Chapter - I

Introduction
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INTRODUCTION

Human Immunodeficiency Virus is the retrovirus that causes acquired immune-deficiency syndrome (AIDS) a condition in humans in which immune system is slowly and progressively declined leading to life threatening opportunistic infections.

AIDS was first recognized in the United States in 1981, when the U.S. Centers for Disease Control and Prevention (CDC) reported the unexplained occurrence of Pneumocystis carinii pneumonia in five previously healthy homosexual men in Los Angeles and of Kaposi's sarcoma (KS) in 26 previously healthy homosexual men in New York and Los Angeles. Previously, PCP had been diagnosed only in people who were immunocompromised. Within months, the disease became recognized in male and female injection drug users (IDUs) and soon thereafter in recipients of blood transfusions and in hemophiliacs. In the United States, the disease was first called “gay cancer” and then labeled “gay-related immune deficiency” because homosexual men first exhibited characteristic symptoms. In some areas in Africa, the disease was called “slim” or “slim disease” because of the profound wasting and the association of death with progressive weight loss and diarrhea. As the epidemiologic pattern of the disease unfolded, it became clear that a microbe transmissible by sexual (homosexual and heterosexual) contact and blood or blood products was the most likely etiologic agent of the epidemic.
In 1983, human immunodeficiency virus (HIV) was isolated from a patient with lymphadenopathy, and by 1984 it was demonstrated clearly to be the causative agent of AIDS. At the beginning of 1986, despite over 20,000 reported AIDS cases worldwide, India had no reported cases of HIV or AIDS. There was recognition, though, that this would not be the case for long, and concerns were raised about how India would cope once HIV and AIDS cases started to emerge. The initial cases of HIV/AIDS were reported among commercial sex workers in Mumbai and Chennai and injecting drug users in the north-eastern State of Manipur. The disease spread rapidly in the areas adjoining these epicentres and by 1996, Maharashtra, Tamil Nadu and Manipur together accounted for 77 percent of the total AIDS cases. Tamil Nadu reported almost half the number of cases in the country. However, the overall prevalence in the country is very low, as compared to many other countries in the Asia-Pacific region.

Despite recent improved access to antiretroviral treatment and care in many regions of the world, in 2007 the AIDS pandemic killed an estimated 2.1 million people, including 330,000 children. In 2007, an estimated 33.2 million people lived with the disease worldwide, with an estimated 2.5 million people newly infected in 2007. This has been attributed to lack of access to antiretroviral treatment in huge areas such as the continent of Africa, where (according to French researcher Olivier Schwarz), less than 10 percent of infected are reported to have access to it.
India has the world's fourth largest population suffering from AIDS. However, the estimated number of human immunodeficiency virus (HIV) infections in India has declined drastically in recent years — from 5.5 million in 2005 to below 2.5 million in 2007. These new figures are supported by the World Health Organization and UNAIDS. Back-calculation suggests that HIV prevalence in India may have declined slightly in recent years, though the epidemic is still growing in some regions and population groups.

1.1 Human Immunodeficiency virus:

HIV is a lentivirus, and like all viruses of this type, it attacks the immune system. Lentiviruses are in turn part of a larger group of viruses known as retroviruses. The name 'lentivirus' means 'slow virus' because they take such a long time to produce any adverse effects in the body. Lentiviruses are transmitted as single-stranded, positive-sense, enveloped RNA viruses (Picture-1.1). Upon entry of the target cell, the viral RNA genome is converted to double-stranded DNA by a virally encoded reverse transcriptase that is present in the virus particle. This viral DNA is then integrated into the cellular DNA by a virally encoded integrase, along with host cellular co-factors, so that the genome can be transcribed (Picture-1.2). After the virus has infected the cell, two pathways are possible: either the virus becomes latent and the infected cell continues to function or the virus becomes active and replicates, and a large number of virus particles that can then infect other cells are liberated. They have been found in a number of different animals, including cats, sheep, horses and cattle. It is widely believed
that HIV is the result of an animal-to-human (zoonotic) transfer of a simian
immunodeficiency virus.

**Picture-1.1**: Human Immunodeficiency virus

Electron micrograph of HIV. Figure illustrates a typical virion following budding from the surface of a CD4+ T lymphocyte, together with two additional incomplete virions in the process of budding from the cell membrane. B. Structure of HIV-1, including the gp120 outer membrane, gp41 transmembrane components of the envelope, genomic RNA, enzyme reverse transcriptase, p18(17) inner membrane (matrix), and p24 core protein (capsid) (copyright by George V. Kelvin). (Adapted from RC Gallo: Sci Am 256:46, 1987).
There are two species of HIV known to exist: HIV-1 and HIV-2. HIV-1 is the virus that was initially discovered and termed both LAV and HTLV-III. It is more virulent, more infective, and is the cause of the majority of HIV infections globally. The lower infectivity of HIV-2 compared to HIV-1 implies that fewer of those exposed to HIV-2 will be infected per exposure. Because of its relatively poor capacity for transmission, HIV-2 is largely confined to West Africa. HIV type 2 (HIV-2), which is prevalent in West Africa and has spread to Europe and India, corresponds to SIVsm, a strain of the Simian Immunodeficiency Virus found in the sooty mangabey monkeys (also known as the White-collared monkey).
Comparison of HIV species

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<tr>
<th>Species</th>
<th>Virulence</th>
<th>Infectivity</th>
<th>Prevalence</th>
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<tbody>
<tr>
<td>HIV-1</td>
<td>High</td>
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<td>Common Chimpanzee</td>
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<td>HIV-2</td>
<td>Lower</td>
<td>Low</td>
<td>West Africa</td>
<td>Sooty Mangabey</td>
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OUTES OF TRANSMISSION OF HIV (Picture-1.3):

**Picture-1.3**: Routes of transmission of HIV

Source: www.healthcentral.com
1. **Sexual intercourse**: Whether heterosexual or homosexual, sexual intercourse is the major route of transmission. HIV can be transmitted through any individual act of unprotected sexual intercourse that is any penetrative sexual act in which a condom is not used where one partner is infected with HIV.

2. **Blood-borne infections**: HIV-infected blood, blood products, transplanted organs or tissues and the use of improperly sterilized needles and syringes that have been in contact with infected blood can transmit HIV. Health care workers are often at risk of needle stick injuries.

3. **An HIV-infected woman can transmit HIV to her fetus or infant before, during, or after birth**: A pregnant woman with HIV-Infection has an approximately 30% chance of passing the virus to her or newborn baby. There is evidence that infection can occur as early as the first 12-15 weeks of gestation. 60% of perinatal infections are in utero or during the birth process. It is estimated that 40% of perinatal infections occur through breast-feeding.

**LIFE CYCLE OF HIV**:

HIV begins its life cycle when it binds to a CD4 receptor and one of two co-receptors on the surface of a CD4 T- lymphocyte. The virus then fuses with the host cell. After fusion, the virus releases RNA, its genetic material, into the host cell. An HIV enzyme called reverse transcriptase converts the single-stranded HIV RNA to double-stranded HIV DNA. The newly formed HIV DNA enters the host cell's nucleus, where an HIV enzyme called integrase "hides" the
HIV DNA within the host cell's own DNA. The integrated HIV DNA is called provirus. The provirus may remain inactive for several years, producing few or no new copies of HIV. When the host cell receives a signal to become active, the provirus uses a host enzyme called RNA polymerase to create copies of the HIV genomic material, as well as shorter strands of RNA called messenger RNA (mRNA). The mRNA is used as a blueprint to make long chains of HIV proteins. An HIV enzyme called protease cuts the long chains of HIV proteins into smaller individual proteins. As the smaller HIV proteins come together with copies of HIV's RNA genetic material, a new virus particle is assembled. The newly assembled virus pushes out ("buds") from the host cell. During budding, the new virus steals part of the cell's outer envelope. This envelope, which acts as a covering, is studded with protein/sugar combinations called HIV glycoproteins. These HIV glycoproteins are necessary for the virus to bind CD4 and co-receptors. The new copies of HIV can now move on to infect other cells (Picture-1.4).
Picture-1.4: Replication cycle of HIV
(Adapted from Fauci, 1996).
NATURAL HISTORY OF HIV:

People infected with HIV are both infected and infectious for life; they can transmit the virus to others. HIV infects primarily vital cells in the human immune system such as helper T cells (to be specific, CD4$^+$ T cells), macrophages, and dendritic cells. T-cells are specialized white blood cells that play an important role in the body's immune system. There are two primary types of T-cells. **CD4 Cells** - These cells have molecules called CD4 on its surface. These "helper" cells initiate the body's response to invading micro-organisms such as viruses. **CD8 Cells** - These types of T-cells have a molecule called CD8 on their surface. CD8 cells destroy cells that have been infected with foreign invading micro-organisms. CD8 cells also produce antiviral substances (antibodies) that help fight off the foreign invader. CD4 cells are the host cells that aid HIV in replication. HIV attaches to the CD4 cells, allowing the virus to enter and infect the CD4 cells, damaging them in the process. HIV infection leads to low levels of CD4$^+$ T cells through three main mechanisms: First, direct viral killing of infected cells; second, increased rates of apoptosis in infected cells; and third, killing of infected CD4$^+$ T cells by CD8 cytotoxic lymphocytes that recognize infected cells. When CD4$^+$ T cell numbers decline below a critical level, cell-mediated immunity is lost, and the body becomes progressively becomes more susceptible to opportunistic infections. Most untreated people infected with HIV-1 eventually develop AIDS. These individuals mostly die from opportunistic infections or malignancies associated with the progressive failure of the immune system. HIV progresses to
AIDS at a variable rate affected by viral, host, and environmental factors; most will progress to AIDS within 10 years of HIV infection. Some will have progressed much sooner, and some will take much longer. The signs and symptoms of infection with HIV are varied and complex (Picture-1.5).

**Picture-1.5**: Course of HIV: The typical course of HIV infection without intervention. The events associated with primary HIV infection are likely critical determinants of the subsequent course of HIV disease. Adapted from the following article with permission from the American College of Physicians: Fauci AS, Pantaleo G, Stanley S, Weissman D. Immunopathogenic mechanisms of HIV infection. Ann Intern Med 1996; 124:654–63.
World Health Organization (WHO) has described clinical staging of HIV/AIDS for Adults and Adolescents (2005) as follows: Primary HIV infection: A stage of acute retroviral syndrome. Infection with HIV results in rapid proliferation of the virus in blood and lymph nodes. The infected person may experience a seroconversion illness, usually present with Flu like symptoms which usually resolve within weeks. The CD4 cell count declines rapidly before virus is controlled by the immune system, and there is acute viremia that is very high viral load. Subsequently, the immune system rebounds to generally normal levels and the infected person becomes asymptomatic for periods ranging from many months to many years. Some patient may remain asymptomatic during this stage

Clinical stage 1: Early immune deficiency (CD4 >500 cells/cmm):

During this phase the immune system has controlled the virus, which is largely restricted to lymphoid tissue. In this phase, the damage inflicted by the virus is limited to the regenerative capacity of the immune system and people with HIV are usually asymptomatic and may have persistent generalized lymphadenopathy

Clinical stage 2 (CD4 count <500 to >350 cells/cmm):

Patients may present with following manifestations-

- Moderate and unexplained weight loss (<10% of presumed or measured body weight)
- Recurrent respiratory tract infections (such as sinusitis, bronchitis, otitis media, pharyngitis)
- Herpes zoster
- Recurrent oral ulcerations
- Papular pruritic eruptions
- Angular cheilitis
- Seborrhoeic dermatitis
- Fungal finger nail infections

**Clinical stage 3 (CD4, 350 to >200 cells/cmm)** Conditions where a presumptive diagnosis can be made on the basis of clinical signs or simple investigations

- Unexplained chronic diarrhoea for longer than one month
- Unexplained persistent fever (intermittent or constant for longer than one month)
- Severe weight loss (>10% of presumed or measured body weight)
- Oral candidiasis
- Oral hairy leukoplakia
- Pulmonary tuberculosis (TB) diagnosed in last two years
- Severe presumed bacterial infections (e.g. pneumonia, empyema, meningitis, bacteraemia, pyomyositis, bone or joint infection)
- Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis
Conditions where confirmatory diagnostic testing is necessary

- Unexplained anaemia (< 80 g/l), and or neutropenia (<500/µl) and or thrombocytopenia (<50 000/ µl) for more than one month

**Clinical stage 4 (CD4 < 200cells/cmm)** - Conditions where a presumptive diagnosis can be made on the basis of clinical signs or simple investigations

- HIV wasting syndrome
- Pneumocystis pneumonia
- Recurrent severe or radiological bacterial pneumonia
- Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month’s duration)
- Oesophageal candidiasis
- Extrapulmonary Tuberculosis
- Kaposi’s sarcoma
- Central nervous system toxoplasmosis
- HIV encephalopathy

Conditions where confirmatory diagnostic testing is necessary

- Extra pulmonary cryptococcosis including meningitis
- Disseminated non-tuberculous mycobacteria infection
- Progressive multifocal leukoencephalopathy
• Candida of trachea, bronchi or lungs
• Cryptosporidiosis
• Isosporiasis
• Visceral herpes simplex infection
• Cytomegalovirus (CMV) infection (retinitis or of an organ other than liver, spleen or lymph nodes)
• Any disseminated mycosis (e.g. histoplasmosis, coccidiomycosis, penicilliosis)
• Recurrent non-typhoidal salmonella septicaemia
• Lymphoma (cerebral or B cell non-Hodgkin)
• Invasive cervical carcinoma
• Visceral leishmaniasis

Antiretroviral therapy has dramatically altered the natural history and outcome of HIV infection since 1987 and revolutionized by combination treatment, known as highly active antiretroviral therapy (HAART), in 1996. Treatment with antiretrovirals increases the life expectancy of people infected with HIV. In the three years following the introduction of HAART, mortality, AIDS, AIDS-defining diagnoses, and hospitalizations all decreased 60 to 80 percent. The EuroSIDA study, comparing this early HAART period to pre-HAART and later HAART (1998 to 2002) treatment periods, found a sustained
decrease in mortality and progression to AIDS with ongoing HAART. Despite the absence of a cure, the natural history of the disease has radically changed.

**LABORATORY DIAGNOSIS OF HIV INFECTION**

The only way to diagnose the presence of HIV and get timely treatment is through a simple blood test. HIV counseling and testing services were started in India in the year 1997. There are now more than 4000 Integrated Counseling and Testing Centers (ICTCs), which are mainly located in government hospitals. As of today, only 25–30% of the people who are HIV positive in the country are aware of their HIV status. The challenge before us is to make all HIV-infected people in the country aware of their status so that they adopt healthy lifestyles and prevent the transmission of HIV to others, and access life-saving care and treatment. Thus, counseling and testing services are an important component of prevention and control of HIV/AIDS in the country. An integrated counseling and testing centre is a place where a person is counseled and tested for HIV, on his own free will or as advised by a medical provider.

In the present study all the patients tested positive by the integrated counseling and testing centre under MSACS/NACO were registered under antiretroviral centre. The most common and easiest way to diagnose HIV infection is based on the detection of antibodies to HIV which are generated in the blood of an HIV-infected person.

Rapid tests are widely used methods of diagnosing HIV infection. They are user friendly and can provide quick results to the client. A variety of rapid tests
are available and these employ different principles. NACO recommends the use of rapid HIV test kits in an ICTC, which provide results to the client within 30 minutes of the test. The use of rapid test kits which detect >99.5% of all HIV-infected individuals and give false-positive results in <2% of all those who are tested is recommended for use in an ICTC. Testing will be done free of cost for all clients in all ICTCs in the government health sector and in all 'stand-alone' ICTCs supported by NACO/SACS.

A client who has a negative result in one test is declared to be HIV-negative. A client is declared to be HIV-positive when the same blood sample is tested three times using kits with different antigens/principles and the result of all three tests is positive. For the purpose of diagnosis three rapid HIV test kits based on different antigens/principles are to be used. Blood samples are processed for HIV. The test result may be positive, negative or indeterminate to HIV. If the result is indeterminate testing should be repeated on a second sample taken after 14–28 days. In case the serological results continue to be indeterminate, then the sample is to be subjected to a Western blot/PCR if facilities are available or refer to the National Reference Laboratory for further testing.

**HIV testing and the window period:**

The window period represents the period of time between initial infection with HIV and the time when HIV antibodies can be detected in the blood (6–12 weeks). A blood test performed during the window period may yield a negative test result for HIV antibodies. These cases may require further testing after 12
weeks. P24 antigen/polymerase chain reaction testing/Virus culture or viral load done during this period may yield early diagnosis of HIV infection.

1.2 TREATMENT OF HIV/AIDS: Anti Retroviral Treatment

Currently there is no cure for AIDS. However, there are drugs that can slow down the progress of HIV and thus slow down the damage to your immune system. These drugs are called antiretrovirals (ARV’s). ARV’s slow down the reproduction rate of HIV. The goals for ARV treatment are maximal and durable suppression of viral load, restoration and preservation of immunologic function. Restoration of immune function reduces the risk of opportunistic infections which in turn improves quality of life and reduces HIV-related morbidity and mortality. Antiretroviral drugs are medications prescribed for the treatment of infection by retroviruses. When several such drugs, three or four, are given in combination, the approach is known as Highly Active Antiretroviral Therapy, or HAART.

There are different classes of antiretroviral drugs that act at different stages of the HIV life-cycle.

Classes of drugs

Antiretroviral (ARV) drugs are broadly classified by the phase of the retrovirus life-cycle that the drug inhibits.

- **Nucleoside and nucleotide reverse transcriptase inhibitors (NRTI)** inhibit reverse transcription by being incorporated into the newly synthesized viral DNA and preventing its further elongation.
Non-nucleoside reverse transcriptase inhibitors (NNRTI) inhibit reverse transcriptase directly by binding to the enzyme and interfering with its function.

Protease inhibitors (PIs) target viral assembly by inhibiting the activity of protease, an enzyme used by HIV to cleave nascent proteins for final assembly of new virions.

Integrase inhibitors inhibit the enzyme integrase, which is responsible for integration of viral DNA into the DNA of the infected cell. There are several integrase inhibitors currently under clinical trial, and Raltegravir became the first to receive FDA approval in October 2007.
- **Entry inhibitors (or fusion inhibitors)** interfere with binding, fusion and entry of HIV-1 to the host cell by blocking one of several targets. Maraviroc and enfuvirtide are the two currently available agents in this class.

Antiretroviral therapy may reduce infectiousness, and therefore transmission, by reducing the total amount of the virus in body fluids and genital secretions.

At the beginning of treatment, the combination of drugs that a person is given is called first line therapy. If after a while HIV becomes resistant to this combination, or if side effects are particularly bad, then a change to second line therapy is usually recommended.

Second line therapy will ideally include a minimum of three new drugs, with at least one from a new class, in order to increase the likelihood of treatment success.

In India ART is now available free to all those who need it. Public health facilities are mandated to ensure that ART is provided to people living with HIV/AIDS (PLHA). In order to make treatment more accessible ART centres are located in medical colleges, district hospitals and non-profit charitable institutions providing care, support and treatment services to PLHA. A PLHA network person at each of the ART centre facilitates access to care and treatment services at these centres. ART centres also provide counselling and follow up on treatment adherence and support through community care centres.
ART is initiated depending upon the stage of infection. PLHA with less than 200 CD4 count require treatment irrespective of the clinical stage. For PLHA with 200-350 CD4, ART is offered to symptomatic patients. Among asymptomatic patients with CD4 of more than 350 treatment is deferred. If CD4 is between 200-250, this should be repeated in four weeks and treatment to be considered in asymptomatic patients.

The American National Institutes of Health and other organizations recommend offering antiretroviral treatment to all patients with AIDS. Increased availability of antiretroviral therapy could strengthen prevention by motivating people to come forward for voluntary counseling and testing, resulting in more prevention counseling, less high-risk behavior, and lower transmission. Antiretroviral therapy drug regimen are expected to result in increased life expectancy and in better health during those years, including a return to usual levels of sexual activity. Increased longevity can thus increase the chance that an individual can pass on the infection if they continue high risk sexual behavior—a phenomenon referred to as “disinhibition.” North American and European studies of men who have sex with men indicate an increase in the proportion of people having unprotected sex since antiretroviral therapy became available. So all the patients attending ART centre should be emphasized to avoid high risk behavior.
1.3 ADHERENCE TO ANTIRETROVIRAL THERAPY

Adherence is defined as a patient’s ability to follow a treatment plan, take medications at prescribed times and frequencies, and follow restrictions regarding food and other medications. Both patients and health care providers face significant challenges with respect to adherence to ART. Once initiated, HAART is a life-long treatment that consists of multiple medications to be taken two to three times a day with varying dietary instructions.

Adherence to ART regimen involves taking all pills in the correctly prescribed doses, at the right time, and in the right way (Carter, 2005). It involves the following elements:

1. Taking all the medicines which make up the ART combination in the correct quantities.

2. Taking the pills at the right times. Delay in taking the medication or taking medications at the wrong time can cause a rise in viral load, because of fall in drug levels and this may lead to the development of drug resistance.

3. Ensuring that the medication is taken with or without food, according to the instructions. Some medicines need to be taken with food to ensure that the body absorbs them properly while others need to be taken on an empty stomach, a certain amount of time before or after eating. It can also be important that the patient eats the right kind of food; for example, the amount of fat eaten can make a difference to how well some drugs are absorbed.
4. Checking for interactions with any other medication or drugs. This includes medicines that have been prescribed for the patient, or bought at a pharmacy, or medical store, including complementary or alternative therapies. Some recreational and illegal drugs can have potentially dangerous interactions with ART. The best response to ART is seen when adherence is 100%. Levels of adherence below 95% have been associated with poor suppression of HIV viral load and a lower increase in CD4 count.

5. If a patient is taking once-daily treatment, 95% adherence means missing no more than one dose a month.

6. If a patient is taking treatment twice a day, 95% adherence means missing no more than three doses a month.

7. If a patient is taking treatment three times a day, 95% adherence means missing no more than four doses a month.

**NON ADHERENCE** is missing one dose of a given drug, multiple doses of one or more prescribed medications or whole days of treatment, not observing the intervals between doses, not taking drugs in prescribed doses or not observing the dietary instructions. Consequences of non adherence are incomplete viral suppression, continued destruction of the immune system, disease progression, and emergence of resistant viral strains. The consequences of non-adherence are not only limited to the patient but lead to higher costs to the individual and ARV
program. If a patient with a resistant virus infects another person, the resistant virus is transmitted. This is hence a risk for society.

Numbers of factors are responsible for nonadherence. As observed in different studies following barriers were found to be associated with nonadherence.

**Barriers to Adherence:**

1. Communication difficulties like language, cultural differences, patient attitudes regarding treatment efficacy, lack of comprehension about treatment plan or regimen
2. Literacy levels illiterate patients
3. Inadequate knowledge or awareness about HIV disease
4. Inadequate understanding about effectiveness of medications
5. Lack of social support
6. Discomfort with disclosure of HIV status
7. Difficult life conditions like lack of income, housing and food; lack of support for childcare
8. Alcohol and drug use
9. Depression and other psychiatric problems
10. Negative or judgmental attitude of providers
11. System barriers like no availability of drugs, shortage of staff, health facility closed
**Measurement of adherence**

Measuring adherence is complex and difficult since there is no optimal approach available. The approaches are divided into direct and indirect methods.

The direct approach is to measure the plasma concentrations of the antiretroviral drugs by viral load. Indirect approach methods rely on less objective measures. The indirect methods mainly include-

I. Self-reported adherence.
II. Pill count.
III. Pharmacy refill records.
IV. Medical event monitoring systems (MEMS).
V. Assessment of adherence by doctor or nurse.
VI. Other indirect methods include reviews of patient charts (documented patient report of adherence to provider), missed clinic visits, direct observed therapy (DOT) and therapeutic outcomes (i.e. viral load, CD4 lymphocyte count, stage of disease progression and mortality).

The most widely used approach is, self-reported adherence.

**Self-reported adherence**

By the use of questionnaires, interviews or diaries, the patients report how many doses they have taken or forgotten to take during a specified time interval. Alternatively, they can be asked about different aspects of their adherent behavior.
The advantages of self-report are low cost, low participant burden, ease and speed of administration, and flexibility with regard to mode of administration and timing. The latter offers possibilities to gain specific information regarding timing of doses and adherence to food restrictions.

The disadvantages with the method are that the results are easily affected by recall error (i.e. the patients do not remember how many doses they have taken) and social desirability (i.e. they report the behavior they think is correct according to the social norms or in other words they report the behavior their health-care personnel want to hear). Another problem is the many different questionnaires developed to measure adherence making the study results difficult to compare.

The specificity and sensitivity of self-reported adherence is high. The patients reporting to be non-adherent are usually actually non-adherent (i.e. high specificity) according to pill count. The sensitivity is the probability that patients actually being adherent will be categorized as adherent according to the assessment. According to a recent meta-analysis, the pooled association between self-reported adherence and viral load was statistically significant despite many different self-reporting measurement approaches being used.

HIV/AIDS is now considered as a chronic manageable illness. Adjusting to the illness is a life-long process. After testing seropositive, individuals need to address number of issues. The discovery of infection precipitates many of the emotional dilemmas described for such illnesses. Shock, anger, denial, guilt and
anxiety are some of the emotions observed in these patients. Persons who are young, undereducated, unemployed, make heavy use of avoidance coping, or perceive themselves as having a low level of social support are found vulnerable to suicidal tendencies. The most prevalent other clinical conditions associated with HIV infection from a mental health perspective are anxiety syndromes, mood disorders, psychotic disorders and substance use disorders. Psychiatric disorders may be seen at any stage of HIV infection. Psychiatric illnesses may be secondary to HIV infection itself or opportunistic infections or the psychological impact due to stigma and discrimination associated with HIV infection. Apart from the more obvious impact of HIV on mental health, there are several ways in which HIV infection and psychiatric disorders are linked. (i) HIV infection owing to its malignant course and the associated stigma often results in emotional reactions of a serious nature among those infected. (ii) The HIV has direct effects on the brain that may lead to neurocognitive disturbances, psychosis or behavioral changes. (iii) Opportunistic neurological and systemic infections and their treatment may lead to neuropsychiatric problems. (iv) Few drugs used in HAART are known to be associated with psychiatric side effects like Efavirenz. (v) Persons with severe mental illness are known to be vulnerable to HIV infection and there are special management concerns in this population. (vi) Substance abuse and HIV are linked in direct ways (intravenous drug use: IVDU) and in indirect ways by their influence on sexual behavior. (vii) Treatment adherence and course of illness have been found to be influenced by emotional factors and substance use.
1.4 MENTAL HEALTH AND HIV PATIENT

Mental health problems can strike anybody, but people with HIV are more likely to experience a range of mental health issues. Most common are feelings of acute emotional distress, depression, and anxiety, which can often accompany adverse life-events. HIV also can directly infect the brain, causing impairment to memory and thinking. In addition, some anti-HIV drugs can have mental health side effects.

The diagnosis of having HIV infection can produce strong emotional reactions in the individual. Initial feelings of shock and denial can turn to fear, guilt, anger, sadness, and a sense of hopelessness. Some people even have suicidal thoughts. They might feel helpless and fear illness, disability, and even death. Support from family and friends can be very helpful at these time along with professional help.

Depression is a serious medical condition that can be paralyzing to sufferers. It is twice as common in people with HIV as in the general population. Depression is characterized by the presence of most or all of the following symptoms: low mood, apathy, fatigue, inability to concentrate, loss of pleasure in activities, changes in appetite and weight, trouble sleeping, low self-worth, and, possibly, thoughts of suicide.

Anxiety is a feeling of panic or apprehension, which is often accompanied by the physical symptoms of sweating, shortness of breath, rapid heart beat, agitation, nervousness, headaches, and panic. Anxiety can accompany depression or be seen as a disorder by itself, often caused by circumstances that result in fear,
uncertainty, or insecurity. Anxiety reactions in persons living with HIV often include pervasive worry, fear, and concern about health, somatic issues, death, and the uncertainty of the illness. These reactions frequently lead to difficulties sleeping and concentrating and to increased somatic complaints. Manifestations of anxiety disorders are more prevalent at diagnosis and during new treatment or acute illness.

Substance use is very common among those with HIV infection. Substance use can trigger and often complicate mental health problems. For many, mental health problems predate substance use activity. Substance use can increase levels of distress, interfere with treatment adherence, and lead to impairment in thinking and memory.

![Vicious Cycle of Mental Illness and AIDS](image)

**Figure-1.1** : Relationship between mental illness and HIV/AIDS


Glenn J. Treisman
Depression is one of the most frequent of all medical illnesses, is a crippling illness. It is associated with episodes of long duration, high rates of chronicity, relapse and recurrence, psychosocial and physical impairment, and morbidity and mortality with a 15% risk of death from suicide in patients with more severe forms of depression. It may also affect adherence to antiretroviral medication. Mental disorders are present as a primary or an associated condition in at least 20% of primary care outpatients.

Direct or indirect effects of the HIV virus can affect brain functioning. Some medications used to treat HIV infection also can cause similar complications. In people with HIV infection or AIDS, these complications can have a significant impact on daily functioning and greatly diminish quality of life. Among the most common disorders are HIV-associated minor cognitive motor disorder, HIV-1-associated dementia complex, delirium, and psychosis. Signs of trouble may include forgetfulness, confusion, attention deficits, slurred or changed speech, sudden changes in mood or behavior, difficulty walking, muscle weakness, slowed thinking, and difficulty finding words.

HIV infection and AIDS affect all aspects of a person’s life.

Mental health is a term used to describe either a level of cognitive or emotional well-being or an absence of a mental disorder. From perspectives of the discipline of positive psychology or holism mental health may include an individual's ability to enjoy life and procure a balance between life activities and
efforts to achieve psychological resilience. Mental health is an expression of our emotions and signifies a successful adaptation to a range of demands.

The World Health Organization defines mental health as "a being of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community".

HIV and mental health are deeply correlated. It has been studied that in most cases, poor mental health makes a person more vulnerable to HIV. On the other hand, the disease also has direct effect on the patient's mental health.

The physical/medical impacts of HIV/AIDS in terms of opportunistic infections may not be as debilitating as the psychological impact, this may be due to the fact that the opportunistic infections can be adequately treated while antiretroviral drugs can be taken to reduce viral load. Whereas, psychological impacts are more difficult to handle, these come in forms of societal stigmatization, inadequate social support and lowered self-esteem. This is confirmed by the findings of Perry, Jacobsberg, and Fishman (1990) that the psychological assessment of physically asymptomatic people at risk of AIDS both before and after serological notification had significant decreases in multiple measures of distress after notification among seronegative individuals. Mental health of PLWHA is also affected by the discrimination by health workers against PLWHA, Kayode, Adeyemo, Owoaje, and Omotunde (2000) found that health care workers discriminate against PLWHA during clinical practice and this makes
them to experience severe emotional and social problems. Therefore, HIV and mental health are a two way order, entwined with each other. HIV prevalence in mentally disturbed patients and out patients is 23%, while for the rest of the population; the percentage is just 0.4%. This is because, people with mental illness are more prone to indulge in highly risked behavioral activities than the general population. Tendencies for committing risky behavior that leads to HIV contraction is around 50% in those people who are mentally ill. There many direct impacts of HIV on the patient's mental health.

- Most HIV patients start suffering from excessive depression and anxiety, the moment they discover their HIV positive status. This is because of the psychological pressure associated with HIV like no recovery and inevitable death.

- The social castration, discrimination and stigmatization associated with HIV, fans the fire a step more.

- Other psychological disorders commonly related to HIV are suicidal tendencies, hopelessness, paranoia and more intense substance abuse.

The prevalence of mental illnesses in HIV-infected individuals is substantially higher than in the general population. HIV tends to be concentrated in highly vulnerable, marginalized and stigmatized populations; in particular, sex workers, men who have sex with men, drug users and prisoners have higher levels of mental health disorders than the general population. Increased psychological distress among people with HIV infection is common. Studies in both low- and
high income countries have reported higher rates of depression in HIV-positive people compared with HIV negative control groups. The level of distress often seems to be related to the severity of symptoms of HIV infection. Coping styles and learnt resourcefulness may shape the experience of depressive symptoms and the ability to care for oneself. Family relationships and the support of a partner can also influence mental health consequences. Apart from psychological impact, HIV infection has direct effects on the central nervous system, and causes neuropsychiatric complications including HIV encephalopathy, depression, mania, cognitive disorder, and frank dementia, often in combination. Cognitive impairment in HIV/AIDS has been associated with increased mortality, independent of other factors such as baseline clinical stage, CD4+ cell count, serum haemoglobin concentration, antiretroviral treatment, and social and demographic characteristics. In a study conducted in HIV-positive women in the United States of America, chronic depressive symptoms were associated with increased AIDS-related mortality and rapid disease progression independent of treatment and comorbid substance use.

Mental and substance-use disorders affect help-seeking behavior or uptake of diagnostic and treatment services for HIV/AIDS. Mental illnesses have been associated with lower likelihood of receiving antiretroviral medication.

Mental health disorders such as anxiety and depression, cognitive impairment, and substance abuse are often undetected and under-treated in people living with HIV (PLWH). Mental disorders impair judgment, reduce fear of
consequences, and increase vulnerability to outside influences. As a result, people with untreated mental disorders are at risk for engaging in behaviors that further the spread of AIDS. In 2002 Yuri Amirkhanian et al conducted a study on a cross-section of the HIV positive population in St. Petersburg, Russia. Most respondents were young, with histories of drug use and risky sexual behavior. Despite knowing that they were HIV positive most remained sexually active and approximately half engaged in unprotected sex with HIV negative partners. Majority of those who used drugs still shared needles. More than 33 percent were believed to suffer from clinical depression.

Research suggests that 20 to 50 percent of psychiatric patients participate in high-risk behavior such as intravenous drug use and unprotected sex. They may also be more likely to have sex with multiple partners. A number of studies have explored the relationship between HIV transmission and mental illness and indicate that HIV prevalence is higher for psychiatric patients than the general population. They have also shown that psychiatric patients have a greater risk for HIV infection. Research further suggests that risk increases with disorder severity as shown in a Columbia University study in which patients with more severe psychiatric symptoms were three times more likely to have multiple sexual partners than those with milder symptoms.

Early identification and treatment of mental health and substance abuse problems can significantly improve HIV treatment adherence and clinical outcomes.
1.5 DEATH ANXIETY

In the 1990s, HIV was a significant cause of death during young adulthood. By 2004, however, HIV had fallen to sixth leading cause of death. There was a decline of 80% in deaths among young adults by HIV due to education, prevention, new treatments for patients. HIV is the 8th leading cause of death of 45 – 54 year olds, however, indicating that people are living longer with the illness.

Death anxiety is the fear and apprehension of one’s own death. It is the neurotic fear of loss of the self which in intense state parallels feeling of helplessness and depression. Man’s awareness of one’s own death produces anxiety which can only be dealt with by recognizing one’s own individuality. Death is a biological, personal, socio-cultural and existential phenomenon. The biological death is useful to distinguish between the process of aging and the ending called death. Yet when the actual time comes, and the individual faces death alone, the psychological reactions appear to be remarkably similar. Kubler (1969) had found that in majority of persons, almost regardless of age, the personal reactions to imminent death pass through five phases- Denial, Anger, Bargaining, Depression and acceptance. Dying and death like other major aspects of human life are also very important cultural and social phenomena.

The death can be fully understood only if it is viewed as one of the central meanings of human existence. An idea of the centrality of one’s own death can be gathered if individuals could be made to contemplate seriously the possibility of their own death (McCarthy, 1980). As death is the final stage of human life cycle,
it can be approached naturally by dying individuals and their families. Death and
dying can be seen as part of the life process, or they can be viewed as a dramatic,
painful, tortured experience both for the patients and the families. According to
the concept of terminal drop, death can be preceded from certain dramatic
changes in cognitive function in the period preceding demise. That is, significant
changes both in personal adjustment and performance may serve as indicators of
impending death (Reigal and Reigel, 1972).

Certain attitudes towards death are typical. Even when approaching death
people ask, “Why me?” and wish to find a meaning for their suffering. This
question cannot be answered in generalized terms because the meaning of life and
death vary from one individual to another (Kubler, 1975). The act of dying itself
may involve a certain amount of “anticipatory self grief”, grief over the loss of
one’s own life- that, fears what it may be to lose one’s self. In addition, fear of
dying is often associated with unfounded beliefs that dying itself is quite painful,
that one may be abandoned by everyone when dying, that death involves an
ultimate aloneness. The fear of pain can be relieved by the knowledge of modern
pain relieving processed. It can help to know that tough dying is rarely pleasant; it
is neither as painful nor as unpleasant as it often feared. Fear of dying involves not
only physiological but psychological factors, too. Pain is more easily dealt with
than loneliness. It helps when the patients family visits frequently, communicates
openly, and gives constant assurance that the dying person will not be abandoned.
Death anxiety, also called thanatophobia, is defined as "A morbid or abnormal and persistent fear of death or dying." People afflicted with death anxiety may spend a large amount of time obsessing over death or trying to avoid talking about death. Many people experience fear or stress regarding death at some point in their lives. Death anxiety becomes a problem when it stands in the way of experiencing life. Janet Belsky (1999) defined “death anxiety” as “the thoughts, fears, and emotions about that final event of living that we experience under more normal conditions of life” (Belsky, 1999, p. 368). Belsky posits that as people live their lives, they are continuously suffering varying degrees of anxiety about death.

Death anxiety is an abnormal fear of dying. A person suffering from death anxiety becomes afraid, anxious or unable to function when they think of, talk about, read about, see on television or in any way hear or experience anything associated with dying.

In general, symptoms of death anxiety may include nausea, being unable to catch your breath, shaking, dry mouth, excessive sweating, heart palpitations, trouble thinking clearly, loss of control, feeling detached from reality, anxiety attacks and hyperventilating.

The three classes of death anxiety are:

1. **Predatory death anxiety:** This form is the oldest phylogenetically in that unicellular organisms have receptors that have evolved to react to external dangers and they also possess self-protective, responsive mechanisms designed to
insure survival in the face of chemical and physical forms of attack or danger. In humans, this form of death anxiety is evoked by a variety of danger situations that put the recipient at risk or threatens his or her survival. These traumas may be psychological and/or physical. Predatory death anxieties mobilize an individual’s adaptive resources and lead to fight or flight, active efforts to combat the danger or attempts to escape the threatening situation. These responses also may take mental and/or physical forms, and include both conscious and unconscious processing and modes of adapting.

2. **Predation death anxiety:** This form of death anxiety arises when an individual harms others physically and/or mentally. The arousal of this type of anxiety often involves unconscious rather than conscious realizations and processing. The primary reaction to this type of anxiety is that of conscious and unconscious guilt, which, in turn, motivates a variety of self-punitive decisions and actions by the perpetrator of harm to others whose deeper sources go unappreciated.

3. **Existential death anxiety:** This is the most powerful form of death anxiety and its activation is based in humans on the definitive, conscious awareness and anticipation of the inevitability of personal demise. This expectation and the anxieties it evokes are the result of human language acquisition, which led to a definitive awareness of the distinction between self and others, a full sense of personal identity, and the ability to anticipate the future. Humans defend against this type of death anxiety through denial, which is effected through a wide range
of mental mechanisms and physical actions many of which also go unrecognized. While limited use of denial tends to be adaptive, its use is usually excessive and proves to be costly emotionally.

Age has been found to be a factor in levels of death anxiety in people. Adolescents generally have a sense of immortality, but at the same time experience a degree of vulnerability, although they usually transform high death-related anxiety into risky death-defying activities (Kastenbaum, 2003). Middle-aged parents often carry a moderate level of anxiety for themselves with concern for whether or not their loved ones would be financially and emotionally prepared for their death. Elderly people in general have the least amount of death-related anxiety stemming from feelings of satisfaction and accomplishment through their life or from their willingness to let go of a life that is no longer worth living (Goebel & Boeck, 1987). Erik Erikson (1950) proposed a psychosocial theory that stated that people progressed through a series of crises as they age, and that later in life a stage of “ego integrity” is attained (Erikson, 1950). By this stage, a person would find meaning and acceptance in the lives they have lived. Erikson proposed that people engage in a life review when they attain late adulthood. During their review, if they find meaning or purpose in their life, they have integrity (Hockenbury & Hockenbury, 2007). On the other hand, if during a review a person sees many missed opportunities, they do not attain ego integrity. By this theory, older adults who reach this stage of ego integrity should have lower death anxiety, by that they have lived a meaningful life. Quinn and Reznikoff (1985)
explored the relationship between death anxiety and sense of purposefulness in life and perceptions of time. What they found was those who felt they had a lowered sense of purposefulness to their lives had both a higher risk of death anxiety and sensitivity to the future. As people age, they seemingly have a decrease in awareness of the future and what their contributions to the future might be. This in turn, allows death-related anxiety to lower to healthier levels in older adults (Quinn & Reznikoff, 1985). Using Abraham Maslow’s theory of Self-Actualization, people who fail to self-actualize, or reach their potential as a person would have higher death anxiety than someone who reached the self-actualization stage and has that sense of accomplishment. From younger to older individuals, the level of religiosity a person has can have a profound impact on the level of death anxiety a person experiences throughout their life. Over the years, the teachings of Christianity have highlighted messages of both Damnation and Salvation. Fire and Brimstone sermons were not uncommon, calling for everyone to denounce their sins or else face the rest of eternity in hell. Followers of Christianity undoubtedly gained a measure of unease regarding their own deaths for fear they were not devout enough. Historical studies suggest that benefits stemming from religious practice only occur when the individual has high intrinsic religious motivation, and a genuine religious conviction, rather than just practicing religion alone or going through the motions (Duff & Hong, 1995). The theory attempting to describe how we are able to live with death anxiety is Jeff Greenberg, Sheldon Solomon, and Tom Pyszczynski’s Terror Management Theory (TMT). The core proposition to TMT is that self-esteem and a positive
worldview serve as effective barriers to death-related anxiety (Kastenbaum, 2007). We often call upon our sense of self-worth and belief that the society in which we live is sound and that we live in a friendly universe whenever we find ourselves in danger. Different things can attribute to our sense of self-worth and our thoughts on the resilience of society, in turn shaping how we manage the threat of terror-induced anxiety. With weak consideration of self-worth, a person may very well be plagued by anxiety, however if this person took on a positive view of the world around them and of themselves, they may realize a decrease in death-related feelings of anxiety (Tomer, 2003). Death anxiety does not affect everyone consciously, however all people should be considered to have some concern for self-preservation at their rim of consciousness, causing at minimum low levels of death anxiety (R. E. Opp, PSY 101 lecture, December 01, 2008). For those who do actively experience its’ symptoms are scarcely the same from person to person. Long before reaching old age, each person has a personal history of thinking about death (Hockenbury & Hockenbury, 2007). Death anxiety can affect both the young and the old; though more often than not those who are middle aged to young adults often experience it with greater frequency and/or strength. Women are more apt to express their anxieties while males hold back discussion of their mortality in order to display their expected societal standing of strength. Religiosity can also affect the level of anxiety followers and non-followers experience. Many psychologists and researchers will agree though that if a person can review their own lives and find a sense of accomplishment and
worth, they will undoubtedly experience less anxiety about death than people who are unable to find accomplishment in their lives.

Anxiety and depression are the most frequently identified psychological symptoms reported by persons with HIV (Kalichman & Sikkema, 1994). Empirical evidence has shown that the HIV population as a whole suffers from a high level of subjective distress such as anxiety, fear, depression, hopelessness, suicidal ideation, and guilt (Dilley, Pies, & Helquist, 1989; Kooner et al., 1989, Hintze, Templer, Cappelletty, & Frederick, 1993). Elevated rates of panic, obsessive-compulsive (body-scanning compulsions), and generalized anxiety disorders in the HIV-infected population have been reported (Treisman, Fishman, Lyketsos, 1994). Rumination concerning physical appearance (Miller, 1990), compulsive checking for new signs of disease progression (Maj, 1990; Ostrow, 1990), and excessive vigilance and exaggerated reactions to harmless bodily signs are widely observed (Kessler, 1988). Past research has provided strong evidence for the existence of death anxiety in the HIV population. (Franks, Templer, Cappelletty, & Kauffman, 1990; Hintze et al., 1993; Hayslip, Luhr, & Beyerlein, 1991; Catania, Turner, Choi, & Coates, 1992)

HIV patients who experience an inordinate fear of death may be routinely avoiding fear-evoking cues (images, thoughts, physiological fluctuations, and situations) associated with death. The persistent avoidance of these cues may result in a strong negative valence associated with death, subsequently leading to a failure to integrate corrective, reality based information such as the acceptance
and inevitability of death. Death instead is viewed as a horrific event instead of an eventual outcome. An acceptance of the possible shortening of one's life due to an illness such as AIDS is avoided resulting in ruminative and obsessive ideation. As with other anxiety disorders, HIV infected persons with an inordinate fear of death may perceive an exaggerated probability that discomfort anxiety lasts indefinitely.

1.6 Cognitive Behavioral Interventions

Cognitive behavior therapy (CBT) is a process of teaching, coaching and reinforcing positive behaviors. CBT helps people to identify cognitive patterns or thoughts and emotions that are linked with behaviors. Cognitive-behavioral therapy is a combination of cognitive and behavior therapies that are directive, time-limited, structured, and place great emphasis on homework exercises. While cognitive therapy emphasizes the role of cognitive processes in the origin and maintenance of psychological disorders, behavior therapy focuses on principles of learning theory and the role of reduced reinforcement in the creation and maintenance of these disorders. In cognitive therapy, individuals learn to identify and monitor distorted, negative thinking, to become aware of the relationship between such thoughts and negative assumptions about oneself and of the association between thoughts and feelings. Individuals also learn to apply techniques to challenge these thoughts. In behavior therapy, individuals are taught to track the frequency of targeted behaviors and to understand the relationship between these behaviors and their antecedents and consequences. Furthermore,
individuals learn techniques to increase or decrease particular events, and are taught skills such as problem solving, relaxation, and assertiveness. Both cognitive therapy and behavior therapy assume that psychological problems can be alleviated by teaching individuals new skills to identify negative thoughts, form adaptive thoughts, and alter maladaptive behavior patterns.

It is a psychotherapeutic approach, a talking therapy, that aims to solve problems concerning dysfunctional emotions, behaviors and cognitions through a goal-oriented, systematic procedure.

Cognitive therapy (CT) is a type of psychotherapy developed by American psychiatrist Aaron T. Beck. CT is one of the therapeutic approaches within the larger group of cognitive behavioral therapies (CBT) and was first expounded by Beck in the 1960s. Cognitive therapy seeks to help the patient overcome difficulties by identifying and changing dysfunctional thinking, behavior, and emotional responses. This involves helping patients develop skills for modifying beliefs, identifying distorted thinking, relating to others in different ways, and changing behaviors. Treatment is based on collaboration between patient and therapist and on testing beliefs. Therapy may consist of testing the assumptions which one makes and identifying how certain of one's usually-unquestioned thoughts are distorted, unrealistic and unhelpful. Once those thoughts have been challenged, one's feelings about the subject matter of those thoughts are more easily subject to change. Beck initially focused on depression and developed a list of "errors" in thinking that he proposed could maintain depression, including
arbitrary inference, selective abstraction, over-generalization, and magnification of negatives and minimization of positives.

The main components to cognitive therapy are education, identification of negative automatic thoughts and challenging dysfunctional schemata. In education, the individual may have little information about anxiety, or may have mistaken information such as a belief that a panic attack is the same as a heart attack. A key step in cognitive therapy is helping the individual to identify the negative automatic thoughts that are intimately connected with feelings of depression and anxiety. These may be identified in the clinical sessions themselves, for example, by asking the individual to role-play a difficult encounter, or they can be identified in homework by asking the individual to keep a diary of such thoughts in the situations in which they arise. Once identified, the individual is then encouraged to test their validity, to question them, and to check for the evidence for and against.

Cognitive-behavioral therapists practice both cognitive and behavioral therapy. Multi-model therapy is an example of the use of cognitive and behavioral techniques along with techniques from the other models. Behavioral therapy is concerned with unwanted, overt behavior rather than hypothetical underlying causes. Techniques used are derived from classical and instrumental conditioning. Cognitive therapies are for internal anxieties. The therapy is concrete and of a directive orientation, but there is no emphasis on conditioning. It tries to change the way the patient thinks about his/her situation. Other types
include various attempts to advance the patients social education, using techniques such as graded task assignments, modeling and role-playing. However, phobias and obsessive-compulsive disorders are dominated by the behavioral approach and anxiety by the cognitive approach.

Cognitive behavior therapy is an action oriented form of psychosocial therapy that assumes that maladaptive or faulty thinking patterns cause maladaptive behavior and "negative" emotions. Maladaptive behavior is behavior that is counter-productive or interferes with everyday living. The treatment focuses on changing the individual’s thoughts (cognitive patterns) in order to change their behavior and emotional state.

Theoretically, cognitive therapy can be employed in any situation in which there is a pattern of unwanted behavior accompanied by distress and impairment. It is a recommended treatment for a number of mental disorders, social phobia, obsessive compulsive disorder (OCD), eating disorder, substance abuse, anxiety or panic, agoraphobia, post traumatic stress disorder (PTSD) and attention deficit hyperactivity disorder (ADHD).

The ‘cognitive’ psychotherapies can be said to have begun with Alfred Adler, one of Freud’s inner circle. Adler disagreed with Freud’s idea that the cause of human emotionality was ‘unconscious conflicts’, arguing that thinking was a more significant factor. Cognitive Behavior Therapy has its modern origins in the mid 1950’s with the work of Albert Ellis, a clinical psychologist. Ellis originally trained in psychoanalysis, but became disillusioned with the slow
progress of his clients. He observed that they tended to get better when they changed their ways of thinking about themselves, their problems, and the world. Ellis reasoned that therapy would progress faster if the focus was directly on the client’s beliefs, and developed a method now known as Rational Emotive Behavior Therapy (REBT). Ellis’ method and a few others, for example Glasser’s ‘Reality Therapy’ and Berne’s ‘Transactional Analysis’, were initially categorized under the heading of ‘Cognitive Psychotherapies’. The second major cognitive psychotherapy was developed in the 1960’s by psychiatrist Aaron Beck; who, like Ellis, was previously a psychoanalyst. Beck called his approach Cognitive Therapy (CT). Since the pioneering work of Ellis and Beck, a number of other cognitive approaches have developed, many as offshoots of REBT or CT. The term ‘Cognitive Behavior Therapy’ came into usage around the early 1990’s, initially used by behaviorists to describe behavior therapy. In more recent years, ‘CBT’ has evolved into a generic term to include the whole range of cognitively-oriented psychotherapies. REBT and CT have been joined by such developments as Rational Behavior Therapy (Maxie Maultsby), Multimodal Therapy (Arnold Lazarus), Dialectical Behavior Therapy (Marsha Linehan), Schema Therapy (Jeffrey Young) and expanded by the work of such theorists as Ray DiGiuseppe, Michael Mahoney, Donald Meichenbaum, Paul Salkovskis and many others.

All of these approaches are characterized by their view that cognition is a key determining factor in how human beings feel and behave, and that modifying
cognition through the use of cognitive and behavioral techniques can lead to productive change in dysfunctional emotions and behaviors.

The National Institute of Clinical Excellence (NICE) guidelines for depression—have recommended CBT as the treatment of choice for management of mild to-moderate depression and in combination with antidepressants for severe, treatment resistant or recurrent depression. It is also recommended in the NICE guidelines for anxiety—as the treatment of choice for generalized anxiety and panic disorder, because of its long-term effectiveness.

In the present study adherence counseling, cognitive restructuring, structural relapse prevention, breathing exercises, structured problem solving were selected as cognitive behavioral interventions on the HIV infected population.

The process of CBT therapy mainly involves following steps- (a) Building a relationship with the client. This can be achieved using the core conditions of empathy, warmth and respect. A client is demonstrated that change is possible and that CBT is able to assist them to achieve this goal. Then assess the problem, person, and situation. Assessment varies from person to person, start with the client’s view of what is wrong for them. Determine the presence of any related clinical disorders. Obtain a personal and social history. Assess the severity of the problem. Note any relevant personality factors. Check for any secondary disturbance: Discuss how the client feels about having this problem. Check for any non-psychological causative factors: physical conditions; medications; substance abuse; lifestyle/ environmental factors. (b) Prepare the client for
therapy. Clarify treatment goals. Assess the client’s motivation to change. Introduce the basics of CBT, including the bio-psychosocial model of causation. Discuss approaches to be used and implications of treatment. Develop a contract. (e) Implement the treatment program; most of the sessions will occur in the implementation phase, using activities like- Analyzing specific episodes where the target problems occur, ascertaining the beliefs involved, changing them, and developing relevant homework (known as ‘thought recording’ or ‘rational analysis’). Developing behavioral assignments to reduce fears or modify ways of behaving. Supplementary strategies & techniques as appropriate, e.g. relaxation training, interpersonal skills training, etc. (d) Evaluate progress; Toward the end of the intervention it is important to check whether improvements are due to significant changes in the client’s thinking, or simply to a fortuitous improvement in their external circumstances. (e) Prepare the client for termination; It is usually very important to prepare the client to cope with setbacks. Many people, after a period of wellness, think they are ‘cured’ for life. Then, when they slip back and discover their old problems are still present to some degree, they tend to despair and are tempted to give up self-help work altogether. Warn that relapse is likely for many mental health problems and ensure the client knows what to do when their symptoms return. Discuss their views on asking for help if needed in the future. Deal with any irrational beliefs about coming back, like: ‘I should be cured for ever’, or: ‘The therapist would think I was a failure if I came back for more help’.
The principles of CBT

The basic aim of CBT is to leave clients at the completion of therapy with freedom to choose their emotions, behaviors and lifestyle (within physical, social and economic restraints); and with a method of self observation and personal change that will help them maintain their gains. Not all unpleasant emotions are seen as dysfunctional nor are all pleasant emotions functional. CBT aims not at ‘positive thinking’; but rather at realistic thoughts, emotions and behaviors that are in proportion to the events and circumstances an individual experiences. Developing emotional control does not mean that people are encouraged to become limited in what they feel – quite the opposite. Learning to use cognitive-behavioral strategies helps oneself become open to a wider range of emotions and experiences that in the past they may have been blocked from experiencing. There is no ‘one way’ to practice CBT. It is ‘selectively eclectic’. Though it has techniques of its own, it also borrows from other approaches and allows practitioners to use their imagination. There are some basic assumptions and principles, but otherwise it can be varied to suit one’s own style and client group. CBT is educative and collaborative. Clients learn the therapy and how to use it on themselves (rather than have it ‘done to them’). The therapist provides the training – the client carries it out. There are no hidden agendas – all procedures are clearly explained to the client. Therapist and client together design homework assignments. The relationship between therapist and client is seen as important, the therapist showing empathy, unconditional acceptance, and encouragement toward the client. In CBT, the relationship exists to facilitate therapeutic work –
rather than being the therapy itself. Consequently, the therapist is careful to avoid activities that create dependency or strengthen any ‘needs’ for approval. CBT is brief and time-limited. It commonly involves five to thirty sessions over one to eighteen months. The pace of therapy is brisk. A minimum of time is spent on acquiring background and historical information: it is task oriented and focuses on problem-solving in the present. CBT tends to be anti-moralistic and scientific. Behavior is viewed as functional or dysfunctional, rather than as good or evil. CBT is based on research and the principles of logic and empiricism, and encourages scientific rather than ‘magical’ ways of thinking. Finally, the emphasis is on profound and lasting change in the underlying belief system of the client, rather than simply eliminating the presenting symptoms. The client is left with self-help techniques that enable coping in the long-term future. Probably the most important CBT strategy is homework. This includes reading, self-help exercises such as thought recording, and experiential activities. Therapy sessions can be seen as ‘training sessions’, between which the client tries out and uses what they have learned. At the end of this article there is an example of a homework format which clients can use to analyze specific episodes where they feel or behave in the ways they are trying to change. The duration of cognitive-behavioral therapy varies, although it is typically thought of as one of the briefer psychotherapeutic treatments. Especially in research settings, duration of CBT is usually short, between 10 and 20 sessions. In routine clinical practice, duration varies depending on patient co morbidity, defined treatment goals, and the specific conditions of the health care system.
Figure-1.2 : Basic Cognitive Behavior Model


Figure-1.3 : Cognitive behavior therapy model

Source: http://counselingresource.com by Dr Greg Mulhauser
Behavior therapy, the earliest of the cognitive and behavioral psychotherapies, is based on the clinical application of extensively researched theories of behavior, such as learning theory (in which the role of classical and operant conditioning are seen as primary). Early behavioral approaches did not directly investigate the role of cognition and cognitive processes in the development or maintenance of emotional disorders. Cognitive therapy is based on the clinical application of the more recent, but now also extensive research into the prominent role of cognitions in the development of emotional disorders. The term ‘Cognitive-Behavioral Therapy’ (CBT) is variously used to refer to behavior therapy, cognitive therapy, and to therapy based on the pragmatic combination of principles of behavioral and cognitive theories.

The Evidence Base for CBT:

Treatment interventions are predicated on a robust evidence base derived from studies utilizing randomized controlled and single-case methodologies that have demonstrated the efficacy and effectiveness of cognitive and behavioral psychotherapies in the treatment of common mental health problems, including the anxiety disorders, generalised anxiety, panic, phobias, obsessive-compulsive disorder, posttraumatic stress disorder, bulimia and depression as identified by a host of recent reviews by NICE, SIGN and other review bodies. CBT models have also been developed for use in an increasing range of mental health and health difficulties including severe and enduring mental health problems, such as psychosis, schizophrenia, bi-polar disorder, anger control, pain, adjustment to
physical health problems, insomnia and organic syndromes, such as early stage dementia. There is an extensive research base around behavioral approaches in working with children and people with learning disabilities, severe and enduring mental health problems and “challenging behavior” generally. More recently CT and CBT have become the treatments of choice for adolescent depression, and for use with children and in intellectual disability (learning disability). Research into the contribution of psychological factors to physical health problems (such as low back pain, chronic fatigue, recovery from surgery etc) is growing and has led to the development of CB approaches in these areas.

**COMPUTER-ASSISTED CBT**

One of the newest and most interesting methods of conducting CBT is through computer-assisted psychotherapy. Multimedia software has been shown to be effective in the treatment of depression, and innovative multimedia programs using virtual reality have been developed for exposure therapy for anxiety disorders. In one study, a computer-assisted therapy software program was shown to be superior to standard CBT in helping patients acquire knowledge about CBT and in reducing maladaptive cognitions. Computer programs are typically combined with the human elements of therapy in an integrated treatment package. Computer-assisted CBT can be used to decrease the amount of clinician time required for effective therapy, provide stimulating psychoeducational experiences, and offer engaging alternatives to standard treatment.
Several important features of CBT make it particularly promising psychotherapeutic approach as CBT is a short-term, comparatively brief approach well suited to the resource capabilities of most clinical programs. CBT has been extensively evaluated in rigorous clinical trials and has solid empirical support as treatment for cocaine abuse. In particular, evidence points to the durability of CBT’s effects as well as its effectiveness. CBT is structured, goal-oriented, and focused on the immediate problems faced by cocaine abusers entering treatment who are struggling to control their cocaine use. CBT is a flexible, individualized approach that can be adapted to a wide range of patients as well as a variety of settings (inpatient, outpatient) and formats (group, individual). CBT is compatible with a range of other treatments the patient may receive, such as pharmacotherapy. CBT’s broad approach encompasses several important common tasks of successful substance abuse treatment.

1.7 Cognitive restructuring:

A cognitive-behavioral therapy technique used to identify and correct negative thinking patterns. The technique involves altering negative automatic thoughts that occur in anxiety-provoking situations by replacing them with more rational beliefs. As thoughts are challenged and disputed, their ability to elicit anxiety is weakened.

Cognitive restructuring is a therapy that focuses on the role of thoughts and behaviors in mental disorders. Cognitive restructuring can help reduce symptoms in people with anxiety disorders such as post-traumatic stress disorder (PTSD),
generalized anxiety disorder (GAD), social phobia and obsessive-compulsive disorder (OCD). The idea behind cognitive restructuring is that feelings of anxiety can be minimized or eliminated by changing the person's thought process in reaction to the anxiety-provoking stimulus. Restructuring techniques teach the anxious person to think about the particular fear or anxiety-provoking situation and, ultimately, with the help of a therapist, change this fear or belief into a more manageable thought. This, in turn, will help to reduce, or eliminate, the anxiety that was previously triggered by that situation.

There are three steps in the cognitive restructuring process. The first is to identify the specific cause of the anxiety. With anxiety disorders, situations are perceived as more dangerous than they really are. Restructuring of the correct fear or negative thought pattern is the focus of therapy. The second step the therapist helps the patient dispel the irrational thoughts that provoke anxiety. In this step irrational beliefs lose much of their power over the patient. The final step is to convert the anxiety-provoking thought into something that, instead, induces relaxation. The final goal of therapy is to give the patient the tools he needs to remain calm under difficult circumstances. This technique teaches clients that they have the power to change the way they think about and perceive undesirable situations and to come up with realistic, calming statements. Once these restructuring techniques are learned, they can be used in any situation. Deep breathing exercises may help patients to remain calm under difficult circumstances.
DEEP BREATHING EXERCISES

Breathing is the process that moves air in and out of the lungs. Aerobic organisms require oxygen to release energy via respiration, in the form of the metabolism of energy-rich molecules such as glucose. Breathing is only one process that delivers oxygen to where it is needed in the body and removes carbon dioxide. Another important process involves the movement of blood by the circulatory system. Gas exchange occurs in the pulmonary alveoli by passive diffusion of gases between the alveolar gas and the blood in lung capillaries. Once these dissolved gases are in the blood, the heart powers their flow around the body (via the circulatory system). The medical term for normal relaxed breathing is eupnea. In addition to removing carbon dioxide, breathing results in loss of water from the body. Exhaled air has a relative humidity of 100% because of water diffusing across the moist surface of breathing passages and alveoli.

Deep breathing exercises are a simple, powerful, indispensable way to improve and maintain your physical, mental and emotional health.

Breathing deeply is a simple, effective addition to a healthy lifestyle. Chronic stress leads to quick, shallow breathing which then becomes a habit. Conscious attention to the breath, lengthening and deepening the drawing in of oxygen, nourishes every cell of the body and promotes relaxation. Prolonged exhalation helps get rid of stale air and toxins in the lungs. Recent studies show that fast breathing rate increases risk of high blood pressure. Deep breathing reduces stress. Deep breathing releases endorphins-the bodies’ own painkillers,
into the system. This can help relieve headaches, sleeplessness, backaches and other stress related aches and pains. It also helps to clear and focus the mind and strengthens weak abdominal and intestinal muscles.

Deep breathing also called abdominal breathing or belly breathing. Instead of flexing only the upper chest, the belly is used to deepen the breath. The belly expands and pulls down the diaphragm during inhalation. It contracts and pushes the diaphragm up during exhalation. Deep breathing exercises are very healthy and train the body to breathe more properly.

The breathing exercises give vital energy. Vital energy means more oxygen in the blood with increased metabolism and heat. This increases energy levels and make person alert and elevates mood.

Many people hyperventilate when anxious, and this can add to feelings of anxiety and symptoms of dizziness and tingling. A controlled rate of breathing, aiming for a rate of 8-12 breaths per minute breathing in a smooth, light way is very effective at reducing symptoms of panic and acute anxiety. Smooth, light breathing is preferred to deep breathing which can accentuate feelings of anxiety and light-headedness. Breathing control techniques should be practiced several times a day when not particularly anxious in order to make it habitual. This makes it more likely that an individual will be able to implement the technique even when highly anxious.

Breathing, especially the exhalation phase, has a natural automatic relaxing effect. One physical mechanism of action for this relaxing effect is the
accumulation of carbon dioxide in the blood. Several studies have shown that 15 minutes of daily breathing exercise lowered BP [Blood Pressure] within 8 weeks by 12.1/6.1 mmHg as compared to 7.6/3.4 mmHg in the control group. Slow breathing at 6 breaths/minute increases baroreflex sensitivity and reduces sympathetic activity suggesting a potentially beneficial effect in hypertension. Slow breathing reduces blood pressure and enhances baroreflex sensitivity in hypertensive patients. Baroreflex is the system in the body that regulates blood pressure by controlling heart rate, strength of heart contractions, and diameter of blood vessels. Baroreflex sensitivity can be enhanced significantly by slow breathing. This seems to occur through a relative increase in vagal activity and a reduction in sympathetic activity, probably by the small reduction in heart rate observed during slow breathing and by the reduction in both systolic and diastolic blood pressures. Deep breathing can be used to elicits the relaxation response. Deep breathing can be used as a mind-body sleeping aid.

There are different ways how breathing exercises are performed. Set the timer to 20 minutes or to the desired length of your deep breathing exercise session. Sit quietly and comfortably in a quiet room. Focus the attention on breathing. Breathe slowly at 6 repetitions per minute. Each complete breath should last 10 seconds. Breathe in through nose for 4 seconds. And, then breathe out through mouth for 6 seconds. During this exercise individual will be concentrating on the breathing.
There are two main limitations of this therapy technique. One is that it is difficult to learn these techniques in any other setting. This can create a problem for those who would rather avoid seeing a therapist. The other limitation is that, because therapy is often limited to an hour or two per week, therapists often assign "homework" to be completed before the next session. For those with a busy schedule, this is something to be considered when weighing treatment options.

The use of cognitive behavioral therapy has, in general, been regarded as effective in the treatment of anxiety disorders. Like any other form of psychotherapy, success of treatment depends largely on the amount of effort directed at getting well. Cognitive therapy techniques are most effective for those who attend therapy regularly and complete all assigned tasks between sessions.

Application of cognitive restructuring -

**Anger management**

Anger management programs have used cognitive restructuring to help high-anger individuals become calm and collected. Anger control training combines cognitive restructuring with social skills training, thus helping the chronically angry to overcome their rage that arises in specific situations as well as their general anger against themselves, loved ones and the world in general. Cognitive Restructuring has also shown great benefits in the pre-release preparations of criminals.
**Depression**

In clinical depression the triggers of the feelings of hopelessness and helplessness are often concealed and using cognitive therapy and communicating in words about finding the causes of the feelings make it possible to identify triggers. Thought processes are activated by external stimuli and so finding what external stimuli activate them restructures the way the mind deals with triggering stimuli. The key to changing behavior is changing the cognitive structure from passive to active and creating behaviors by first changing the mind.

**Social phobia**

Cognitive restructuring, integrated with exposure techniques, is used in Cognitive-Behavioral Group Therapy (CBGT) to break the cycle of social anxiety. CR is used to conquer social phobia both in the therapist's office and in the client’s daily life. Under the therapist's direction, clients are guided through cognitive restructuring before, during, and after in-session exposures to high-anxiety social situations. Then for homework, clients are asked to engage in cognitive restructuring activities before, during, and after each assigned exposure.

**PTSD**

Cognitive restructuring, in combination with other techniques, has been used successfully to reduce anxiety in many people from trauma victims to students suffering from test anxiety to diabetes-related issues. It has also helped patients struggling with Post Traumatic Stress Disorder, Body Dysmorphic Disorder (BDD), substance abuse habits and non-generalized social phobia.
Criminal Thinking

Samuel Yochelson and Stanton Samen now pioneered the idea that cognitive behavioral approaches can be used successfully with a criminal population. In recent years cognitive behavioral approaches have become prevalent in correctional settings. These programs are designed to teach criminals cognitive skills that will reduce criminal behaviors. Cognitive behavioral program strategies have become commonplace, if not pervasive, in community corrections, prisons and jails in many countries.

1.8 Structured Relapse Prevention:

Structured Relapse Prevention (SRP) is a cognitive behavioral, manual-based counseling approach that is used in a variety of settings. SRP is designed for people with moderate to severe substance dependence, and is typically delivered in eight to 12 group or individual counseling sessions.

By George A. Parks, Ph.D. and G. Alan Marlatt, Ph.D. Relapse Prevention Therapy (RPT) was originally designed as a maintenance program for use following the treatment of addictive behaviors although it is also used as a stand-alone treatment program (Marlatt & Gordon, 1985; Parks & Marlatt, 1999). In the most general sense, RPT is a behavioral self-control program designed to teach individuals who are trying to maintain changes in their behavior how to anticipate and cope with the problem of relapse. Relapse refers to a breakdown or failure in a person's attempt to maintain change in any set of behaviors. Like other cognitive-behavioral therapies, RPT combines behavioral and cognitive
interventions in an overall approach that emphasizes self management. RPT intervention strategies can be grouped into three categories: coping skills training, cognitive therapy, and lifestyle modification. Coping skills training strategies include both behavioral and cognitive techniques. Cognitive therapy procedures are designed to provide clients with ways to reframe the habit change process as learning experience with errors and setbacks expected as mastery develops. Finally, lifestyle modification strategies such as meditation, exercise, and spiritual practices are designed to strengthen a client's overall coping capacity.

Relapse, broadly defined as an act or instance of backsliding, worsening, or subsiding, may be the common denominator in the outcome of treatments designed to address psychological problems and health-related behaviors especially those related to alcohol and drug misuse. That is, most individuals who make an attempt to change health-related behaviors (e.g., lose weight, spend more time with family, stop smoking, etc.), will experience set-backs or slips (lapses) that will sometimes worsen and become relapses. As evidenced Mark Twain’s quote, people usually report that quitting is not nearly as difficult as staying quit, i.e. the maintenance of change.

Relapse Prevention Therapy (RPT) is a cognitive-behavioral approach to the treatment of addictive behaviors that specifically address the nature of the relapse process and suggest coping strategies useful in maintaining change (Marlatt & Gordon, 1985; Parks, Marlatt, & Anderson, 2001). It is based on the idea that addictive behaviors are acquired, over-learned habits with biological,
psychological, and social determinants and consequences. Engaging in an addictive behavior typically provides immediate rewards that increase pleasure and/or decrease pain. In other words, people engage in addictive behaviors to “feel good” (enhanced pleasure) or to “feel better” (self medication of pain) although both motives can exist at the same time. The rewards of following addictive behaviors serve to maintain their excessive frequency, intensity, and duration, despite the delayed negative consequences, which can be quite severe and long lasting.

From a cognitive-behavioral point of view, the same learning process are involved in the development of both addictive (maladaptive) and non-addictive (adaptive) behaviors. The development of an addictive behavior is a learned process, changing addictive behaviors can be seen as a combination of extinguishing the connection between pleasure seeking and/or pain reduction and subsequent alcohol or drug use and helping clients to build a new behavior repertoire in which more adaptive coping behaviors replace addictive behaviors for the pursuit of pleasure and pain relief. Utilizing this cognitive-behavioral analysis of addictive behaviors, Relapse Prevention Therapy (RPT) begins with the assessment of a client’s potential interpersonal, intrapersonal, environmental, and physiological risks for relapse and the unique set of factors and situations that may directly precipitate a lapse. Once potential relapse triggers and high-risk situations are identified, cognitive and behavioral techniques are implemented that incorporate both specific interventions to prevent lapses or manage them if they
do occur and more global strategies to address lifestyle balance, craving, and cognitive distortions that might set-up exposure to high-risk situations where relapse is most likely.

The initial therapeutic component in RPT is the identification of a client’s unique profile of high-risk situations for relapse and evaluating that client’s ability to cope with these high-risk situations without having a lapse. Where coping deficits are recognized, it is important to determine if they are due to a lack of knowledge and skills or if adequate coping skills are being interfered with by factors such as low motivation, low self-efficacy, or anxiety. Following this assessment of coping capacity, coping skills training is undertaken to develop missing skills or to address factors that interfere with the performance of skills already in the client’s repertoire. An extensive overview of coping skills training for substance dependence is provided by the Cognitive-Behavioral Therapy (CBT) for Substance Dependence clinical guideline available at this website (Kadden, 2001).

In addition to teaching more effective coping responses, a major component of RPT is the enhancement of self-efficacy. Self-efficacy is defined as the extent to which an individual feels capable of performing a specific task (Bandura, 1977; Bandura, 1986). Higher levels of self-efficacy are predictive of improved treatment outcomes. The collaboration between the client and therapist plays a critical role in the encouragement of self-efficacy. RPT encourages practitioners to engage clients actively in the therapeutic process which tends to
increase the client’s sense of ownership over successful therapy outcomes and willingness to persist when obstacles arise. Positive feedback from the therapist concerning the successful completion of substance use and non-substance use related tasks may help to increase a client’s sense of general self-efficacy which may further motivate the client’s efforts to change their problematic thoughts and behavior.

**Self evaluation**

Self-evaluation is a process that is ongoing. We evaluate how we are managing life tasks, and we evaluate whether we are doing what we should, saying what we should, or acting the way we should. In depression, self-evaluation is generally negative and critical. When a mistake occurs, we think, "I messed up. I'm no good at anything. It's my fault things went wrong." When someone is depressed, he/she tends to take responsibility for everything that goes wrong, and tends to give others credit for things that turn out fine. Psychologists assume that self-evaluation of depressed individuals, is too critical, and feeds low self-esteem and a sense of failure.

**SRP counseling** focuses on engaging the client to:

- assess his or her goals and commitment to change
- design an individually tailored treatment plan
- identify his or her strengths and resources
learn to anticipate triggers to alcohol or other drug use, and develop alternative ways of coping

develop confidence by practicing coping skills in real-life risk situations

make connections between alcohol and other drug use and other life situations

ultimately, take over the therapist’s role by anticipating risk situations and pre-planning coping strategies.

SRP Program

A complete program involving SRP typically includes:

• a full clinical assessment with personalized feedback

• one or more Motivational Interviewing appointments prior to SRP counseling

• engaging the client in developing an individually tailored treatment plan consisting of:
  
  o a treatment contract

  o a personal hierarchy of triggers to alcohol or other drug use, to be worked on in treatment through homework assignments

  o client goal setting and self-monitoring.

• eight to 12 counseling sessions (individual or group)

• Initiation of Change homework assignments
• Maintenance of Change homework assignments.

There are five major components of SRP counseling:

• Assessment

• Motivational interviewing

• Individualized treatment planning

• Initiation of change counseling

• Maintenance of change counseling.

Counseling begins with a full clinical assessment, with a focus on the following areas of the client’s situation:

• Psychosocial functioning

• History of alcohol and other drug use, and of related problems and consequences

• Reasons for and commitment to change

• Coping strengths and weaknesses.

1.9 **Structured problem solving**

Our mental problem-solving resources lie in our two brain hemispheres. Both perform reasoning, remembering, communication, and problem solving. But they do them differently and share their results, one is better at logic and the other is better at intuition. The left- and right-brain hemispheres (LH and RH) receive the same sensory information simultaneously but process it according to different
protocols. Each is aware of the other through their adjoining corpus callosum. LH controls language and logic in most individuals. Technologists are influenced more by their LHs and artisans more by their RHs. RH is better at visualization of spatial relationships and the use of metaphors. Having no language, RH is at a disadvantage to LH. LH may veto RH ideas.

We often ascribe the “gift” of problem solving to creative people. Creative person is someone who can process in new ways information directly at hand, “a person having a new point of view.”

Thinking refers to the conscious and subconscious processes used in problem solving. We are aware of the conscious but we cannot know the subconscious. However, we can, through introspection, make useful deductions about thinking and use them to engage best practices for innovation. This requires language, an LH trait.

Introspection reveals that our natural thinking is unorganized and uncontrolled. It is at times logical, at other times illogical. It can be rational and whimsical. It jumps uncontrollably between different topics interrupting concentration. It pulls together unusual objects and functions creating wholly new concepts. Our communication of problem solving is orderly; like this, Definition – Analysis – Solution. However, thinking while problem solving is not orderly but jumps in random ways between these three phases of problem solving. Typically, we begin with an instantaneous, intuitive, solution concept. It is tested and modified iteratively as necessary for acceptance or rejection. From this
observation we deduce that in our natural mode of thinking, while problem solving, the content of structure is important not its order. Consequently, flowcharts can be avoided. By comparison with our natural thinking, our communication must be organized and logical to be effective. Organization is a heuristic for communication not for thinking.

To maximize our creative thinking we need to subdue LH’s logical reasoning while encouraging RH’s metaphorical thinking. Structure and language are the tools of logical communication. Image and metaphor are the tools of creative thinking.

Problem situations arise as collections of objects, attributes, functions, unwanted effects, causes, and extraneous information, which we must identify, sort, cull, and minimize – logical thinking. The first step is simplification, which leads to identification and elimination of extraneous information. The goal of definition is to reduce a problem situation consisting of objects, attributes, functions, unwanted effects, extraneous information, and images to a well-defined problem.

**Problem Solution strategies**

Solution strategies need to be simple, graphic, and metaphorical with minimum structure and expressed generically. There are three strategies for resolving an unwanted effect: utilization, nullification, and elimination.

In utilization, U becomes a useful function, F. In nullification, U is countered by a new function. In elimination, U disappears.
Mental attitudes for simplifying problem solving

- Recognize that order and logic can encourage LH-logic versus RH-intuitive thinking.
- Use structure as a heuristic not as a necessity.
- Components, not order of structure, are important.
- Use simple sketches to engage RH metaphorical thinking.
- Match verbal descriptions with graphic expressions.
- Suspend judgment of ideas in order to encourage intuitive leaps of insight.
- Simplify a problem to a single unwanted effect and minimize the number of objects in order to enable a holistic view of a problem.
- Seed the subconscious with verbal metaphors.
- Start with solutions.
- Iterate between solution, analysis, and definition in steps rather than complete one before moving on.
- Search concepts at every step.
- Follow your inspiration.

One of the core Cognitive Behavior Therapy (CBT) strategies is structured problem solving. It is applicable across a wide variety of diagnostic categories – and is a useful skill in all areas of life. (It is also used widely in business). Clinically it is useful in helping people who feel overwhelmed by their problems
and unable to find effective ways of coping or dealing with them, especially because of depression and anxiety.

There are rarely perfect or ideal solutions to problems, however, the structured problem solving approach aims to identify the most effective plan of action available at the time. The problem solving process includes: Defining problems or goals in an everyday manner, encouraging people to seek a wide range of ideas, defining solutions in terms of current strengths, careful consideration of the practical constraints that are involved in successfully applying a solution.

One of the main aims of teaching structured problem solving to individuals or families is to assist people to incorporate the principals of efficient problem solving and goal achievement into their everyday lives. The aim is not to solve everyone’s problems for them but to give people skills so that they can effectively overcome problems and achieve goals for themselves. Self-management is a key goal, with the clinician adopting the role of a teacher or guide.

Structured problem solving is also a useful means to manage the symptoms of anxiety/depression as these symptoms are often the result of an inability (or perceived inability) to deal effectively with problems. Some simple steps suggested by Carroll and Mynors-Wallis can be a useful guide in assisting the client:

- Identify the problem (try to break it down) and define it.

- Step back from the problem and try to view it as an objective challenge.
- Brainstorm possible solutions (realistic and unrealistic).
- Think about each solution in practical terms, and evaluate the pros and cons.
- Decide on the best solution (and a second, “back-up” solution).
- Put the solution into action.
- Evaluate how effective it was and whether it can be improved.

1.10 Adherence counseling:

The most common cause of ART failure is poor adherence. Adherence should be assessed and routinely reinforced by everyone in the clinical team like physicians, counselors, nurses, pharmacists, peer educators, NGO workers, etc at each of the patient’s visits to the clinic.

ADHERENCE COUNSELING: ITS NATURE AND PURPOSE

In HIV/AIDS-related counseling, two people who are in no way related to each other meet to resolve a crisis, solve a problem or make decisions involving highly personal and intimate matters and behavior. A counselor’s emotional detachment is the key in assessing a client’s case and providing unbiased information on HIV/AIDS to the client. Additionally, counseling is done during the pre- and post-test periods, after which patients may seek care elsewhere and the counselor withdraws. Adherence counseling on the other hand is a long-term requirement of patients on ART. At this time, as scientific research stands, the virus cannot be eradicated from the body; therefore, the disease cannot be cured.
It has become a chronic illness requiring management with medications. Anti-retroviral therapy has to be taken long-term. As is with other chronic illnesses, adherence to treatment changes over time and patients need support at different periods during their treatment. Adherence counseling forms a relationship between a counselor and client that is based on an understanding of the client’s life situation and needs. This relationship is strengthened over time.

The objectives of adherence counseling are the following:

- Help patients develop an understanding of their treatment and its challenges.
- Prepare the patient to initiate treatment.
- Provide ongoing support for clients to adhere to treatment over the long term.
- Help clients develop good treatment taking behavior.
- Help patients in setting goals for their treatment.

Counseling for treatment preparation and adherence is started by establishing rapport and relationship of trust with the patient. It is then followed by providing necessary information and guidance, encouraging peer participation and help identify treatment support persons such as spouse, friends, children etc.

During counseling individual treatment plan should be developed and ART included into the patient’s lifestyle/daily events. Treatment reminder system should be identified. Patient’s readiness for and commitment to ART should be assessed by observing patients past ability to attend clinic regularly and not miss
appointments, past ability to take OI prophylaxis, such as cotrimoxazole, past ability to complete a full course of TB therapy and adequate understanding of the treatment requirements.

There should be strict adherence to treatment. Adherence to recommended regimens should be $>95\%$ to avoid development of ARV drug resistance. This means that missing $>3$ doses per month is associated with an increased risk of drug resistance and failure. If patients have difficulty in adhering to regular doses, reinforce adherence counseling. List barriers to adherence and develop strategies to overcome these barriers. The timing of drug intake is critical (e.g. drugs taken twice daily must be taken every 12 hours + one hour). Missed doses can be taken up to 6 hours later in a twice-daily regimen. If $>6$ hours elapse, skip the dose and take next normal dose. Patients must also be told about dietary requirements with ARV drugs as some drugs are taken with food like atazanavir, some on an empty stomach, and some require an increased intake of water (indinavir). The possible side-effects of the drugs should have to be explained to and understood by the patient before commencing ART.

Safe sex practices should also be emphasized every visit as people on ART need to continue to use condoms regularly to avoid drug resistance in the spouse.

Other medications, including herbal/traditional products, may interact with ART. Patients need careful counseling about which medications are allowed and which are not with their ART. Regular clinic attendance for monitoring of efficacy, side-effects and adherence is essential. If patients cannot keep the
appointment, they should be called and if required a home visit should be made by community care coordinators.

During adherence counseling the patient should be allowed to explore his/her feelings. Many patients are preoccupied with problems related to family, job, relationships, etc. and cannot focus on strict adherence until negative feelings about these problems are sorted out. Many have no private place to store their medicines and are not able to take them in privacy. Not wanting others to know their HIV status is by far the commonest reason for poor adherence by patients. Patients should be helped to be realistic about who to confide in about their HIV status and how to tell them. While counseling check for any financial difficulties the patient may be experiencing. Some patients may not follow up if they do not have money to travel to the centre, or their health may be affected by a poor diet. Help patients develop secondary support systems for themselves. Solving these practical problems and creating a treatment plan is very important step of adherence counseling.