenous drug use (Friedland & Klein, 1987). Likewise, the incidences of perinatal transmission in the United States are 15.1 and 9.1 times greater in Black and Hispanic children respectively than in Caucasian children (Friedland & Klein, 1987).

One of the most frequently referred to differences between countries involves the male-to-female case ratio of AIDS. In most parts of North America and in Europe there are anywhere from 14 to 19 times more males than females with AIDS (Biggar, 1986; Padian, 1987). These figures are in stark contrast to the epidemiologic characteristics of AIDS in Central Africa; the sex distribution of Central African AIDS cases is nearly equal (Quinn et al., 1986). Besides the difference in the sex distribution of the disease between Central Africa and most other countries, there is also a reported lack of evidence in Central African cases of intravenous drug use or homosexuality as risk factors (Padian, 1987). In fact, Biggar (1986) reports that

most Africans adamantly deny homosexual activity as well as ever having tried heterosexual anal intercourse. Likewise, he has found most Africans also deny any form of oral sex other than kissing. The combination of these findings have led many researchers to conclude that AIDS in Central Africa is much more of a bidirectional, heterosexually transmitted disease than found in North America and Europe (Biggar, 1986; Kreiss et al., 1986; Linke, 1986; Padian, 1987; Quinn et al., 1986).

To interpret accurately the discrepancy between these epidemiologic data it is necessary to consider possible contributing variables which are unique to Central Africa.

It is possible that the difference in the epidemiologic data of AIDS among countries is due to the length of time the virus has been present. Newmark (1985) hypothesizes that the virus originated in Africa, and furthermore it is suggested by Padian (1987) that Africa is at a different stage of the epidemic than other countries. In Africa, transmission of HIV may have involved the heterosexually active population at a much earlier time than in other countries, or it may have initially infected the heterosexual population. This would possibly account for the difference found in North America where the virus was initially introduced and spread in predominantly male populations: hemophiliacs, a disorder restricted to males;

male homosexuals; and intravenous drug users, of whom it is estimated 70 percent are male (Friedland & Klein, 1987; Padian, 1987). If this is true, then eventually it would be expected that without interference the epidemics would become more similar.

The possibility of the epidemiology of AIDS changing over time has been demonstrated in Haiti. Padian (1987) explains that the epidemiology of AIDS in Haiti in 1983 was very similar to the current epidemiology of AIDS in the United States. In 1983 71 percent of Haitian AIDS cases were recorded as resulting from transfusions of blood products, intravenous drug use, and homosexual contact. By 1987 about 71 percent of all cumulative cases of AIDS or ARC had been recorded as heterosexual transmission, along with a substantial increase in the numbers of cases among women. It is possible that some of this shift in transmission data may be due to a reporting bias; however, it seems more likely that the epidemic spread over time to heterosexuals after initially having been in other populations.

Another possibility that could account for differences between African and North American AIDS is the use of contaminated needles in the treatment of sexually transmitted diseases in both African men and women (Padian, 1987). Rosenbert, Schulz and Burton (1986) indicate that Africa suffers excessively from sexually transmitted

diseases. Although sexually transmitted diseases such as gonorrhea, genital ulcers, and syphilis have been linked to HIV transmission (Quinn et al., 1986) they may in fact only be indirectly associated with exposure to contaminated needles and HIV transmission (Padian, 1987). This would account for the age distribution of AIDS in Africa initially being almost entirely within the sexually active age range (Biggar, 1986); since those people who are sexually active would be treated more regularly for sexually transmitted diseases and would in turn be exposed more often to HIV contaminated injections. The explanation for the use of needles and their contamination is offered by Quinn et al. (1986), who explain that African patients strongly prefer needles over oral medication because they believe them to be more effective for treatment. Furthermore, nonmedical personnel inadequately trained in aseptic techniques often administer the injections. As well, for financial purposes, disposable equipment is reused and there is inadequate sterilization.

In contrast though, there has not been an association between childhood vaccinations and HIV transmission possibly because of the relatively small number of vaccinations received per child in comparison to the number of injections received by adults to treat sexually transmitted diseases.

Furthermore, immunization programs are more likely to use properly sterilized equipment (Quinn et al., 1986).

A final explanation offered for the differences between African and North American AIDS is the lack of blood screening tests in Africa. The likelihood of a person receiving an HIV contaminated blood transfusion in Africa is very high because anywhere from 8 to 18 percent of blood donors have been found to be seropositive (Quinn et al., 1986). It is not surprising then that people who are seropositive in Africa report having received blood transfusions more often than people who are seronegative (Quinn et al., 1986)

Unfortunately, the economic factors which create the conditions for unsterilized/contaminated needles and blood will continue unless Africa receives financial assistance. What it cost the United States in 1985 to implement blood-bank screening is many times greater than the entire health budgets of many African countries (Quinn et al., 1986). Similarly, African hospital budgets are not able to afford the "luxury" of disposable injection equipment.

### Concluding Comments

This section of the chapter has presented data and information on the transmission of HIV from the infected to the uninfected. Paradoxically, what is seldom discussed is

the threat "healthy" individuals pose to people with HIV infection and/or AIDS. Since it is persons with AIDS or other HIV infections who have compromised immune systems they are much more likely to acquire infectious organisms from other people. In fact, Newman and Schimpff (1987) indicate that a person with a compromised immune system is even at risk when in the care of a hospital setting, the last place most people would think of as being dangerous (also see Cousins, 1979, for an example of how the hospital has physical and emotional ill effects on an immune compromised person, in which he suggests that it is healthier to leave). These researchers detail the possible threat to an immune-compromised person resulting from the hospital's air, water and food services, some of which can result in life-threatening complications. The personal threat that the environment and the people in the community pose everyday to persons with AIDS is often overlooked as the public scrambles to determine their own risks (Kevin Brown, Vancouver PWA Coalition).

The data presented in this section support the conclusion that transmission of HIV occurs through blood, sexual activity, and perinatal events. The fear of transmission by other routes has been present since the initial reports of AIDS, and will undoubtedly continue as the number of people who are seropositive increases.



Although AIDS is sometimes presented as a cruel, frightening, and fatal disease, it is important to realize that public fears of HIV transmission have compounded the suffering of the men, women and children infected. The public's fears and responses to the disease is the topic of the next section.

### Public Response

#### Common Fears

Since AIDS is essentially a fatal disease, the emotional impact of the diagnosis can be devastating. Persons with AIDS have many of the reactions associated with any life-threatening illness (Cohen & Lazarus, 1979; Cohen & Weisman, 1986; Donlou, Wolcott, Gottlieb & Landsverk, 1985). These reactions may include: fear of death; fear of disfigurement or disability; fear of pain; loss of control and autonomy in their lives; disruption of established relationships and activities; loss of future hopes and plans; difficulty in adjusting to the role of patient; emotional difficulty because of all the above stresses. Many people pass through some, if not all, of the stages of dying outlined by Kubler-Ross (1969): denial and isolation; anger; bargaining; depression; acceptance. While not every person with AIDS experiences all these stages, and the

stages do not necessarily occur in the same order, most do experience at least some of these stages.

To fully understand the public's reaction to AIDS, it is helpful to appreciate the factors involved with both the fear of AIDS, and the universal fear of death.

There has been a genuine fear of AIDS that has resulted in public panic. AIDS has been linked with the public's anxieties and fears that are intermixed with powerful feelings of prejudice. The classic work on prejudice by Gordon Allport (1986) explains that when the source of fear is correctly perceived, but the person can do nothing to control it, the fear becomes chronic and results in anxiety. This form of anxiety puts people on the defensive and predisposes them to see all sorts of things as menacing. Other times the source of the fear may have been forgotten or repressed. Anxiety in this form may come from irrational fear, not directed at an appropriate target and not subject to control by the person's logic.

Allport (1986) further explains that people will often attempt to mask or hide their anxiety because they tend to be ashamed of it. While they try to repress this anxiety, they also seek a displaced outlet -- upon what Allport calls "socially sanctioned sources of fear" (p. 368). The displaced fears are chosen for being socially allowable

phobias. These people would not be respected if they admitted the real source of much of their anxiety, which lies in their feelings of personal inadequacy and dread of life.

Of course the public recognizes the threat of AIDS, but unable to respond adequately to this threat -- unable to immediately cure or control AIDS -- the fear becomes a chronic anxiety. Since AIDS seemed to be localized among certain groups, they were predictable targets for displaced fears.

Normally, those suffering from a life-threatening illness evoke sympathy. Here, persons with AIDS have been stigmatized and blamed. Those with AIDS were easily divided into two categories: the "innocent" (hemophiliacs, female partners of bisexual men, children), and the "guilty" (drug addicts, prostitutes, the "promiscuous", and gay men). Above all else, it is the association of AIDS with homosexuality that has dominated attitudes.

To understand the association of AIDS with homosexuality it is necessary to discuss briefly public attitudes toward homosexuals both before and after the recognition of AIDS.

The position that homosexuality is a moral and social problem is founded in Judeo-Christian beliefs.

Judeo-Christian beliefs are the foundation of religious and moral convictions in Western society as a whole.

Homosexuality in this context is linked with sex, death, and a corruption of "traditional" values: "If a man lies with a male as with a woman, both of them shall be put to death for their abominable deed; they have forfeited their lives."

(Leviticus 20:13). Anti-homosexual attitudes held in Western society are rooted in a conservative and punitive outlook (Larsen, Reed & Hoffman, 1980). In the most horrific demonstration of anti-homosexual attitudes, homosexuals, along with witches, were often burned at the stake during the Middle Ages (Cleischild, 1988).

Before the recognition of AIDS, Levitt and Klassen (1974) reported their findings from surveying over 30,000 American adults about their attitudes toward homosexuality. Most of the American public considered homosexual activity to be "unnatural" and "perverted". It was apparent that sex between same-sexed persons, regardless of their relationship, was regarded as wrong by a majority of respondents. Furthermore, the public's bias against homosexuals extended beyond moral disapproval. The public indicated that they would choose to bar a homosexual from employment in certain significant professions and occupations. The majority of the public believed that homosexuals should not be permitted to engage in professions

of influence and authority. The public was found to distrust the homosexual in positions of public responsibility, particularly when this explicitly involved moral leadership.

Levitt and Klassen (1974) also reported that nearly two-thirds of the population sampled found homosexuality "very much" obscene and vulgar to them, and 60 percent thought homosexuals have unusually strong sex drives. It was not surprising then that a majority saw homosexuals as different "from the rest of us" (p. 35).

This attitudinal bias setting the homosexual apart as "something else" or "something different", both prompted and supported nationwide anti-gay campaigns and led a majority of Americans to fear, dislike and distrust homosexual men and women (Hudson & Ricketts, 1980). Such biases were initially referred to as "antihomosexuality" by Churchill (1967) and later as "homophobia", a term popularized by Weinberg (1972) and defined by him as "the dread of being in close quarters with homosexuals". A more complete definition is attempted by Hudson and Ricketts (1980) as "the responses of fear, disgust, anger, discomfort, and aversion that individuals experience in dealing with gay people" (p. 358). Smith (1987) succinctly adds that these pathological fears of homosexuality are manifested in antagonism and cloaked in religious, legal, moral, or

scientific rationalizations. Not surprisingly homophobia has been linked by researchers to a number of consequences including job discrimination and "gay bashing", -- a gang-style beating of homosexuals (Salladay, 1987). Recent increases in homophobic behavior have been observed in Vancouver, British Columbia, where gay businesses have received numerous bomb threats since December of 1987, with one bookstore being bombed twice (Bjorge, 1988). Likewise, gay bashings in Vancouver have increased and are occurring outside bars and even hospitals, as well as the more common places like the parks and beaches (Bjorge, 1988).

Since homophobic attitudes are widespread in society, it is argued by Malyon (1982) that almost everyone (both heterosexual and homosexual) is socialized to some degree to be homophobic. Such socialization involves the internalization of the negative values, beliefs and attitudes held by society.

In December 1973, the American Psychiatric Association found homosexuality no longer to be classified as a pathology (Levitt & Klassen, 1974). Personal beliefs among both the psychiatric profession and the rest of society have, however, been resistant to accepting homosexuality. The Gallup Report (1986) found a majority of the American public sampled were not in favour of legalizing homosexuality. Furthermore, 37 percent of the public

reported that their opinions about homosexuals have changed for the worse since AIDS became widely publicized. Similarly, a substantial number of people reported they did not believe in equal job opportunities for homosexuals; a majority were against hiring homosexuals as clergy or elementary school teachers.

Homophobic attitudes have been present long before AIDS, and have persisted well after AIDS was first recognized and brought to public attention. In accordance with the public's need to isolate a scapegoat (Allport, 1986) the gay community was conveniently targeted because they already were characteristically stereotyped as peculiar types of vulgar/obscene "monsters" (Weeks, 1987).

Besides the fear of AIDS and the corresponding homophobia, the public has also had to confront their fear of death. The universal fear of death has been extensively written about by Elizabeth Kubler-Ross (1969). Kubler-Ross argues that society's fear of death has been consistent over the years. She believes the fear of death is a universal fear that has been reinforced by advances in science and technology. With these advances society has been aware of the imminent possibility of destruction by war and toxic chemicals, made more acute with the increased stockpiling of nuclear weaponry. The public has an unconscious heightened level of anxiety because of the possibility of war and

destruction without a chance of survival. Without having any control over these technologies and no way of effectively responding, the public has become anxious and searches for a way to defend themselves (for a specific study on locus of control and AIDS see Gabay & Morrison, 1985). Since the public feels they are unable to physically defend themselves, psychological defenses have to increase many times over. Under these societal conditions which increase psychological defenses, death is viewed as taboo, something not to be discussed. In fact, we hardly ever see death because:

When a person dies in a hospital, he is quickly whisked away; a magical disappearing act does away with the evidence before it could upset anyone.... We routinely shelter children from death and dying, thinking we are protecting them from harm. But it is clear that we do them a disservice by depriving them of the experience. By making death and dying a taboo subject and keeping children away from people who are dying or who have died, we create fear that need not be there.

(Kubler-Ross, 1975, pp. 5-6)

Kubler-Ross (1987) believes that with the recognition of AIDS as being life-threatening, the public has predictably reacted in a destructive and hurtful way because of the already overwhelming feelings of vulnerability. To understand public reaction, we can use the same stages of dying outlined by Kubler-Ross (1969) for individual patients. Not only do persons with life-threatening illnesses pass through some, if not all, of the stages of dying; so do their family members and lovers. Likewise, in



reacting to AIDS as a life-threatening illness that confronts society as a whole, the public has reacted in terms of the same stages of dying (Kubler-Ross, 1987).

### Coping With AIDS and Death

Rather than attempting an exhaustive report of the public response to AIDS, key examples for each stage of dying will be discussed to give an illustration of public response.

#### Denial and Isolation

This stage of dying -- denial and isolation -- is observed most frequently in the general public. As a way of defending themselves psychologically from their fear of death, people have often isolated themselves from persons with AIDS. Unable to cope, lovers, friends and family members may stop visiting a person with AIDS. Some parents may only write or telephone a son who has AIDS, willing to discuss everything other than the disease. Similarly, other patients on a hospital ward may ostracise a person with AIDS, just as has been observed with nurses who keep the door closed and seldom look in on a person with AIDS under their care (Kubler-Ross, 1987). As a result of such treatment, many persons with AIDS report feeling "dirty", as if they should be wearing bells around their neck. This desire to stay away from persons with AIDS has not been

helped by media and public descriptions of persons with AIDS as the "new lepers" (Deuchar, 1984).

In keeping with being a death denying society, the public must defend themselves psychologically against personal susceptibility:

Psychologically he can deny the reality of his own death for a while. Since in our unconscious we cannot perceive our own death and do believe in our own immortality, but can conceive our neighbor's death, news of numbers of people killed in battle, in wars, on the highways only support our unconscious belief in our own immortality and allow us -- in the privacy and secrecy of our unconscious mind -- to rejoice that it is "the next guy, not me."

(Kubler-Ross, 1969, p. 14)

Denial has been observed in many different forms. The premier of British Columbia has only been in favour of teaching teenagers abstinence rather than explaining the cause and routes of transmission for AIDS (Quotes, 1987). This is in direct opposition to research which shows school sex education programs have a positive influence upon students' attitudes and do not lead to greater permissiveness (Kirby, 1980; Pegis, Gentels & Verber, 1986). In another case of denial, a father may refuse to discuss his son's homosexuality and diagnosis of AIDS. Instead, the same father may explain to his friends that his son is dying from cancer (partly true for his son may have Kaposi's Sarcoma). A wife may deny she and her newborn child contracted the virus from her husband, for she is unable to admit he may have had an extramarital affair (with a woman

or man) or uses intravenous drugs. Similarly, the Catholic Church has been reluctant to acknowledge that a number of priests have been sexually active and died from AIDS (Corwin, 1987; Leishman, 1987b). In keeping with this denial the obituary usually attributes the cause of death to some other illness, often cancer.

The United States armed forces also seem determined to deny their men could be at risk. Unwilling to admit that drug use or homosexuality occurs in the Army, and denying that heterosexuals are also at risk, the armed forces has only partially addressed the problem (Leishman, 1987b). By implementing only pre-induction screening tests for the antibodies to HIV, the United States armed forces have denied the possibility of someone contracting the virus once enlisted (Leishman, 1987b).

Another institution that has strongly denied an AIDS problem are prisons. Kubler-Ross (1987) explains how she contacted "every conceivable source who had anything to do with the prison system" and "was told that they had 'no problems whatsoever with any inmates who had AIDS.'" (p. 283). Wanting to check for herself, Kubler-Ross flew immediately to California and found in one prison alone, eight young men with AIDS:

Each one was in his own isolated cell; each one was deprived of outdoor exercise or other sports activities that they were still able to perform. They were in an

utter state of depression and despair without a chance for any improvement. The food was so untenable that half of them were unable to swallow because of their mouth and throat infections. And what services were available only slowed down even more if they complained. (p. 284)

Further evidence discrediting the penal systems denial of an AIDS problem is offered by Nancy Jaicks and Bob Alexander in their letter written to and published in Kubler-Ross (1987):

The Centers for Disease Control estimates that California men between the ages of twenty-nine and thirty would test positive at the rate of one in nine. If so, there are at least seven thousand seropositives in the California system. A higher-than-average incidence of drug users should boost this figure dramatically. (p. 313)

On September 22 1987, in a personal conversation with a health worker named John (last name withheld) for British Columbia's lowermainland corrections system, we discussed the specific problems encountered in prisons. When questioned about the use of intravenous needles in prisons, and the incidence of sexual intercourse, John denied that these behaviors occur in prisons as frequently as the public seems to believe. Unwilling to discuss how the penal system may foster drug use and homosexuality, he was equally unable to recognize the need to allow condoms in prisons -- that in itself being a form of denial. Instead, John was most interested in educating prisoners for when they leave the corrections system. Insistent upon denying any major problem with AIDS in the prison system, John was able to

admit to there being a problem outside of the system. He thought it was most important to help the men protect themselves and others when they return home to their wives and children, for a lot of inmates eventually leave the system.

An explanation for this denial may be found in John's description of the present corrections environment, where he believes it can be an explosive situation if someone was found to have AIDS. According to John, he was one of the few persons in the penal system who was aware of how the virus is transmitted (and even this was highly questionable). With the level of ignorance so high, he believed it would pose a serious threat to his ability to implement what he considered appropriate programs. Feeling personally inadequate to confront the penal system policies and employee denial, John also resorted to denial as a way of coping with the problem.

When it comes to practicing safer sex or not sharing intravenous needles, the heterosexual public often deny they could be at risk, believing "AIDS only happens to the other people". These people deny that they are susceptible to contracting the virus, believing that they are good judges of other people and can tell if someone is a "bad or good risk". This misconception has been propagated by both the media and even health agencies which -- in a stage of denial

themselves -- recommend "know your partner" before having sex with them (for an example of this, see the pamphlet "AIDS: Be Responsible...for Life" mailed in 1987 to B.C. residents by the B.C. Ministry of Health). This advice implies that if you get to know your partner well enough, then you will be able to determine whether he or she is a member of a risk group, such as homosexual/bisexual men or intravenous drug users. Of course this promotes the erroneous notion that heterosexuals are not at risk and further stigmatizes people with the virus as being different and detectable. An example of this form of denial is found in Leishman (1987b):

What dating I do, I trust my judgment. I am extremely intuitive about people's wellness and their participation in their wellness process. I'm drawn to people who are in touch with their processes; I would intuit if someone had something as degenerative as the AIDS virus. (p. 48)

One of the major influences fostering denial has come from the media. Although the media may reflect public attitudes to a degree (Baker, 1986), to a larger extent the media are also responsible for producing public attitudes towards AIDS. The media successfully influences public attitudes by selectively covering the issues with intentions of sensationalizing AIDS as the "homosexual plague" (Keerdoja, 1982).

After initially reporting the discovery of AIDS in 1981, the press printed very few stories about AIDS, neglecting the topic for almost two years (Baker, 1986). The reluctance of the media to publicize AIDS stories has been related to the negatively perceived attributes and habits of a majority of persons with AIDS (Baker, 1986). As new discoveries were made and more routes of transmission identified the media began to publicize more stories. News stories identified by the press as particularly curious or deviant behavior are usually confined to the tabloids (e.g. the Star and National Enquirer). However, AIDS provided an opportunity for the nontabloid media to exploit what they believed to be "strange" and "disordered" behavior (Albert, 1986). In so doing, the media, more than anywhere else, have provided an artificial barrier between persons with AIDS and the rest of the public. By concentrating on the differences between the lifestyles of the gay and heterosexual community, the media have promoted the belief that persons who contract AIDS are different from the heterosexual public. Interestingly, Albert (1986) found the media entirely ignored the lifestyle of intravenous drug users. He attributed this lack of media attention to public beliefs about gay and intravenous drug using lifestyles. The public may have felt convinced that shooting drugs was damaging (e.g. deaths from overdoses) while it could only be assumed that homosexuality was damaging because there was no

concrete evidence. AIDS changed this, for it provided "evidence " to the media that homosexuality was damaging, and further distanced this group from the rest of society.

The belief that homosexuality was damaging further contributed to the belief in there being "innocent" as well as "guilty" persons with AIDS. Albert (1986) found that in media photographs of adults and children with AIDS there is an obvious discrepancy between the precautions taken by caregivers. The photographs of the children suspected of having AIDS show caregivers with concerned expressions holding the children with the absence of protective gear. In contrast, the media have chosen to print photographs of adults most often surrounded by "caregivers" wearing unnecessary protective gear.

Thus, a Newsweek photograph shows three correctional personnel wearing their protective gear for use in dealing with prisoners suspected of AIDS. Two wear heavy gloves, what appear to be jump suits, and riot helmets with plastic face plates. The third, in a surgical gown, cap, mask, and gloves also carries a walkie-talkie.

(Albert, 1986, p. 174)

The focus upon deviant behaviors of people who have AIDS has contributed to the belief that the public only has to take precautions with those people who live a different lifestyle from themselves.

Eventually, the false sense of security allowing public denial to be rampant began to come into question when more



non-stigmatized groups were identified as having AIDS. As the differences between the people with AIDS and the rest of the public diminished, public denial had to adjust to a different stage of coping. Predictably, some people moved to the next stage: anger.

### Anger

When people no longer can defend themselves psychologically with denial, Kubler-Ross (1969) believes it "...is replaced by feelings of anger, rage, envy, and resentment" (p. 50). As a public response to AIDS, both overt and disguised forms of anger occur everywhere in society. British Columbia's Minister of Health, Peter Dueck, revealed his own level of homophobia and anger when he reportedly remarked that AIDS Vancouver, the city's oldest community support group initially founded in the gay community, should "help their own kind" ("AIDS Vancouver: front-line", 1987; Fournier, 1987; Mullens and Baldrey, 1987). More anger is shown by police officers who want to be allowed to "shoot to kill" HIV seropositive people who defiantly spit or bite them ("Police", 1987).

Kubler-Ross (1987) found the caregivers in prisons so negative, clearly vindictive, and out for revenge that she believes prison is the worst possible place to be if you have AIDS. She reported how in the penal system a prisoner

was fed tacos after asking for oatmeal because a mouth and throat infection made it difficult to swallow. In another situation, a minister told a person with AIDS that she should stop coming to church because the rest of the congregation would be offended (Kubler-Ross, 1987). And in a manner reminiscent of how lepers and prostitutes were once accused of spreading leprosy from the sinful to the innocent, the contemporary media similarly concentrates their efforts on blaming prostitutes for spreading AIDS (Arrington, 1987; Leishman, 1987b). The blaming of prostitutes and other easily identified groups is a result of public resentment that the behavior of these people jeopardizes the rest of society's safety.

Just as people with leprosy were once identified by their cloaks, clappers or bells, the public has also indicated a desire to identify persons with AIDS. The most drastic measure recommended was recorded by the Los Angeles Times Poll where they found in December of 1985 15 percent of the American public surveyed were in favour of using tattoos to mark those people who had AIDS. Again, in July of 1987 the same measure was recommended by 29 percent of the American public surveyed (Los Angeles Times Poll, study # 101 & 126). Reports of increases in AIDS diagnosis in the media from 1985 to 1987 is likely to account for increased public fear and anger, leading to the belief that more

drastic measures such as "branding" people with AIDS is warranted.

As previously discussed, both plague and leprosy were considered by some members of society to be a punishment from God for sinful behavior. People stricken with plague or leprosy were often accused of living sexually promiscuous lifestyles and therefore believed to be justly punished by God. Likewise, AIDS has been accepted by some people as a punishment from God for sinful behavior (Los Angeles Times Poll, study # 101 and 126). The association between sin and AIDS is most often founded in society's belief that homosexuals are wrongfully promiscuous (Abrams, Dilley, Maxey, Volberding, 1986). Many people in the Christian community have expressed judgments that homosexuals are "getting what they deserve" or AIDS is a "punishment from God for homosexuality" (Salladay, 1987).

The consequence of such beliefs are that people have often replaced compassion with condemnation:

As Whitehouse characteristically put it: "Over recent years homosexuality has been represented as being perfectly normal... But now the laughing is over..." "If AIDS is not an Act of God," thundered the ineffable John Junor in the Sunday Express, "with consequences just as frightful as fire and brimstone, then just what the hell is it?"

(cited in Weeks, 1987, p. 30)

Another example of public anger directed towards persons with AIDS, involves students in the school system.

Although the number of adolescents who have actually been diagnosed with AIDS is small, there will predictably be a continual increase of students with AIDS. Estimates by the Centers for Disease Control are that by 1991 about 10,000 to 20,000 children under age 13 will be infected with HIV (Reed, 1988). The risks to adolescents of coming into contact with the virus are the same as for adults -- unsafe sexual contact and/or needle sharing in drug use -- come from activities practiced by a high proportion of teenagers (Quackenbush, 1987). For example, in the United States:

... 50% of teenage women in high school have had sexual intercourse, and 16% (more than 1.5 million) report having had four or more partners. In addition, there are 1.2 million teenage pregnancies in the United States annually (about 3288 conceptions per day), and health officials estimate that one in seven teenagers currently has a sexually transmitted disease (STD). The same activities that cause pregnancies and most STD's can also expose an individual to AIDS.

While there are no national statistics on I.V. drug use among teenagers, conservative estimates suggest more than 200,000 high school students have used heroin. Millions more have used cocaine, stimulants, or other opiates, all substances that can be used intravenously. (Quackenbush, 1987, p. 1)

One of the most publicized test cases of students with HIV involved three boys and their family in Arcadia, Florida (Reed, 1988). The three boys were brothers (ages 8, 9, and 10) who contracted the virus through blood transfusions for treating their hemophilia. The boys were barred from attending school by the county school officials who feared

and believed that casual/personal contact could transmit the virus.

The boys' parents sued the school board claiming discrimination (Leisner, 1987). While waiting for the court decision, the family tried relocating in a different school district but eventually their school records caught up with them and again the boys were barred from school (Reed, 1988). Finally, after missing school for almost a year, a federal judge ordered the boys' reinstatement.

In reaction to the court's decision, some local parents mobilized a group they called Citizens Against AIDS in the Schools. These parents were not only scared for their own personal safety, but they were also furious that their children were being put in what they believed was a life-threatening situation ("AIDS boys back", 1987). They felt that their school board was on their side, but its authority had been usurped by the federal court decision. Believing that they had to defend their children, these parents called for a week-long boycott of classes as a first step in fighting the court order. As a result, just over half of the students enrolled in the school attended classes and approximately 500 people came to a boycott rally one evening ("Boys battle", 1987; Reed, 1988).

Besides rallies, angry parents distributed petitions against the three boys attending school, and some parents made threatening telephone calls to the family - one caller said, "Your children will die," and others threatened to burn their house (Schwed, 1987). On August 25 and 26, 1987 the three boys' school received bomb threats which forced the school to be evacuated temporarily and more parents to withdraw their children from the school ("AIDS kids cause", 1987; Reed, 1988).

The culminating event for this tragic situation was when the family's home was heavily damaged by fire (Reed, 1988). Investigators believed the fire was caused by arson ("AIDS kids hiding", 1987; "AIDS kids' home", 1987). It is suspected that parents (maybe only one) felt so threatened that they thought it justified to fight back -- to the extent that lives were risked. Although only the boys' uncle was home when the house caught on fire and he escaped through a window, the family no longer could stay in their town. "Arcadia is no longer our home," said the father. "To be safe, we have to go someplace else." ("AIDS kids' home", 1987).

How many other school districts and parents will cope with their fears by becoming angry is yet to be determined. In this instance, the rage that was expressed by the citizens in Arcadia was psychologically distressing for the

family and nothing short of shocking for a great deal of other people in society. Reminiscent of how people with leprosy were sometimes buried alive (often in symbolic ritual) and declared unclean, the incident in Arcadia was an uncomfortable reminder that society has not really changed very much in its ability to cope with the fear of dying.

The final issue to be discussed, in relation to the stage of anger, is quarantine legislation. As previously discussed, quarantine for people with leprosy was implemented (usually unsuccessfully) by citizens who were scared. These citizens commonly lashed out with hate and furor towards those people who they perceived were a threat.

Similarly today public response has been to lash out at persons with AIDS by locking them up -- with some individuals suggesting quarantining everyone on an island ("AIDS island", 1987; Los Angeles Times Poll, Study # 101 & 126; Volkart, 1987). In July of 1987, the British Columbia legislature introduced legislation directed at the spread of AIDS. In late fall, the Health Minister amended the Bill which received second and third reading shortly thereafter. The Health Statutes Amendment Act (Bill 34) was proclaimed on January 9, 1988. Bill 34 has been a controversial piece of legislation and has been referred to in the media as the "quarantine legislation" (Gordon, 1988).

The government has claimed that changes to Bill 34 are targeted to help with the control of tuberculosis carriers who are negligent and place others at risk (Rekart, 1988). However, Smith and Hughes (1987) argue that "suggestions that the proposed measures are targeted at tuberculosis cannot be true because explicit references to tuberculosis which appear in the previous legislation have, in fact, been deleted." (p. 1).

Bill 34 now gives health officials the power to detain, test, and quarantine people with AIDS as well as other communicable diseases (Stewart, Soltan & Thorne, 1988). It is suggested by Smith (1988) that changes to Bill 34 resulted from the government being pressured by the public for protection from AIDS. Since the politicians were influenced by the public's anger and hysteria, the decisions made were based upon uninformed opinion more than upon legal and medical guidance.

Under Bill 34, definitions of broad terms such as "communicable disease", "isolation" and "quarantine" to be used by medical officers are left in the hands of the province's Lieutenant Governor in Council, presently premier Bill Vander Zalm and Cabinet (Smith & Hughes, 1987). Bill 34 allows a medical officer to seek a court order to have someone tested for AIDS or other diseases, or put into detention or quarantine if that officer has "reasonable



grounds" to believe that a person is "likely to willfully, carelessly or because of mental incompetence," expose someone to the disease (Health Statutes Amendment Act, S.B.C. 1987, section 8, subsection (1) ). The court will eventually decide what is "reasonable grounds" using guidelines developed by Cabinet. Furthermore, a medical health officer is authorized to order medical tests, treatment, isolation or impose "reasonable conditions" not only upon a person infected with the disease but also any person "infected with an agent which is capable of causing a reportable communicable disease" (Health Statutes Amendment Act, S.B.C. 1987, section 8, subsection (3) ). This is clearly designed for people testing positive for HIV (Smith & Hughes, 1987).

The bill also allows a quarantine of a person who has been exposed to a reportable communicable disease. The power of the medical health officer could be used to order a person who is infected or is suspected of being infected to refrain from having sex or from other risk-related activities (Stewart et al., 1988). Needless to say, this is very controversial and opponents to Bill 34 claim it denies individual liberty (Smith, 1988). Any legal measures to control the spread of infectious diseases should require the individual's interest in liberty and privacy to be balanced

against the public's interest in health and safety (Mills, Wofsy & Mills, 1986).

An individual may challenge the charges made by the health officer, as stated in Bill 34 (Section 5, subsection (4) ): "A person aggrieved by a request made under subsection (2) may at any time apply, by means of an originating application commenced by petition, to the Supreme Court for a review of the request." Moul (1988) suggests that these procedural safeguards are to ensure that individuals are not unjustly quarantined against their will -- balancing the rights of the individual with those of society. Such a claim of protection for the individual disregards the consequences encountered if a person were to go to court:

To ask an individual to go to the Supreme Court with an application stopping a demand for information is to put that person under the scrutiny of the media and the public and expose his or her private life. For people who have tested positive to antibodies to the AIDS virus this has the potential of destroying their lives.  
(Smith & Hughes, 1987, p. 3)

AIDS has provoked so much fear, and the people who are directly affected are very likely for other reasons to be stigmatized, that particular attention needs to be devoted towards maintaining confidentiality (Mills et al., 1986).

As a result of the perceived threat to people's confidentiality, Bill 34 has made a large number of people very cautious and scared. Prostitutes, intravenous drug

users and the gay community are especially concerned about how their test results will be used as well as whether they may be charged in the future under Bill 34. As a consequence of Bill 34, people with AIDS or HIV may go into hiding, often referred to as going "underground" (Gordon, 1988). With the threat of quarantine, many people affected may choose not to seek medical attention. This is harmful or life-threatening to people with HIV or AIDS, as well as to existing medical research programs. For instance, in Vancouver, a large number of gay men have volunteered their time and energy to being subjects in research conducted through St. Paul's Hospital. As these men become more anxious because of Bill 34, they may decide to withdraw from the research because of the fear that any association with such a program may make them more easily identified. As a result valuable research understandings may be lost.

One of the most harmful consequences of Bill 34 has been peoples' reluctance to go for antibody testing. The problem has not been so much that these people do not find out their antibody status, but more importantly, they are not benefitting from the pre and post-test counselling. The counselling conducted at the test site plays a major role in educating people who may be engaging in activities that are high-risk. Ironically, by implementing Bill 34 the government has actually made more people reluctant to go to

one of the governments main education programs -- the AIDS testing clinic.

Since Bill 34 has only been recently proclaimed, it will be necessary to wait to determine how it will be used and whether the negative consequences will be as far reaching as predicted.

### Bargaining

When people are unable to cope by denying the facts, and have been angry at people and maybe God in the second stage, they sometimes move into a phase where they try to make some sort of an agreement which may postpone the inevitable from happening (Kubler-Ross, 1969). Kubler-Ross (1969) explains that these bargains are usually made secretly between the individual and God. An example would be of a man bargaining with God for an extension on his life just so he could live long enough to see his grandchildren one last time. No matter how sincere the bargaining may be initially, Kubler-Ross (1969) notes that none of her patients have ever "kept their promise" after the final event or deadline has come. That is, once the grandfather sees his grandchildren for the last time, he may then enter into further bargaining and more unkept promises when the deadlines pass.

When it has come to AIDS, people have attempted to strike up bargains as partial solutions, fully intent on avoiding the major commitment necessary to address the problem. These bargains are not generally made with God, but often between the government and public, companies, schools, and individuals.

Bargaining was attempted in different cities across North America by social clubs/dating services for people who wanted to be sexually active without fear of contracting AIDS. These clubs were open only to people who tested negative for HIV and paid a yearly membership fee, sometimes as high as 350 dollars a year ("Club tests", 1987). Members of such clubs wanted to believe that they could buy into a group of people that was risk-free so they would not have to practice safer sex. Such programs allowed people to have a false sense of security since there was no way of guaranteeing that any client did not have sex with anyone from outside of the club (Mullens, 1987).

Another example of agreements being made are when school boards reassign a school teacher (who they know has HIV) to a position outside of the classroom (Bendel & Mauro, 1987). The bargain in this case is between the school board and the parents. Rather than responding to parents' concerns and emphasizing that the virus is not transmitted by close contact, some school boards have tried to go only

part way by suggesting they have removed some of the perceived risk by reassigning the teacher. Instead of confronting the real problem which requires implementing school board policy without discrimination and fear, the school board reassigns the teacher hoping that it will keep everyone happy and safe for the time being. Such bargains are only temporary solutions because AIDS remains an issue that requires addressing.

As previously discussed, during the plague years guards were often posted around the perimeter of a city to restrict foreigners from entering. This measure was an attempt by the citizens to stop the plague from being spread from other infected cities to their uninfected city. Of course the citizens of the day did not understand how plague was transmitted and were desperate to try anything.

In a similar way, some contemporary governments have implemented immigration laws which restrict people with HIV and AIDS from entering their country. In August of 1987, the United States announced AIDS had been added to the list of contagious diseases whose carriers are barred from entry ("AIDS man barred", 1987). They also announced that all immigrants to the country would be tested for HIV starting December 1, 1987 ("U.S. starts test", 1987). In a similar move, the Canadian federal health ministry recommended following the U.S. lead, in the belief that testing

immigrants "would be politically attractive" ("AIDS testing", 1987).

It is suggested that such laws are attempts by governments to find partial solutions, and similarly to avoid major commitments to education programs in their own country. Unlike the citizens during the plague years, the present scientific community understands how the disease is transmitted. Likewise, they know the virus is not detectable by tests immediately after infection. By implementing immigration laws the governments may appear to the lay public to be responsibly trying to halt the spread of AIDS. However, by having no control over tourists with HIV, by not restricting business people with HIV, and by not even restricting people with HIV who have recently been infected, the governments' programs can be of little effect (Griffin, 1987). By focusing attention and blame on immigrants to the country, governments are ignoring the larger pool of HIV infected people in their own country (Draaisma, 1987). Such measures may only appease the uninformed public for a short while.

Another area where a type of bargaining has occurred involves persons with AIDS and their workplace. For most people, employment defines the quality of their life and is an important legal right (Jackson, 1987). It is also the responsibility of the employer to protect its general

workforce from possible exposure to an illness. Furthermore, employees and customers may refuse to work with an employee with AIDS, claiming it is unsafe. Fears expressed by customers, employers and/or fellow employees have often resulted in discrimination against persons with AIDS.

The current Canadian human rights legislation does not prevent discrimination, it just prevents discrimination on unreasonable grounds (Jackson, 1987). Determining when discrimination will be justifiable is the role of the law. The courts and legislatures have said that discrimination is only tolerable when the adverse effects to the individual are outweighed by the adverse effects to society as a whole (Jackson, 1987). If there is no rational connection between the discrimination and the supposed advantages to society, then the discrimination must be rejected.

In the case of AIDS, the lawmakers task is to balance the right of society to be free from danger with the right of the individual to exercise his or her rights to live in a meaningful way (Jackson, 1987).

To date, the only Canadian arbitration decision dealing with AIDS in the workplace is Pacific Western Airlines Ltd. and the Canadian Airline Flight Attendants Association (Jackson, 1987). In this case the employer responded to



complaints from pilots that a flight attendant with AIDS posed a threat to them. Instead of educating the pilots and the rest of the staff, the employer tried to arrange an agreement with the flight attendant which they thought would be satisfactory to everyone. The flight attendant was put on paid leave of absence by the employer to satisfy the fears of the pilots. The employer believed that the employee could not challenge this decision since, although he was not permitted to work, he was being paid.

The employee did, however, challenge the employer's arrangement for paid leave of absence because he wanted to continue working. Some of the expert witnesses for the Union testified that not being allowed to work may in fact lessen a person's life span. The general rejection that comes with suspension or termination causes deterioration in mental health and often in physical health as well (Jackson, 1987).

The arbitration board ruled in favour of the flight attendant and stated that:

There is an implied term in this agreement that employees will not be denied a right to attend at work in the absence of some reasonable cause for imposing that limitation upon them.

(cited in Jackson, 1987, p. 12)

Based on the current medical evidence, the board decided that there was no risk of contagion through casual contact and therefore there was no legitimate concern to

justify the employer's action in removing the flight attendant from his job.

An employee who can no longer do his or her work can be discharged. But the employee who can continue working and is HIV positive cannot justifiably be terminated -- even in the presence of compromising agreements or bargains.

The final issue to be briefly discussed, in relation to how bargaining is a stage of coping with AIDS and death, has to do with quarantine legislation. Besides being an expression of anger towards persons with AIDS, threats of quarantine can also be viewed as a bargaining attempt between the government and the public. As a result of public pressure, government officials may decide it is politically advantageous to appear as though they are trying everything in their powers to control the situation. If public pressure is strong enough the government may respond to that public pressure, even if the action were later thought of as improper. By quarantining a prostitute or an intravenous drug user, the government may try to convince the public that they are not at risk. Such action would of course be at the expense of persons who are being "made an example of". The Court could correct such abuses of course, but they would be unable to prevent them (Smith & Hughes, 1987).

Quarantine would inevitably be a short-term "solution" to public hysteria. As more people are diagnosed worldwide with AIDS, the public will quickly return to feeling anxious and again demand further government intervention. By emphasizing quarantine laws the British Columbia government has looked for politically favorable short-term solutions rather than committing themselves to expensive long-term education and support programs.

#### Depression

Kubler-Ross (1969) describes two types of depression experienced by people coping with death and dying. No longer able to deny the possibility of death, a person's anger may be replaced with a sense of great loss -- a loss of mobility, financial independence, or perhaps family and friends. Thus, the first type of depression occurs naturally as a result of past loss. The second type of depression involves preparing for the future. This form of depression takes into account impending losses.

In terms of AIDS, the people who are experiencing depression are generally family members, friends and lovers of persons who are seropositive or have AIDS. Directly affected, these people experience both types of depression -- both the impending loss and then the past loss. Some people in the gay community have had to cope with the loss of literally dozens of friends who were "in the prime of

their life". The stress placed on these individuals every time they lose another friend makes it more difficult for them to cope. Naturally, as the number of people who are seropositive increases, there will be more people affected and likewise more people who will be feeling a sense of great loss.

### Acceptance

Acceptance, according to Kubler-Ross (1969), occurs when persons are neither depressed nor angry about their "fate". This stage should not be mistaken for a happy stage nor an unhappy stage; it is also not a resignation. Instead, acceptance can be explained as an increased self awareness and contact with others, and perhaps most importantly, an increase in self-reliance. There comes a time when a person is no longer afraid of death, and accepts the inevitable as a part of living. The emphasis turns to living -- with death being the final stage of growth (Kubler-Ross, 1975).

Some segments of the public have coped with AIDS and the threat of death with acceptance. Just as there have been many school districts in North America where parents have responded angrily towards students with AIDS, there have also been some school districts where parents, principals, teachers and school board members acted out of compassion and understanding (Reed, 1988). Granted, in some

school districts the parents initially responded with fear and anger, but because the school board members and principal accepted the responsibility to deal with the problem rationally, the situation did not escalate. Leadership and openness were qualities recognized by school board members and principals in fostering an accepting way of dealing with AIDS (Reed, 1988).

Similarly, not all governments have responded with denial and anger. For instance, the Council of the City of Vancouver have drafted "Guidelines for Managing Persons with HIV Infections in the Workplace" (unpublished, 1987). These guidelines attempt to protect both the rights of civic employees who have HIV as well as to protect other employees and the public. Furthermore, recommendations are made for educating all staff members so in future cases, where it is known that an employee is seropositive, people will not act irrationally. By developing these guidelines the Council is providing a model of leadership for other employers that is based upon a full commitment to dealing with AIDS.

The most notable people to respond to AIDS in an accepting way have been the AIDS community organizations around the world. These organizations were initiated by people in the gay community as the need arose for educating the public and supporting persons with AIDS. Since no other agency was willing or capable of responding at the time for

helping persons with AIDS, these organizations accepted the responsibility to do whatever they could.

As people started to be diagnosed with AIDS in Vancouver, there was a need to educate and support the public. In 1983 the first attempts to do this were initiated by members of the community -- which eventually lead to the establishment of the community group called AIDS Vancouver. Since its beginning AIDS Vancouver has grown substantially as a reflection of the incidence of AIDS in the province. The goal of AIDS Vancouver is to maintain and improve the quality of life for people with AIDS or those who are seropositive by providing a social support system. The objectives of the agency are to provide emotional support, home care support and education. Operating with under a dozen paid staff and approximately 300 unpaid volunteers, AIDS Vancouver strives to offer a range of services to people with AIDS or HIV, family/partners and friends of people with AIDS, the "worried well", and also the rest of the public. These services are provided through "Buddy" programs, self-help support groups, financial assistance, educational programs and informational materials, as well as telephone counselling and peer counselling. In essence, AIDS Vancouver strives to help anyone who is coping with AIDS.

The next chapter, III, outlines the methods and procedures used to examine the understanding and opinions of AIDS related-issues collected from a selected sample of the Greater Vancouver Regional District (GVRD).

### Chapter III

#### Methodology

This chapter describes the research design, methodology and procedures used in the study. The following topics are discussed in separate sections: procedures used for selecting the sample, pilot testing the selection procedure, training interviewers, conducting the interviews, the study sample, developing the questionnaire, pilot testing the questionnaire, and data analysis.

#### Procedures Used for Selecting the Sample

For reasons outlined in Chapter one, it was considered desirable to collect information documenting local adults' understandings and beliefs about AIDS related-issues dealing with transmission, testing, cause, resources and solutions.

Data were collected by telephone interviews. The telephone interview was chosen over other procedures (eg. face-to-face interviews or mail surveys) because of its suitability in meeting important criteria, eg.: the nature of the topic and the desire to sample from a large population; the limitations imposed by personnel requirements; available monetary resources; and implementation time. Since it is estimated that 95-97 percent of North American households have telephones (Frey,



1983) the omission of those who do not was not considered to be a serious sampling problem.

The most frequently used method by Pollsters for selecting telephone numbers is a computerized Random Digit Dialing system. Such a system was not available for this study so alternative selection procedures were investigated. One possible method for selecting the sample of telephone numbers that was not favored was the use of a telephone directory. There were two main reasons a telephone directory was not used for selecting the sample. First, it was believed necessary to convince respondents of confidentiality. Ensuring confidentiality was considered important because of the nature of the topic and the greater likelihood the respondent would feel confident his or her replies would not be identified and therefore increase the truthfulness of answers. Secondly, it was considered important to have access to unlisted as well as listed telephone numbers. Groves and Kahn (1979) reported an unlisted rate of telephone numbers of 27 percent for their United States national sample. The B.C. Telephone Company's public affairs office staff were unable to give an exact percentage for unlisted numbers in British Columbia, but estimated it to be approximately 10 percent. When new, as yet unpublished telephone numbers are also considered, it is possible that at any one time, nearly 40 percent of all

telephone subscribers could be omitted from a telephone directory (Frey, 1983; Rich, 1977).

To deal with the issue of unlisted numbers as well as ensuring respondent confidentiality, an attempt was made to generate all numbers randomly. This process involved determining the three-digit prefix and then the remaining four digits to complete each telephone number.

All telephone number prefixes for the Greater Vancouver Regional District were determined by referring to the "Toll-Free Area Guide" on page 8 of the 1986 B.C. Telephone Directory. All of the three-digit number combinations were then listed with each city/municipality name. Vancouver city had as many as 55 different prefixes while Pitt Meadows had only one.

The four-digit numbers were produced on the Macintosh computer, using the Random Number Generator in the Excel Spreadsheet program. This program generated and randomly chose 5,000 four-digit numbers, removing all duplicates.

Complete seven-digit telephone numbers were a combination of a prefix number from a certain city/municipality with a randomly chosen four-digit number. Each city/municipality was assigned a playing card (one to fourteen by including Jokers) which were shuffled and then

drawn to determine the order of assignment for the city/municipality prefix number to the four-digit numbers.

Using this procedure, the first card drawn represented the municipality of Surrey. Since Surrey had 13 different prefixes and was to represent approximately 14 percent of the sample (the city/municipality percentages will be discussed in the following section), it was calculated that each prefix from Surrey should be assigned to 53 four-digit numbers. This resulted in 689 telephone numbers (approximately 14 percent of the 5,000 four-digit numbers) targeted for Surrey. The same procedure was used for assigning the other city/municipality prefixes to the four-digit numbers until a list of 5,000 telephone numbers was generated.

#### Pilot Testing the Selection Procedure

After the survey questionnaire was developed (this will be discussed in the following section), a pilot study was performed to evaluate the suitability of the questions as well as the success rate of using random telephone numbers. Rather than using any of the 5,000 telephone numbers, a separate list of 30 telephone numbers was generated. These numbers all started with a Vancouver city telephone number prefix, with prefixes not being repeated. All of the last four-digit numbers were chosen from a table of random numbers found in Appendix C of Borg and Gall (1983). The

four-digit numbers were selected by starting in the upper left corner of the table and taking the first four numbers in each entry of the first column.

Of the 30 telephone numbers called in the pilot study, two were business numbers (only households were targeted), while another nine were disconnected lines. These eleven unsuccessful calls represented 37 percent of the numbers and contributed greatly to interviewer frustration. It was therefore decided that before the 5,000 telephone numbers were used, they would need to be "cleaned up" so that business numbers and disconnected lines would be either reduced or eliminated.

The status of all 5,000 telephone numbers were determined by keying each number into B.C. Telephone Company's computerized master file and removing all non-residential numbers from this study's list. This resulted in the removal of 2755 telephone numbers (55 percent) from the original list of 5,000 numbers. Of the remaining 2245 telephone numbers, there appeared to be a proportionate quantity for each city/municipality (with respect to population size). The conclusion was drawn that there was no need to generate any extra telephone numbers. This shortened list of telephone numbers was used soon after being completed to reduce the likelihood of listed numbers becoming disconnected lines.

The final list of telephone numbers met the criteria of ensuring respondent confidentiality, as well as being more accurate and up-to-date than any published telephone directory.

### Training Interviewers

Before the telephone survey was implemented an evening was devoted to training interviewers. A list of names of people who had offered to be volunteers was obtained from the community group AIDS Vancouver. These people had not yet been assigned to a volunteer position, and it seemed reasonable to expect that they might be willing to help gather information about AIDS. Twenty people were initially contacted by telephone, eleven of whom agreed to volunteer and who would be available for both the training and survey dates. Unfortunately, only four people came on the training date, and only one person was able and willing to participate in administering the survey. As a result another six people, friends of the researcher, were contacted and agreed to participate as interviewers. These people were all trained separately because of the difficulty in finding a suitable date for everyone to meet. Furthermore, none of the eight interviewers (except for the researcher) was available on all of the survey dates because of other commitments. There were three male and five female interviewers.

Each interviewer was given three documents (adapted from Frey, 1983) which gave suggestions and guidelines for assisting with the administering of the survey (a copy of this printed material is found in Appendix A). Each person was instructed to read and follow this material carefully so there would less likely be influence from interviewer differences. After reading the material interviewers discussed the ideas with the researcher to ascertain that everything was fully understood. The first document, titled the "Role of the Interviewer" explained the importance of the interviewer remaining neutral and trying not to influence the respondents' replies. The second document, "Questions and Responses", gave examples of anticipated questions an interviewer could be asked by a respondent. Each question was followed by an appropriate answer so interviewers would feel prepared when questions of this type were raised. General expectations and requirements were presented in the third document, "Interviewing Guidelines", so interviewers would understand better the procedures of interviewing.

#### Conducting the Interviews

Interviews were conducted from both a centralized location and from the homes of the interviewers. The centralized telephone facility was a Vancouver business office which was made available to the researcher during the

evening hours. This centralized facility offered the opportunity to monitor and supervise interviewers, clarify both respondent and interviewer inquiries, and verify interviews completed. The facility contained individual desks or stations with access to six push-button telephones. When this facility was not available interviewers conducted telephone calls from their homes.

The centralized telephone facility was made available during the weekday from 6:00 p.m.. Weeks, Jones, Folson, and Benrud (1980) report that weekday evenings from 5:30 to 9:00 p.m. are the best times for conducting a telephone survey. Saturday from 9:00 a.m. to 2:00 p.m. and Sunday evenings are considered the next best calling times, followed by weekday hours and holidays. The majority of the interviews conducted for this study occurred at the centralized facility from 6:00 to 9:00 p.m. during weekdays. Fewer calls were made during the daytime hours because most interviewers had daytime jobs and also because it was found more difficult to contact people during the daytime.

The interviews were conducted over a seven day period starting on Tuesday, August 11, 1987. This may not have been the best month to conduct the survey. Vigderhous (1981) found that January, February, March, and April were the best months to call, while June, July, and August were less desirable since many people are vacationing or outside

the home during these months. During this survey period it was noted that the weather was varied, with mild rainfall for two days and slightly cloudy to sunny weather the other days. It is unknown if the weather conditions made it more or less likely for people to be available at home for the telephone interviews.

All telephone conversations were initiated with the same introductory message (see Appendix B). The introductory message had a number of primary functions: to verify the telephone number, identify the caller (the interviewer), establish rapport, explain the purpose and nature of the survey, gain informed consent, and sample within the household. All interviewers identified themselves by stating their complete name. Frey (1983) suggests complete names be used to enhance the credibility of the study. Further identifying information was given to potential respondents which identified the source of the study -- S.F.U. graduate research. A brief explanation of the study's purpose and topic followed and eventually a request for respondent participation was made. All respondents were told, even if they agreed to participate before the entire introductory message had been stated, that their responses would be kept confidential.

Selecting appropriate respondents from within each selected household was the final purpose of the introductory



message. Frey (1983) refers to this as "sampling within households". Previous telephone survey results have shown that the most likely person to be home, answer the telephone, and volunteer is the oldest female of the household, followed by the oldest male (personal communication with Mary Cooper, July 4, 1987). Likewise, the least likely person to be home and answer the telephone and volunteer is the youngest male, followed by the youngest female. If steps are not taken to sample equally from all targeted gender and age groups then the older female household member would expectedly be over-represented. Instead of interviewing respondents who answer the telephone first (selection by convenience), interviewers may control the selection of respondents. By controlling the selection procedure the resulting sample not only represents randomly selected households, but also randomly selected individuals within each household.

Frey (1983) reviews and evaluates the most popular within household sampling procedures used by telephone researchers. These procedures generally require the person who answers the telephone to tell the interviewer about the number of household members as well as the gender and age group of occupants -- as in oldest man, oldest woman or youngest man, youngest woman. Some procedures have the interviewer ask for the oldest male in the first household,

then the oldest female in the second , and so on, repeating the order once all age groups are surveyed. An important aspect of these procedures is that if the household telephoned is to have the oldest woman surveyed, and she is unavailable, the interviewer requests a suitable time to telephone later to contact that person. No interview is conducted if the targeted person is unavailable.

A noticeable component of all these procedures is that their administration is quite time consuming, both for the sampling procedure itself and for the number of call-backs required. Such time consuming introductions and sampling procedures could be problematic because there is some resistance by respondents to engage in lengthy telephone interviews (Frey, 1983). Call-backs could also become problematic because obtaining an adequate sample size would require more time and effort if people are frequently unavailable. In addition, these sampling procedures place a significant burden upon the interviewer for gathering information and making decisions about whom to interview. Likewise, the respondent may not react favorably to answering detailed questions about household members before the nature of the study is made clear. Therefore, it was believed that these procedural difficulties with sampling within households would increase the number of respondent refusals as well as create an overly frustrating situation

for interviewers. For these reasons a different and somewhat less rigorous procedure for within household sampling was utilized by this study.

This study sampled within households by requesting the services of the "hardest to reach" (least likely to answer the telephone, be home, or volunteer) persons first. If the hardest to reach persons were unavailable, the "easier to reach" people were requested. Specifically, the interviewer first asked to speak with the youngest male in the household who was over 18 years of age. If this person was unavailable, then interviewers asked for the youngest female in the household who was over 18 years of age. Again, if this person was not available the interviewer asked for the oldest male over 18 years of age, and finally would ask for the oldest female over 18 years of age if no one else was available. The intention of this procedure was to equally sample from all age groups (over 18 years of age), and from both genders. Furthermore, because of this study's limited resources, it was considered important to complete an interview when a household member who was over 18 years of age was contacted.

After a telephone number was dialed it was coded on the same list according to its status: interview completed (I.C.), no answer (N.A.), refusal (Ref.), business (Bus.),

or disconnected (Disc.). No answer numbers were sometimes called either later that day or another day.

Next to the interview completed code was placed a further code to indicate whether the respondent was the youngest male (Y.M.), the youngest female (Y.F.), the oldest male (O.M.), or the oldest female (O.F.). Originally it was thought that such information could help later in the survey to decide if additional older or younger people needed to be sampled. However, this information turned out to be unnecessary because often the oldest male (or female) in the household was also the youngest male (or female). The groups were not mutually exclusive.

#### The Study Sample

The sample in this research study consisted of 268 persons of which 133 were male and 135 were female. The age range of the subjects sampled was from 19 to 87. Table 3-1(a) shows the frequency of sampled age groups. Table 3-1(b) shows the sample distribution by age group and gender.

Subjects sampled lived in the fourteen cities/municipalities comprising the area known as the Greater Vancouver Regional District (GVRD). Population statistics for these fourteen cities/municipalities was obtained from the Statistics Canada 1986 Census, and was used for drawing a stratified sample such that each

Table 3-1(a).--Sample distribution by age group

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Age	Frequency	Percent
19-29	77	28.7
30-39	76	28.4
40-49	50	18.7
50-59	26	9.7
60-69	18	6.7
70-79	15	5.6
80-89	5	1.9
refused	1	.3
	-----	-----
	268	100%

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Table 3-1(b).--Sample distribution by age group and gender

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Age	Male	Female
19-29	44	33
30-39	38	38
40-49	20	30
50-59	10	16
60-69	10	8
70-89	11	9
refused		1
	-----	-----
	133	135

---

city/municipality was represented according to its share of the population. For example, since Vancouver city comprises approximately 33 percent of the GVRD population, 33 percent of the sample data was from Vancouver city. Table 3-2(a) displays the population size and corresponding sample size for the fourteen cities/municipalities in the GVRD. Table 3-2(b) shows the sample distribution by city/municipality and gender.

The majority of the subjects were Caucasian (236 persons). Nineteen subjects were Chinese; four people sampled were East Indian; two were Persian; and the remaining subjects were single cases of Japanese, Native Indian, Filipino, Pakistan, and Vietnamese.

Approximately half (49.6 %) of the subjects were married, while another 12 people (4.5 %) reported living "commonlaw". Eighty-eight people (32.8 %) reported being single, while another 35 people (13.0 %) were either widowed, separated or divorced. The sample distribution by marital status and gender is shown in Table 3-3.

Just over half of the subjects (52.3 %) had some post-secondary education, while 102 people (38.1 %) reported having graduated from high school. The breakdown for completed education levels of subjects is found in Table

Table 3-2(a).--Sample distribution according to population size of city/municipality

City/Municipality	Population (%)		Sample Frequency (%)	
Vancouver	431,147	(33.2)	90	(33.6)
Surrey	181,447	(14.0)	39	(14.6)
Burnaby	145,161	(11.2)	31	(11.6)
Richmond	108,492	(8.4)	20	(7.5)
North Vancouver	103,939	(8.0)	20	(7.5)
Delta	79,610	(6.1)	15	(5.6)
Langley	69,991	(5.4)	14	(5.2)
New Westminister	39,972	(3.1)	10	(3.7)
West Vancouver	36,266	(2.8)	8	(3.0)
Maple Ridge	36,023	(2.8)	7	(2.6)
Port Coquitlam	29,115	(2.2)	5	(1.9)
Port Moody	15,754	(1.2)	3	(1.1)
White Rock	14,387	(1.1)	3	(1.1)
Pitt Meadows	8,004	(0.6)	3	(1.1)
	1,299,308	100%	268	100%

Table 3-2(b).--Sample distribution by city/municipality and gender

City/Municipality	Male	Female
Vancouver	52	38
Surrey	20	19
Burnaby	14	17
Richmond	9	11
North Vancouver	9	11
Delta	8	7
Langley	3	11
New Westminister	7	3
West Vancouver	2	6
Maple Ridge	3	4
Port Coquitlam	2	3
Port Moody	2	1
White Rock	1	2
Pitt Meadows	1	2
	133	135

Table 3-3.--Sample distribution by marital status and gender

---

Marital Status	Male	Female	Total
Single	58	30	88
Cohabiting	6	6	12
Married	57	76	133
Widowed	3	11	14
Separated/Divorced	9	12	21
	-----	-----	-----
	133	135	268

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Table 3-4(a).--Completed levels of education

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Education Level	Frequency	Percent
Elementary	6	2.2
Junior High	20	7.5
Senior High	102	38.1
Post Secondary	72	26.9
University Graduate	50	18.7
Post Graduate	18	6.7
	-----	-----
	268	100%

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Table 3-4(b).--Sample distribution by level of education and gender

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Education Level	Male	Female
Elementary	3	3
Junior High	13	7
Senior High	53	49
Post Secondary	29	43
University Graduate	26	24
Post Graduate	9	9
	-----	-----
	133	135

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3-4(a). The sample distribution by education level and gender is shown in Table 3-4(b).

The majority of the subjects (65.3 %) reported being employed. There was a diverse representation of occupations held by subjects. Table 3-5(a) displays the frequency of reported occupations and Table 3-5(b) shows the sample distribution by occupation and gender.

Household income was defined as the combined income of all household residents. Most subjects reported household incomes over twenty-five thousand dollars. Table 3-6(a) shows the subjects' reported household incomes and Table 3-6(b) shows the sample distribution by household income and gender.

Most subjects reported having a religious affiliation (70.1 %). One hundred two people (38.1 %) reported to be Protestant, 43 people (16.0 %) were Catholic, and 17 (6.3 %) were Christian. All other religious groups represented 19 percent of the sample. All of the frequencies for the reported religions are found in Table 3-7(a). Table 3-7(b) presents the sample distribution by religious affiliation and gender.

Finally, the reported sexual orientation of the subjects was predominantly heterosexual (257 people--95.9%). Two people reported being bisexual, another six reported

Table 3-5(a).--Occupations of subjects

Job Description	Frequency	Percent
Financial	7	2.6
Medical	9	3.4
Legal	2	.7
Educational	8	3.0
Technical	14	5.2
Labour	34	12.7
Sales	19	7.1
Service	37	13.8
Office	26	9.7
Management	10	3.7
Housewife	3	1.1
Selfemployed	3	1.1
Retired	22	8.2
Unemployed	74	27.6
	268	100%

Table 3-5(b).--Sample distribution by occupation and gender

Occupation	Male	Female
Financial	4	3
Medical	1	8
Legal	-	2
Educational	2	6
Technical	11	3
Labour	32	2
Sales	10	9
Service	16	21
Office	10	16
Management	7	3
Retired	12	10
Housewife/husband	-	3
Selfemployed	2	1
	107	87

Table 3-6(a).--Reported annual household incomes

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Household Income in Dollars	Frequency	Percent
under 15,000	33	12.3
15 -- 24,999	35	13.0
25 -- 34,999	33	12.3
35 -- 44,999	40	14.9
45 -- 54,999	26	9.7
55,000 & over	48	17.9
Don't know	23	8.6
Refused	30	11.2
	268	100%

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Table 3-6(b).--Sample distribution by household income and gender

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Household Income in Dollars	Male	Female
under 15,000	16	17
15 -- 24,999	20	15
25 -- 34,999	19	14
35 -- 44,999	17	23
45 -- 54,999	12	14
55,000 & over	25	23
Don't know	10	13
Refused	14	16
	133	135

---

Table 3-7(a).--Reported religious affiliation

Religion	Frequency	Percent
Protestant	102	38.1
Catholic	43	16.0
Christian	17	6.3
Jewish	4	1.5
Moslem	3	1.1
Born Again Christian	3	1.1
Sikh	2	.7
Islam	1	.4
Baha'i	1	.4
Greek Orthodox	1	.4
Mormon	1	.4
Other	3	1.1
Refused to respond	7	2.6
None	80	29.9
	-----	-----
	268	100%

Table 3-7(b).--Sample distribution by religious affiliation and gender

Religion	Male	Female
Protestant	45	57
Catholic	21	22
Christian	9	8
Jewish	3	1
Moslem	2	1
Sikh	2	-
Other	5	5
Refused to respond	3	4
None	43	37
	-----	-----
	133	135

Table 3-8.--Sample distribution by sexual orientation and gender

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Sexual Orientation	Male	Female	Total
Bisexual	2	-	2
Heterosexual	124	133	257
Homosexual	5	1	6
Refused	2	1	3
	<hr/> 133	<hr/> 135	<hr/> 268

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being homosexual, and three refused to answer this question. Table 3-8 shows the sample distribution by sexual orientation and gender.

### Developing the Questionnaire

Surveys on AIDS have previously been conducted with differences in their procedure, thoroughness and purpose. These surveys have been administered to the public in such countries as the United States (Gallup Report, 1986; Los Angeles Times Poll, Study # 101 & 126; World Opinion Update, 1984-85), Canada (Bolan, 1987; Draaisma, 1987; Gallup, 1985 & 1987; Ludlow, 1987), and Great Britain (British Public Opinion, 1987; World Opinion Update, 1984-85 & 1986). Besides surveying the general adult population, other researchers have questioned different groups such as adolescents in San Francisco (DiClemente, Zorn & Temoshok, 1986) and medical students in London, England (Morton & McManus, 1986).

Awareness of the previous surveys on AIDS generated interest in a replication study. A replication study would provide an opportunity to test the validity of previous findings, as well as the generalizability of the findings. Careful examination of the surveys that had been conducted, however, revealed that their focus was often limited or inappropriate for this study's purposes. Furthermore, the specific wording and content of survey questionnaires was

observed to be negatively biased towards persons with AIDS. Consequently the results obtained may have been biased. For this reason an attempt was made to develop a questionnaire that was more neutral in content and focused upon significant issues.

The areas of favor in the questionnaire were determined through an examination of other survey questions, through an extensive review of the literature on AIDS, through the researcher's personal experiences with persons with AIDS, and through consultation with Lezlie Wagman, the coordinator of information and education at AIDS Vancouver. The areas in which data would be collected included: degree of concern, the cause of AIDS, transmission of Human Immunodeficiency Virus, recommended solutions, available resources, and Human Immunodeficiency Virus blood testing. Gathering data in these seven topical areas would reveal what respondents knew about AIDS, what they believed about AIDS, and how they felt about AIDS-related issues. Demographic data was also needed to provide information about the respondents. This demographic analysis was most often missing from other reported survey analysis about AIDS.

The next step in developing the questionnaire involved deciding on the format and specific wording of the items. Allport (1986) reported large differences (40% variation) in



different survey results because of the way questions were worded. Although the topic remained the same, the wording of the question can influence public response. In terms of asking respondents what they knew about AIDS, it was decided to rely heavily on open-ended questions. This type of question would require respondents to depend more upon their own "spontaneous" ideas and recall, instead of their ability to recognize information. It was thought that if persons could independently verbalize what they knew about AIDS, it would provide a more reasonable assessment of their understanding. Another reason in favor of open-ended questions involved the subject matter of the survey. It was considered important not to offend respondents by using words such as anal intercourse or oral sex. Rather than risk offending respondents and have them refuse to participate any further, it was decided to allow them to answer the questions by using their own choice of vocabulary. Following the development of the open-ended questions, lists of likely responses/answers were created to make the interviewers job of coding easier.

In an attempt to measure peoples' feelings or beliefs about certain AIDS-related issues, statements were developed that were either in favour of (positive) or against (negative) specific AIDS topics/issues. A Thurstone-type

scale was used for allowing respondents to say whether they agreed, disagreed, or had no opinion about each statement.

The complexity of the wording for both open-ended questions and closed statements was chosen after consideration of the characteristics of the population to be sampled. It was considered necessary to simplify the wording and the content to reduce the likelihood of misinterpretation. It was also necessary to formulate the questions so they were neither overly simple nor too difficult for most people, and to avoid jargon, slang, technical terms, or abbreviations.

The next step in developing the questionnaire was the ordering of the questions. Frey (1983) discusses how a logical and organized question order reduces the potential for respondent error. Even after the introduction, the questionnaire must hold the respondent's attention and motivate continued participation. The first question is considered critical for establishing rapport and trust between the interviewer and respondent. The advice of Dillman (1978) was taken in making the first question a closed item relevant to the topic of AIDS, interesting, and easy to answer. The second question was developed as open-ended, allowing the respondents to express their ideas and to find their "telephone voice".

As recommended by Frey (1983) transitional statements were used liberally within the questionnaire. These are phrases, words, or sentences that communicate topic changes, explain choices or instructions, and contribute to the flow (the relationship) of item groups. Transitional statements were also used to provide a "sense of movement" through the questionnaire, communicating to the respondents that their participation was helpful in completing the questionnaire quickly. Furthermore, transitional statements and variations in question form alleviated respondents' fatigue and avoided a response set.

The location of the questions asking for the demographic characteristics were also chosen after consideration of respondent fatigue. Since questions concerning age, ethnicity, education, marital status, et cetera are relatively easy to answer, Frey (1983) recommends placing them at the end of the questionnaire. Furthermore, although these items can be classified as "sensitive", Frey (1983) has found resistance to responding truthfully or at all to these items more likely to be overcome if left for the end of the questionnaire. By this time sufficient rapport between the respondent and interviewer should have been established: that is, it is more likely the respondent would trust that the interviewer and the purpose of the

research are legitimate and that the information being requested is necessary for the research.

The final consideration of fatigue had to do with the length of the questionnaire. The main concern was the length of time it would take to complete an interview. A ten minute interview was considered appropriate because it would be long enough to obtain pertinent information but not so long as to contribute to respondent fatigue. If the questionnaire was too long it was likely to be more difficult to obtain a reasonable sample size.

#### Pilot Testing the Questionnaire

Once all of the questions and transitional statements were developed and organized into a questionnaire format, a pilot study was performed to determine its practicality/utility. The questionnaire was administered by the researcher over the telephone to four family members, three friends, and five Vancouver city residents chosen randomly (as discussed previously). In addition to answering the questions, the respondents were also asked to evaluate the interview after it was over. These people were asked to explain whether the questions were understandable and clear, and how they felt about participating.

It is likely that the respondents who were friends and family members may not have wanted to be overly critical

when asked to evaluate the questionnaire. Nevertheless, all twelve respondents indicated that the questions were very clear to them and they did not mind participating. Based upon the results from the pilot test, it was concluded that the questionnaire was appropriate for the purposes of this study. The questionnaire titled "Telephone Survey on AIDS" is found in Appendix B.

At the top of the first page of the questionnaire there is a line labelled "Identification" which was filled in by all interviewers. The interviewer filled in the first two spaces with the same, personally chosen, two-digit number to identify who administered the questionnaire. The next three spaces were for numbering the questionnaires completed by the interviewer (e.g. 001, 002, 003, et cetera). It was originally planned to use interviewer identification in the analysis of the results to determine if differences between interviewers (due to interviewer bias) were found. However, since some interviewers only administered the questionnaire to one city/municipality while other interviewers sampled from a variety of regions, differences between results could be attributed to a number of variables. These identification numbers were useful for tracking how many interviews were completed by each interviewer as well as providing a number for identifying each questionnaire.

The right side of each questionnaire page was also prepared for computer entry. All of the answers for each question were assigned a line (numbered for computer entry) that was filled in by the researcher after all of the questionnaires were completed. Interviewers were not required to use these coding lines since it would have made the interviewing too cumbersome. Instead, the interviewers simply circled the number which was directly on the left side of the respondents' answers. If a respondent answered a question with an "other" response, interviewers would write this idea down. If respondents also wanted to qualify an answer, interviewers would also write down the comments next to the question and corresponding answer.

#### Data Analysis

After the last day of the survey, all of the questionnaires were individually checked to ensure they were completed and useable. All of the qualifying statements and "other" comments were recorded separately from the questionnaires. The qualifying comments were used as anecdotal notes to assist in the analysis of the responses. The "other" statements were written down along with the corresponding identification number. These identification numbers were later used for assisting in changing commonly stated "other" responses into useable codes.

All of the data were entered into the mainframe computer at Simon Fraser University so they could be managed and analyzed by using the Statistical Package for the Social Sciences (SPSS-x). The results of this analysis are discussed in Chapter 4.

## Chapter IV

### Findings

This chapter reports the results of the study pertaining to the sampling procedure and the objectives. Both quantitative and qualitative findings are presented for analysis.

#### Sampling Results

There were 268 interviews completed from the fourteen cities/municipalities over a seven day period. Summary data are presented in Table 4-1, showing that day five was the least successful day for completing interviews, while day three was the most successful. The average number of interviews completed each day was 38.29.

There were eight interviewers, three of whom were male. Rosenthal (1966) recommends reducing interviewer effects by controlling for gender when using individually administered tests. Ideally, the gender of the interviewers in this study would have been equally represented. However, despite there being more female interviewers, 55% of the respondents were interviewed by males. This was due to the fact that the investigator (male) had the greatest amount of time to do the interviewing.



Table 4-1.--Number of interviews completed daily by  
city/municipality

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City/ Municipality	Day of Interviewing							total
	1	2	3	4	5	6	7	
Vancouver	16	17	19	14		12	12	90
Surrey	13		1	5	7	9	4	39
Burnaby		11		5	5	6	4	31
Richmond			8	8	4			20
North Vancouver					7	10	3	20
Delta				6	9			15
Langley			10				4	14
New Westminster			10					10
West Vancouver		6					2	8
Maple Ridge		6					1	7
Port Coquitlam	2			2			1	5
Port Moody	2						1	3
White Rock	2						1	3
Pitt Meadows	2						1	3
total	37	40	48	40	32	37	34	268
running total	37	77	125	165	197	234	268	

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Daily average = 38.29

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The amount of time spent interviewing varied among interviewers by number of days and also by the amount of time during each day (anywhere from one to six hours). Table 4-2 presents the number of completed interviews daily for each interviewer. The mean number of daily interviews completed by interviewers ranged from eight to over thirteen.

There were 1095 telephone numbers called during the seven day period. The distribution of responses from these telephone calls are summarized by city/municipality in Table 4-3. These calculations do not take into consideration the number of call-backs required and each number's initial status. That is, if a number was called three times with the first two calls receiving no answer, and the third call was a refusal, the number was tabulated only once in the table as a refusal. Completed interviews were obtained from 24.5 percent of all the telephone numbers called, with West Vancouver having the lowest percentage of interviews completed (17.0 %) and Maple Ridge with the highest (43.8%). West Vancouver had the highest rate of no answers (70.2 %) and the second lowest rate of refusals (10.6 %). This suggests that West Vancouver residents were harder to contact to complete interviews. Similarly, Maple Ridge had the lowest rate of no answers (12.5 %), suggesting that the high rate of completed interviews was due to someone being

Table 4-2.--Interviews completed by individual interviewers

Interviewer's identification and gender (m/f)	Day of Interviewing							total
	1	2	3	4	5	6	7	
88 (m)	17	19	18	19	13	12	16	114
03 (f)	7							7
22 (f)	13	14	10	21			14	72
41 (m)		7	10					17
43 (f)			10					10
08 (f)					7	10		17
69 (f)					5	6	4	15
26 (m)					7	9		16
Total	37	40	48	40	32	37	34	268
Mean	12.3	13.3	12.0	20.0	8.0	9.0	11.3	

Table 4-3.--Number of telephone numbers called and status of call by city/municipality

City/ Municipality	Numbers called	I.C.	N.A.	Ref.	Bus.	Disc.
Vancouver	434	90 20.7%	224 51.6%	102 23.5%	4 .9%	14 3.2%
Surrey	129	39 30.2%	52 40.3%	29 22.5%	0 -	9 7.0%
Burnaby	123	31 25.2%	54 43.9%	36 29.3%	1 .8%	1 .8%
Richmond	92	20 21.7%	43 46.7%	25 27.2%	1 1.1%	3 3.3%
North Vancouver	69	20 29.0%	33 47.8%	14 20.3%	1 1.4%	1 1.4%
Delta	56	15 26.8%	25 44.6%	14 25.0%	0 -	2 3.6%
Langley	40	14 35.0%	18 45.0%	6 15.0%	2 5.0%	0 -
New Westminster	36	10 28.0%	14 39.0%	11 30.6%	0 -	1 2.8%
West Vancouver	47	8 17.0%	33 70.0%	5 10.6%	1 2.1%	0 -
Maple Ridge	16	7 43.8%	2 12.5%	4 25.0%	0 -	3 18.8%
Port Coquitlam	13	5 38.5%	7 53.8%	0 -	0 -	1 7.7%
Port Moody	16	3 18.8%	8 50.0%	4 25.0%	0 -	1 6.8%
White Rock	14	3 21.4%	8 57.1%	3 21.4%	0 -	0 -
Pitt Meadows	10	3 30.0%	4 40.0%	3 30.0%	0 -	0 -
Totals	1095	268 24.5%	525 47.9%	256 23.4%	10 .9%	36 3.3%

I.C.= Interviews Completed

N.A.= No Answers

Bus.= Businesses

Disc.= Disconnected

Ref.= Refusals

at home to answer the telephone. The rate of no answers for the entire sample was approximately 48%. No answers included telephones that rang five or more times without being answered, busy signals, and answering machines.

#### Characteristics of refusals

The percentage of refusals for the entire sample was 23.4%. This is consistent with research on refusals of telephone interviews that have obtained rates averaging 20-28% (Frey, 1983). This study's highest rates of refusal were from residents sampled in Burnaby (29.3 %), Pitt Meadows (30.0 %), and New Westminster (30.6 %). There were no refusals from residents sampled in Port Coquitlam.

It is unknown whether the characteristics of those who refused to respond compared to the characteristics of those who responded can be held to account to bias the findings. The majority of the refusals occurred during the introductory statement. Some of the refusals were the result of no adults (over 18 years of age) at home.

When interviewers asked whether they had just reached the specific number dialed, most people who answered the telephone said, "yes". However, even at this initial question some people already indicated reluctance by asking, "Who do you wish to talk to?" or "Who is calling please?" Interviewers tried to answer these questions appropriately

and then attempted to continue with the introduction. Some people said they were "not interested" immediately after being told the researcher's name and that it was for graduate research at Simon Fraser University. These people had not been told yet that it was a survey nor did they know it was a survey about AIDS. Interviewers tried to be persuasive by explaining that they were not selling any products. Sometimes the interviewer was successful at keeping the person on the telephone and eventually completing the interview. Others hung-up without staying on long enough to hear an explanation.

There were also people who immediately asked how their number had been obtained. Many of these said they had unlisted telephone numbers and expressed anger because we had called them. When the interviewers explained that the telephone numbers were generated randomly by a computer program some people with unlisted telephone numbers were reassured while others remained upset. It is unknown what proportion of people sampled who had unlisted telephone numbers refused.

When interviewers explained the survey was about AIDS, some older respondents who described themselves as "senior citizens" suggested to the interviewers that they try contacting someone who was younger and knew more about AIDS. Some of these older respondents explained that they did not

have anything to say about AIDS and they were not interested in the topic because of their age. These respondents did not seem to identify with the problem.

Similarly, when interviewers initially asked to speak to the youngest male in the household who was over 18 years of age, they were told by people who identified themselves as "senior citizens" that no young people lived in their household and therefore the interviewer should telephone someone else. Some of these people were persuaded to participate once they were told that the opinions held by all age groups were desired.

Refusals were also recorded for respondents who were either deaf or hearing impaired and answered their telephone with a TDD (Telecommunication Device for the Deaf). It was considered too time consuming to administer the questionnaire by TDD to the five hearing impaired respondents contacted.

Another recognized characteristic of refusals involved a language barrier. Since the interviewers only spoke English it was not possible to administer the questionnaire to respondents who did not speak English. The problem with a language barrier was more noticeable among prefixes to telephone numbers for the eastside of Vancouver. Despite the language differences, some people who spoke limited

amounts of English managed to complete the questions when interviewers read the questions very slowly and repeated them often. It was also noted that some people may have used their limited English vocabulary as an excuse not to participate.

A final finding was seen in the tendency for some people to be willing participants only after the interviewer went through the "within household" sampling. Even after the first, second, or third person requested was unavailable the interviewer eventually identified the person on the telephone as being the next person on the list to be interviewed. This often resulted in laughter from the respondent and eventual compliance. As Frey (1983) suggests, this procedure may help people feel that they are not being singled out just because they answer the telephone.

### Objectives

Data gathered from telephone interviews are presented according to the study's five objectives.

Objective One.

To examine the level of concern about AIDS among a selected sample of the Greater Vancouver Regional District (GVRD) population.



The questions that provided data on this issue included:

- (a) I would like to ask how you feel about the spread of AIDS. Would you say the spread of the disease AIDS is a matter of:
  - 1. Great concern
  - 2. Some concern
  - 3. Little concern
  - 4. No concern at all
  - 5. Don't know
  
- (b) I would like to know if you are worried that you might contract AIDS?

In response to question (a), the majority (82.1%) indicated that they thought the spread of AIDS was of great concern. The frequency of responses for this question are shown in Table 4-4.

In response to question (b), the majority (66.0%) reported not being worried at all about contracting AIDS. The frequency of responses for this question are shown in Table 4-5.

The data in both of these tables indicate that although the majority of respondents believe the spread of AIDS is of great concern, they do not feel very vulnerable personally to contracting the virus. One possible explanation for the absence of personal concern among respondents may involve their perception of what constitutes a high-risk behavior. Some respondents may accurately believe they do not engage in high-risk behaviors and as a result do not feel at-risk. This explanation was given greater credence when some

Table 4-4.--Level of concern about the spread of AIDS

**Question: I would like to ask how you feel about the spread of AIDS. Would you say the spread of the disease AIDS is a matter of:**

	Frequency	Percent
Great concern	220	82.1
Some concern	40	14.9
Little concern	5	1.9
No concern at all	2	.7
Don't know	1	.4
	-----	-----
	268	100

Table 4-5.--Personal concern about contracting AIDS

**Question: I would like to know if you are worried that you might contract AIDS?**

	Frequency	Percent
Very worried	11	4.1
Fairly worried	28	10.4
Only a little worried	52	19.4
Not at all worried	177	66.0
	-----	-----
	268	100

respondents (frequently senior citizens) reported that they were not personally worried since they defined their behavior as celibate. However, these same respondents frequently expressed concern for their children, grandchildren and other young people in general.

Another explanation is that respondents may be uninformed of, or denying the practice of, high-risk behaviors. Since this study did not examine respondent behaviors, further interpretation of this idea is not possible.

#### Objective Two.

To examine what is understood by the selected sample of the GVRD population in the areas of AIDS cause, transmission, testing, and resources.

Questions that provided data in this area included:

- (a) AIDS is caused by a virus. (True, Unsure, or False)
- (b) Next, I would like to know how do you think people get AIDS?
- (c) What do you think the test for AIDS tells you?
- (d) How effective do you think the test for AIDS is?
- (e) If you wanted to find out more information about AIDS, where would you go, or what would you do?

### Cause

Respondents were asked if they thought AIDS was caused by a virus. Table 4-6 shows the frequency and percentage of responses to this question.

Approximately 74% of respondents stated that AIDS was caused by a virus. This understanding is consistent with current medical practice.

The high percentage of accurate responses to this question may be inflated since respondents were not required to recall the information. Since the correct answer was provided in the statement, the likelihood of guessing the answer accurately would be 50%. Respondents commonly said that they were guessing or did not know with certainty the answer to this question, but because they could not think of another causative agent, they were inclined to accept the statement as being true. It was also noted that respondents who were unsure of the cause of AIDS would later use the word virus when explaining their answers to other questionnaire items. Some respondents who answered this question accurately may have had a tenuous understanding of the cause of AIDS.

### Transmission

Respondents were asked how they thought people got AIDS. The frequency of responses is shown in Table 4-7.

Table 4-6.--Frequency of responses on the cause of AIDS

**Statement: AIDS is caused by a virus.**

Responses	Frequency	Percent
True	199	74.3
Unsure	37	13.8
False	32	11.9
	-----	-----
	268	100

Table 4-7.--Frequency of responses on the transmission of  
AIDS

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**Question: How do you think people get AIDS?**

	Frequency	Percent
-----		
1. Body fluids	48	17.9
2. Sexual intercourse	187	69.8
3. Heterosexual intercourse	10	3.7
4. Homosexual intercourse	46	17.2
5. Receiving blood transfusion	122	45.5
6. Giving blood	6	2.2
7. Organ transplants	1	.4
8. Infected needles/syringes	86	32.1
9. Mother to child in utero	8	3.0
10. Breast feeding	2	.7
11. Being promiscuous	13	4.9
12. Saliva form kissing	17	6.3
13. Saliva from spitting or on cutlery etc.	5	1.9
14. Touching infected person	3	1.1
15. Proximity to an infected person	0	-
16. Toilet seats	2	.7
17. Swimming pools	1	.4
18. Insect bites (eg. mosquitoes)	4	1.5
19. Human bites	1	.4
20. Blood contact	47	17.5
21. Cut contact	11	4.1
22. Anal intercourse	5	1.9
23. Going to prostitutes	5	1.9
24. Tears/Sweat	5	1.9
25. Other	21	7.8
26. Refused	0	-
27. Don't know	14	5.2

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670

Total number of responses  
made by 268 respondents = 670

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The most commonly stated means of transmission was sexual intercourse (187 people). Ten additional responses were more specific, saying heterosexual intercourse. Forty-six responses specifically mentioned homosexual intercourse. Five responses noted anal intercourse. A total of 248 responses showed awareness of a primary means of AIDS transmission. The different degrees of explicitness may reflect the varying degrees of comfort people have with talking about sexual acts. The more commonly stated response of homosexual intercourse may also indicate that respondents associate AIDS transmission more with homosexual acts.

The association of AIDS transmission and homosexuality was also evident in the 21 responses coded as "other". The category of "other" has been collapsed to include responses that have been made at least once, but not more than twice. "Other" responses include: receiving a tattoo; having sex with someone who is gay; hanging out with homosexuals; going to gay bars; going to San Francisco; going to crowded, messy areas/ghettos; not being monogamous; it is unknown; having sex the first time; persons with AIDS should suffer for it; spreads like germs, it is contagious; by being unclean when sexually active; not knowing sex partner; carelessness; some people just acquire it and they are not in a high-risk group; associated with homosexuals -- AIDS does not exist,

it is propaganda to scare young men so they do not want to become homosexual; abnormal sex habits and lifestyle -- immoral living.

The second most frequently stated means of transmission was by receiving a blood transfusion (122 people). Although blood screening tests have substantially reduced the risk of transfusion associated transmission, the respondents named this more often than intravenous drug use (86 people) or contact with either blood (47 people) or surface cuts (11 people).

The initial analysis of the responses to this question on transmission suggests that respondents are fairly well informed, with the most frequent responses correctly identifying the main routes of HIV transmission. To further examine the accuracy of respondents' statements, the data were grouped by whether a respondent had only correct information on transmission, or either all incorrect information or a combination of correct and incorrect information. Just over half of the respondents gave only correct information (137 people); 131 people gave some or all incorrect information. Tables 4-8(a) and (b) present the responses to the transmission question categorized according to the correctness of the respondents' information.



Table 4-8(a).--Frequency of responses from respondents with either correct or incorrect information on transmission

Question: How do you think people get AIDS?

	Correct Information(%)	Incorrect Information(%)
* 1. Body fluids	19 (39.6)	29 (60.4)
* 2. Sexual intercourse	117 (62.6)	70 (37.4)
* 3. Heterosexual intercourse	8 (80.0)	2 (20.0)
* 4. Homosexual intercourse	28 (60.9)	18 (39.1)
* 5. Receiving blood transfusion	71 (58.2)	51 (41.8)
6. Giving blood	-	6 (100)
* 7. Organ transplants	1 (100)	-
* 8. Infected needles/syringes	55 (64.0)	31 (36.0)
* 9. Mother to child in utero	4 (50.0)	4 (50.0)
*10. Breast feeding	-	2 (100)
11. Being promiscuous	-	13 (100)
12. Saliva from kissing	-	17 (100)
13. Saliva from spitting or on cutlery	-	5 (100)
14. Touching infected person	-	3 (100)
15. Proximity to an infected person	-	-
16. Toilet seats	-	2 (100)
17. Swimming pools	-	1 (100)
18. Insect bites (eg. mosquitoes)	-	4 (100)
19. Human bites	-	1 (100)
*20. Blood contact	-	47 (100)
*21. Cut contact	-	11 (100)
*22. Anal intercourse	-	5 (100)
23. Going to prostitutes	-	5 (100)
24. Tears/Sweat	-	5 (100)
25. Other	-	21 (100)
26. Refused	-	-
27. Don't know	-	14 (100)
	303	367

\* coded as correct responses

Table 4-8(b).--Total number of responses on transmission by correctness of information

Number of Respondents	Number of Responses	
	With correct information only	With some or all incorrect information
137	303	-
131	-	367
268	303	367

In the group of responses that mentioned 'body fluids' to explain how transmission occurs, the majority (60.4%) also included incorrect information about transmission. There were other responses given that mentioned specific body fluids. These included breast milk (two responses), saliva (22 responses), tears/sweat (five responses) and blood. The body fluid, blood, was stated as either blood or cut contact (58 people, all of whom also stated incorrect information), receiving a blood transfusion (of whom 51 people or 41.8%, also gave incorrect information), donating blood (incorrectly stated by six people), or as using blood infected needles/syringes, as in intravenous drug use (of whom 31 people or 36.0%, also gave incorrect information).

Of the 187 respondents who said transmission occurs during sexual intercourse, 70 of them (37.4%) also gave incorrect information. Two respondents (20.0%) who stated that heterosexual intercourse transmits HIV also gave incorrect information, while 18 respondents (39.1%) who mentioned homosexual intercourse as a means of transmission also gave incorrect information. All five people who mentioned anal intercourse as a possible means of transmission also gave incorrect information.

These findings indicate that approximately half of the sample responded with information on transmission that is inconsistent with current medical information.

### Antibody testing

Respondents were asked what they thought the antibody test determines. The wording for this question is "What do you think the test for AIDS tells you?". Although this is a misnomer because it is not a test for AIDS but rather a test for the viral antibodies, it was believed that only uninformed respondents would be misled. The frequency of responses for this question are shown in Table 4-9.

The most common answer to this question was incorrect, with 75 responses explaining that the test determines if you have AIDS. Sixty responses correctly stated that the test determines if you have had contact with the virus, while 74 responses explained that it determines if you are a carrier of the virus. The most specific answer was provided by 25 responses which explained that the test determines if you have produced antibodies to the virus. Almost 20% of the responses were coded as "Don't know", while 15 responses were coded as "other". Other responses included: if you are in a risk category; if you have been careless; it is like a drivers license test; at what stage the disease is since it develops in five to seven years; if you can be cured; if you will die; whether the environment was unclean; it does not tell you if you are contagious or not; if you have been doing something wrong or been around persons with AIDS; not much, it is only a caution; the illness is serious.

Table 4-9.--Frequency of responses on antibody testing

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**Question: What do you think the test for AIDS tells you?**

	Frequency	Percent
	-----	
1. If you have AIDS	75	28.0
2. If you have had contact with virus	60	22.4
3. If you have antibodies to virus	25	9.3
4. If you are (will be) healthy/sick	9	3.4
5. If you will develop AIDS	3	1.1
6. If you are immune to AIDS	1	.4
7. If you are a carrier of the virus	74	27.6
8. Other	15	5.6
9. Refused	0	-
10. Don't know	53	19.8
	-----	
	315	

Total number of  
responses by 268 respondents = 315

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The data indicate that 58.3% of the sample are misinformed about what the test determines.

To further examine the accuracy of respondents' understanding of the antibody test, the data were grouped by whether a person had all correct information on this question, or whether they had some or all incorrect information. Table 4-10(a) categorizes the data by whether or not the responses were correct.

Table 4-10(b) shows 124 respondents gave 141 correct responses about the antibody test. One hundred forty-four respondents made some or all incorrect responses to this question. In this latter group, of the 174 responses made, only 18 were correct.

It was noted that some respondents who said that they did not know what the antibody test determined, had no hesitation in answering the next question which asked how effective the test was. Some people explained that because there was a test it meant that it must be effective.

The data on respondents' understanding of the effectiveness of the antibody test are presented in Tables 4-11(a) and (b). The data are classified by whether the response was given by a respondent who answered the previous question on what the test determines with either correct or incorrect information.

Table 4-10(a).--Frequency of responses from respondents with either correct or incorrect information on the antibody test

Question: What do you think the test for AIDS tells you?

	Correct Information(%)	Incorrect Information(%)
1 If you have AIDS	-	75 (100.)
*2 If you have contact with virus	55 (91.7)	5 ( 8.3)
*3 If you have antibodies to virus	24 (96.0)	1 ( 4.0)
4 If you are (will be) healthy/sick	-	9 (100.)
5 If you will develop AIDS	-	3 (100.)
6 If you are immune to AIDS	-	1 (100.)
*7 If you are a carrier of the virus	62 (83.8)	12 (16.2)
8 Other	-	15 (100.)
9 Refused	-	-
10 Don't know	-	53 (100.)
	141	174

\*Responses coded as correct.

Table 4-10(b).--Total number of responses on the antibody test by correctness of information

Number of Respondents	Number of Responses	
	With correct information only	With some or all incorrect information
124	141	-
144	-	174
268	141	174

The responses given that were coded as "other" were: need to repeat it two to three times; needs more research; needs follow-up and monitoring; as effective as possible at this time; does not believe the virus exists.

One hundred ten responses indicated a lack of knowledge about the effectiveness of the antibody test. A majority of these responses (63.6%) were made by those who had given incorrect responses on what this test determines. Not surprisingly, the 35 responses explaining the specific problems associated with the test, such as false positive and negative results, or the time lag for antibodies to be produced after viral infection, were provided more often by respondents who had correct information about what the test determines. There was an even proportion of correct and incorrect responses about the test for those respondents who thought the test was very effective, while the majority of respondents who said it was fairly effective had correct information about what the test determines. These results suggest that respondents who understand what the antibody test determines are also more aware of the test's limitations. Likewise, respondents who have incorrect information about what the antibody test determines, are also more likely not to be aware of the antibody test limitations. This is also seen in the majority of respondents who incorrectly thought the antibody test was

Table 4-11(a).--The respondents' understanding of the effectiveness of the antibody test related to their understanding of what the test determines

-----

**Question: How effective do you think the test for AIDS is?**

	Frequency of Correct Responses (%)	Frequency of Incorrect Responses (%)
1. Very effective	31 (50.0)	31 (50.0)
2. Fairly effective	45 (60.8)	29 (39.2)
3. Barely effective	5 (35.7)	9 (64.3)
4. Not effective	3 (50.0)	3 (50.0)
5. Mention of false positives or negatives	13 (86.7)	2 (13.3)
6. Mention of time-lag for detection of antibodies	16 (80.0)	4 (20.0)
7. Other	1 (12.5)	7 (87.5)
8. Don't know	40 (36.4)	70 (63.6)
	-----	-----
	154	155

-----

Table 4-11(b).--Total number of responses on the effectiveness of the antibody test by correctness of information

Number of Respondents	Number of Responses	
	With correct information only	With some or all incorrect information
124	154	-
144	-	155
-----	-----	-----
268	154	155

-----



barely effective and who also did not have correct information about what the test determines.

### Resources

To examine public awareness of available resources respondents were asked what they would do if they wanted to find out more information about AIDS (Question: If you wanted to find out more information about AIDS, where would you go, or what would you do?). The responses are presented on Table 4-12.

The majority of responses indicated that people in the sample would depend on the medical profession for obtaining more information: 160 responses were given for going to a doctor, 61 responses were given for consulting a health agency and 11 responses were given for going to the medical community. Since AIDS is a medical condition these results are not surprising.

The second most common answer (84 responses) was to telephone AIDS Vancouver. Another 17 responses were given for telephoning an information hot-line, although the people who made this response could not recall the name of the organization. These respondents commonly said, "I'd phone that AIDS place in Vancouver"; "I'd go to that AIDS society downtown"; or "That place where Mr. Tivey was fired from."

Table 4-12.--Responses showing awareness of resources

-----

**Question: If you wanted to find out more information about AIDS, where would you go, or what would you do?**

	Frequency	Percent
	-----	
1. Phone AIDS Vancouver	84	31.3
2. Phone an Information Hotline	17	6.3
3. Go to clergy	0	-
4. Ask my doctor	160	59.7
5. Consult a health agency	61	22.8
6. Consult Minister of Health	4	1.5
7. Go to library	24	9.0
8. Consult the media	24	9.0
9. Go to medical community	11	4.1
10. Go to schools/universities	6	2.2
11. Go to government agency	5	1.9
12. Other	23	8.6
13. Refused	0	-
14. Don't know	23	8.6
	-----	
	442	

Total number of responses  
given by 268 respondents = 442

-----

These comments suggest that these respondents were referring to AIDS Vancouver.

No responses were given for going to a member of the church for information; 24 responses were given for going to the library; 24 responses were given for referring to the media. Twenty-three responses were made by people who did not know what they would do if they wanted to obtain more information.

There were also a variety of comments made by 23 people that were coded as "other". The category of "other" has been collapsed to include responses that have been made at least once, but not more than twice. "Other" comments include: attend public meetings; talk with teenage daughter or school nurse; read pamphlet in mail from government; telephone my wife's gay friends; telephone Center for Disease Control; talk with colleagues; ask people; counseling service; video available at videotape outlets; ask a person who has AIDS; go to gay organization; does not want to hear anymore about AIDS because it has dominated the media; not interested in more information because it is propaganda to scare young men into being normal.

The data indicate that respondents stated a variety of possible resources, some of which would be more informative than others. It is unknown how respondents would reconcile

any differences in information if they sought out more than one resource. Furthermore, since respondents were not asked where they obtained their main source of information, it was not possible to evaluate the merit of these resources.

The data have been presented to satisfy the study's second objective under the separate areas of cause, transmission, antibody testing and resources. An examination of the respondents' degree of understanding (on cause, transmission, and antibody testing) was made to assess "total understanding." One hundred two respondents responded with only correct information to these three questions, and 166 respondents responded with some or all incorrect information. This finding reveals that the majority of respondents presented information inconsistent with current medical information.

#### Objective Three.

To examine the opinions the GVRD sample have towards AIDS related-issues dealing with transmission, testing, cause, and solutions.

In examining the responses that reflect opinions of the respondent sample towards transmission, testing, cause and solutions, the data are presented in the following categories:

- (1) Tables 4-13(a) and (b) present the responses to the interview statements related to cause:
  - (a) The AIDS problem arose because of a "permissive" society.
  - (b) The AIDS problem has come about as a judgment of God.
- (2) Tables 4-14(a) through (e) present the responses to the following interview statements related to transmission:
  - (a) School officials should tell all parents if a child with AIDS is attending their school.
  - (b) Children can be taught by a person with AIDS.
  - (c) People with AIDS should be allowed to mingle freely with the general public.
  - (d) People with AIDS can work freely within any environment.
  - (e) By using condoms you can lower your risk of contracting the AIDS virus.
- (3) Tables 4-15(a) through (c) present the responses to the following interview statements related to antibody testing:
  - (a) People should be tested for AIDS for employment reasons.
  - (b) The government should be compiling a list

on who has the AIDS virus.

(c) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.

(4) Table 4-16 presents the responses to the following interview question related to solutions:

(a) What do you think should be done to solve the AIDS problem?

(5) Table 4-17 presents the responses to the following interview statement related to confidence in the data:

(a) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.

(1) Interview statements related to the cause of AIDS

The responses to the two interview statements related to the cause of AIDS are found in Tables 4-13(a) and (b). Responses to the statement "The AIDS problem arose because of a permissive society", found in Table 4-13(a), show almost an equal proportion agreed (108 people) and disagreed (119 people).

Responses to the statement "The AIDS problem has come about as a judgment of God", found in Table 4-13(b), show

Tables 4-13(a) and (b).--Responses to the two interview statements related to the cause of AIDS

---

**(a) The AIDS problem arose because of a "permissive" society.**

(The definition of permissive was left to the respondent.)

	Frequency	Percent
	-----	-----
Agree	108	40.3
No opinion	41	15.3
Disagree	119	44.4
	---	----
	268	100

**(b) The AIDS problem has come about as a judgment of God.**

	Frequency	Percent
	-----	-----
Agree	25	9.3
No opinion	37	13.8
Disagree	206	76.9
	---	----
	268	100

---

the majority of respondents (206 people) disagreed. Less than ten percent of the respondents agreed with this statement. Both statements in Tables 4-13(a) and (b) are inconsistent with current medical information.

(2) Interview statements related to the transmission of AIDS

The responses to the five interview statements related to the transmission of AIDS are categorized in Tables 4-14(a) through (e). The two statements "School officials should tell all parents if a child with AIDS is attending their school" and "Children can be taught by a person with AIDS", found in Tables 4-14(a) and (b), pertain to transmission of AIDS in the schools. Table 4-14(a) shows slightly more respondents disagreed (132 people) than agreed (111 people) with the idea of informing parents of a child attending their school, while Table 4-14(b) shows the majority of respondents (193 people) believed it would be all right for children to be taught by a person with AIDS. Current medical practices do not recommend informing parents if a child who has AIDS is in school, and it is considered safe for students if a teacher who has AIDS is in the classroom.

Casual contact is the issue in the statements on Tables 4-14(c) and (d). Responses to the statement "People with AIDS should be allowed to mingle freely with the general



Tables 4-14(a) through (e).--Responses to the five interview statements related to transmission

---

**(a) School officials should tell all parents if a child with AIDS is attending their school.**

	Frequency	Percent
	-----	
Agree	111	41.4
No opinion	25	9.3
Disagree	132	49.3
	---	---
	268	100

**(b) Children can be taught by a person with AIDS.**

	Frequency	Percent
	-----	
Agree	193	72.0
No opinion	19	7.1
Disagree	56	20.9
	---	---
	268	100

Tables 4-14.--continued

---

**(c) People with AIDS should be allowed to mingle freely with the general public.**

	Frequency	Percent
	-----	
Agree	182	67.9
No opinion	30	11.2
Disagree	56	20.9
	---	----
	268	100

**(d) People with AIDS can work freely within any environment.**

	Frequency	Percent
	-----	
Agree	111	41.4
No opinion	22	8.2
Disagree	135	50.4
	---	----
	268	100

**(e) By using condoms you can lower your risk of contracting the AIDS virus.**

	Frequency	Percent
	-----	
Agree	244	91.0
No opinion	12	4.5
Disagree	12	4.5
	---	----
	268	100

---

public", found in Table 4-14(c), show the majority of respondents (182 people) agreed. Responses to the statement "People with AIDS can work freely within any environment", found in Table 4-14(d), show that slightly more respondents disagreed (135 people) than agreed (111 people). The current medical practice is to allow people with AIDS the right to have casual contact in any environment, whether it is work related or not.

Sexual contact and the risk of transmission is considered in the statement "By using condoms you can lower your risk of contracting the AIDS virus", found in Table 4-14(e). The responses to this statement reveal that the majority of respondents (244 people) believed the risk of contracting HIV is reduced by using a condom. This finding is consistent with medical information.

### (3) Interview statements related to antibody testing

The responses to the three interview statements related to antibody testing are categorized in Tables 4-15(a) through (c). Responses to the statement "People should be tested for AIDS for employment reasons", found in Table 4-15(a), show that the majority of respondents (147 people) disagreed. Responses to the statement "The government should be compiling a list on who has the AIDS virus", found in Table 4-15(b), reveal that only slightly more respondents agreed (125 people) than disagreed (120 people). The

Tables 4-15(a) through (c).--Responses to the three interview statements related to antibody testing

---

**(a) People should be tested for AIDS for employment reasons.**

	Frequency	Percent
	-----	
Agree	92	34.3
No opinion	29	10.8
Disagree	147	54.9
	---	---
	268	100

**(b) The government should be compiling a list on who has the AIDS virus.**

	Frequency	Percent
	-----	
Agree	125	46.6
No opinion	23	8.6
Disagree	120	44.8
	---	---
	268	100

**(c) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

	Frequency	Percent
	-----	
Agree	201	75.0
No opinion	29	10.8
Disagree	38	14.2
	---	---
	268	100

---

majority of respondents (201 people) agreed with the statement "Doctors should demand the names of previous sexual partners of people who have the AIDS virus", found in Table 4-15(c). Antibody testing for employment reasons, governments compiling lists, and contact tracing are all not currently recommended by the medical profession.

(4) Interview question related to solutions

The responses to the interview question on recommended solutions are categorized in Table 4-16. The most common recommendations were for research (132 responses) and education (126 responses). These recommendations are consistent with the recommendations made by the medical profession. Forty-three responses recommended behavior changes; 12 responses suggested identifying carriers by methods such as tattoos; 24 responses recommended quarantine; and 17 responses wanted more antibody testing. Spending more money was suggested by 39 responses, while another 31 responses did not have any recommendations. The suggestions for identifying carriers and for quarantine are not recommended by the medical profession.

Approximately 18% of the responses were coded as "other". The category of "other" has been collapsed to include responses that have been made at least once, but not more than twice. These responses include: got sick and tired reading about AIDS; watch the blood tests; use

Table 4-16.--Responses to the interview question related to solutions

-----  
**Question: What do you think should be done to solve the AIDS problem?**

	Frequency	Percent
	-----	-----
1. Abstinence	4	1.5
2. Attitude changes	7	2.6
3. Behavior changes	43	16.0
4. Education	126	47.0
5. Identification of carriers	12	4.5
6. Quarantine	24	9.0
7. Research	132	49.3
8. Spend more money	39	14.6
9. Antibody testing	17	6.3
10. Vaccine	4	1.5
11. Care for people with AIDS	10	3.7
12. Monogamy	5	1.9
13. Monitor people with AIDS	4	1.5
14. Teach about condoms	4	1.5
15. Other	48	17.9
16. Refused	1	.4
17. Don't know	31	11.6
	-----	
	511	

Total number of responses  
 given by 268 respondents = 511

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celebrity spokespersons; is individual responsibility; more television documentaries; eliminate prejudice; use peer pressure; place all homosexuals in jail; stop drug addicts; does not think it is a problem; less panic, more logic; publication of current information; no male homosexuality; have regular medical check-ups; people with AIDS should be more responsible; less protection of gays; no gay parades; stay away from people who have AIDS; more sexual awareness; separate boys and girls in sex education classes; teachers to observe and report on students' behaviors; too much money wasted; everyone should watch television and tell their children not to go outside with unknown people; support AIDS Vancouver; depend on the medical profession; less censorship in the media; more treatment clinics; it will wipe itself out because in five years most homosexuals inflicted will be dead; counseling for people who test positive; cooperation by health officials; honesty politically and medically; let the people with AIDS die and just educate the others; early treatment; legalize prostitution and then have constant medical check-ups.

The responses coded as other involve a combination of recommendations that are consistent and inconsistent with medical practice. From the suggestions or comments that are inconsistent with medical practice, there is a prevalence of discrimination and homophobia.

(5) Interview statement related to confidence in the data

The final opinion statement is related generally to cause, transmission and antibody testing because it questions how much faith respondents have with the medical profession and its understanding of AIDS. The responses to this interview statement are categorized in Table 4-17.

The majority of respondents (159 people) believe they can trust what the medical authorities say about AIDS, while 94 respondents expressed skepticism. The most common explanations offered by respondents for their lack of faith with the medical profession involve the relatively short history of AIDS as well as the continuous change in information and understanding. The medical profession is confident in its understanding of AIDS transmission, cause and antibody testing.

Objective Four.

To examine any relationships between understanding about AIDS and the opinions about AIDS related-issues as held by the selected sample of the GVRD population.

When respondents expressed their opinions about certain AIDS related-issues, it was noted that their reasoning was sometimes inconsistent with their other responses on cause, transmission and antibody testing. To examine any



Table 4-17.--Responses to the interview statement on  
confidence in the data

---

(a) You cannot believe what the medical authorities tell  
us about AIDS because a lot is still unknown.

	Frequency	Percent
<hr/>		
Agree	94	35.1
No opinion	15	5.6
Disagree	159	59.3
	<hr/>	<hr/>
	268	100

---

relationships between understanding and opinions, the stated opinions were analyzed by whether the respondent had presented correct or incorrect information on that topic. The Chi-square statistic was calculated on the frequency data to assist with the analysis. The data are presented in the following categories:

- (1) Tables 4-18(a) and (b) present the responses to the interview statements related to the cause of AIDS by whether respondents presented correct information for the question on the cause of AIDS.

Table 4-18(a) presents the responses for the statement "The AIDS problem arose because of a permissive society."

Table 4-18(b) presents the responses for the statement "The AIDS problem has come about as a judgment of God."

- (2) Tables 4-19(a) through (e) present the responses to the interview statements related to transmission by whether respondents presented correct information for the question on transmission.

Table 4-19(a) presents the responses for the statement "School officials should tell all parents if a child with AIDS is attending their school."

Table 4-19(b) presents the responses for the

statement "Children can be taught by a person with AIDS."

Table 4-19(c) presents the responses for the statement "People with AIDS should be allowed to mingle freely with the general public."

Table 4-19(d) presents the responses for the statement "People with AIDS can work freely within any environment."

Table 4-19(e) presents the responses for the statement "By using condoms you can lower your risk of contracting the AIDS virus."

- (3) Tables 4-20(a) through (c) present the responses to the interview statements related to antibody testing by whether respondents presented correct information for the question on antibody testing.

Table 4-20(a) presents the responses for the statement "People should be tested for AIDS for employment reasons."

Table 4-20(b) presents the responses for the statement "The government should be compiling a list on who has the AIDS virus."

Table 4-20(c) presents the responses for the statement "Doctors should demand the names of previous sexual partners of people who have the AIDS virus."

(1) Understanding and opinion on the cause of AIDS

On Table 4-6, data show that there are 199 respondents that gave correct information about the cause of AIDS. Sixty-nine respondents gave incorrect information or were unsure of the cause of AIDS. For purposes of this analysis incorrect responses and responses from respondents who were unsure were collapsed into a category of responses that did not present correct information.

Tables 4-18(a) and (b) present responses to the two interview statements related to the cause of AIDS, according to whether respondents presented correct information for the question on the cause of AIDS. Table 4-18(a) presents the responses for the statement "The AIDS problem arose because of a permissive society." The data show that of the 119 people who disagreed with this statement, 95 of them had correct information about the cause of AIDS, while 24 people had incorrect information. Of the 108 people who agreed with this statement, 77 of them had correct information about the cause of AIDS, while 31 people had incorrect information. The pattern in the data indicates that people who agreed with this statement had proportionately more incorrect information when compared to people who disagreed with this statement ( $\text{Chi-Square}=3.95$ ,  $\text{d.f.}=2$ ,  $p>.05$ ). Respondents with no opinion had the greatest percentage of incorrect information about the cause of AIDS.

Tables 4-18(a) and (b).--Understanding by interview  
statements related to the cause of AIDS

---

**(a) The AIDS problem arose because of a "permissive" society.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	77 (71.3)	31 (28.7)	108
No opinion	27 (65.9)	14 (34.1)	51
Disagree	95 (79.8)	24 (20.2)	119
	-----	-----	---
	199	69	268

Chi-square = 3.95    D.F.= 2     $p > .05$

**(b) The AIDS problem has come about as a judgment of God.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	18 (72.0)	7 (28.0)	25
No opinion	20 (54.1)	17 (45.9)	37
Disagree	161 (78.2)	45 (21.8)	206
	-----	-----	---
	199	69	268

Chi-square = 9.6    D.F.= 2     $p < .05$

---

Table 4-18(b) presents the responses for the statement "The AIDS problem has come about as a judgment of God." The data indicate that the majority of those respondents who disagreed or those who agreed with this statement had correct information. Respondents who had no opinion for this statement were more evenly divided between those with correct and those with incorrect information. The pattern of the data suggests that the responses to this statement are not influenced by whether respondents had correct information or incorrect information on the cause of AIDS (Chi-Square=9.6, d.f.=2,  $p<.05$ ).

(2) Understanding and opinion on HIV transmission.

On Table 4-8 data show that there were 137 respondents who answered the question on transmission with only correct information, while 131 respondents gave some or all incorrect information.

Tables 4-19(a) through (e) present the responses to the five interview statements related to transmission by whether respondents presented correct information for the question on transmission. Responses to the statement "School officials should tell all parents if a child with AIDS is attending their school", found in Table 4-19(a), indicate a trend whereby the number of respondents with incorrect information who agreed is greater than the number of respondents with correct information who agreed. Likewise,

the number of respondents with correct information who disagreed is greater than the number of respondents with incorrect information who disagreed (Chi-Square=1.79, d.f.=2,  $p>.05$ ). Respondents who had correct information on transmission were less likely to believe it necessary for parents to be informed of a student who has AIDS.

Responses to the statement "Children can be taught by a person with AIDS", found in Table 4-19(b), reveal that the number of respondents with correct information who agreed is greater than the number of respondents with incorrect information who agreed. An opposite trend in the data is shown for respondents who disagreed, with the number of respondents with correct information who disagreed being less than the number of respondents with incorrect information who disagreed (Chi-Square=2.19, d.f.=2,  $p>.05$ ). This suggests that respondents who had correct information on transmission (as opposed to those with incorrect information) felt more comfortable about a teacher who has AIDS being in contact with children.

Responses to the statement "People with AIDS should be allowed to mingle freely with the general public", found in Table 4-19(c), show no relationship between understanding of transmission with respondents who either agreed or disagreed with this statement. There was some trend for more respondents who had no opinion for this statement to have

Tables 4-19(a) through (e).--Understanding by interview  
statements related to transmission

---

**(a) School officials should tell all parents if a child  
with AIDS is attending their school.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	52 (46.8)	59 (53.2)	111
No opinion	15 (60.0)	10 (40.0)	25
Disagree	70 (53.0)	62 (47.0)	132
	137	131	268

Chi-square = 1.79    D.F. = 2     $p > .05$

**(b) Children can be taught by a person with AIDS.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	104 (53.9)	89 (46.1)	193
No opinion	9 (47.4)	10 (52.6)	19
Disagree	24 (42.9)	32 (57.1)	56
	137	131	268

Chi-square = 2.19    D.F. = 2     $p > .05$

**(c) People with AIDS should be allowed to mingle freely  
with the general public.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	91 (50.0)	91 (50.0)	182
No opinion	18 (60.0)	12 (40.0)	30
Disagree	28 (50.0)	28 (50.0)	56
	137	131	268

Chi-square = 1.05    D.F. = 2     $p > .05$



Tables 4-19--continued

**(d) People with AIDS can work freely within any environment.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	53 (47.7)	58 (52.3)	111
No opinion	13 (59.1)	9 (40.9)	22
Disagree	71 (52.6)	64 (47.4)	135
	137	131	268

Chi-square = 1.20      D.F. = 2       $p > .05$

**(e) By using condoms you can lower your risk of contracting the AIDS virus.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	130 (53.3)	114 (46.7)	244
No opinion	4 (33.3)	8 (66.7)	12
Disagree	3 (25.0)	9 (75.0)	12
	137	131	268

Chi-square = 5.14      D.F. = 2       $p > .05$

---

correct information on transmission (Chi-Square=1.05, d.f.=2,  $p>.05$ ). This reveals that regardless of the information respondents had on transmission, they were not concerned about casual contact with a person who has AIDS.

Responses to the statement "People with AIDS can work freely within any environment", found in Table 4-19(d), show that the number of respondents with incorrect information who agreed is greater than the number of respondents with correct information who agreed. The data also show that the number of respondents with correct information who disagreed is greater than the number of respondents with incorrect information who disagreed (Chi-Square=1.20, d.f.=2,  $p>.05$ ). The data suggest that respondents with correct information are not in favor of people with AIDS working within any environment.

It was noted that respondents expressed concern over the statement in Table 4-19(d) because they did not think it appropriate for a person with AIDS to work in specific occupations. The most commonly stated work environments considered inappropriate were in the medical or restaurant professions. Respondents expressed concern about persons with AIDS working as nurses, dentists, doctors, waiters or cooks.

The data indicate that the majority of respondents who had no opinion or disagreed with the statement "By using condoms you can lower your risk of contracting the AIDS virus", found in Table 4-19(e), had incorrect information on transmission. The data also show that more respondents who agreed with this statement had correct information about transmission (Chi-Square=5.14, d.f.=2,  $p>.05$ ).

(3) Understanding and opinion for issues related to antibody testing

On Table 4-10, data show that 124 people in the sample responded with only correct information on the antibody test question, while 144 respondents gave incorrect information.

Tables 4-20(a) through (c) present the responses to the three interview statements related to antibody testing according to whether respondents presented correct information for the question. Responses to the statement "People should be tested for AIDS for employment reasons", found in Table 4-20(a), reveal that the majority of respondents with incorrect information either agreed or had no opinion compared with respondents who had correct information. The data also indicate that more respondents with correct information on the antibody test disagreed with this statement (Chi-Square=8.24, d.f.=2,  $p<.05$ ).

Tables 4-20(a) through (c).--Understanding by interview statements related to antibody testing

---

**(a) People should be tested for AIDS for employment reasons.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	32 (34.8)	60 (65.2)	92
No opinion	13 (44.8)	16 (55.2)	29
Disagree	79 (53.7)	68 (46.3)	147
	-----	-----	-----
	124	144	268

Chi-square = 8.24      D.F. = 2      p < .05

**(b) The government should be compiling a list on who has the AIDS virus.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	51 (40.8)	74 (59.2)	125
No opinion	8 (34.8)	15 (65.2)	23
Disagree	65 (54.2)	55 (45.8)	120
	-----	-----	-----
	124	144	268

Chi-square = 5.71      D.F. = 2      p > .05

**(c) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

	Frequency (%)		Total
	Correct	Incorrect	
Agree	84 (41.8)	117 (58.2)	201
No opinion	17 (58.6)	12 (41.4)	29
Disagree	23 (60.5)	15 (39.5)	38
	-----	-----	-----
	124	144	268

Chi-square = 6.51      D.F. = 2      p < .05

---

For the statement "The government should be compiling a list on who has the AIDS virus", found in Table 4-20(b), the trend in the data indicates that respondents who agreed with or had no opinion were more likely to have incorrect information about the antibody test compared with those having correct information. Respondents who disagreed were more likely to have correct information about the antibody test (Chi-Square=5.71, d.f.=2,  $p>.05$ ). The data suggest uninformed respondents believed the government should be keeping a list of people who are seropositive, while informed respondents did not.

Respondents who agreed with the statement "Doctors should demand the names of previous sexual partners of people who have the AIDS virus" were more likely to have incorrect information about the antibody test, while respondents who disagreed with this statement were more likely to have correct information about the antibody test (Chi-Square=6.51, d.f.=2,  $p<.05$ ). These data are found in Table 4-20(c). The data indicate that uninformed respondents are in favor of contact tracing while informed respondents are not.

### Objective Five.

To examine any relationships in the selected GVRD sample according to demographic characteristics, with respect to what is understood and opinions about AIDS.

In examining the demographic characteristics of the sample, the following variables are examined: city, gender, age, marital status, ethnicity, education, work status, occupation, household income, religion, sexual orientation and personal experience. Most of the categories for the demographic characteristics were collapsed to ensure a large enough response frequency for analysis.

The data are presented in the following two categories:

- (1) The sample distribution is presented by the demographic characteristics and whether respondents presented correct information on the interview questions:
  - (a) Table 4-21(a) presents respondents' understanding by city.
  - (b) Table 4-21(b) presents respondents' understanding by gender.
  - (c) Table 4-21(c) presents respondents' understanding by age.
  - (d) Table 4-21(d) presents respondents' understanding by marital status.
  - (e) Table 4-21(e) presents respondents'

- understanding by ethnicity.
- (f) Table 4-21(f) presents respondents' understanding by education.
  - (g) Table 4-21(g) presents respondents' understanding by work status.
  - (h) Table 4-21(h) presents respondents' understanding by occupation.
  - (i) Table 4-21(i) presents respondents' understanding by household income.
  - (j) Table 4-21(j) presents respondents' understanding by religion.
  - (k) Table 4-21(k) presents respondents' understanding by sexual orientation.
  - (l) Table 4-21(l) presents respondents' understanding by personal experience.
- (2) The sample distribution is presented by the demographic characteristics and the opinion statements on AIDS related-issues:
- (a) Tables 4-22(a) through (k) present the demographic characteristic of city by the opinion statements.
  - (b) Tables 4-23(a) through (k) present the demographic characteristic of gender by the opinion statements.
  - (c) Tables 4-24(a) through (k) present the

demographic characteristic of age by the opinion statements.

- (d) Tables 4-25(a) through (k) present the demographic characteristic of marital status by the opinion statements.
- (e) Tables 4-26(a) through (k) present the demographic characteristic of ethnicity by the opinion statements.
- (f) Tables 4-27(a) through (k) present the demographic characteristic of education by the opinion statements.
- (g) Tables 4-28(a) through (k) present the demographic characteristic of work status by the opinion statements.
- (h) Tables 4-29(a) through (k) present the demographic characteristic of occupation by the opinion statements.
- (i) Tables 4-30(a) through (k) present the demographic characteristic of household income by the opinion statements.
- (j) Tables 4-31(a) through (k) present the demographic characteristic of religion by the opinion statements.
- (k) Tables 4-32(a) through (k) present the demographic characteristic of sexual orientation by the opinion statements.



(1) Tables 4-33(a) through (k) present the demographic characteristic of personal experience by the opinion statements.

(1) Demographic characteristics by understanding

Respondents' answers to the questions on cause, transmission and antibody testing were coded as either correct or incorrect to obtain a measure of total understanding. There were 102 respondents with all correct information and 166 respondents with some or all incorrect information.

Table 4-21(a) presents the data by city. The data indicate that all areas had more respondents with incorrect information than respondents with correct information. Respondents in area four (Burnaby, Richmond and New Westminster) had the greatest difference in number of respondents with correct and incorrect information, while an almost equal number of respondents in area two (North Vancouver and West Vancouver) had correct and incorrect information. Except in the case of area two, the data indicate the majority of respondents are misinformed across all areas of the GVRD (Chi-Square=5.25, d.f.=4,  $p>.05$ ).

Table 4-21(b) presents the data by gender. The data indicate that the majority of male (65.4%) and female (58.5%) respondents had incorrect information, with male

Tables 4-21(a) and (b).--Respondents' understanding by city  
and gender

---

**(a) City**

The city codes were grouped into five areas according to population size and proximity to downtown Vancouver.

1=Vancouver  
2=North Vancouver, West Vancouver  
3=Surrey, Delta, White Rock  
4=Burnaby, Richmond, New Westminster  
5=Port Moody, Pitt Meadows, Langley,  
Maple Ridge, Port Coquitlam

Understanding	Area					total
	1	2	3	4	5	
Correct	38	13	23	16	12	102
Incorrect	52	15	34	45	20	166
	90	28	57	61	32	268

Chi-Square = 5.25    D.F. = 4     $p > .05$

**(b) Gender**

Understanding	Gender		total
	Male	Female	
Correct	46	56	102
Incorrect	87	79	166
	133	135	268

Chi-Square = 1.35    D.F. = 1     $p > .05$

---

respondents having the greatest proportion of incorrect information (Chi-Square=1.35, d.f.=1,  $p>.05$ ).

Table 4-21(c) presents the data by age. The majority of respondents had incorrect information across all sampled age ranges, except for respondents with ages between 40 to 49, who were almost evenly divided between having correct or incorrect information (Chi-square=4.95, d.f.=4,  $p>.05$ ).

Table 4-21(d) presents the data by marital status. The data indicate that married respondents have the same proportion of incorrect information as single respondents (Chi-Square=.04, d.f.=1,  $p>.05$ ).

Table 4-21(e) presents the data by ethnicity. The data show that the majority of Caucasian and Chinese respondents had incorrect information. The data do not indicate any relationship between understanding and ethnicity (Chi-Square=.50, d.f.=1,  $p>.05$ ).

Table 4-21(f) presents the data by education. The data show that respondents with Senior high school education or less had a high proportion of incorrect information, while respondents with Post Secondary education or more were almost equally divided between those with correct and those with incorrect information (Chi=Square=20.72, d.f.=3,  $p<.05$ ). None of the education categories show a majority of respondents having correct information.

Tables 4-21(c) and (d).--Respondents' understanding by age  
and marital status

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**(c) Age**

Understanding	Age					total
	19-29	30-39	40-49	50-59	60-90	
Correct	27	32	24	7	12	102
Incorrect	50	44	26	19	26	165
	77	76	50	26	38	267

Chi-Square = 4.95      D.F.= 4      p>.05

**(d) Marital Status**

The code for married also includes respondents living commonlaw, and the code for single also includes respondents who are widowed, separated or divorced.

Understanding	Marital Status		total
	Married	Single	
Correct	56	46	102
Incorrect	89	77	166
	145	123	268

Chi-Square = .04      D.F.= 1      p>.05

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Tables 4-21(e) and (f).--Respondents' understanding by  
ethnicity and education

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**(e) Ethnicity**

Only two ethnic groups were compared because of the limited number of respondents from other ethnic groups.

Understanding	Ethnicity		total
	Caucasian	Chinese	
Correct	94	6	100
Incorrect	142	13	155
	236	19	255

Chi-Square = .50      D.F.= 1      p>.05

**(f) Education**

The responses for education were categorized into four groups:  
1=Junior High or less  
2=Senior High  
3=Post Secondary  
4=University degree or more

Understanding	Education				total
	1	2	3	4	
Correct	3	29	38	32	102
Incorrect	23	73	34	36	166
	26	102	72	68	268

Chi-Square = 20.72      D.F.= 3      p<.05

---

Table 4-21(g) presents the data by work status. The data indicate that being employed does not influence understanding about AIDS (Chi-Square=.40, d.f.=1,  $p>.05$ ).

Table 4-21(h) presents the data by occupation. The data indicate that the majority of respondents with nonprofessional jobs had incorrect information, while an almost equal number of respondents with professional jobs had correct and incorrect information (Chi-Square=.88, d.f.=1,  $p>.05$ ). The pattern in the data may be related to the significant relationship between understanding and education because more respondents with higher education may also have professional occupations.

Table 4-21(i) presents the data by household income. The data indicate that across all income categories there were more respondents with incorrect information than respondents with correct information. The category of respondents who did not know their household income had the lowest proportion of correct information. There was a tendency for respondents with the lowest household incomes to make more incorrect statements, although the frequencies in all income categories indicate less than 50 percent of the respondents had correct information (Chi-Square=6.51, d.f.=5,  $p>.05$ ).

Tables 4-21(g) and (h).--Respondents' understanding by work status and occupation

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**(g) Work status**

Understanding	Employed		total
	Yes	No	
Correct	69	33	102
Incorrect	106	60	166
	175	93	268

Chi-Square = .40      D.F.= 1      p>.05

**(h) Occupation**

Understanding	Occupation		total
	Professional	Nonprofessional	
Correct	12	51	63
Incorrect	14	89	103
	26	140	166

Chi-Square = .88      D.F.= 1      p>.05

---

Tables 4-21(i) and (j).--Respondents' understanding by  
household income and religion

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**(i) Household Income**

The income categories used were: 1= under \$19,999  
2=\$20,000-\$34,999  
3=\$35,000-\$54,999  
4=\$55,000 & over  
5= Don't know  
6= Refused

Understanding	Income						total
	1	2	3	4	5	6	
Correct	16	24	28	20	4	10	102
Incorrect	31	30	38	28	19	20	166
	47	54	66	48	23	30	268

Chi-Square = 6.51      D.F. = 5      p > .05

**(j) Religion**

Understanding	Religion			total
	Catholic	Protestant	None	
Correct	11	40	35	86
Incorrect	32	62	45	139
	43	102	80	225

Chi-Square = 3.99      D.F. = 2      p > .05

---



Table 4-21(j) presents the data by religion. The data indicate that across all categories there were more respondents with incorrect than correct information. In the Catholic and Protestant categories there was a greater difference in number of respondents with correct and incorrect information than compared to respondents who had no religious affiliation (Chi-Square=3.99, d.f.=2,  $p>.05$ ).

Table 4-21(k) presents the data by sexual orientation. Although the majority of respondents who defined their sexual orientation as Heterosexual had incorrect information, the opposite was found for respondents who defined themselves as Bisexual or Homosexual (Chi-Square=4.76, d.f.=1,  $p<.05$ ). Bisexual/Homosexual respondents may be more informed as a result of the higher incidence of AIDS historically in the gay community.

Table 4-21(l) presents the data by personal experience. The majority of respondents who stated that they or someone they knew had been affected by AIDS had correct information, while the majority of non-affected respondents had incorrect information (Chi-Square=7.02, d.f.=1,  $p<.05$ ). This suggests that respondents who are affected by AIDS may try to become more well informed. Likewise, respondents who have not been affected may not feel the need to become informed.

Tables 4-21(k) and (l).--Respondents' understanding by  
sexual orientation and personal experience

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**(k) Sexual Orientation**

Understanding	Sexual orientation		total
	Heterosexual	Bisexual/Homosexual	
Correct	95	6	101
Incorrect	162	2	164
	257	8	265

Chi-Square = 4.76      D.F.=1      p<.05

**(l) Personal Experience**

Understanding	Affected by AIDS		total
	Yes	No	
Correct	20	82	102
Incorrect	14	151	165
	34	233	267

Chi-Square = 7.02      D.F.= 1      p<.05

---

The respondent characteristics that showed a statistically significant relationship with understanding were education level (Chi-Square= 20.72, d.f.= 3,  $p < .05$ ), sexual orientation (Chi-Square= 4.76, d.f.= 1,  $p < .05$ ), and whether respondents were personally affected (Chi-Square= 7.02, d.f.= 1,  $p < .05$ ). While other respondent characteristics have also been shown to have a relationship with understanding, these have not been found to be statistically significant.

## (2) Demographic characteristics by opinions

Respondents expressed agreement, disagreement or no opinion towards eleven opinion statements. These data are analyzed separately by twelve demographic characteristics of city, gender, age, marital status, ethnicity, education, work status, occupation, household income, religion, sexual orientation, and personal experience.

### City

The demographic characteristic of city is presented with the opinion statements in Tables 4-22(a) through (k).

Responses to the statements, "People should be tested for AIDS for employment reasons"; "School officials should tell all parents if a child with AIDS is attending their school" and "People with AIDS should be allowed to mingle freely with the general public", found on Tables 4-22(a)

Tables 4-22(a) and (b).--Respondents' opinions by city

City codes are: 1= Vancouver  
 2= North Vancouver, West Vancouver  
 3= Surrey, Delta, White Rock  
 4= Burnaby, Richmond, New Westminster  
 5= Port Moody, Pitt Meadows, Langley,  
 Maple Ridge, Port Coquitlam

**(a) People should be tested for AIDS for employment reasons.**

City	Agree	Opinion No opinion	Disagree	total
1	32	8	50	90
2	7	6	15	28
3	22	8	27	57
4	22	5	34	61
5	9	2	21	21
	92	29	147	268

Chi-Square=7.52      d.f.=8      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

City	Agree	Opinion No opinion	Disagree	total
1	40	7	43	90
2	12	3	13	28
3	25	6	26	57
4	22	5	34	61
5	12	4	16	32
	111	25	132	268

Chi-Square=2.40      d.f.=8      p>.05

Tables 4-22(c) and (d).--Respondents' opinions by city

---

City coded as: 1= Vancouver  
 2= North Vancouver, West Vancouver  
 3= Surrey, Delta, White Rock  
 4= Burnaby, Richmond, New Westminster  
 5= Port Moody, Pitt Meadows, Langley,  
 Maple Ridge, Port Coquitlam

**(c) People with AIDS should be allowed to mingle freely with the general public.**

City	Opinion			
	Agree	No opinion	Disagree	total
1	64	11	15	90
2	17	2	9	28
3	37	7	13	57
4	41	5	15	61
5	23	5	4	32
	182	30	56	268

Chi-Square=6.15      d.f.=8      p>.05

**(d) The AIDS problem arose because of a "permissive" society.**

City	Opinion			
	Agree	No opinion	Disagree	total
1	33	15	42	90
2	11	3	14	28
3	22	15	20	57
4	29	4	28	61
5	13	4	15	32
	108	41	119	268

Chi-Square=10.86      d.f.=8      p>.05

---

through (c), do not show any relationship with city of residence.

Responses to the statement, "The AIDS problem arose because of a permissive society", found on Table 4-22(d), show that respondents in Vancouver more often disagreed. Respondents in the other areas were more evenly divided between agreeing and disagreeing (Chi-Square= 10.86, d.f.= 8,  $p > .05$ ).

Responses to the statements, "Children can be taught by a person with AIDS" and "The AIDS problem has come about as a judgment of God", found on Tables 4-22(e) and (f), do not show any relationship with city of residence.

Responses to the statement, "People with AIDS can work freely within any environment", found on Table 4-22(g), indicate a relationship whereby respondents in Vancouver were almost evenly divided between agreeing and disagreeing with the statement of people with AIDS working freely within any environment, while respondents in area five (Port Moody, Pitt Meadows, Langley, Maple Ridge, and Port Coquitlam) agreed proportionately more often. Respondents in the other areas disagreed more often with the statement (Chi-Square= 6.44, d.f.= 8,  $p > .05$ ).

Responses to the statements, "The government should be compiling a list on who has the AIDS virus"; "Doctors should

Tables 4-22(e) and (f).--Respondents' opinions by city

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City coded as: 1= Vancouver  
 2= North Vancouver, West Vancouver  
 3= Surrey, Delta, White Rock  
 4= Burnaby, Richmond, New Westminister  
 5= Port Moody, Pitt Meadows, Langley,  
 Maple Ridge, Port Coquitlam

**(e) Children can be taught by a person with AIDS.**

City	Agree	Opinion No opinion	Disagree	total
1	66	3	21	90
2	20	3	5	28
3	40	4	13	57
4	43	4	14	61
5	24	5	3	32
	193	19	56	268

Chi-Square=8.37      d.f.=8      p>.05

**(f) The AIDS problem has come about as a judgment of God.**

City	Agree	Opinion No opinion	Disagree	total
1	7	10	73	90
2	0	5	23	28
3	7	8	42	57
4	7	9	45	61
5	4	5	23	32
	25	37	206	268

Chi-Square=5.52      d.f.=8      p>.05

---

Tables 4-22(g) and (h).--Respondents' opinions by city

City coded as: 1= Vancouver  
 2= North Vancouver, West Vancouver  
 3= Surrey, Delta, White Rock  
 4= Burnaby, Richmond, New Westminster  
 5= Port Moody, Pitt Meadows, Langley,  
 Maple Ridge, Port Coquitlam

**(g) People with AIDS can work freely within any environment.**

City	Opinion			total
	Agree	No opinion	Disagree	
1	40	6	44	90
2	8	3	17	28
3	20	6	31	57
4	25	5	31	61
5	18	2	12	32
	111	22	135	268

Chi-Square=6.44      d.f.=8      p>.05

**(h) The government should be compiling a list on who has the AIDS virus.**

City	Opinion			total
	Agree	No opinion	Disagree	
1	44	8	38	90
2	13	2	13	28
3	28	4	25	57
4	27	4	30	61
5	13	5	14	32
	125	23	120	268

Chi-Square=3.31      d.f.=8      p>.05



Tables 4-22(i) and (j).--Respondents' opinions by city

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City coded as: 1= Vancouver  
 2= North Vancouver, West Vancouver  
 3= Surrey, Delta, White Rock  
 4= Burnaby, Richmond, New Westminster  
 5= Port Moody, Pitt Meadows, Langley,  
 Maple Ridge, Port Coquitlam

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

City	Opinion			total
	Agree	No opinion	Disagree	
1	65	10	15	90
2	24	3	1	28
3	41	8	8	57
4	48	3	10	61
5	23	5	4	32
	201	29	38	268

Chi-Square=6.83      d.f.=8      p>.05

**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

City	Opinion			total
	Agree	No opinion	Disagree	
1	82	3	5	90
2	28	0	0	28
3	48	6	3	57
4	57	2	2	61
5	29	1	2	32
	244	12	12	268

Chi-Square=9.07      d.f.=8      p>.05

---

demand the names of previous sexual partners of people who have the AIDS virus" and "By using condoms you can lower your risk of contracting the AIDS virus", found on Tables 4-22(h) through (j), do not show any relationship with city of residence.

Responses to the statement, "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown", found on Table 4-22(k), show that respondents in area five agreed more, while the respondents in the other areas disagreed more (Chi-Square= 14.72, d.f.= 8,  $p > .05$ ). This relationship in the data suggests that the respondents in area five had less confidence in what the medical authorities say about AIDS, while more respondents in the other areas expressed confidence.

### Gender

The demographic characteristic of gender is presented with the opinion statements in Tables 4-23(a) through (k).

On Table 4-23(a) the responses to the statement, "People should be tested for AIDS for employment reasons" show a relationship with gender of respondents. The data indicate that proportionately more females than males disagreed with antibody testing for employment reasons (Chi-Square= 5.78, d.f.= 2,  $p > .05$ ).

Table 4-22(k) .--Respondents' opinions by city

City coded as: 1= Vancouver  
 2= North Vancouver, West Vancouver  
 3= Surrey, Delta, White Rock  
 4= Burnaby, Richmond, New Westminster  
 5= Port Moody, Pitt Meadows, Langley,  
 Maple Ridge, Port Coquitlam

(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.

City	Agree	Opinion No opinion	Disagree	total
1	30	5	55	90
2	10	3	15	28
3	20	1	36	57
4	17	2	42	61
5	17	4	11	32
	94	15	159	268

Chi-Square=14.72      d.f.=8      p>.05

Tables 4-23(a) through (c).--Respondents' opinions by gender

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**(a) People should be tested for AIOS for employment reasons.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	55	13	65	133
female	37	16	82	135
	92	29	147	268

Chi-Square=5.78      d.f.=2      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	63	15	55	133
female	48	10	77	135
	111	25	132	268

Chi-Square=6.68      d.f.=2      p<.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	81	17	35	133
female	101	13	21	135
	182	30	56	268

Chi-Square=6.22      d.f.=2      p<.05

---

Responses to the statement, "School officials should tell all parents if a child with AIDS is attending their school", found on Table 4-23(b), show that more female respondents disagreed while more male respondents agreed (Chi-Square= 6.68, d.f.=2,  $p < .05$ ).

Responses to the statement, "People with AIDS should be allowed to mingle freely with the general public", found on Table 4-23(c), show that while the majority of male and female respondents agreed, proportionately more female than male respondents agreed with this statement (Chi-Square= 6.22, d.f.= 2,  $p < .05$ ).

Responses to the statements, "The AIDS problem arose because of a permissive society"; "Children can be taught by a person with AIDS" and "The AIDS problem has come about as a judgment of God" do not show any gender relationship. These data are found on Tables 4-23(d) through (f).

On Table 4-23(g), responses to the statement, "People with AIDS can work freely within any environment" show that an equal number of female respondents agreed and disagreed, while more male respondents disagreed (Chi-Square= 2.40, d.f.= 2,  $p > .05$ ).

Responses to the statement, "The government should be compiling a list on who has the AIDS virus", found on Table 4-23(h), show that male and female respondents expressed

Tables 4-23(d) through (f).--Respondents' opinions by gender

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**(d) The AIDS problem arose because of a "permissive" society.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	51	20	62	133
female	57	21	57	135
	108	41	119	268

Chi-Square=.55      d.f.=2      p>.05

**(e) Children can be taught by a person with AIDS.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	92	9	32	133
female	101	10	24	135
	193	19	56	268

Chi-Square=1.60      d.f.=2      p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	13	22	98	133
female	12	15	108	135
	25	37	206	268

Chi-Square=1.83      d.f.=2      p>.05

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Tables 4-23(g) through (i).--Respondents opinions by gender

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**(g) People with AIDS can work freely within any environment.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	49	11	73	133
female	62	11	62	135
	111	22	135	268

Chi-Square=2.40      d.f.=2      p>.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	79	8	46	133
female	46	15	74	135
	125	23	120	268

Chi-Square=17.36      d.f.=2      p<.05

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	98	12	23	133
female	103	17	15	135
	201	29	38	268

Chi-Square=2.66      d.f.=2      p>.05

---

opposing opinions. More male respondents agreed with the government compiling lists on who is antibody positive, while more female respondents disagreed with such action (Chi-Square= 17.36, d.f.= 2,  $p < .05$ ).

The data do not show any gender relationship in response to the statements, "Doctors should demand the names of previous sexual partners of people who have the AIDS virus"; "By using condoms you can lower your risk of contracting the AIDS virus" and "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown." These data are found in Tables 4-23(i) through (k).

### Age

The demographic characteristic of age is presented with the opinion statements in Tables 4-24(a) through (k).

On Table 4-24(a) responses to the statement, "People should be tested for AIDS for employment reasons" show a relationship with age of respondents. The data indicate that respondents in the age categories of 19-29 and 30-39 years disagreed proportionately more often with testing for AIDS for employment reasons. The respondents in the older age categories were more evenly divided between agreeing and disagreeing with this statement (Chi-Square= 9.87, d.f.= 8,  $p > .05$ ).



Tables 4-23(j) and (k).--Respondents opinions by gender

---

**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	124	5	4	133
female	120	7	8	135
	244	12	12	268

Chi-Square=1.72      d.f.=2      p>.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Gender	Opinion			total
	Agree	No opinion	Disagree	
male	49	7	77	133
female	45	8	82	135
	94	15	159	268

Chi-Square=.38      d.f.=2      p>.05

---

Responses to the statement, "School officials should tell all parents if a child with AIDS is attending their school", found on Table 4-24(b), do not show any relationship with gender of respondents.

Responses to the statement, "People with AIDS should be allowed to mingle freely with the general public", found on Table 4-24(c) show that younger respondents in the age groups 19-29 and 30-39 agreed proportionately more than the older respondents. Similarly, the proportion of older respondents who disagreed with this statement is greater than the proportion of younger respondents who disagreed (Chi-Square= 13.80, d.f.= 8,  $p > .05$ ).

On Table 4-24(d), responses to the statement, "The AIDS problem arose because of a permissive society" show a trend in which twice as many respondents in the 60 to 90 year group agreed, while respondents in the other age groups were more evenly divided or in disagreement (Chi-Square= 11.94, d.f.=8,  $p > .05$ ).

Responses to the statements, "Children can be taught by a person with AIDS" and "The AIDS problem has come about as a judgment of God", found on Tables 4-24(e) and (f), do not show an age relationship.

On Table 4-24(g), responses to the statement, "People with AIDS can work freely within any environment" show that

Tables 4-24(a) through (c).--Respondents' opinions by age

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**(a) People should be tested for AIDS for employment reasons.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	21	11	45	77
30-39	22	6	48	76
40-49	21	5	24	50
50-59	11	1	14	26
60-90	17	5	16	38
	92	28	147	267

Chi-Square=9.87      d.f.=8      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	35	6	36	77
30-39	29	8	39	76
40-49	19	3	28	50
50-59	12	1	13	26
60-90	16	6	16	38
	111	24	132	267

Chi-Square=5.34      d.f.=8      p>.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	59	5	13	77
30-39	54	11	11	76
40-49	30	7	13	50
50-59	18	0	8	26
60-90	21	6	11	38
	182	29	56	267

Chi-Square=13.80      d.f.=8      p>.05

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Tables 4-24(d) through (f).--Respondents' opinions by age

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**(d) The AIDS problem arose because of a "permissive" society.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	29	12	36	77
30-39	26	14	36	76
40-49	17	10	23	50
50-59	11	3	12	26
60-90	24	2	12	38
	107	41	119	267

Chi-Square=11.94      d.f.=8      p>.05

**(e) Children can be taught by a person with AIDS.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	58	5	14	77
30-39	55	5	16	76
40-49	38	2	10	50
50-59	17	1	8	26
60-90	25	5	8	38
	193	18	56	267

Chi-Square=5.30      d.f.=8      p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	8	16	53	77
30-39	7	5	64	76
40-49	1	8	41	50
50-59	4	3	19	26
60-90	5	4	29	38
	25	36	206	267

Chi-Square=12.25      d.f.=8      p>.05

---

the proportion of respondents who disagreed was greater for respondents in the age categories of 40 to 49 and 60 to 90. The respondents in the other age categories were more evenly divided on the statement (Chi-Square= 19.47, d.f.= 8,  $p<.05$ ).

Responses to the statement, "The government should be compiling a list on who has the AIDS virus", found on table 4-24(h), indicate a trend for respondents in the age category of 60 to 90 to agree, while the respondents in the other age categories were more evenly divided (Chi-Square= 6.40, d.f.= 8,  $p>.05$ ).

Responses to the statement, "Doctors should demand the names of previous sexual partners of people who have the AIDS virus", found on Table 24(i), show no relationship with age of respondents.

On Table 4-24(j), responses to the statement, "By using condoms you can lower your risk of contracting the AIDS virus" indicate a tendency for older respondents to disagree (Chi-Square= 21.45, d.f.= 8,  $p<.05$ ). The indicated relationship in the data should be interpreted with caution however, because of the limited frequency of responses for two of the three opinion categories.

Responses to the statement, "You cannot believe what the medical authorities tell us about AIDS because a lot is

Tables 4-24(g) through (i).--Respondents' opinions by age

---

**(g) People with AIDS can work freely within any environment.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	34	10	33	77
30-39	36	5	35	76
40-49	19	0	31	50
50-59	14	1	11	26
60-90	8	6	24	38
	111	22	134	267

Chi-Square=19.47      d.f.=8      p<.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	36	6	35	77
30-39	30	8	38	76
40-49	22	4	24	50
50-59	13	2	11	26
60-90	24	3	11	38
	125	23	119	267

Chi-Square=6.40      d.f.=8      p>.05

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	62	7	8	77
30-39	54	10	12	76
40-49	36	4	10	50
50-59	22	2	2	26
60-90	27	5	6	38
	201	28	38	267

Chi-Square=5.27      d.f.=8      p>.05

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Tables 4-24(j) and (k).--Respondents' opinions by age

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**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	74	2	1	77
30-39	72	3	1	76
40-49	48	0	2	50
50-59	21	2	3	26
60-90	29	4	5	38
	244	11	12	267

Chi-Square=21.45      d.f.=8      p<.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Age	Opinion			total
	Agree	No opinion	Disagree	
19-29	28	4	45	77
30-39	29	7	40	76
40-49	15	1	34	50
50-59	9	1	16	26
60-90	12	2	24	38
	93	15	159	267

Chi-Square=5.16      d.f.=8      p>.05

---

still unknown", found on Table 4-24(k), do not show a relationship with age of respondents.

### Marital Status

The demographic characteristic of marital status is presented with the opinion statements in Tables 4-25(a) through (k). As can be seen in these tables, the data do not show a relationship between marital status and the expressed opinions.

### Ethnicity

The demographic characteristic of ethnicity is presented with the opinion statements in Tables 4-26(a) through (k).

On Table 4-26(a) responses to the statement, "People should be tested for AIDS for employment reasons" show that an equal proportion of Chinese respondents expressed agreement and disagreement. A larger proportion of Caucasian respondents disagreed with the statement (Chi-Square= 6.36, d.f.= 2,  $p < .05$ ).

On Tables 4-26(b) through (f), responses to the statements, "School officials should tell all parents if a child with AIDS is attending their school"; "People with AIDS should be allowed to mingle freely with the general public"; "The AIDS problem arose because of a permissive society"; "Children can be taught by a person with AIDS" and



Tables 4-25(a) through (c).--Respondents opinions by marital status

---

**(a) People should be tested for AIDS for employment reasons.**

Marital status	Opinion			total
	Agree	No opinion	Disagree	
married	51	15	79	145
single	41	14	68	123
	92	29	147	268

Chi-Square=.14      d.f.=2      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Marital status	Opinion			total
	Agree	No opinion	Disagree	
married	59	14	72	145
single	52	11	60	123
	111	25	132	268

Chi-Square=.09      d.f.=2      p>.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Marital status	Opinion			total
	Agree	No opinion	Disagree	
married	98	16	31	145
single	84	14	25	123
	182	30	56	268

Chi-Square=.05      d.f.=2      p>.05

---

Tables 4-25(d) through (f).--Respondents' opinions by marital status

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**(d) The AIDS problem arose because of a "permissive" society.**

Marital Status	Opinion			total
	Agree	No opinion	Disagree	
married	62	22	61	145
single	46	19	58	123
	108	41	119	268

Chi-Square=.87      d.f.=2      p>.05

**(e) Children can be taught by a person with AIDS.**

Marital status	Opinion			total
	Agree	No opinion	Disagree	
married	105	8	32	145
single	88	11	24	123
	193	19	56	268

Chi-Square=1.32      d.f.=2      p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Marital status	Opinion			total
	Agree	No opinion	Disagree	
married	16	19	110	145
single	9	18	96	123
	25	37	206	268

Chi-Square=1.14      d.f.=2      p>.05

---

Tables 4-25(g) through (i).--Respondents opinions by marital status

---

**(g) People with AIDS can work freely within any environment.**

Marital status	Opinion			total
	Agree	No opinion	Disagree	
married	61	11	73	145
single	50	11	62	123
	111	22	135	268

Chi-Square=.18      d.f.=2      p>.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Marital status	Opinion			total
	Agree	No opinion	Disagree	
married	67	13	65	145
single	58	10	55	123
	125	23	120	268

Chi-Square=.07      d.f.=2      p>.05

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Marital status	Opinion			total
	Agree	No opinion	Disagree	
married	113	14	18	145
single	88	15	20	123
	201	29	38	268

Chi-Square=1.45      d.f.=2      p>.05

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Tables 4-25(j) and (k).--Respondents opinions by marital status

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**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Marital status	Agree	Opinion No opinion	Disagree	total
married	133	5	7	145
single	111	7	5	123
	244	12	12	268

Chi-Square=.85      d.f.=2      p>.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Marital status	Agree	Opinion No opinion	Disagree	total
married	48	7	90	133
single	46	8	69	135
	94	15	159	268

Chi-Square=1.08      d.f.=2      p>.05

---

Tables 4-26(a) through (c).--Respondents opinions by  
ethnicity

---

**(a) People should be tested for AIDS for employment reasons.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	76	22	138	236
Chinese	7	5	7	19
	83	27	147	255

Chi-Square=6.36      d.f.=2      p<.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	93	21	122	236
Chinese	9	3	7	19
	102	24	129	255

Chi-Square=1.93      d.f.=2      p>.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	163	25	48	236
Chinese	15	2	2	19
	178	27	50	255

Chi-Square=1.11      d.f.=2      p>.05

---

Tables 4-26(d) through (f).--Respondents' opinions by  
ethnicity

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**(d) The AIDS problem arose because of a "permissive" society.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	93	34	109	236
Chinese	9	3	7	19
	102	37	116	255

Chi-Square=.64      d.f.=2      p>.05

**(e) Children can be taught by a person with AIDS.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	175	15	46	236
Chinese	11	2	6	19
	186	17	52	255

Chi-Square=2.36      d.f.=2      p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	18	28	190	236
Chinese	1	4	14	19
	19	32	204	255

Chi-Square=1.42      d.f.=2      p>.05

---

"The AIDS problem has come about as a judgment of God" do not show an ethnic relationship.

Responses to the statement, "People with AIDS can work freely within any environment", found on Table 4-26(g), indicate a tendency for more Caucasian respondents to disagree, while more Chinese respondents agreed (Chi-Square= 2.37, d.f.= 2,  $p > .05$ ).

Responses to the statement, "The government should be compiling a list on who has the AIDS virus", found on Table 4-26(h), show that more Caucasian respondents disagreed, while more Chinese respondents agreed (Chi-Square= 2.44, d.f.= 2,  $p > .05$ ).

Responses to the statement, "Doctors should demand the names of previous sexual partners of people who have the AIDS virus", found on Table 4-26(i), do not show an ethnic relationship.

A noticeable relationship in response to the statement, "By using condoms you can lower your risk of contracting the AIDS virus", found on Table 4-26(j), is seen in all Chinese respondents agreeing. The majority of Caucasian respondents also agreed with the statement, with another nine expressing no opinion and 12 disagreeing (Chi-Square= 1.84, d.f.= 2,  $p > .05$ ).

Tables 4-26(g) through (i).--Respondents opinions by ethnicity

---

**(g) People with AIDS can work freely within any environment.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	94	18	124	236
Chinese	11	1	7	19
	105	19	131	255

Chi-Square=2.37      d.f.=2      p>.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	105	19	112	236
Chinese	10	3	6	19
	115	22	118	255

Chi-Square=2.44      d.f.=2      p>.05

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	175	25	36	236
Chinese	15	2	2	19
	190	27	38	255

Chi-Square=.32      d.f.=2      p>.05

---



Tables 4-26(j) and (k).--Respondents opinions by ethnicity

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**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	215	9	12	236
Chinese	19	0	0	19
	234	9	12	255

Chi-Square=1.82      d.f.=2      p>.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Ethnicity	Opinion			total
	Agree	No opinion	Disagree	
Caucasian	81	12	143	236
Chinese	6	2	11	19
	87	14	154	255

Chi-Square=1.01      d.f.=2      p>.05

---

Responses to the statement, "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown", found on Table 4-26(k), do not show an ethnic relationship.

### Education

The demographic characteristic of education is presented with the opinion statements in Tables 4-27(a) through (k).

Responses to the statement, "People should be tested for AIDS for employment reasons", found on Table 4-27(a), do not show an education relationship.

On Table 4-27(b), responses to the statement, "School officials should tell all parents if a child with AIDS is attending their school" show a relationship with education level. Respondents with senior high school education or less were more often in agreement. Respondents in the higher education categories more often disagreed with the statement (Chi-Square= 12.81, d.f.=6,  $p<.05$ ).

Responses to the statement, "People with AIDS should be allowed to mingle freely with the general public", found on Table 4-27(c), do not show an education relationship.

On Table 4-27(d), the data indicate a relationship between education and opinion in response to the statement,

Tables 4-27(a) through (c).--Respondents' opinions by  
education

-----  
Education coded as: 1= Junior high or less  
2= Senior high  
3= Post secondary  
4= University degree or more

**(a) People should be tested for AIDS for employment reasons.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	8	2	16	26
2	41	14	47	102
3	19	5	48	72
4	24	8	36	68
	92	29	147	268

Chi-Square= 8.07      d.f.= 6      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	14	2	10	26
2	51	8	43	102
3	21	11	40	72
4	25	4	39	68
	111	25	132	268

Chi-Square= 12.81      d.f.= 6      p<.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	13	5	8	26
2	63	14	25	102
3	53	6	13	72
4	53	5	10	68
	182	30	56	268

Chi-Square= 10.03      d.f.= 6      p>.05  
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"The AIDS problem arose because of a permissive society." Respondents with senior high school education or less expressed agreement more often. Respondents with post secondary education or more disagreed more often with the statement (Chi-Square= 10.76, d.f.= 6,  $p>.05$ ).

In response to the statement, "Children can be taught by a person with AIDS", the data on Table 4-27(e) show that in comparison to the other education categories, a large proportion of respondents with a senior high school education disagreed (Chi-Square= 11.89, d.f.= 6,  $p>.05$ ).

On Table 4-27(f), responses to the statement, "The AIDS problem has come about as a judgment of God" show that only two persons agreed in the post secondary education categories. In comparison, a greater proportion of respondents with less education agreed with the statement (Chi-Square= 29.75, d.f.= 6,  $p<.05$ ).

Responses to the statement, "People with AIDS can work freely within any environment", found on Table 4-27(g), do not show an education relationship.

With reference to Table 4-27(h), the data indicate a relationship with education level for the statement, "The government should be compiling a list on who has the AIDS virus." More respondents with senior high school education or less agreed, while respondents with post secondary

Tables 4-27(d) through (f).--Respondents' opinions by education

-----  
 Education coded as: 1= Junior high or less  
                     2= Senior high  
                     3= Post secondary  
                     4= University degree or more

**(d) The AIDS problem arose because of a "permissive" society.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	13	4	9	26
2	50	16	36	102
3	23	13	36	72
4	22	8	38	68
	108	41	119	268

Chi-Square= 10.76    d.f.= 6    p>.05

**(e) Children can be taught by a person with AIDS.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	17	3	6	26
2	65	11	26	102
3	55	5	12	72
4	56	0	12	68
	193	19	56	268

Chi-Square= 11.89    d.f.= 6    p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	7	4	15	26
2	16	18	68	102
3	1	9	62	72
4	1	6	61	68
	25	37	206	268

Chi-Square= 29.75    d.f.= 6    p<.05

-----

Tables 4-27(g) through (i).--Respondents' opinions by  
education

-----  
Education coded as: 1= Junior high or less  
2= Senior high  
3= Post secondary  
4= University degree or more

**(g) People with AIDS can work freely within any  
environment.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	11	3	12	26
2	39	12	51	102
3	34	4	34	72
4	27	3	38	68
	111	22	135	268

Chi-Square= 5.27      d.f.= 6      p>.05

**(h) The government should be compiling a list on who has  
the AIDS virus.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	16	2	8	26
2	58	8	36	102
3	18	8	46	72
4	33	5	30	68
	125	23	120	268

Chi-Square= 20.62      d.f.= 6      p<.05

**(i) Doctors should demand the names of previous sexual  
partners of people who have the AIDS virus.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	19	3	4	26
2	78	11	13	102
3	52	10	10	72
4	52	5	11	68
	201	29	38	268

Chi-Square= 1.90      d.f.= 6      p>.05

-----

education disagreed. Respondents with more than post secondary education were almost evenly divided on the statement (Chi-Square= 20.62, d.f.= 6,  $p < .05$ ).

Responses to the statement, "Doctors should demand the names of previous sexual partners of people who have the AIDS virus", found on Table 4-27(i), do not show an education relationship.

Table 4-27(j) shows that a larger proportion of respondents with senior high school education expressed no opinion to the statement, "By using condoms you can lower your risk of contracting the AIDS virus". The data also show that no respondents in the highest education category disagreed with the statement (Chi-Square= 12.35, d.f.= 6,  $p > .05$ ). Any relationship in the data however, should be interpreted with caution because of the limited frequency of responses for two of the three opinion categories.

On Table 4-27(k), responses to the statement, "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown", show that the more education respondents had, the more they disagreed (Chi-Square= 13.19, d.f.= 6,  $p < .05$ ). Respondents with higher education more often expressed the opinion that they could believe what the medical authorities say about AIDS.

Tables 4-27(j) and (k).--Respondents' opinions by education

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Education coded as: 1= Junior high or less  
 2= Senior high  
 3= Post secondary  
 4= University degree or more

**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	23	1	2	26
2	87	9	6	102
3	67	1	4	72
4	67	1	0	68
	244	12	12	268

Chi-Square= 12.35 d.f.= 6 p>.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Education	Opinion			total
	Agree	No opinion	Disagree	
1	13	1	12	26
2	44	6	52	102
3	23	5	44	72
4	14	3	51	68
	94	15	159	268

Chi-Square= 13.19 d.f.= 6 p<.05

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### Work Status

The demographic characteristic of work status is presented with the opinion statements in Tables 4-28(a) through (k).

The data on Tables 4-28(a) through (c) do not show any relationship between work status and each of the three opinion statements, "People should be tested for AIDS for employment reasons"; "School officials should tell all parents if a child with AIDS is attending their school" and "People with AIDS should be allowed to mingle freely with the general public."

The data on Table 4-28(d) show a relationship between work status and the statement, "The AIDS problem arose because of a permissive society." More respondents who were employed disagreed with the statement, while more unemployed respondents expressed the opposite opinion (Chi-Square= 13.07, d.f.=2,  $p < .05$ ).

The data presented in Tables 4-28(e) through (i) do not show any relationship between work status and the opinion statements, "Children can be taught by a person with AIDS"; "The AIDS problem has come about as a judgment of God"; "People with AIDS can work freely within any environment"; "The government should be compiling a list on who has the

Tables 4-28(a) through (c).--Respondents' opinions by work status

---

**(a) People should be tested for AIDS for employment reasons.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	57	21	97	175
no	35	8	50	93
	92	29	147	268

Chi-Square= 1.13      d.f.= 2      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	77	13	85	175
no	34	12	47	93
	111	25	132	268

Chi-Square= 2.81      d.f.= 2      p>.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	122	18	35	175
no	60	12	21	93
	182	30	56	268

Chi-Square= .81      d.f.= 2      p>.05

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Tables 4-28(d) through (f).--Respondents' opinions by work status

---

**(d) The AIDS problem arose because of a "permissive" society.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	58	34	83	175
no	50	7	36	93
	108	41	119	268

Chi-Square= 13.07 d.f.= 2 p<.05

**(e) Children can be taught by a person with AIDS.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	129	10	36	175
no	64	9	20	93
	193	19	56	268

Chi-Square= 1.57 d.f.= 2 p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	14	25	136	175
no	11	12	70	93
	25	37	206	268

Chi-Square= 1.09 d.f.= 2 p>.05

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Tables 4-28(g) through (i).--Respondents' opinions by work status

---

**(g) People with AIDS can work freely within any environment.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	75	14	86	175
no	36	8	49	93
	111	22	135	268

Chi-Square= .43      d.f.= 2      p>.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	83	15	77	175
no	42	8	43	93
	125	23	120	268

Chi-Square= .13      d.f.= 2      p>.05

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	136	14	25	175
no	65	15	13	93
	201	29	38	268

Chi-Square= 4.21      d.f.= 2      p>.05

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AIDS virus" and "Doctors should demand the names of previous sexual partners of people who have the AIDS virus."

On Table 4-28(j), responses to the statement, "By using condoms you can lower your risk of contracting the AIDS virus" show that the majority of respondents who were either employed or unemployed agreed. However, a larger proportion of respondents who were unemployed, as compared to employed, disagreed with this statement (Chi-Square= 12.62, d.f.= 2,  $p < .05$ ).

Responses to the statement, "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown", found on Table 4-28(k), do not show a work status relationship.

#### Occupation

The demographic characteristic of occupation is presented with the opinion statements in Tables 4-29(a) through (k). The data on all tables do not show a relationship between occupation and the expressed opinions.

#### Household income

The demographic characteristic of household income is presented with the opinion statements in Tables 4-30(a) through (k).

Tables 4-28(j) and (k).--Respondents' opinions by work status

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**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	167	5	3	175
no	77	7	9	93
	244	12	12	268

Chi-Square= 12.62 d.f.= 2 p<.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Employed	Opinion			total
	Agree	No opinion	Disagree	
yes	57	10	108	175
no	37	5	51	93
	94	15	159	268

Chi-Square= 1.40 d.f.= 2 p>.05

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Tables 4-29(a) through (c).--Respondents' opinions by  
occupation

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**(a) People should be tested for AIDS for employment reasons.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	10	0	16	26
non-professional	44	20	76	140
	54	20	92	166

Chi-Square= 4.26      d.f.=2      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	8	2	16	26
non-professional	66	11	63	140
	74	13	79	166

Chi-Square= 2.58      d.f.=2      p>.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	22	1	3	26
non-professional	93	18	29	140
	115	19	32	166

Chi-Square= 3.56      d.f.=2      p>.05

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Tables 4-29(d) through (f).--Respondents' opinions by  
occupation

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**(d) The AIDS problem arose because of a "permissive" society.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	6	5	15	26
non-professional	47	27	66	140
	53	32	81	166

Chi-Square= 1.26      d.f.=2      p>.05

**(e) Children can be taught by a person with AIDS.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	21	1	4	26
non-professional	104	8	28	140
	125	9	32	166

Chi-Square= .51      d.f.=2      p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	2	1	23	26
non-professional	10	23	107	140
	12	24	130	166

Chi-Square= 2.82      d.f.=2      p>.05

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Tables 4-29(g) through (i).--Respondents' opinions by  
occupation

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**(g) People with AIDS can work freely within any  
environment.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	10	0	16	26
non-professional	58	14	68	140
	68	14	84	166

Chi-Square= 3.38      d.f.=2      p>.05

**(h) The government should be compiling a list on who has  
the AIDS virus.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	12	0	14	26
non-professional	67	14	59	140
	79	14	73	166

Chi-Square= 3.30      d.f.=2      p>.05

**(i) Doctors should demand the names of previous sexual  
partners of people who have the AIDS virus.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	20	0	6	26
non-professional	109	14	17	140
	129	14	23	166

Chi-Square= 4.49      d.f.=2      p>.05

---

Tables 4-29(j) and (k).--Respondents' opinions by occupation

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**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	25	0	1	26
non-professional	133	5	2	140
	158	5	3	166

Chi-Square= 1.64      d.f.=2      p>.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Occupation	Opinion			total
	Agree	No opinion	Disagree	
professional	7	1	18	26
non-professional	45	9	86	140
	52	10	104	166

Chi-Square= .65      d.f.=2      p>.05

---

On Table 4-30(a), responses to the statement, "People should be tested for AIDS for employment reasons" show that respondents in the lowest household income category, as well as respondents who did not know their household income, agreed and disagreed almost equally. Respondents in the household income categories of, \$20,000-\$34,999; \$35,000-\$54,999 and \$55,000 & over, more often disagreed with the statement (Chi-Square= 16.24, d.f.= 10,  $p>.05$ ).

On Table 4-30(b), responses to the statement, "School officials should tell all parents if a child with AIDS is attending their school" show a relationship in which respondents who agreed were either in the lowest household income category, refused to give their household income, or did not know their household income. Respondents in the other categories more often disagreed with the statement (Chi-Square= 14.52, d.f.= 10,  $p>.05$ ).

On Table 4-30(c), responses to the statement, "People with AIDS should be allowed to mingle freely with the general public" show that the lower the household incomes, the greater the proportion of respondents who disagreed. In comparison respondents who refused to give their household incomes also disagreed more often (Chi-Square= 19.40, d.f.= 10,  $p<.05$ ).

Tables 4-30(a) and (b).--Respondents' opinions by household income

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Household income coded as: 1= under \$19,999  
 2= \$20,000-\$34,999  
 3= \$35,000-\$54,999  
 4= \$55,000 & over  
 5= Don't know  
 6= Refused

**(a) People should be tested for AIDS for employment reasons.**

Household income	Agree	Opinion No opinion	Disagree	total
1	22	6	19	47
2	15	7	32	54
3	17	3	46	66
4	15	7	26	48
5	10	4	9	23
6	13	2	15	30
	92	29	147	268

Chi-Square= 16.24    d.f.= 10    p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Household income	Agree	Opinion No opinion	Disagree	total
1	23	6	18	47
2	17	5	32	54
3	23	4	39	66
4	20	3	25	48
5	23	4	6	23
6	15	3	12	30
	111	25	132	268

Chi-Square= 14.52    d.f.= 10    p>.05

---

On Table 4-30(d), responses to the statement, "The AIDS problem arose because of a permissive society" show that proportionately more respondents in the household income categories of thirty-five thousand dollars or more disagreed. Proportionately more respondents in the lower household income categories agreed with the statement (Chi-Square= 28.59, d.f.= 10,  $p < .05$ ).

On Table 4-30(e), responses to the statement, "Children can be taught by a person with AIDS" show that proportionately more respondents who refused to give their household income disagreed, while the majority of respondents in the other household income categories agreed. Respondents in the household income category of twenty to thirty-five thousand dollars showed the highest proportion of disagreement (Chi-Square= 32.60, d.f.= 10,  $p < .05$ ).

Responses to the statement, "The AIDS problem has come about as a judgment of God", found on Table 4-30(f), do not show a relationship to reported household income.

On Table 4-30(g), a relationship is seen between the statement, "People with AIDS can work freely within any environment" and household income. Respondents who agreed with the statement reported incomes between thirty-five to fifty-five thousand dollars, or did not know their household income. Respondents who disagreed with the statement either

Tables 4-30(c) and (d).--Respondents' opinions by household income

Household income coded as: 1= under \$19,999  
 2= \$20,000-\$34,999  
 3= \$35,000-\$54,999  
 4= \$55,000 & over  
 5= Don't know  
 6= Refused

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Household income	Agree	Opinion No opinion	Disagree	total
1	25	7	19	47
2	35	5	14	54
3	52	6	8	66
4	39	3	6	48
5	16	4	3	23
6	15	5	10	30
	182	30	56	268

Chi-Square= 19.40    d.f.= 10    p<.05

**(d) The AIDS problem arose because of a "permissive" society.**

Household income	Agree	Opinion No opinion	Disagree	total
1	28	4	15	47
2	24	9	21	54
3	19	8	39	66
4	15	9	24	48
5	6	9	8	23
6	16	2	12	30
	108	41	119	268

Chi-Square= 28.59    d.f.= 10    p<.05

Tables 4-30(e) and (f).--Respondents' opinions by household income

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Household income coded as: 1= under \$19,999  
 2= \$20,000-\$34,999  
 3= \$35,000-\$54,999  
 4= \$55,000 & over  
 5= Don't know  
 6= Refused

**(e) Children can be taught by a person with AIDS.**

Household income	Agree	Opinion No opinion	Disagree	total
1	34	5	8	47
2	37	2	15	54
3	54	5	7	66
4	41	2	5	48
5	15	3	5	23
6	12	2	16	30
	193	19	56	268

Chi-Square= 32.60    d.f.= 10    p<.05

**(f) The AIDS problem has come about as a judgment of God.**

Household income	Agree	Opinion No opinion	Disagree	total
1	7	5	35	47
2	4	7	43	54
3	4	7	55	66
4	2	6	40	48
5	3	6	14	23
6	5	6	19	30
	25	37	206	268

Chi-Square= 12.43    d.f.= 10    p>.05

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Tables 4-30(g) and (h).--Respondents' opinions by household income

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Household income coded as: 1= under \$19,999  
 2= \$20,000-\$34,999  
 3= \$35,000-\$54,999  
 4= \$55,000 & over  
 5= Don't know  
 6= Refused

**(g) People with AIDS can work freely within any environment.**

Household income	Agree	Opinion No opinion	Disagree	total
1	13	5	29	47
2	19	5	30	54
3	34	5	27	66
4	21	2	25	48
5	15	4	4	23
6	9	1	20	30
	111	22	135	268

Chi-Square= 22.30      d.f.= 10      p<.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Household income	Agree	Opinion No opinion	Disagree	total
1	27	4	16	47
2	27	2	25	54
3	26	7	33	66
4	21	3	24	48
5	11	4	8	23
6	13	3	14	30
	125	23	120	268

Chi-Square= 8.953      d.f.= 10      p>.05

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had household incomes of less than thirty-five thousand dollars, refused to give their household income, or had household incomes of fifty-five thousand dollars or more (Chi-Square= 22.30, d.f.= 10,  $p < .05$ ).

Responses to the statements, "The government should be compiling a list on who has the AIDS virus" and "Doctors should demand the names of previous sexual partners of people who have the AIDS virus", found on Tables 4-30(h) and (i), do not show a relationship to reported income.

On Table 4-30(j), responses to the statement, "By using condoms you can lower your risk of contracting the AIDS virus" show that the majority of respondents in all categories agreed. No respondents who had a household income of fifty-five thousand dollars or more either disagreed or had no opinion for the statement. Although the data show a statistically significant relationship (Chi-Square= 33.35, d.f.= 10,  $p < .05$ ) the low frequency of responses in two of the three opinion categories prevents a meaningful interpretation.

Responses to the statement, "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown", found on Table 4-30(k), do not show a relationship to reported income.

Tables 4-30(i) and (j).--Respondents' opinions by household income

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Household income coded as: 1= under \$19,999  
 2= \$20,000-\$34,999  
 3= \$35,000-\$54,999  
 4= \$55,000 & over  
 5= Don't know  
 6= Refused

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Household income	Agree	Opinion No opinion	Disagree	total
1	36	5	6	47
2	40	3	11	54
3	47	11	8	66
4	39	2	7	48
5	16	3	4	23
6	23	5	2	30
	201	29	38	268

Chi-Square= 10.08    d.f.= 10    p>.05

**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Household income	Agree	Opinion No opinion	Disagree	total
1	40	4	3	47
2	52	0	2	54
3	63	0	3	66
4	48	0	0	48
5	20	2	1	23
6	21	6	3	30
	244	12	12	268

Chi-Square= 33.35    d.f.= 10    p<.05

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Table 4-30(k).--Respondents' opinions by household income

Household income coded as: 1= under \$19,999  
 2= \$20,000-\$34,999  
 3= \$35,000-\$54,999  
 4= \$55,000 & over  
 5= Don't know  
 6= Refused

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Household income	Agree	Opinion No opinion	Disagree	total
1	19	3	25	47
2	16	5	33	54
3	24	2	40	66
4	14	1	33	48
5	12	2	9	23
6	9	2	19	30
	94	15	159	268

Chi-Square= 9.85    d.f.= 10    p>.05

## Religion

The demographic characteristic of religion is presented with the opinion statements in Tables 4-31(a) through (k).

Responses to the statements, "People should be tested for AIDS for employment reasons"; "School officials should tell all parents if a child with AIDS is attending their school" and "People with AIDS should be allowed to mingle freely with the general public" do not show a relationship with religious affiliation. These data are presented on Tables 4-31(a) through (c).

Responses to the statement, "The AIDS problem arose because of a permissive society", found on Table 4-31(d), show that respondents who had no religious affiliation more often disagreed. Respondents who were Catholic or Protestant were more evenly divided in their responses, with the largest proportion of no opinions coming from Protestant respondents (Chi-Square= 13.69, d.f.= 4,  $p < .05$ ).

Responses to the statement, "Children can be taught by a person with AIDS", found on Table 4-31(e), do not show a relationship with religious affiliation.

In response to the statement, "The AIDS problem has come about as a judgment of God", the data presented on Table 4-31(f) show the most noticeable relationship between respondents with no religious affiliation. None of the

Tables 4-31(a) through (c).--Respondents' opinions by religion

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**(a) People should be tested for AIDS for employment reasons.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	14	4	25	43
Protestant	38	15	49	102
None	18	9	53	80
	70	28	127	225

Chi-Square= 6.69      d.f.= 4      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	16	4	23	43
Protestant	42	11	49	102
None	28	7	45	80
	86	22	117	225

Chi-Square= 1.27      d.f.= 4      p>.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	28	7	8	43
Protestant	68	12	22	102
None	66	7	7	80
	162	26	37	225

Chi-Square= 7.92      d.f.= 4      p>.05

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Tables 4-31(d) through (f).--Respondents' opinions by religion

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**(d) The AIDS problem arose because of a "permissive" society.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	23	3	17	43
Protestant	41	22	39	102
None	21	13	46	80
	85	38	102	225

Chi-Square= 13.69 d.f.= 4 p<.05

**(e) Children can be taught by a person with AIDS.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	27	2	14	43
Protestant	79	8	15	102
None	62	5	13	80
	168	15	42	225

Chi-Square= 7.05 d.f.= 4 p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	7	7	29	43
Protestant	9	13	80	102
None	0	11	69	80
	16	31	178	225

Chi-Square= 12.73 d.f.= 4 p<.05

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respondents who had no religious affiliation agreed with the statement, while a small proportion of both Catholic and Protestant respondents did express agreement (Chi-Square= 12.73, d.f.= 4,  $p < .05$ ).

Responses to the statement, "People with AIDS can work freely within any environment" show that Protestant respondents expressed the greatest range of opinion in their responses, with the majority disagreeing. The other two categories of respondents show an equal proportion who agreed and disagreed (Chi-Square= 4.96, d.f.= 4,  $p > .05$ ). These data are found on Table 4-31(g).

On Table 4-31(h), responses to "The government should be compiling a list on who has the AIDS virus" show a trend in which more Catholic respondents agreed with the statement. Protestant respondents were equally divided in their responses and respondents with no religious affiliation most often disagreed with the statement (Chi-Square= 3.25, d.f.= 4,  $p > .05$ ).

Responses to the statement, "Doctors should demand the names of previous sexual partners of people who have the AIDS virus", found on Table 4-31(i), do not show a relationship with religious affiliation.

On Table 4-31(j), responses to the statement, "By using condoms you can lower your risk of contracting the AIDS

Tables 4-31(g) through (i).--Respondents' opinions by religion

---

**(g) People with AIDS can work freely within any environment.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	21	3	19	43
Protestant	34	10	58	102
None	38	6	36	80
	93	19	113	225

Chi-Square= 4.96      d.f.= 4      p>.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	24	4	15	43
Protestant	46	10	46	102
None	33	6	41	80
	103	20	102	225

Chi-Square= 3.25      d.f.= 4      p>.05

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	35	4	4	43
Protestant	80	8	14	102
None	59	8	13	80
	174	20	31	225

Chi-Square= 1.47      d.f.= 4      p>.05

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virus" show that nine Protestant and two Catholic respondents disagreed. Respondents with no religious affiliation did not disagree with this statement (Chi-Square= 10.15, d.f.= 4,  $p < .05$ ). The statistically significant relationship in the data should be interpreted with caution because of the limited frequency of responses for two of the three opinion categories.

Responses to the statement, "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown", found on Table 4-31(k), indicate that Catholic respondents were equally divided, while the majority of respondents in the other two categories disagreed with the statement (Chi-Square= 6.16, d.f.= 4,  $p > .05$ ). This suggests that in comparison to Catholic respondents, respondents who were either Protestant or without any religious affiliation had more confidence in the information presented by the medical authorities.

#### Sexual orientation

The demographic characteristic of sexual orientation is presented with the opinion statements in Tables 4-32(a) through (k). Interpretation of relationships in the data need to be treated with caution because of the small sample of bisexual/homosexual respondents.

Tables 4-31(j) and (k).--Respondents' opinions by religion

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**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	38	3	2	43
Protestant	91	2	9	102
None	78	2	0	80
	207	7	11	225

Chi-Square= 10.15    d.f.= 4    p<.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Religion	Opinion			total
	Agree	No opinion	Disagree	
Catholic	20	4	19	43
Protestant	30	5	67	102
None	25	5	50	80
	75	14	136	225

Chi-Square= 6.16    d.f.= 4    p>.05

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Responses to the statement, "People should be tested for AIDS for employment reasons", found on Table 4-32(a), do not show a relationship with respondents' sexual orientation.

On Table 4-32(b), responses to the statement, "School officials should tell all parents if a child with AIDS is attending their school" show the majority of bisexual/homosexual respondents in disagreement. Although more heterosexual respondents also disagreed with the statement, a large proportion also agreed (Chi-Square= 4.84, d.f.= 2,  $p > .05$ ).

Responses to the statement, "People with AIDS should be allowed to mingle freely with the general public", found on Table 4-32(c), do not show a relationship with respondents' sexual orientation.

On Table 4-32(d), responses to the statement, "The AIDS problem arose because of a permissive society" show heterosexual respondents evenly divided. The majority of bisexual/homosexual respondents however, disagreed with this statement (Chi-Square= 6.89, d.f.= 2,  $p < .05$ ).

Responses to the statement, "Children can be taught by a person with AIDS", found on Table 4-32(e), do not show a relationship with respondents' sexual orientation.

Tables 4-32(a) through (c).--Respondents' opinions by sexual orientation

**(a) People should be tested for AIDS for employment reasons.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	90	27	140	257
Bisexual/ Homosexual	1	1	6	8
	91	28	146	265

Chi-Square= 1.77      d.f.= 2      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	109	24	124	257
Bisexual/ Homosexual	1	0	7	8
	110	24	131	265

Chi-Square= 4.84      d.f.= 2      p>.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	174	28	55	257
Bisexual/ Homosexual	6	1	1	8
	180	29	56	265

Chi-Square= .37      d.f.= 2      p>.05

Tables 4-32(d) through (f).--Respondents' opinions by sexual orientation

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**(d) The AIDS problem arose because of a "permissive" society.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	107	40	110	257
Bisexual/ Homosexual	0	1	7	8
	107	41	117	265

Chi-Square= 6.89      d.f.= 2      p<.05

**(e) Children can be taught by a person with AIDS.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	184	18	55	257
Bisexual/ Homosexual	7	0	1	8
	191	18	56	265

Chi-Square= 1.12      d.f.= 2      p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	25	36	196	257
Bisexual/ Homosexual	0	0	8	8
	25	36	204	265

Chi-Square= 2.47      d.f.= 2      p>.05

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On Table 4-32(f), responses to the statement, "The AIDS problem has come about as a judgment of God" show that all of the bisexual/homosexual respondents disagreed. While 196 out of 257 heterosexual respondents disagreed, 25 agreed and 36 had no opinion (Chi-Square= 2.47, d.f.= 2,  $p>.05$ ).

Responses to the statement, "People with AIDS can work freely within any environment", found on Table 4-32(g), show no relationship with respondents' sexual orientation.

On Table 4-32(h), responses to the statement, "The government should be compiling a list on who has the AIDS virus" indicate that slightly more heterosexual respondents agreed, while bisexual/homosexual respondents largely disagreed (Chi-Square= 4.02, d.f.= 2,  $p>.05$ ).

Responses to the statement, "Doctors should demand the names of previous sexual partners of people who have the AIDS virus", found on Table 4-32(i), do not show a relationship with respondents' sexual orientation.

On Table 4-32(j), responses to the statement, "By using condoms you can lower your risk of contracting the AIDS virus" show that all bisexual/homosexual respondents agreed. The great majority of heterosexual respondents also agreed with this statement, with a small proportion disagreeing or having no opinion (Chi-Square= .78, d.f.= 2,  $p>.05$ ).

Tables 4-32(g) through (i).--Respondents' opinions by sexual orientation

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**(g) People with AIDS can work freely within any environment.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	105	22	130	257
Bisexual/ Homosexual	5	0	3	8
	110	22	133	265

Chi-Square= 1.83      d.f.= 2      p>.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	124	22	111	257
Bisexual/ Homosexual	1	1	6	8
	125	23	117	265

Chi-Square= 4.02      d.f.= 2      p>.05

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	196	25	36	257
Bisexual/ Homosexual	4	2	2	8
	200	27	38	265

Chi-Square= 3.14      d.f.= 2      p>.05

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Tables 4-32(j) and (k).--Respondents' opinions by sexual orientation

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**(j) By using condoms you can lower your risk of contracting the AIDS virus.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	234	11	12	257
Bisexual/ Homosexual	8	0	0	8
	242	11	12	265

Chi-Square= .78      d.f.= 2      p>.05

**(k) You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown.**

Sexual orientation	Agree	Opinion No opinion	Disagree	total
Heterosexual	91	14	152	257
Bisexual/ Homosexual	1	1	6	8
	92	15	158	265

Chi-Square= 2.18      d.f.= 2      p>.05

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Responses to the statement, "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown", found on Table 4-32(k), do not show a relationship with respondents' sexual orientation.

#### Personal experience

The demographic characteristic of personal experience is presented with the opinion statements in Tables 4-33(a) through (k).

Responses to the statements, "People should be tested for AIDS for employment reasons"; "School officials should tell all parents if a child with AIDS is attending their school" and "People with AIDS should be allowed to mingle freely with the general public" show no relationship to the demographic characteristic of personal experience. These data are found on Tables 4-33(a) through (c).

On Table 4-33(d), responses to the statement, "The AIDS problem arose because of a permissive society" show that the majority of respondents who had been affected by AIDS disagreed. Respondents who had not been affected by AIDS were evenly divided in their responses (Chi-Square= 4.71, d.f.= 2,  $p > .05$ ).

Responses to the statements, "Children can be taught by a person with AIDS" and "The AIDS problem has come about as a judgment of God" do not show a relationship with the

Tables 4-33(a) through (c).--Respondents' opinions by  
personal experience

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**(a) People should be tested for AIDS for employment reasons.**

Affected	Agree	Opinion		total
		No opinion	Disagree	
yes	9	3	22	34
no	82	26	125	233
	91	29	147	267

Chi-Square= 1.47      d.f.= 2      p>.05

**(b) School officials should tell all parents if a child with AIDS is attending their school.**

Affected	Agree	Opinion		total
		No opinion	Disagree	
yes	12	1	21	34
no	98	24	111	233
	110	25	132	267

Chi-Square= 3.24      d.f.= 2      p>.05

**(c) People with AIDS should be allowed to mingle freely with the general public.**

Affected	Agree	Opinion		total
		No opinion	Disagree	
yes	27	2	5	34
no	154	28	51	233
	181	30	56	267

Chi-Square= 2.50      d.f.= 2      p>.05

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Tables 4-33(d) through (f).--Respondents' opinions by  
personal experience

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**(d) The AIDS problem arose because of a "permissive" society.**

Affected	Opinion			total
	Agree	No opinion	Disagree	
yes	9	4	21	34
no	98	37	98	233
	107	41	119	267

Chi-Square= 4.71      d.f.= 2      p>.05

**(e) Children can be taught by a person with AIDS.**

Affected	Opinion			total
	Agree	No opinion	Disagree	
yes	28	0	6	34
no	165	18	50	233
	193	18	56	267

Chi-Square= 3.38      d.f.= 2      p>.05

**(f) The AIDS problem has come about as a judgment of God.**

Affected	Opinion			total
	Agree	No opinion	Disagree	
yes	1	3	30	34
no	24	34	175	233
	25	37	205	267

Chi-Square= 3.09      d.f.= 2      p>.05

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demographic characteristic of personal experience. These data are found on Tables 4-33(e) and (f).

On Table 4-33(g), responses to the statement, "People with AIDS can work freely within any environment" show that slightly more respondents who had been affected agreed, while respondents who had not been affected more often disagreed (Chi-Square= 6.53, d.f.= 2,  $p < .05$ ).

Responses to the statements, "The government should be compiling a list on who has the AIDS virus"; "Doctors should demand the names of previous sexual partners of people who have the AIDS virus"; "By using condoms you can lower your risk of contracting the AIDS virus" and "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown" do not show a relationship with the demographic characteristic of personal experience. These data are found on Tables 4-33(h) through (k).

Tables 4-33(g) through (i).--Respondents' opinions by  
personal experience

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**(g) People with AIDS can work freely within any environment.**

Affected	Opinion			total
	Agree	No opinion	Disagree	
yes	20	0	14	34
no	91	21	121	233
	111	21	135	267

Chi-Square= 6.53      d.f.= 2      p<.05

**(h) The government should be compiling a list on who has the AIDS virus.**

Affected	Opinion			total
	Agree	No opinion	Disagree	
yes	14	1	19	34
no	110	22	101	233
	124	23	120	267

Chi-Square= 2.73      d.f.= 2      p>.05

**(i) Doctors should demand the names of previous sexual partners of people who have the AIDS virus.**

Affected	Opinion			total
	Agree	No opinion	Disagree	
yes	25	4	5	34
no	175	25	33	233
	200	29	38	267

Chi-Square= .05      d.f.= 2      p>.05

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Tables 4-33(j) and (k).--Respondents' opinions by personal  
experience

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**(j) By using condoms you can lower your risk of  
contracting the AIDS virus.**

Affected	Opinion			total
	Agree	No opinion	Disagree	
yes	32	0	2	34
no	211	12	10	233
	243	12	12	267

Chi-Square= 1.96      d.f.= 2      p>.05

**(k) You cannot believe what the medical authorities tell  
us about AIDS because a lot is still unknown.**

Affected	Opinion			total
	Agree	No opinion	Disagree	
yes	11	1	22	34
no	82	14	137	233
	93	15	159	267

Chi-Square= .74      d.f.= 2      p>.05

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## Chapter V

### Summary and Discussion

This chapter summarizes the study's purpose, methodology, and results. The major findings of the study are discussed in reference to the five objectives. The chapter also discusses methodological limitations, and considers several recommendations of the study.

#### Summary of Purpose and Methodology

Among the public exists a wide spectrum of differences in philosophical beliefs and opinions about AIDS. For an AIDS education program to be successful it needs to consider and attend to these differences. This study undertook to examine public understanding and opinion in order to assist in establishing a focus for future AIDS education material.

Questions on AIDS pertaining to cause, transmission, antibody testing, resources, and recommended solutions were administered by a telephone survey to examine respondents' understanding and opinions. Respondent demographic information was also collected, including the following characteristics: city, gender, age, marital status, ethnicity, education, work status, occupation, household income, religion, sexual orientation, and personal experience with AIDS. Data were examined in reference to

each of the demographic characteristics in an attempt to determine any relationships with respondents' understanding and opinions about AIDS.

### Methodological Limitations

While Chapter Four presented the data collected, this chapter will attempt to interpret these data in reference to the study's five objectives. However, interpretation of the data must be conditional based upon the study's methodological limitations. The study's methodological limitations are discussed in reference to the sample size, sampling procedures, interviewer effects, instrumentation, and data analysis.

#### Sample size

Interviews were conducted with 268 respondents. The sample size does not permit generalization to the entire population, however it does allow for the observation of specific relationships and trends in the data.

#### Sampling procedures

As discussed in Chapter Three, there was an attempt to interview respondents chosen from a stratified sample of the GVRD. Although the contacted households were selected randomly, the sampling procedure for within households was not random. Instead, a systematic procedure was used for



within household sampling. This method compromised on random selection to increase the opportunity for completing interviews. The consequence was a random selection of contacted households with a sample of convenience for within households. The sampling method did not always require the first person who answered the telephone to be interviewed, but it did select from only the household members who were home at the time. It is unknown the extent to which the method used for sampling within households limits the generalization of the data.

#### Interviewer effects

Minimizing interviewer effects was the purpose of having training material for interviewers. This material (discussed in Chapter Three and found in Appendix A) focused on standardizing interviewers' behaviors in such a way as to minimize interviewer bias. A centralized telephone facility was also used to enable the monitoring of interviewers. However, because this facility was only available for certain times of the day, some interviews were conducted from interviewers' homes. Analysis of the data for interviewer effect was not performed so the extent of such effect is unknown.

### Instrumentation

The questionnaire contains two particular items that were problematic. One of these items asked respondents to say whether they thought AIDS was caused by a virus. Since the correct answer was provided in the statement, the likelihood of guessing the answer accurately would be 50 percent. The percentage of accurate responses to this question may therefore be inflated since respondents were not required to recall the information.

When originally field tested as an open ended question ("What do you think is the cause of AIDS?") respondents provided responses on AIDS transmission, i.e. "It is caused by having sex with someone." Changing the phrasing of the question made it clearer for respondents but did not improve the validity of the measure.

As a means of more accurately determining respondents' understanding of the cause of AIDS, the question format might be changed to include a list of possible choices from which respondents could choose.

The other questionnaire item that proved to be problematic was the last opinion statement which states, "You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown." The content of this question was difficult for some respondents and

required repeating. A less cumbersome phrasing for this statement may be: "You can have confidence in what the medical authorities tell us about AIDS."

### Data analysis

This study's sample size made it necessary to collapse demographic characteristic categories to provide frequency of responses large enough to justify analysis. The categories collapsed were chosen in a nonarbitrary manner. The categories chosen were also decided upon before the data were analyzed, and at no time were categories changed to favor indicated trends in the data. Nevertheless, the findings of this study are dependent partly upon the manner in which the categories were collapsed.

For some demographic characteristic categories the frequency of responses remained less than the optimal size for analysis. Specifically, the number of respondents in the categories for ethnicity, religion, and sexual orientation did not allow for an interpretation of the data with great confidence.

### Discussion of Results

The major findings of the study are discussed in reference to the five objectives.

## Objective One

To examine the level of concern about AIDS among a selected sample of the GVRD population.

The findings of the study on respondent concern show a discrepancy between the degree of concern about AIDS itself, and the level of concern expressed for the possibility of personally contracting the virus. Tables 4-4 and 4-5 show the majority of respondents believe the spread of AIDS is of great concern, while a minority of respondents are either fairly or very worried about contracting the disease.

The absence of personal concern among respondents may result from their perception of what constitutes a high-risk behavior. Although some respondents may accurately understand that they do not engage in high-risk behaviors, this may not be accurate for all 177 respondents who were not at all worried about contracting HIV.

Another possible explanation for the absence of personal concern involves denial. Denial may be due to misinformation or brought about by fear of the disease and its association with death. In the first instance involving misinformation, denial of personal risk may result from the misunderstanding that only certain groups of people, such as bisexual/homosexual males or intravenous drug users, have and will acquire this disease. As discussed in Chapter Two,

the association of AIDS with specific high-risk groups has continued since the initial recognition of the disease.

The data presented in Chapter Four shows evidence of respondents associating AIDS predominantly with homosexuals. By continuing to associate AIDS with homosexuals, non-gay respondents may deny personal risk.

In a similar manner some individuals may deny personal risk because they believe themselves to be invincible, not only from AIDS, but from anything life-threatening. Such unrealistic beliefs are frequently associated with young adults (but not confined to them) and reflect an immaturity that allows a sense of security. The rationale behind this type of denial--the proverbial belief that "It cant' happen to me"--allows people to feel safe while engaging in high-risk behaviors.

The other form of denial that may account for some respondents' absence of personal concern involves their fear of the disease and their fear of dying. As discussed in Chapter Two, Kubler-Ross (1969) has found denial to be an effective coping strategy used by people who are confronted with a life-threatening disease. Since it is uncomfortable for people to imagine themselves sick and possibly dying, they may deny the presence of personal risk. In a similar manner, some respondents in this study may be denying

personal concern about contracting HIV as a means of coping with the uncomfortable feelings associated with AIDS.

Although denial is frequently seen means of coping for a person who has a life-threatening disease, it is not an effective coping strategy for people who want to remain uninfected. In the case of HIV infection and AIDS, denial allows people to feel comfortable with, and engage in, high-risk behaviors.

No attempt was made in this study to examine respondent behaviors. As a result it is not possible to establish whether respondents who express no personal concern also engage in high-risk behaviors.

If respondents are denying personal risk, it is possible that this denial may also have a relationship with the questionnaire items on respondents' understanding and opinions towards AIDS related-issues. That is, if respondents deny personal risk, they may not be motivated to become informed and they may likewise feel distant from any AIDS related-issues. This study did not have a separate measure on respondent denial so further examination of this relationship is not possible.

## Objective Two

To examine what is understood by the selected sample of the GVRD population in the areas of AIDS transmission, testing, cause, and resources.

The major findings on understanding are presented separately for the questions on cause, transmission, antibody testing, and resources.

### Cause

Responses on Table 4-6 show that approximately 74% of respondents stated accurately that AIDS was caused by a virus. For reasons previously discussed in this chapter under methodological limitations, the frequency of correct responses to this question may be inflated because the question format allowed respondents who had a tenuous understanding to accurately guess the answer. Caution is therefore exercised in making the interpretation that within this sample, it is widespread knowledge that a virus is the causative agent in AIDS.

### Transmission

Responses on Tables 4-7, 4-8(a) and (b) show that the sample of respondents were almost evenly divided between those who had correct information only on transmission, and those with some or all incorrect information. There were a wide range of incorrect responses, with a large proportion

associating transmission with homosexual lifestyles and close personal contact. These data suggest that within this sample, people are equally ignorant and equally informed with respect to how AIDS is transmitted.

### Antibody testing

The responses on the HIV antibody test are shown on Tables 4-9, 4-10(a) and (b). The findings indicate that a large number of incorrect responses were expressed, with only a small proportion of respondents expressing specifically what the test determines.

Responses on Table 4-11 show that respondents who understand what the HIV antibody test determines are also more aware of the test's limitations. Likewise, respondents who have incorrect information about what the HIV antibody test determines are also more likely not to be aware of the test's limitations. This finding suggests that respondents who are not aware of the test's limitations may expect the test to be effective under circumstances that are not appropriate. These data reveal that, within this sample, more people are ignorant with respect to what the HIV antibody test determines.

### Resources

Table 4-12 presents the responses on respondents' awareness of AIDS resources.



Since AIDS is a medical condition it is not surprising that the majority of respondents said that they would depend on the medical profession for obtaining more information.

Although the medical profession seems the logical place to go for more information on AIDS, Wass (1987) has found the majority of general practitioners misinformed about AIDS. She attributes their misinformation to a variety of factors, one being the limited amount of time some general practitioners have spent studying AIDS. As a consequence, going to a general practitioner may not be the most informative resource.

In this instance, it appears that the largest percentage of the respondents sampled would choose an inappropriate source of information about AIDS.

The second most common response was to telephone AIDS Vancouver. Since AIDS Vancouver provides support and education programs for the public, it may be one of the most informative resources available in the GVRD. The data show that at least 31% of the respondents sampled show knowledge about potentially informative resources for information.

There were also responses for consulting the media as a resource on AIDS. Although the media regularly report AIDS news stories, the coverage reveals a selectivity of perspective. Besides traditionally sensationalizing AIDS

stories, the media have also been one of the major influences fostering denial (Albert, 1986; Nelkin, 1987). The media, more than anywhere else, distance people with AIDS: the "problem group" is detached from the rest of society. As a consequence, reliance upon the media for information on AIDS would likely be limiting and misleading. The data therefore indicate that how people would go about gathering good information was not encouraging.

### Objective Three

To examine the opinions the GVRD sample have towards AIDS related-issues dealing with transmission, testing, cause, and solutions.

The responses that reflect opinions of the respondent sample are discussed in reference to the interview statements related to cause, transmission, testing, and solutions.

### Cause

Responses to the interview statements related to the cause of AIDS are found on Tables 4-13(a) and (b).

The findings show that most of the respondent sample did not view AIDS as a consequence of God's judgment, but a substantial proportion did express the opinion that it was a consequence of improper behavior (i.e. permissive behavior). The belief that AIDS resulted from improper behavior

encourages blaming for those who have AIDS. An accusation of responsibility, a focusing of blame, is a way to deny personal vulnerability for individuals who do not view their own behavior as improper/permissive.

### Transmission

Responses to the interview statements related to transmission are found on Tables 4-14(a) through (e).

The responses indicate that respondents were almost equally divided over whether all parents should be informed if a child with AIDS is attending their school. It is unknown if the expressed opinions depended upon whether the respondent had school aged children. As discussed in Chapter Two, some parents have reacted very negatively when informed of a child with AIDS attending their school.

Most respondents did not express concern over a teacher with AIDS remaining in the classroom, and they also were in favor of people with AIDS having casual contact with the general public.

Although more respondents thought it all right for people with AIDS to be able to work in any environment, a substantial number of respondents expressed concern over certain occupations. The medical and dental professions, as well as the food industry were occupations that a large

number of respondents thought people with AIDS should not work.

This finding suggests that although respondents thought casual contact was permissible, they were not in favor of close/personal contact, any contact with peoples' blood (either directly or indirectly), and expressed concern over transmission occurring during the preparation and serving of food (i.e. in restaurants). These work environments have not been associated with transmission, and concern over them may reflect respondents' misunderstanding. Once again, the sample reveals opinions that are not in agreement with the best medical knowledge.

The great majority of respondents believed condoms are effective in lowering the risk of transmission. It would seem that on this issue, the sample opinion and medical knowledge are in agreement.

#### Antibody testing

Responses to the interview statements related to antibody testing are found on Tables 4-15(a) through (c).

Although most respondents were not in favor of antibody testing for employment reasons, a substantial number were.

Respondents were also evenly divided over whether the government should be compiling a list on who is antibody

positive, and the great majority were in favor of doctors demanding the names of sexual partners of people who are antibody positive.

Although antibody testing for employment reasons, governments compiling lists, and contact tracing are all not currently recommended by the medical profession, they were recommended by a large proportion of respondents. This suggests that respondents' opinions are not reflective of accepted medical practice with respect to the use of antibody test results as a means for prevention, nor may they be aware of the limitations and negative consequences these measures could create. Since the findings for Objective One revealed that respondents are not concerned about contracting AIDS, it may be questioned whether respondents are likely to associate any of these recommendations with having a personal consequence for themselves.

### Solutions

Responses to the interview statement related to solutions are found on Table 4-16.

The majority of responses were for more education programs and more medical research. There were also a substantial number of responses expressed in favor of discrimination of people with AIDS as well as discrimination

of homosexuals. These discriminatory responses suggest that some respondents view AIDS as something that happens to a problem group of individuals who are irresponsible and detached from mainstream society. Some respondents thought it necessary to control people with AIDS by tattooing or quarantining them, suggesting that they are to blame for the spread of the disease.

In terms of their responses to potential solutions to the problem of AIDS transmission, while the majority suggest more education and medical research, a large number also call for more drastic measures.

#### Objective Four

To examine any relationships between understanding about AIDS and the opinions about AIDS related-issues, as held by the selected sample of the GVRD population.

Responses to the opinion statements are categorized by respondents' correctness of information on Tables 4-18(a) through 4-20(c).

Respondents with correct information on the cause of AIDS were less likely to express the opinion that AIDS arose because of a permissive society, while respondents with incorrect information did express this opinion slightly more often. Although the relationship was not statistically significant, a trend in the responses was observed revealing

that correct information about cause is less likely to be related to simplistic attributions about how the disease is transmitted.

The responses to the other interview statement related to the cause of AIDS did show a statistically significant relationship, with respondents with correct information more often disagreeing with AIDS having come about as a judgment of God. Although statistically significant the relationship of the responses is not strong, with a great proportion of respondents who also had correct information expressing the opinion that AIDS was a judgment of God. The weakness of the relationship for both of these interview statements may be related to the poor format of the question on the cause of AIDS. Nevertheless, the data show an inclination for respondents within the sample to be doubtful about the cause of the disease, with approximately 50% resorting to simplistic and doctrinaire explanations.

The responses to the five interview statements related to HIV transmission do not show a relationship that is statistically significant. The responses do however show some trends which warrant discussion.

Respondents who had correct information on transmission were less likely to believe it necessary for parents to be informed of a student who has AIDS, more comfortable about a

teacher who has AIDS being in the classroom, and also more likely to believe the use of condoms reduce the risk of transmission.

Regardless of the information respondents had on transmission, they were not concerned about casual contact with a person with AIDS, but they did express concern about the occupations held by persons with AIDS. This suggests that regardless of the information respondents had, they were concerned for routes of transmission involving anything more intimate than casual contact.

Responses to all three interview statements related to antibody testing show a relationship, with two of the relationships being statistically significant.

The responses indicate that respondents with correct information on the antibody test were more likely to disagree with antibody testing for employment reasons, disagree with the government compiling a list of antibody positive individuals, and disagree with doctors being involved in any contact tracing. Respondents with incorrect information more often had the opposing beliefs, more often recommending the antibody test, while informed respondents were more aware of the test's limitations and possible harmful consequences. In examining these data, it seemed clear that a relationship does exist between the correctness



of a person's information and the validity of his or her opinions.

#### Objective Five

To examine any relationships in the selected GVRD sample according to demographic characteristics, with respect to what is understood and opinions about AIDS.

The findings related to Objective Five are discussed separately for each demographic characteristic.

#### Understanding

Respondent understanding is categorized by demographic characteristics on Tables 4-21(a) through (l). Three of the twelve demographic characteristics which show a statistically significant relationship with understanding are education, sexual orientation, and personal experience.

Table 4-21(f) presents respondents' understanding by education. The majority of respondents with grade twelve education or less had incorrect information. Respondents with more than grade twelve education expressed more correct information, although none of the education categories show a majority of respondents expressing correct information. Although a higher education seems to have a positive relationship with correctness of respondent understanding, the extent of understanding appears limited. Respondents in the highest education category (university graduates) were

almost equally divided between those with correct and those with incorrect information.

One possible explanation for the relationship shown between education and respondents' understanding may involve the ability to critically evaluate information. A great amount of information is available on AIDS, so much so that instead of educating and informing, it may make it more complex for some people to understand. Respondents with higher education may be more capable of critically evaluating and remembering more of the essential pieces of information, while respondents with lower education may be unable, or have not tried, to evaluate all of the fragmented information. This may be especially true if respondents receive the majority of their information from the media, for the media continuously present bits of information that need evaluation (Albert, 1986; Baker, 1986).

If this interpretation has validity, the responses would also suggest that even though higher educated respondents may be more successful at understanding the information on AIDS, their success is limited, for approximately half presented incorrect information. A substantial proportion of respondents with higher education may also choose not to be informed about AIDS because they do not feel at risk and therefore do not feel the need for acquiring correct information. This would suggest that

higher educated people are also susceptible to denying personal risk.

Table 4-21(k) presents respondents' understanding by sexual orientation. Although the majority of respondents who defined their sexual orientation as heterosexual had incorrect information, the opposite was found for respondents who defined themselves as bisexual or homosexual. Bisexual/homosexual respondents may be more informed as a result of the higher incidence of AIDS historically in the gay community. As well, they may make more concerted efforts to be accurately informed, since the disease has affected so many in that group. Likewise, more heterosexual respondents may be uninformed because they do not perceive AIDS as a heterosexual concern, and therefore do not feel an urgency about acquiring correct information.

A similar relationship is shown on Table 4-21(l) for respondent understanding and personal experience. The majority of respondents who said that they or someone they knew had been affected by AIDS had correct information, while the majority of non-affected respondents had incorrect information. This suggests that respondents who have a closer personal connection to AIDS may try to become more well informed, while non-affected respondents may not feel the need to become informed. Non-affected respondents may

have a false impression that AIDS only affects other people, those who are different from them.

### Opinions

The sample distribution is presented on Tables 4-22(a) through 4-33(k) by the demographic characteristics and the opinion statements on AIDS related-issues. The demographic characteristics which do not show a statistically significant relationship with the opinion statements include: city, found on Tables 4-22(a) through (k); marital status, found on Tables 4-25(a) through (k); and occupation, found on Tables 4-29(a) through (k). The demographic characteristics which show a statistically significant relationship are gender, age, ethnicity, education, work status, household income, religion, sexual orientation, and personal experience with AIDS. These are discussed separately below.

The gender of respondents show a relationship with the opinion statements presented in Tables 4-23(b), (c), and (h). The responses show that the opinions expressed by female respondents were more consistent with the medical profession's recommendations, while the opinions expressed by male respondents were not. The responses reveal that male respondents favored having information available on who has the virus, as well as measures that restrict the freedom of people with AIDS. These opinions suggest that male

respondents desired more control over people with AIDS, possibly reflecting a greater resentment towards those people that they believe are to blame for the spread of the disease. Males may be less caring of people with AIDS, and in favor of measures that they believe may control the spread of the disease, despite any negative consequences for people with AIDS or HIV.

If male respondents are less caring of people with AIDS, it may also be related to homophobia. This study's findings frequently revealed antagonistic feelings toward homosexuals and a belief that AIDS is a gay disease. The male opinions in favor of restrictive and controlling measures may reflect a dislike and fear of homosexuals. Female respondents would be less likely to express the same opinions as males because they would not feel homosexuality is a threat to their sexual orientation.

The age of respondents show a relationship with the opinion statements presented on Tables 4-24(g) and (j). The responses indicate that older respondents are more concerned about transmission occurring in the workplace, and they also show a tendency to distrust the effectiveness of condoms when used for barrier protection. Both of these opinions reflect a more cautious and conservative attitude, suggesting that older respondents are less likely to favor taking risks. Correspondingly, younger respondents may be

less cautious and more tolerant of greater risk. These opposing orientations may be related to the maturity of respondents, with younger respondents denying personal risk and feeling invincible, while older respondents may feel more vulnerable.

The ethnicity of respondents show a relationship with the opinion statement presented on Table 4-26(a). The responses indicate that Chinese respondents were equally divided over the use of antibody testing for employment reasons, while Caucasian respondents more often disagreed with using the test for this purpose. Differences in opinions between Chinese and Caucasian respondents may be related to their sources of information. It was frequently noticed that the Chinese respondents often had difficulty answering the survey questions because English was not their first language. Therefore, these respondents may rely on non-English sources of AIDS information. It is highly probable that the information presented in these non-English sources are different from English sources, and may account for differences in opinion.

The education of respondents show a relationship with the opinion statements on Tables 4-27(b), (f), (h), and (k). The responses to these statements show that respondents with more than grade twelve education more often expressed opinions which were consistent with the medical profession's

recommendations, while the opinions expressed by most respondents with less education were not consistent. It can be speculated that education is a contributing factor to the development of more intelligent opinion, where lack of education results in less informed opinion.

The work status of respondents show a relationship with the opinion statements on Tables 4-28(d) and (j). The responses to these statements show that unemployed respondents more often blamed a permissive society for the AIDS problem, and they also did not have confidence in the use of condoms as a barrier against transmission. The reason for these differences in opinion are mystifying, although one explanation may be that people who are employed formulate their opinions through and are influenced by discussions with co-workers. Although people who are unemployed also have contact with a variety of people, they may not be influenced in a similar way because the extent and kind of contact is different.

The household income of respondents show a relationship with the opinion statements on Tables 4-30(c), (d), (e), (g), and (j). The responses show that the lower the household income of respondents, the more they disagreed with people with AIDS either having casual contact with the general public or working in any environment. More low income respondents also believed a permissive society caused

the AIDS problem. Respondents who refused to give their household income were also not in favor of people with AIDS working in any environment, and they were not in favor of someone with AIDS being a school teacher.

Respondents with household incomes of over \$55,000 also disagreed with people with AIDS working in any environment, but they had more confidence in condoms being used for barrier protection.

Although not always consistent, the responses to these statements indicate that the lower the household income of respondents, the more inconsistent the opinions were with the medical profession's understanding of cause and transmission. It is suggested that household income may be related to work status and education level, with respondents of higher household incomes being employed and often having higher education.

The religion of respondents show a relationship with the opinion statements on Tables 4-31(d), (f), and (j). Respondents with no religious affiliation more often did not believe AIDS was a result of a permissive society nor the judgment of God. Respondents with no religious affiliation also expressed confidence in the use of condoms as a barrier against HIV transmission. Although the majority of Catholic and Protestant respondents did not express opposing opinions



to respondents with no religious affiliation, they did show a slight tendency to respond differently. This finding suggests that the opinions expressed were partially dependent upon the religious orientation of respondents. Religious respondents may be influenced by the doctrine of their church.

The sexual orientation of respondents show a relationship with the opinion statement on Table 4-32(d). The responses show that the great majority of bisexual/homosexual respondents did not believe a permissive society caused AIDS, while heterosexual respondents were more evenly divided. Bisexual/homosexual respondents did not place blame for the AIDS problem, but a significant proportion of heterosexual respondents did. The differences in opinion between heterosexual and bisexual/homosexual respondents may reflect the beliefs people have about people who have AIDS. The media have repeatedly emphasized the association of AIDS with homosexuals and deviant behaviors. As a result heterosexual respondents may stereotype homosexuals as being permissive and therefore to blame for the spread of the disease. This stereotype would not be as common for bisexual/homosexual respondents.

The demographic characteristic of personal experience shows a relationship with the opinion statement on Table 4-33(g). The responses show that more respondents who had

been affected by AIDS believed people with AIDS would not pose a threat in the work environment, while more respondents who had not been affected did express concern. This finding suggests that acquaintance with a person who has AIDS brings about sounder beliefs. People who have not been affected are likely to have stereotypes of people with AIDS as being a threat to others, while those who have been affected are likely not to have such stereotypes. By knowing someone who has AIDS the disease takes on a more personal meaning, as opposed to an abstract problem that one only reads about or hears in the media.

The major findings have been discussed in terms of the five objectives. A number of relationships have been observed, and although the size of the sample does not permit generalization to the wider population, the relationships shown between understanding, opinion, and the demographic characteristics of gender, age, ethnicity, education, work status, household income, religion, sexual orientation, and personal experience with AIDS have provided data that warrant further investigation. It seems clear that these demographic characteristics--all factors that suggest a broader knowledge base about AIDS--are related to more intelligent and informed opinion and understanding. These findings also allow certain recommendations to be made for AIDS education programs.

## Recommendations

The major findings of this study suggest three recommendations for AIDS education programs. These include: demystifying the data; personalizing the instruction; and increasing awareness of personal risk and susceptibility.

### Demystifying the data

Respondents frequently expressed incorrect information about AIDS, as well as inconsistencies between understanding and the opinions held about AIDS related-issues. This finding suggests that a substantial number of respondents have been unable to evaluate and comprehend the information on AIDS. One reason for this misunderstanding may involve how information on AIDS is often presented in a fragmented and incomplete manner (especially in the media). AIDS information may be more effective if presented as a complete program explaining more than just the main routes of transmission. By explaining what are considered the main routes of transmission, why some routes of transmission are more effective than others, and also what research these conclusions are based upon, people may be capable of more comprehensive understanding. To be more effective this information should be personalized and related to individual risk.

### Personalizing the instruction

Education programs need to be able to answer the specific questions/concerns people express. If not, people may continue to have a combination of incorrect and correct information. Analysis of the demographic characteristics examined in this study revealed relationships with opinions held by respondents and their understanding. This finding points to the necessity of education programs being responsive to the varying perspectives people have, so that the content is relevant to levels of understanding. Information programs which do not allow for specific questions to be answered will likely not provide material that is viewed as personally relevant.

### Increasing awareness of personal risk and susceptibility

Respondents frequently indentified AIDS as a disease that only affects other people. It was also shown that respondents who were affected by AIDS were more informed. Increasing peoples' awareness is not achieved by trying to scare them or repeatedly explaining what not to do. Instead, an education program needs to discuss the common fears people have which enable them to deny risk. By examining fears in a non-threatening way, people may feel more safe about expressing concern over their own risk of contracting HIV. The specific fears that may profitably be

addressed include: fear of death and dying; fear of homosexuals (homophobia); and fear of AIDS (AIDS-phobia).

## APPENDIX A

Interviewer Training Material:  
Role of Interviewer, Questions and Responses, and  
Interviewing Guidelines

## ROLE OF INTERVIEWER

## A. Neutral Role of the Interviewer

- 1) Avoid interjecting your own opinions
- 2) Avoid being clever
- 3) Avoid any unnecessary or overly enthusiastic reinforcement such as "All right!"
- 4) Be an "active listener" but only give the minimum of reinforcement such as "OK", "I see", or grunts - "uh huh"
- 5) Never suggest an answer

## B. Balanced Rapport

Remember, the telephone interview is a social interaction situation. You, as interviewer, and the respondent will not only relate to each other according to your respective roles but also as individuals. Therefore, it is necessary to achieve some kind of "balance" or rapport. That is, a relationship must be established that will not stimulate either incomplete responses or biased responses based on "over-rapport" or an overly "mechanical" interviewing style.

Neutral responses are difficult for most of us, since normal phone behaviour is not neutral. When we are on the phone, we usually express our own opinions. Telephone interviewing calls for us to drop this persuasive tactic, except when introducing the interview. It is then and only then that we use our powers of persuasion to get a prospective respondent to agree to an interview.

## C. General Tasks of Interviewer

- 1) Accurately communicate questions
- 2) Maximize the respondents' ability and willingness to answer
- 3) Listen actively to determine what is relevant
- 4) Probe to increase the validity, clarity, and completeness of the response

## D. Specific Tasks

- 1) Be familiar with the questionnaire
- 2) Follow question wording and question order exactly; ask all questions
- 3) Record responses exactly/accurately
- 4) Be casual, conversational, and friendly
- 5) Repeat answers for respondent if there is any doubt
- 6) Doublecheck questionnaire to be sure that all items

have been answered, answers have been recorded correctly, and status information (phone number, location) is complete.

#### E. Final Comment

Most people like to talk about themselves and what they know. Once their initial anxieties are relieved, the respondent will talk because of this fact and the guarantee of a good listener - you. However, beware of being "trapped" into listening to someone's life story!



## Questions and Responses

## 1. Graduate Research in Department of Education at S.F.U.?

This is research done by a student in the Department of Education - working on his Master of Arts program. The student is Rob Henderson and he can be reached at 872-----. The supervisor of the project is Dr. S. Wassermann. The Department Director is Dr. Ron Marx, contact phone number 291-4787. If you have any questions or concerns about the study you may phone Rob Henderson. If you have any complaints about the study you may contact Dr. Marx.

## 2. How did you get my name or number?

We do not have or need your name. Your number was dialed at random (technique: Random Number Table) without using any list such as the telephone directory.

## 3. How do I know this will be confidential?

We do not have your name. We are only interested in the combined responses of all the people who will be called. No individual's responses will be singled out. All of us that are working on this project are required to follow certain policies for the protection of everyone's identity. We do not attach your phone number to your completed survey.

## 4. How will the results be used?

The information generated by this survey will be utilized by a graduate student named Rob Henderson at Simon Fraser University. The results will be reported in his thesis work and made available to the public. If you would like to be contacted in the future to have access to the results you can phone Rob Henderson at 872-----.

## 5. What is the purpose of this survey?

This is a general survey of the public in the lower mainland on the information and feelings they have about AIDS.

## INTERVIEWING GUIDELINES

## A. Introduction

Past research indicates that telephone interviews are seldom terminated once started. However, if a refusal is to occur, it will be between the introductory message and the first question. Therefore, it is crucial that you state who you are, who you represent, and why you are calling. Respondents need to feel that their opinions are important and necessary for the survey to be valid. If they hesitate, even after the introduction, you may have to do some prodding:

"This won't take much time and we really do want your opinion."

"Since your number was drawn, we need to talk to you in order for our survey to be valid, a true representation of the community."

"Let me remind you that your responses will be confidential."

## B. Whom to Interview

- 1) We are seeking the opinion of adult members of households, age 19 and over
- 2) You may talk with either males or females
- 3) Try to interview randomly within the household. First ask for the youngest male (over 18) and if he is not home proceed to ask for the youngest female. If the youngest female is not available then try for the oldest male, and finally, if he is not available try to interview the oldest female.
- 4) If no one over 18 years of age is available, try to establish a time that will be convenient for a call-back (for yourself or someone else)

## C. How Much Information to Give

- 1) Read questions precisely as written
- 2) I repeat, read them precisely as written. It is extremely important that everyone be asked the same way. Even a difference in one word drastically changes the meaning and, thus, the response.
- 3) Information that you can provide to the respondent is listed on an attached sheet. Do not go beyond this information to interpret questions for the respondent. Key phrases you might use to answer questions are:  
"This is all the information available to us."  
"We would like you to answer the question in terms of the way it is stated. Could I read it again for

you?"

"I'm sorry, I don't have that information."

"I will write on the questionnaire the qualifications to your answer you have just mentioned."

- 4) If the respondent still requires more information, you can refer him or her to the researcher -Rob Henderson, at 872-----.

D. Probing

- 1) If a respondent is reluctant to answer a question, you may have to coax him or her to answer with statements like:  
 "Is there anything else you would like to say?"  
 "Are you sure that is all?"
- 2) Be careful about leading the respondent. Probes are to be neutral requests for information.
- 3) If unsure of respondent's final response, repeat what you think it was so that he can confirm or correct it. This can especially be helpful when the respondent lists off a lot of ideas.

E. Whose Opinion to Accept

Everything should be in terms of what the RESPONDENT thinks - not the respondent's kids, friends, boss, bartender, etc.. Therefore, you might need to say:

"I see. Now, is that what you think?"

"It's your opinion that we really want."

ALSO, DON'T GIVE RESPONDENT YOUR OPINION.

If you are asked for your opinion explain that you can't share that information because it might influence how they answer the remaining questions.

F. Record Every Call You Make, even though the number was not working, no answer was received, or the interview was not completed.

- 1) You will be provided with numbers to call on a separate sheet. Do not call any other numbers.
- 2) Please record any pertinent comments on the cover of the questionnaire or in the margins.

G. If By Chance A Person Becomes Incensed, Uses Foul Language, Goes On A Tirade, Etc.

- 1) Be nice! Do not hang up.
- 2) Possible kinds of responses, as situations warrant:  
 "Yes, I see."  
 "Uh huh."  
 "You feel really strongly about this."  
 "We really need your opinion so I was wondering if you could try to answer it."  
 "Let me repeat the question for you."

- 3) Do not, under any condition, argue, insert your own opinion, or worst of all, lose your temper.
- 4) Try not to terminate the interview if a respondent is abusive. Do terminate if subject refuses to respond. If all else fails, wait for the opportunity, and then say something to this effect: "I'm awfully sorry you prefer not to complete the interview, but thank you anyway. Goodbye."

H. Extraneous Comments About the Questions

Insofar as possible, write them down using margins of questionnaire, or the back if necessary.

I. After You Leave

Please avoid revealing your summary of findings. Just because 90 percent of your respondents were ignorant about AIDS doesn't mean 90 percent of everyone else's were too. The problem is that the people you tell will tell others, and they will do the generalizing no matter how good you are at qualifying things.

## APPENDIX B

Survey Instruments:  
Introduction and Questionnaire

## INTRODUCTION

Hello. Is this \_\_\_\_\_ ? (fill in phone number)

If NO: STATE YOU HAVE REACHED A WRONG NUMBER AND TERMINATE THE INTERVIEW. ALSO TERMINATE IF A NON-RESIDENTIAL NUMBER.

If YES: PROCEED

Oh, great! My name is \_\_\_\_\_ and I'm calling on behalf of Graduate Research in the Department of Education at Simon Fraser University. We're conducting a survey of the public's knowledge and feelings about the disease called Acquired Immune Deficiency Syndrome, frequently referred to as AIDS.

Your number was selected at random and in order to do this survey properly I have been instructed to try to interview the

1. youngest male (IF NOT AVAILABLE ASK FOR #2)
2. youngest female (" " " " " #3)
3. oldest male (" " " " " #4)
4. oldest female

in your household who is over 18 years of age. Does that person happen to be home?

IF YES, REREAD FIRST PARAGRAPH TO NEW PERSON AND THEN PROCEED WITH THE FOLLOWING PARAGRAPH.

Your number was selected at random and I was wondering if you could take a few minutes to participate? To help you decide I should tell you that what you say will be kept confidential and of course you can feel free to ask questions at any time, and you may also choose to withhold a response to any item if you wish.

Would you be willing to help us out?

PROCEED TO QUESTIONNAIRE OR TERMINATE THE CALL AFTER THANKING THE PERSON.

## TELEPHONE SURVEY ON AIDS

IDENTIFICATION: \_\_\_\_\_

1. First, I would like to ask how you feel about the spread of AIDS. Would you say the spread of the disease, AIDS, is a matter of:
  1. Great concern
  2. Some concern
  3. Little concern
  4. No concern at all
  5. Don't know
  
2. Next, I would like to know how do you think people get AIDS?
  - 1 Body fluids
  - 2 Sexual intercourse
  - 3 Heterosexual intercourse
  - 4 Homosexual intercourse
  - 5 Receiving blood transfusion
  - 6 Giving blood
  - 7 Organ transplants
  - 8 Infected needles/syringes (I.V. drug use)
  - 9 Mother to child in utero
  - 10 Breast feeding
  - 11 Being promiscuous
  - 12 Saliva from kissing
  - 13 Saliva from spitting or on cutlery etc.
  - 14 Touching infected person
  - 15 Proximity to an infected person (being in same room)
  - 16 Toilet seats
  - 17 Swimming pools
  - 18 Insect bites (eg. mosquitoes)
  - 19 Human bites
  - 20 Other \_\_\_\_\_
  - 21 Refused
  - 22 Don't know/No answer

FOR THE FOLLOWING QUESTION PLEASE SAY WHETHER YOU THINK THE STATEMENT I READ IS EITHER TRUE OR FALSE. IF YOU ARE UNSURE PLEASE SAY SO.

3. AIDS is caused by a virus. 1.True 2.Unsure 3.False

NOW I'M GOING TO READ A FEW MORE STATEMENTS. FOR EACH, PLEASE TELL ME IF YOU AGREE, DISAGREE, OR IF PERHAPS YOU HAVE NO OPINION ON THAT STATEMENT:

4. People should be tested for AIDS for employment reasons  
1.Agree 2.No Opinion 3.Disagree

5. School officials should tell all parents if a child with AIDS is attending their school  
1. Agree 2. No Opinion 3. Disagree
6. People with AIDS should be allowed to mingle freely with the general public  
1. Agree 2. No Opinion 3. Disagree
7. The AIDS problem arose because of a 'permissive' society  
1. Agree 2. No Opinion 3. Disagree
8. Children can be taught by a person with AIDS  
1. Agree 2. No Opinion 3. Disagree
9. The AIDS problem has come about as a judgment of God  
1. Agree 2. No Opinion 3. Disagree
10. People with AIDS can work freely within any environment  
1. Agree 2. No Opinion 3. Disagree
11. The government should be compiling a list on who has the AIDS virus  
1. Agree 2. No Opinion 3. Disagree
12. Doctors should demand the names of previous sexual partners of people who have the AIDS virus  
1. Agree 2. No Opinion 3. Disagree
13. By using condoms you can lower your risk of contracting the AIDS virus  
1. Agree 2. No Opinion 3. Disagree
14. You cannot believe what the medical authorities tell us about AIDS because a lot is still unknown  
1. Agree 2. No Opinion 3. Disagree

THE NEXT FOUR QUESTIONS NO LONGER ASK YOU TO AGREE OR DISAGREE BUT INSTEAD ASK YOU FOR YOUR OWN THOUGHTS.



15. What do you think should be done to solve the AIDS problem?

- 1 Abstinence
- 2 Attitude changes
- 3 Behavior changes
- 4 Education
- 5 Identification of carriers
- 6 Quarantine
- 7 Research
- 8 Spend more money
- 9 Testing
- 10 Vaccine
- 11 Other \_\_\_\_\_
- 12 Refused
- 13 Don't know/no answer

16. If you wanted to find out more information about AIDS, where would you go, or what would you do?

- 1 Phone AIDS Vancouver
- 2 Phone an Information Hot Line
- 3 Go to clergy
- 4 Ask my doctor
- 5 Consult a health agency
- 6 Consult Health Minister
- 7 Go to library
- 8 Consult the media
- 9 Other \_\_\_\_\_
- 10 Refused
- 11 Don't know/No answer

17. WHAT DO YOU THINK THE TEST FOR AIDS TELLS YOU?

- 1 If you have AIDS
- 2 If you have had contact with virus
- 3 If you have antibodies to virus
- 4 If you are (or will be) healthy/sick
- 5 If you will develop AIDS
- 6 If you are immune to AIDS
- 7 If you are a carrier of the virus
- 8 Other \_\_\_\_\_
- 9 Refused
- 10 Don't know/No answer

18. HOW EFFECTIVE DO YOU THINK THE TEST FOR AIDS IS?

- 1 Very effective
- 2 Fairly effective
- 3 Barely effective
- 4 Not effective
- 5 False Positives or False Negatives
- 6 Time lag for antibodies to be produced
- 7 Other \_\_\_\_\_
- 8 Don't know

THAT CONCLUDES OUR QUESTIONS ON AIDS ISSUES. NOW I WOULD LIKE TO ASK YOU A FEW QUESTIONS ABOUT YOURSELF FOR STATISTICAL PURPOSES. REMEMBER, YOUR RESPONSES WILL BE KEPT CONFIDENTIAL.

CITY: 1 2 3 4 5 6 7 8 9 10 11 12 13 14  
SEX: 1. M 2. F

Could you please tell me how old you are?  
AGE: \_\_\_\_\_

And what is your marital status?

1. Single
2. Cohabiting
3. Married
4. Widow(er)
5. Separated or divorced

Can you tell me your ethnic origin?

1. Black
2. Caucasian
3. Chinese
4. East Indian
5. Japanese
6. Korean
7. Native Indian
8. Other \_\_\_\_\_

And what is your

Highest Level of Education: College/University #of yrs \_\_\_\_\_  
Grade level \_\_\_\_\_

Are you employed? 1. Yes 2. No

What type of job do you have? \_\_\_\_\_

Okay, now can you please tell me just approximately what is your Household Income per year:

1. under 10,000
2. 10,000-14,999
3. 15,000-19,999
4. 20,000-24,999
5. 25,000-34,999
6. 35,000-44,999
7. 45,000-54,999
8. 55,000 & over
9. Don't know
10. Refused

And what is your religion?

1. Catholic
2. Hindu
3. Jewish
4. Moslem
5. Protestant
6. Sikh
7. None
8. Other \_\_\_\_\_
9. Refused

Now I just have three questions left.

For the first one, I would like to know if you would mind telling me your sexual orientation?

Please remember that your response will be confidential.

1. Bisexual
2. Heterosexual
3. Homosexual
4. Other \_\_\_\_\_
5. Refused

Have you or someone you know been affected by AIDS?

1. Yes
2. No
3. Other \_\_\_\_\_

For the last question, I would like to know if you are worried that you might contract AIDS?

- 1 Very worried
- 2 Fairly worried
- 3 Only a little worried
- 4 Not at all worried
- 5 Unsure
- 6 Other \_\_\_\_\_

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