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## Fighting AIDS with Holistic Weapons: An Integrated Approach

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## THE CARL AND WINIFRED LEE HONORS COLLEGE

### CERTIFICATE OF ORAL EXAMINATION

Tom Goodwin, having been admitted to the Carl and Winifred Lee Honors College in 1996 successfully presented the Lee Honors College Thesis on April 14, 2000.

The title of the paper is:

"Fighting Aids With Holistic Weapons: An Integrated Approach"

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The current AIDS epidemic has changed the way we view the world as well as our society as a whole. Diseases have ravaged humanity since the dawn of time, so what makes AIDS so much different from every other disease encountered by man? One reason is its transmission method. We know that HIV passes from person to person via blood, semen, and vaginal secretions. Most people that suffer from this disease contract it during sex, during intravenous drug use, or during a blood transfusion. Early accounts of HIV disease occurred in minority groups, namely homosexual men. This may have been a significant factor that delayed most research that could have stopped this virus before it climaxed with the epidemic it is today.

Another reason this disease is different from other devastating epidemics is that HIV is part of a complex class of viruses known as retroviruses. With a little help from the body's immune system, most viruses can eventually be overcome, or at least sustained. Perhaps the most significant reason HIV remains a deadly virus is that it is the first to directly attack and manipulate the body's main line of defense, the immune system.

To date, there have been few documented diseases that attack the immune system the way this virus does. In fact, baffled researchers doubt a true cure within their lifetimes. However, the increasing numbers of alternative therapies sought by AIDS patients give great insight into the power of the human brain as well as the future of medicine. These therapies concern themselves with treating the mind, body, and soul, not just the disease. With the recently discovered scientific basis behind holistic medicine, practitioners and researchers gain many new areas to explore.

AIDS affects far more than the immune system. This disease, like other infectious diseases, affects almost every aspect of the person's physical, emotional, and

psychological health. Much of the current research in the field is concerned with the development of new, more potent drugs to fight off the infection caused by HIV. However, this disease causes a slow infection that gradually, over a period of many years, takes life from the infected individual. For this reason alone, the future of HIV research must not only continue to develop better drugs to fight the disease, it must also consider other aspects of the patient's health. Since nearly all infected individuals will succumb to the effects of HIV, the patient quickly confronts his or her own mortality. This leads to a bleak outlook on the rest of the person's "life". We often ignore the emotional, physical, spiritual, and social aspects of the disease on the person. Instead, they are given a harsh regiment of drug therapies that may seem only to prolong a miserable existence for them. For this reason, future research must branch into new fields devoted to improving the quality of life and total wellness for the unfortunate individual.

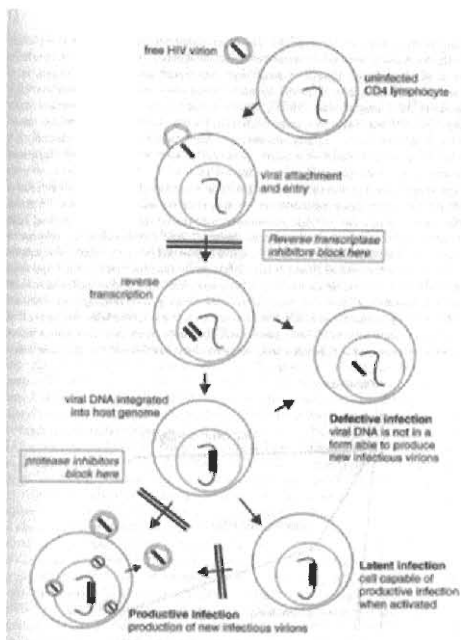
This thesis will be divided into two primary sections. The first will focus on the biological aspects of the disease, while the second will focus on the psychological, sociological, and economical facets of HIV.

### Exploration of DNA, viruses, and the immune system

To understand this new field of scientific research concerning HIV disease, one must first become aware of the mechanisms involved in cell replication, the immune system, and HIV. According to Campbell (1996), for an organism to survive, its cells must properly replicate. Small packets of chromatin that lie in the nucleus of a cell carry a cell's genetic information (DNA). DNA is a double stranded helical molecule that consists of several nucleotides that contain one of four nitrogen bases (adenine (A), thymine (T), guanine (G), and cytosine (C)), a sugar, and a phosphate backbone. The bases bind specifically, A binds to T and G binds to C. The order of the nitrogen bases is extremely important because they contain the specific instructions for the cell. From here the cell has two choices. The first is to make copies of its own DNA, a process known as replication. The other choice is to form single stranded messenger RNA (mRNA) molecules from DNA that instruct the cell to make certain cellular components (translation). The usual pattern in the cell is DNA transcribed to RNA. For example, a series of three nitrogenous bases provide the triplet code necessary for translation into amino acids. The bases on the mRNA are read, like letters in a word, to code for amino acids that will later synthesize proteins essential for cell function (Campbell 1996).

## Viruses and their mechanisms of action

Viruses are organisms that consist of DNA or RNA enclosed in a protein sheath. They lack the biochemical machinery to replicate; therefore viruses are dependent on other cells to carry out this process for them. To date limited drugs exist that can fight most types of viral infections. Antibiotics are useful in bacterial attacks, but are basically useless against viruses. These drugs may treat the symptoms of the infection, but do not attack the virus directly (Sherwood 1997).



**Figure 1: Generalized HIV Reproduction (Dalglish & Weiss 1999)**

Viruses differ significantly from other living organisms. Each virus has a specific cell that it can invade in what can be thought of as a lock-and key model. When the virus locates this cell, it attaches itself to the host cell and injects its genetic material (DNA or RNA) into the cell. The viral DNA then either instructs the cell to replicate viral DNA instead of its normal DNA (replication), or it instructs the cell to make the proteins the virus needs for transportation (transcription and

translation). Eventually the virus releases its numerous copies into the host organism. Each of these copies can initiate the process in another cell. After only a few rounds of replication, millions of copies of the virus exist. HIV (human immunodeficiency virus) belongs to a class of viruses classified as retroviruses. This type of virus is able to “work

backwards” and form DNA from RNA, a much more potent effect. The end result, however, is the same (Campbell 1996).

### The immune system

According to Sherwood (1997), macrophages (phagocytic molecules that surround and catabolize foreign molecules) and white blood cells, specifically B cells and T cells, control most immune system activity. There are three types of T cells. Cytotoxic (CD8) that kill cells invaded by viruses, suppressor T cells that suppress helper T cell activity, and helper T cells (CD4) that enhance the effects of B cells and T cells. We will focus mainly on the last of which, CD4 cells, the cells directly affected by HIV.

Helper T cells are perhaps the most important cells the human body possesses to fight against bacterial or viral infection. These cells are among the most abundant in human blood. Their primary function is to recruit other cells that can contain or kill the invading organism. Without these cells the body’s immune system cannot work effectively. When helper T cells locate an invading organism (virus, bacterium, etc.), several actions may occur. These can activate macrophages that phagocytize the organism, recruit cytotoxic T cells that destroy the infected cell, and stimulate growth and activation of other immune cells.

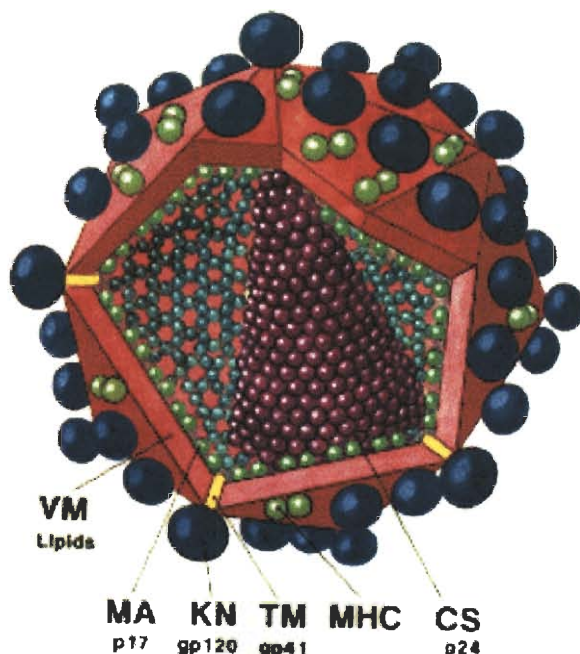
Under normal circumstances, the human body can defend itself well from other organisms with the use of these components of the immune system. However, when there is damage to the body’s first line of defense, the skin, viruses can enter our blood stream easily. Helper T cells impede this entry by recruiting numerous immune cells to the site. CD4 cells generally rush to an open area of skin, and are the primary catalyst for immune

response. Since CD4 cells are in such high concentration around a breakdown in the skin, they are also the most susceptible to viral attack.

### Etiology and immunology of HIV disease

HIV is the first known virus that is able to directly infect CD4 cells. This means that if there is blood-to-blood contact with HIV-positive individual, there is a high chance of HIV infection. Since HIV infects helper T cells, it essentially slowly turns off the body's immune system as it reproduces itself and infects more helper T cells (Sherwood 1997).

Recent advancements in medical research leave many wondering why no cure for HIV exists. The answers for this problem lie in the structure, viral genome, mutation rate and the replication cycle of the virus, as well as the existence of two strains of HIV, HIV-1 and HIV-2 (White & Fenner 1994).



HIV has a unique structure, even for a retrovirus. The virion possesses a dense conical core and contains additional proteins. Seventy-two proteins project from the viral envelope. The major glycoprotein of concern here is gp160, which consists of two linked proteins, gp120 (extracellular, denoted as KN in Figure 2) and

**Figure 2: HIV Structure** (courtesy of Dr. Milan V. Nermut, National Institute for Biological Standards)



gp41 (transmembrane, denoted as TM in Figure 2). The anchor of the protein, gp41 seems responsible for viral transport into CD4 cells. Researchers also believe that HIV's resistance is due to the unique structure of gp120 (the blue balls on the cover art). Many believe that this protein's complexity allows it to neutralize any combating antibodies (White & Fenner 1994, Sell 1996).

The unique genome of HIV also contributes to its complexity. The HIV genome consists of only nine genes, three encoding structural proteins (*gag*, *env*, *pol*) and six encoding regulatory proteins. By simple variations in splicing, greater than 30 distinct RNA species arise. (White & Fenner, 1994). The three main gene regions that lead to the complex code for HIV include the *gag*, *env*, and *pol* gene regions. The *gag* region refers

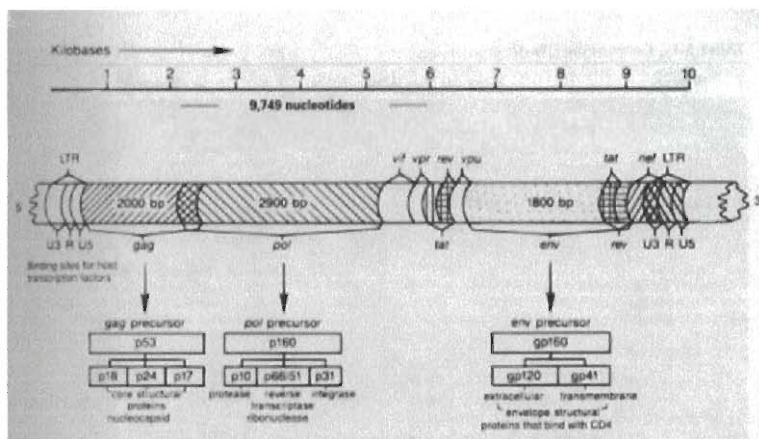


Figure 3: HIV Genome: gag, pol, env regions (Stine 1999)

to “group antigens” that code for the structural proteins of the core while the *env* region refers to genes that code for the viral

envelope. Perhaps the most significant coding region is

the *pol* region. This refers to the molecule responsible for the unique retrovirus polymerization, reverse transcriptase. This enzyme catalyzes the transcription from RNA to DNA, the potent effect of HIV disease (Sell 1996).

The genetic variation of HIV presents another problem for a possible vaccine. The high mutation rate of the reverse transcriptase enzyme represents most of the difficulty.

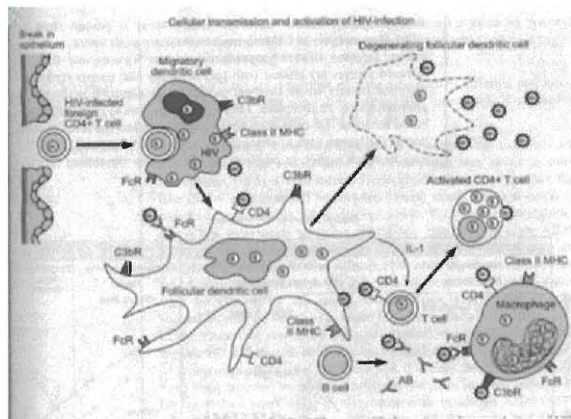
According to Campbell (1996), a mutation is simply a change in the cell's genetic makeup. While several types of mutations exist, the type of concern here refers to point mutations. This usually occurs when one of the nitrogenous bases substitutes for another or from errors derived during translation (Campbell 1996). Both give a slightly different form of the compound, in this case reverse transcriptase. This slight change may seem insignificant; however, changing only one nitrogenous base may lead to factors that enable the enzyme to become resistance to certain drugs or endogenous compounds (Sell 1996). Researchers estimate that in as soon as fourteen days after infection, nearly all HIV virions could become drug resistant (Stine 1999). These mutations usually occur in variable regions of the *env* genes and *pol* genes and can be divided into three subclasses that differ in tropism (involuntary reactions to stimuli), virulence (degree of pathogenicity possessed), or antigenicity (reaction to certain antigens). Comparisons of HIV strains from one individual can differ by as much as 20% in nucleotide sequence (White & Fenner 1994). HIV strains can vary by so much that two separate strains have been identified, HIV-1 and HIV-2 that differ by as much as 60% in nucleotide sequence. HIV-1 is the main etiological agent of AIDS in the western world, while HIV-2, closely related to the Simian Immunodeficiency Virus (SIV, a virus that mainly infects monkeys) has begun to surface in sub-Saharan Africa (Sell 1996).

The next area of HIV complexity is its method of replication. As stated previously, HIV infects CD4 T lymphocytes. However, because a virus cannot replicate its own genome, the cell it infects must be growing (replicating) for any viral replication to occur. The latency of HIV disease results from the fact that most CD4 cells are at rest in the human body. In other words, they are not replicating, so HIV remains in the cell, but

does not infect any further cells. When CD4 cells are activated, after any immune response, they cluster to the infected site, and begin to replicate. If HIV virions are present in the cell, they begin to replicate as well resulting in a cascade of CD4 infection. This is the main cause of HIV latency, which will be discussed later.

### Transmission and onset of HIV disease

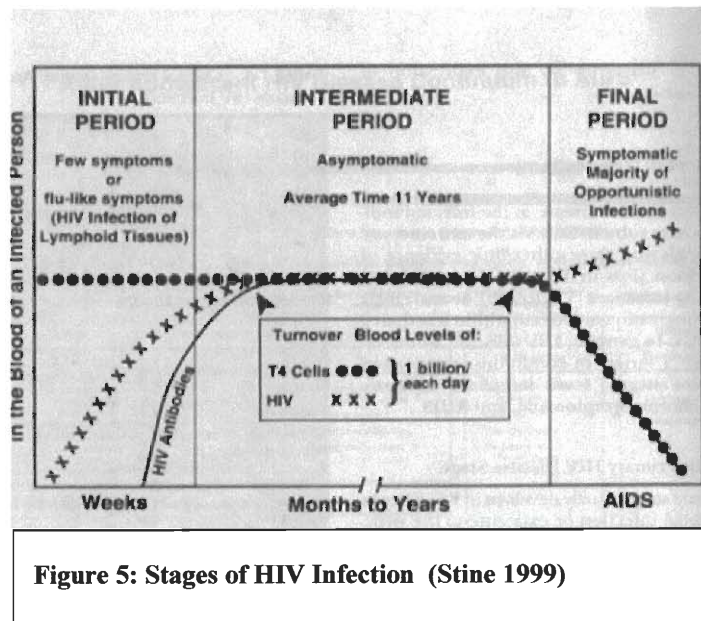
According to Sell (1996), HIV is transmitted by “passage of viable infected blood lymphocytes or macrophages” (p. 868). The most common methods of HIV transmission via this route are infection by a transfusion with infected blood, the sharing of contaminated needles, and the passage of infected semen or vaginal secretions across exposed mucous membranes. Specifically, this may occur if any lesions (breaks in the epithelium) of the infected individual release an infected CD4 cell. When this infected cell contacts the blood of another, uninfected individual, a macrophage from the uninfected individual may phagocytize, or engulf the foreign CD4 cell. Through a series of processes, the macrophage digests the coat of the infected CD4 cell, leaving exposed HIV virions. These are “held” on the outer membrane of the antigen-presenting cell and presented to passing CD4 cells. When these uninfected CD4 cells pickup these antigens, the CD4 cell becomes infected.



**Figure 4: Cellular Transmission and Activation of HIV (Sell 1996)**

The uninfected individual is not HIV-positive (Sell 1996).

The stages of HIV disease follow infection and consist of three periods. In the initial period, few symptoms occur. However, researchers estimate that nearly 40% of infected individuals experience flu-like symptoms accompanied by swollen lymph nodes, as



the virus begins to immediate reproduction in the lymphatic system (Sell 1996, Stine 1999). This initial period generally lasts for a few weeks and is characterized by a steady level of CD4 cells. This occurs because while the presence of HIV

destroys some CD4 cells, rapid replacement occurs. Approximately 6-20 weeks after infection represents the “window period.” During this period, antibodies (endogenous molecules that neutralize foreign antigens) cannot be detected because the body has not yet produced them. This is perhaps the most dangerous period of infection. Researchers estimate that 56%-92% of HIV transmissions occur during this period (Stine 1999).

The next stage is the intermediate period, characterized as asymptomatic. In this period, no symptoms are visible. In this period, the body produces antibodies that can be detected by clinical means. The levels of CD4 cells, HIV molecules, and HIV antibodies remain relatively constant during this period. Again, during this period, the body can match HIV output with CD4 cell production, so no net loss of CD4 cells appears. Individuals in the asymptomatic period seem to be living healthy, unaffected lives. The

length of this period varies greatly between individuals. Present estimates range from as little as six months, to a median of eleven years. Use of triple-drug therapy (discussed later) seems to extend the length of the intermediate period (Stine 1999).

The final period of HIV disease is referred to as end-stage HIV disease or AIDS. In this period, new CD4 cells cannot replace losses. As a result, CD4 cell concentration drops along with HIV antibody production. With nothing to stop the HIV virions from spreading, the body becomes extremely susceptible to opportunistic infections, pathogens normally combated by a healthy immune system.

#### The effects of anti-HIV drugs on the body

According to Kirsten and Whipple, there are three main classes of drugs used to fight HIV infection. The first class is the nucleoside reverse transcriptase inhibitors (NRTIs) that block the enzyme responsible for converting HIV RNA into DNA. The second, protease inhibitors, inhibit another enzyme necessary for HIV replication. Prescriptions in the final class, nonnucleoside reverse transcriptase inhibitors (NNRTIs), occur if a patient is resistant to the initial dose regimen. These drug combinations may cost in excess of \$500 per month. Common side effects of NRTIs include pancreatitis, nausea, diarrhea, low white blood cell count, low platelet count, headache, dizziness, fever, liver damage, and insomnia among several others. Protease inhibitors can cause nausea, kidney stones, diarrhea, and vomiting upon intake. The final class, NNRTIs, usually cause nausea, fever, blistering, and rash (Calabrese, 1998).

Most patients are on triple drug therapy that consists of any combination of the aforementioned three drug classes. Kirsten and Whipple take a case example. A thirty-seven year old man is HIV positive. Emotionally he is unstable when hearing of diagnosis.

Immediately he is subject to tests for blood cell count, electrolytes, kidney function, liver function, viral load, and CD4 count. The man's doctor decides to treat him aggressively with two NRTIs (class with the most significant side effects) and one protease inhibitor. The authors discuss how one should educate the man about his condition as well as his treatment regimen. They also realize the complex emotional issues this patient faces. The main treatment strategy they suggest is to have the patient reduce daily stress and anxiety, learn relaxation techniques, exercise, and eat a balanced diet (Kirsten and Whipple, 1998). These practitioners represent a growing class of health care workers that realize the importance of holistic medicine. In the past, these practitioners may have only treated the virus and given little attention to the patient's emotional needs.

### The holistic health movement

The lack of a cure for HIV has led patients to question traditional treatment. These individuals may turn to the holistic health movement for answers. According to Edlin, Golanty, and Brown (1999), the holistic model of health “encompasses the physiological, mental, emotional, social, spiritual, and environmental aspects of individuals and communities (p. 6). An entire health movement has risen from this model. This type of medicine emphasizes the unity of the mind, body, and spirit through self-healing, health maintenance, as well as illness prevention. Holistic health differs from traditional medical models by using these methods instead of simply treating symptoms of disease (Edlin et al. 1999). Essentially, the patient is the healer while therapies and health care officials are their aids (Mizrahi, Fulder, and Scheinman, 1997). For most, a future of daily agonizing drug treatments, degrading comments, and near certain death awaits. This may leave one’s outlook on the rest of their “life” bleak. This leads many HIV patients to this health movement for help.

Holistic medicine is not without scientific bounds. Recent research into natural healing and other nontraditional methods support the movement. According to Baer et al. (1998) “the holistic health movement is an extremely variegated assortment of alternative medicine systems.” This type of medicine has been present for most of time. Alternative medicine has roots in ancient Chinese philosophies of Zen and acupuncture, among other things. The herbal drug craze, which most likely developed in the 1960s in America, is an example of this movement. Western medicine has avoided such techniques because of lack of scientific evidence to support the often-miraculous outcomes (Baer, 1998). However, pioneering research may scientifically support these ancient methods.

Many interesting parallels exist between the holistic health movement and the incidence of HIV disease. According to Sande and Volberding, frustration with the disease and lack of early therapy lead many to holistic techniques. Most of the initial HIV patients belonged to socially stigmatized (homosexual men and Haitians) groups. In the early 1980s, the initial outbreaks of HIV, holistic health techniques were also stigmatized. Western medicine practitioners rarely implemented these controversial techniques because of the lack of scientific fact to support the results. Sande and Volberding estimate that as many as thirty percent of HIV patients used holistic therapies at this time. With the FDA approval of AZT, they found a slight decrease in the amount of HIV patients seeking holistic therapy. However, the numerous side effects associated with this drug and others like it, coupled with the lack of a cure, led patients to complement their drug therapy with the holistic health movement. They report that currently 40% to 50% of HIV patients use holistic therapies regularly to strengthen the body, improve their quality of life, and delay the progression of end stage HIV disease.

The growth of holistic medicine may be correlated to the incidence of HIV in some cases. The holistic health movement offers researchers a new direction as numerous potentially useful drugs become available to these patients. Through the recent discoveries of the scientific evidence of holistic medicine and the rising respect for alternative practitioners, holistic medicine may be the medicine of the future. Many practitioners believe the keys for prevention of HIV infection and a possible cure for those already infected lie within the realm of holistic medicine (Sande & Volberding 1995).



### A survey of holistic practitioners

A recent survey of 117 health care providers by Calabrese et al. gives some insight into the future of HIV therapy and treatment. These providers consisted of medical doctors, acupuncturists, massage practitioners, naturopathic physicians, counselors, social workers, nutritionists, and chiropractors. All gave an average of 6.5 years of HIV treatment. Over 95% of these practitioners held a professional degree and over half had clinical research experience. The survey found that ninety percent of the practitioners found their therapies were somewhat to very effective on all disease stages. Nearly all providers reported their therapies effective in symptom management, quality of life, maintenance of CD4 count, slowing AIDS progression, and extending life. They also found that each practitioner used an average of twelve different alternative treatments and therapies, each individualized to the patient. Treatments included oral vitamins, dietary therapy, exercise, herbs, acupuncture, massage, meditation, and botanicals along with triple drug therapy. Therapies consisted of spiritual activities, psychotherapy, visualization, yoga, and naturopathic medicine. In the most important aspect of the study, the researchers found that 98% of practitioners surveyed found their therapies effective in improving quality of life (Calabrese et al., 1998).

A similar study by Sande and Volberding (1995) found many patients baffled by the lack of effective therapies under Western medicine. These patients explored the holistic health movement. This study used similar therapies. Exercise, prayer, relaxation, chiropractic help, massage therapy, imagery, and spiritual healing were all reported treatment methods. These recent studies show the overwhelming respect and acceptance for the holistic health movement in the HIV community of practitioners. This also shows

the need for extensive investigation of holistic medicine. If these therapies work for individuals who know they will die, perhaps other devastating diseases, such as cancer, could benefit from their techniques.

#### The role of nutrition in HIV disease

Nutrition is a common therapy in the holistic health movement. According to Watson (1998), prolonged inadequate nutrition may be a precursor for many neurological diseases of the central nervous system. Watson also claims that deficiencies in several types of nutrients and vitamins can lead to a variety of disorders ranging from loss of motor control to complete spinal cord degeneration. The central nervous system damage seen in HIV positive patients shows many of the same symptoms as nutritional deficiencies. The study estimates that 50% of early symptomatic HIV patients and 75% of late symptomatic HIV patients have moderate cognitive impairment. Also, levels of vitamin B<sub>12</sub>, a nutrient thought to influence neurological function, are often low in HIV positive individuals (Watson 1996).

Watson (1995) states that HIV infected patients with low vitamin B<sub>12</sub> levels test significantly lower than expected on memory tests. He also claims that if the levels of B<sub>12</sub> remain constant over time, through diet and supplements, significant improvement on memory tests occurs. If these levels progressively drop however, the speed at which the patient can recall information greatly decreases. This vitamin may be one of several keys to treat neuropsychological disease among HIV positive patients. Treatment with vitamin B<sub>12</sub> has resolved some cases of AIDS dementia complex (ADC) (Watson 1996).

Another important vitamin in HIV psychological therapy is vitamin B<sub>6</sub>, a nutrient necessary for maintenance of nerve cells. Treatment with this vitamin shows drastic

improvement in a patient's mood, this will be discussed later. This vitamin is also important in mental function. Researchers believe that low B<sub>6</sub> levels inhibit the production of serotonin, a neurotransmitter required for proper brain function.

Several other vitamins are important in nutritional HIV therapy. For the AIDS patient especially, researchers highly recommend a diet high in thiamin, niacin, vitamin B<sub>6</sub>, vitamin B<sub>12</sub>, and folate to hold the immune system at its highest levels for the longest time possible. Research in this area is slowly unveiling the mechanisms by which vitamins and nutrients exert their effects on the immune system. Recently this research has continued in patients in every stage of HIV disease (Watson, 1995). With continued exploration of nutrition's effects on the immune system, researchers may find ways to extend a patient's life even further.

#### The brain's effects on HIV

The mind is a major concern when treating HIV disease. These effects can be categorized into two major areas, emotional effects and physiological effects. Stress, anxiety, depression, and a variety of other emotions race through an individual in every stage of the disease, from testing to the eventual onset of end-stage HIV disease. An early study found that over 50% of AIDS patients suffered from a major neurological disorder. Upon further study, researchers found serious central nervous system (brain and spinal cord) suppression (Catalan et al., 1995 & Watson, 1995). This suggests that HIV, and its effects, may hinder a person's cognitive function.

This biggest step in transforming holistic medicine from ancient Chinese magic to modern Western medicine came in the late 1980s. Many have hypothesized the pharmacological methods of action for these alternative remedies but have been unable to

provide the crucial evidence required for acceptance in the scientific community. The recent discovery of neuropeptides and immunopeptides, which play an integral role in the immune system, has catalyzed the holistic health movement (Morgan et al. 1990).

Researchers have recently discovered receptors on immune cells that when activated by these special peptides release certain hormones that possess many immunoregulatory responses. Studies have found that endorphins, hormones released by the brain when one is euphoric, can trigger immune responses. Studies have also found that stress releases other hormones that suppress lymphocyte (B and T cells) activity and lead to immunosuppression (Morgan, 1990). In other words, when one “feels good”, one’s immune system may be working best. This is the primary reason holistic medicine is being used in the fight against AIDS. Stress plays a huge role in immune system suppression (Catalan, Burgess, and Klimes 1995, Mizrahi et al., 1997, Marsh and Kendall, 1996, & Morgan et al. 1990). Imagine the stress an HIV positive diagnosis gives an individual.

Since the brain can regulate immune function, the patient’s ability to fight against disease is limited solely to existing immune cells. The brain can no longer assist the immune system by furnishing immunopeptides and neuropeptides to catalyze the effects of the immune system.

HIV also directly attacks nerve cells (neurons) or diminishes certain proteins and other molecules necessary for proper nerve growth and maintenance (Watson, 1995). One major neurological disease that occurs in AIDS patients is AIDS dementia complex (ADC) (Catalan et al. 1995). The prominence of this disease has prompted the Centers for Disease Control and Prevention (CDC) to add ADC to their criteria for AIDS. In

short, dementia causes cognitive impairment, motor dysfunction, and behavioral changes. In effect, this disease affects nearly every aspect of the individual. Besides simply suppressing the immune system, HIV disease may reduce an individual's cognitive skills, mood, or even motor function. In these cases, either HIV or HIV-related opportunistic infections cause the central nervous system suppression (Catalan et al. 1995).

Early reports estimate that about 5%-8% of the AIDS population was diagnosed with ADC. These may be underestimates, however, because of the current classification of the disease. A recent estimate of ADC incidence is approximately 15% by end stage HIV disease (Catalan et al., 1995). While these numbers are relatively low, neuropsychological decline occurs in many AIDS patients.

A study by Catalan et al. (1995) tested two groups of AIDS patients, one with "early" AIDS and the other with "late" AIDS. The objective was to determine the significance of neurological disorders in the AIDS population. Memory levels and attention levels were not significantly different between the groups. Both groups suffered from impairment of fine motor speed. In further tests, "late" AIDS patients performed significantly worse than "early" AIDS patients, again illustrating HIV's effects on the brain.

#### Therapy of the mind: An integrated approach

Treating the HIV positive person rather than combating the virus seems essential to treatment. The human brain remains the least understood organ in the human body. Many researchers have explained the movement of molecules in the brain, but none has been able to uncover the method responsible for having a thought (Winiarski, 1997). According to Winiarski, the AIDS epidemic has forced practitioners to expand their

expertise and “bend the rules” of traditional health care. Initially, patients struggling to cope with this enormous disease do not consider mental health an important factor in health care. Most see themselves as physically ill, not emotionally sick. In the holistic health movement however, practitioners are forcing their patients to consider the mental side of physical health. This movement allows these patients, as well as their practitioners, to search for answers outside traditional Western medicine.

Frustration with the inevitability of lifelong drug treatments may lead doctors and patients to holistic medicine. The initial meeting with a holistic practitioner generally takes one to three hours. This allows time for necessary doctor-patient interaction (Winiarski, 1997). The complexities and mysteries of this disease allow practitioners to combine their knowledge with others and develop far superior methods to treat HIV positive patients. To date, little research has been directed to the emotional and cognitive impairments of HIV disease. The triple drug therapy prescribed to HIV patients contains drugs used to directly attack different enzymes involved with the reproduction and maintenance of the virus. The discovery that one’s thoughts and emotions play an integral role in the immune system should force practitioners to consider a patient’s mental health upon treatment for HIV disease. Many who contract HIV are of minority groups living in highly populated urban areas. In these areas, as well as many others, the individual may often be rejected by others and forced to deal with the deadly disease without necessary social interaction. The CDC estimates that over 60% of total AIDS cases in the United States are in people of minority races (Stine, 1999). For these people, AIDS is just another difficulty in their struggle for life; for some, the source of their next meal or

preexisting medical conditions are of more concern (Winiarski, 1997). These individuals demonstrate the overwhelming need to address HIV mental health issues.

For this group of patients, expensive drug therapy is difficult to initiate. Most patients simply cannot devote either the time or the money in an effort to extend their lives. However, discussed in a proper social setting, the patient may better understand the disease, its consequences, and its treatment. The patient no longer feels isolated from his or her society; rather the individual may still feel a part of the community, not an outcast.

Several recent studies have researched the effects of emotions on AIDS patients. Every stage of HIV infection, from testing to death, causes immense psychological torment (Catalan et al., 1995). Intense feelings of confusion and regret surge through the person. A person who feels they are at risk for contracting HIV, regardless of actually knowing if they have the disease, expresses the same emotions as an infected individual. The emotions one experiences upon HIV testing are complex. Many factors lead a person to seek treatment, all of which cause some level of stress. A recent study by Ickovics et al. (1995) administered HIV education and testing for several groups of at-risk women. The main concern in the study was psychological reactions in different circumstances concerning HIV infection. The study consisted of five interviews over an eighteen-month period. One group of women was initially tested for HIV infection and the other was not. The researchers found that HIV tested women were much more anxious and depressed while they awaited the results of the test, most likely due to the fact that they may actually possess the disease. However, they found in both groups a steady decline in anxiety and depression as the women learned more about the disease and were able to socialize with others. Researchers reported a general feeling of "happiness" in these women (Ickovics et

al. 1998). The group that did not receive counseling after the test expressed extremely elevated levels of anxiety and stress (Ickovics et al., 1998). This suggests some of the struggle early-diagnosed individuals encounter. In fact, patients diagnosed with HIV disease receive rigorous treatments from the first day of diagnosis.

To introduce mental health issues to a variety of HIV patients, Winiarski (1997) slowly introduced several community-specific techniques at both his inpatient and outpatient clinics. The majority of these patients were low-income minorities with little help in disease treatment. He taught the patients about the disease and updated them often on current HIV research. A team of professionals that consisted of a coordinator, four social workers, a psychiatrist, and a psychologist worked in coordination with doctors, nurses, and other staff to provide medical care to the patient. This team approach crossed many disciplines to care for the individual. The patient still received standard HIV medications, but also received important social interaction. The team members encouraged the patient to discuss his or her concerns and welcomed comments and suggestions on the treatment (Winiarski 1997). The families and friends of the patients also participated in the treatment sessions. They were educated along with the patient to minimize fear and anxiety and to provide a better understanding of the entire situation. The team members also encouraged them to ask questions and comment about therapies and treatment the patient receives. The team used this information to either change certain treatment or to introduce new variables for treatment. Patients reported an overall better feeling towards the disease after only a few days of treatment. They reported that the presence and participation of family and friends greatly assisted their ability to cope with the disease. The family members also reported that as they learned more about the



disease, they felt less apprehensive towards the infected individual. They were once again able to see the patient as the person he or she was before contracting the disease (Winiarski 1997).

Other researchers have studied the effects of stress on HIV positive individuals. More importantly, however, these studies witnessed the effects of bereavement on the individuals. The first study evaluated a group of 166 men and evaluated the levels of stress in their lives caused by HIV. Two-thirds of the individuals were HIV positive. The other individuals had been seriously affected by the disease (loss of friend, etc.). The researchers in this study found that a brief group intervention seemed to reduce stress. The researchers used a psychological index to calculate composite distress totals. They found that after the group bereavement sessions, the indexes dropped significantly (Goodkin et al. 1999).

The lack of “scientific” evidence from these studies fueled the research for the next experiment. Researchers at the University of California at Los Angeles took a similar demographic sample of individuals and conducted bereavement sessions. The subjects underwent cognitive processing and were encouraged to find meaning in their lives. The researchers, however, added one crucial step to the experiment. They measured CD4 counts before, during, and after the sessions, a key step that linked the holistic approaches to science. Two years post-study, CD4 levels were measured. The researchers found that the subjects who expressed that they had “found or discovered meaning” expressed significantly less CD4 level decline and lower rates of AIDS-related mortality. With this study as a foundation, future research may find the endogenous physiological mechanisms responsible for this type of result (Bower et al. 1998).

To address the issue of mental health for other HIV patients, some practitioners regularly prescribe psychological medicines to help the patient struggling with the variety of emotions encountered during HIV disease. These psychological medicines may consist of antidepressants, or other drugs to help to control the person's mood. Just as HIV makes the body sick, HIV makes the mind sick. As discussed earlier, HIV can infect the central nervous system, leading to many serious problems ranging from motor impairment to mood disorders to immune system suppression. This further emphasizes the importance of holistic approaches to HIV disease.

While it may seem that integration of health care in this manner may lead to increased costs of medical care, Winiarski reported this model to have decreased costs for many patients. The team reported lower incidences of minor illnesses, such as chronic headaches, muscle aches, and fatigue that may have increased patient care costs. The study stated that in common treatment situations, these illnesses may lead to several trials of different triple drug combinations or different supplemental medications that may greatly increase the cost of daily medications. With the groundwork in place, perhaps the team approach to health care may also be beneficial in other classes of HIV patients, as well as in the treatment of other diseases (Winiarski 1997).

#### The necessity of integration: St. John's wort vs. protease inhibitors

The scientific foundation for some holistic techniques is emerging. However, many people, physicians and patients, may refuse to warrant the necessity of the integration of Western and holistic medicine. Many practitioners may be unwilling to recognize holistic treatments as beneficial. As a result, their patients may conceal the fact that they participate in holistic treatments or consume herbal remedies. However, since

most herbs are simply a diluted forms of drugs, they may interact with prescription drugs, specifically those involved in triple drug therapy. A recent news release from the National Institute of Health (NIH) found St. John's wort to have significant interaction with the protease inhibitor indinavir. The NIH studied the effects of St. John's wort on blood indinavir levels. For indinavir to have its effects, it must be present in high levels in the blood. The results showed that the serum levels of indinavir dropped from 49-99 percent, a highly significant number. This study shows the importance for integration of holistic and Western medical techniques. Patients must be aware that herbs and other holistic practices may contradict beneficial drug treatment. Patients should be encouraged to discuss all aspects of their treatment with their physicians. Perhaps physicians could suggest an alternative to St. John's wort for patients on indinavir so they can still experience its benefits without its detriments (National 2000).

The AIDS epidemic is worldwide. It has no preference for race, sex, age, or income. Anyone can contract the virus. Research in the field of AIDS has brought forth many answers, but no cure. The rebirth of the holistic health movement allows researchers to explore many new areas. The search for an AIDS cure still continues, but the line between alternative medicine and Western medicine has rapidly blurred.

As researchers open new doors to investigate, we learn much about the ways the disease affects our bodies. Perhaps the biggest discovery was that the human immune system is the best weapon we possess to fight this deadly disease. The detection of proteins and peptides released by the brain in different situations has catalyzed the exploration of the mind. The discovery of receptors for these proteins on existing human

immune cells suggests that there may be other important effects of the brain on the body. Modern treatments for HIV disease incorporates the individuality of the patient as they fight the fatal disease. New treatments focus on the mind and feelings of the patient instead of simply killing off the virus.

The rise of the holistic health movement in certain areas may also be paralleled to the prevalence of HIV disease (Sande and Volberding, 1995). The willingness of these patients to attempt anything to extend their rapidly ending lives has allowed for the evaluation of several potentially useful HIV fighting drugs. The holistic health movement allows Western medicine to collaborate with other schools of medicine to provide increasingly better care. After all, many therapies considered alternative to Western thought are actually staples in other medical circles.

Early HIV research focussed exclusively on defeating the virus (Stine, 1999). Current research explores the effect of HIV on the body in attempt to strengthen the patient's innate ability to cure himself. Researchers slowly redefine the immune system as they explore the effects of HIV on a patient. HIV, although devastating the world, unites the world medically. Western medicine, because it may not possess all the answers, should accept foreign help as the entire world searches for a cure to the devastating virus. The mysteries of the disease essentially require this. For this reason also, many other diseases benefit from the research of HIV.

The AIDS epidemic has baffled a quickly progressing technological society that once believed this disease would never amount to a serious problem. Perhaps the benefit of AIDS is a more open-minded medical community. Research of holistic medicine's effects on the body and immune system is well underway. Without this virus most of these

recent discoveries may have remained hidden from man for decades to come. If one can look past the devastation this disease has caused the world, one may see an overall better medical system as a result. The holistic health movement is still in its infancy. Scientific facts coupled with miraculous results should encourage this movement to progress rapidly. If holding one's spirits high can keep one healthy, truly everyone could benefit from holistic medicine. In the age of technology we must use all tools necessary to aid patients struggling with deadly diseases. As researchers learn to trust their instincts and implement non-Western techniques, science greatly benefits.

The key to defeating this terrible disease is integration of medical treatment with psychological, emotional, social, spiritual, and other aspects of a person's health. Researchers have unraveled several key steps linking holistic approaches and the immune system. We must continue the foundation these pioneers have set for us. Science must study the effects of herbal remedies on drug treatment to inform the public of harmful herb-drug interactions, such as that observed with St. John's wort and indinavir. The powerfully effective anti-viral drugs have prolonged the lives of those infected with HIV. The compassionate methods of holistic health may make those remaining years enjoyable and pleasant to live. With an integrated approach, lives can be extended as we learn more about the human body and immune system. However, these lives will not be miserable and painful lives, rather they may be gratifying and memorable. Perhaps the words of labor leader Mary (Mother) Jones speak best. "Pray for the dead and fight like hell for the living."

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