

CHAPTER 3

Literature review

3.1 INTRODUCTION

The research design, including data collection and analysis, trustworthiness and ethical considerations, was described in chapter 2. This chapter discusses the literature review conducted for the study.

A literature review refers to “a critical analysis of research on a topic of interest, generally prepared to put a research problem in context and to identify gaps and weaknesses of prior studies” and is “a summary of the state of existing knowledge on a research problem” (Polit & Hungler 1999:79).

A review of relevant literature is conducted “to generate a picture of what is known about a particular situation and the knowledge gaps that exist in it. This background enables the researcher to build on the works of others” (Burns & Grove 2001:34).

According to Polit and Hungler (2004:24), acquaintance with relevant research literature and the state of current knowledge can help researchers with the following:

- Identify a research problem and develop or refine research questions or hypotheses.
- Discover what is known and not known about an area of inquiry to ascertain what research can best make a contribution to the existing base of evidence.
- Determine any gaps or inconsistencies in a body of research.
- Determine a need to replicate a prior study in a different setting or with a different study population.
- Identify or develop new or refined clinical interventions to test through empirical research.
- Identify relevant theoretical or conceptual frameworks for a research problem.

- Identify suitable designs and data-collection methods for a study.
- Assist in interpreting study findings and developing implications and recommendations.

Streubert and Carpenter (1995:20) state that the purpose of a literature review in a qualitative study is to “place the findings in the context of what is already known and depict how the findings fit into what is already known about the topic”. Streubert and Carpenter (1995:111) add that it assists the researcher to “fill in the missing pieces in the emerging theory”.

In this study, the literature review covered the epidemiology of HIV/AIDS, the conceptual framework for the study, voluntary counselling information and perceptions, and general information on antiretroviral drugs (ARVs), including the benefits, when to initiate therapy, what therapy to start with, adherence, and side effects of the drugs.

3.2 EPIDEMIOLOGY OF HIV/AIDS

According to the United Nations Programme on HIV/AIDS (UNAIDS 2003:34), in 2002, forty-two million people were estimated to be living with HIV/AIDS globally. The epidemic's grip has been deadliest on Africa with an estimation of about thirty million people living with the virus (UNAIDS 2003:34). Sub-Saharan Africa remains the epicentre and accounts for 70% of the people worldwide living with the virus and all regions are affected (UNAIDS 2003:35).

In Swaziland, approximately 130 000 people are living with HIV/AIDS (UNAIDS 2003:36). During the special session of the General Assembly on HIV/AIDS (2002), King Mswati III said, “My people are dying, dying before their time, leaving behind their children as orphans and a nation in a continuous state of mourning ...”. The infection continues to spread rapidly. In 2003, about five million people worldwide became newly infected. Of these, 3,5 million live in Sub-Saharan Africa (WHO 2004b:22). The average life expectancy is now 47 years and is projected to drop by the year 2005 (WHO 2004b:15). Kofi Annan, the UN Secretary General, describes AIDS as a “weapon of mass destruction”.

The WHO (2002) states that the nearly forty-two million people living with HIV/AIDS need ARVs. Without ARV treatment, decades of economic, social and cultural development will be destroyed and the existence of the whole continent is put at risk. "Scaling up access to treatment is a human imperative and there is a need to liberate those living with HIV/AIDS from their immense suffering and avoid unnecessary deaths" (WHO 2003:16). Lewis (2003:66) states that "we can be saving and prolonging millions of lives tomorrow, we have that capacity, we just don't have the resources and it has now become an irresistible issue to provide hope". "You can't have forty-two million people wanting to live and not provide the treatment". The WHO (2002:43) sees "wider access to safe and practical treatment as an important element of an overall strategy to fight HIV/AIDS and bring together prevention and ARVs so that these elements reinforce each other". Moreover, the main emphasis of the primary health care strategy is that services should be acceptable, accessible and affordable to individuals so that individuals lead a socially and economically productive life (WHO 2002). These health services include the provision of ARVs. ARVs prolong life for as long as 27 years provided patients stick to the required prescriptions. The WHO aims to provide ARVs to approximately three million people by the year 2005 (WHO 2004b:16).

In the USA, the introduction of the triple drug combination of ARV treatment in 1996 led to a decline of about 70% in deaths attributable to HIV/AIDS. In developing countries, the same profound effects are anticipated. Currently 230 000 people are receiving ARVs in the developing world (WHO 2003:29). Africa, the continent hardest hit by the HIV/AIDS pandemic, is less well served with fewer than 50 000 people estimated to be currently receiving ARVs (WHO 2003:14).

The above indicate that there is still under-provision of the therapy in Swaziland despite the fact that these drugs are our hope for now. This under-provision is evidenced by the number of people presently on the drugs compared to the number of people infected with the virus.

In response to the urgent need to scale up access to ARVs, the former USA President, Bill Clinton announced a plan in 2003 to make generic drugs available to poor countries. Three Indian drug companies, Bambaxy, Cipla, and Matric Laboratories, together with a South African company, Aspen Pharmacare Holdings, agreed to participate in the scheme by producing generic ARVs to be sold at a cheaper cost to developing countries. Another important effort to secure price reductions for ARVs was the establishment of an international framework, a public/private partnership on accelerating and increasing access. This partnership was initiated in 2000 between the UN (UNICEF, UNFPA, WHO, World Bank and UNAIDS secretariat) and five major pharmaceutical companies (Boehringer Ingelheim, Bristol-Myers Squibb, Glaxo Smith Kline, Merck and Co, and F Hoffman-La Roche Ltd) with Abbott Laboratories joining later .

At the Fourteenth World AIDS Conference in 2002 the WHO in collaboration with the International AIDS Society formally launched new international guidelines for a public health response to the treatment of AIDS in resource-limited setting. The UN Declaration on Commitment set goals in response to the need for ARVs. One of the goals states that by the year 2003, national strategies will be developed to strengthen health care systems and address factors affecting the provision of ARVs, including affordability and pricing, and make treatment fundamental to the people with HIV/AIDS. To make drugs accessible to the people, drug companies have doubled the supply of ARVs to Africa at reduced prices. In Swaziland, the National Emergency Response Committee for HIV/AIDS (NERCHA) has played a major role in obtaining money from the global fund to buy ARVs and provide them free to people infected with HIV/AIDS. NERCHA has raised 17 million Emalangeni (Swaziland currency, equivalent to US \$ 102 million) to purchase ARVs for a year. According to Dr Von Wissel in the *Times of Swaziland* (2003:5), the target is to treat 4 500 people in the first year, increasing to 10 000 by the end of 2005. Currently 500 people receive ARVs in Swaziland.

3.3 VCT IN SWAZILAND

According to the Swaziland National VCT Guidelines (2003:13), VCT is the process by which individuals undergo counselling to enable them to make an informed choice about being tested for HIV and future behaviours. The identification of HIV-infected individuals

allows them to make informed decisions about anti-retroviral treatment. This includes long-term anti-retroviral therapy, prevention of mother-to-child transmission (PMTCT) of HIV and post-exposure prophylaxis (PEP). Informed consent is the cornerstone of VCT service delivery. The term “informed consent” refers to clients having an opportunity to consider the benefits and potential difficulties associated with their HIV status, understanding the testing procedure and then deciding to be tested and take ARVs (Swaziland National VCT Guidelines 2003:17).

VCT for HIV is a vital component of HIV prevention and care. It is considered the entry point to prevention and care. Voluntary counselling is important in dealing with the physical, psychological and social problems affecting people with HIV/AIDS. These problems include having an HIV test and coping with the results, coping with feelings of fear, guilt, anger, depression, adjusting to safer sexual practices, coping with uncertainties about AIDS and, most importantly, making decisions about using antiretroviral therapy (see figure 1). When clients are HIV-positive and choose to use ARVs, counselling includes telling them the following:

- HIV cannot be cured at present and clients will have to take ARVs until such time as a cure is available.
- The ultimate goal is maximal suppression of the virus and even with undetectable viral loads the medication must still be taken.
- The chief determinant of success is not the specific drug combination but the patient’s compliance with and adherence to the prescribed regimen.
- Common side effects to expect and ways to deal with these effects.
- Where to get refills of medication in time.

VCT, therefore, consists of:

- Information
- Education
- Capacity building
- Risk assessment and reduction
- Rapid testing

- Psychological support and emotional support
- Appropriate referral
- ARV treatment

Swaziland has eight VCT centres offering the above services. Four of them are attached to the four regional hospitals, namely Mbabane Government Hospital, Raleigh Fitkin Memorial Hospital, Good Shepherd Hospital and Mankayane Government Hospital. The others are attached to non-governmental organisations (NGOs), namely Task, the Salvation Army, Family Life Association of Swaziland, and Hospice at Home. Each has at least eight trained counsellors who are nurses. Figure 3.1 illustrates the VCT services.

3.4 PERCEPTION

Concise Oxford English Dictionary (2002:1059) defines perception as “(1) the ability to see,hear or become aware; (2) insight or intuition gained by perceiving; (3) the ability or capacity to perceive; and (4) way of perceiving; awareness or consciousness; view”. Perception of ARVs means understanding the true nature of ARVs, including understanding the drug actions, benefits, drug choice and side effects.

We are where we are today because of many factors. A major factor is a lack of understanding of HIV/AIDS. People died yesterday because they did not understand the basic facts of HIV/AIDS. People are dying today and will die tomorrow not because they are HIV-positive but because they lack insight into, awareness and understanding of ARVs although they are aware of the HIV/AIDS scourge. Such a lack of understanding is dangerous and uncalled for at a time when ARVs are the only window of hope for those affected (researcher’s view).

HIV prevention and care

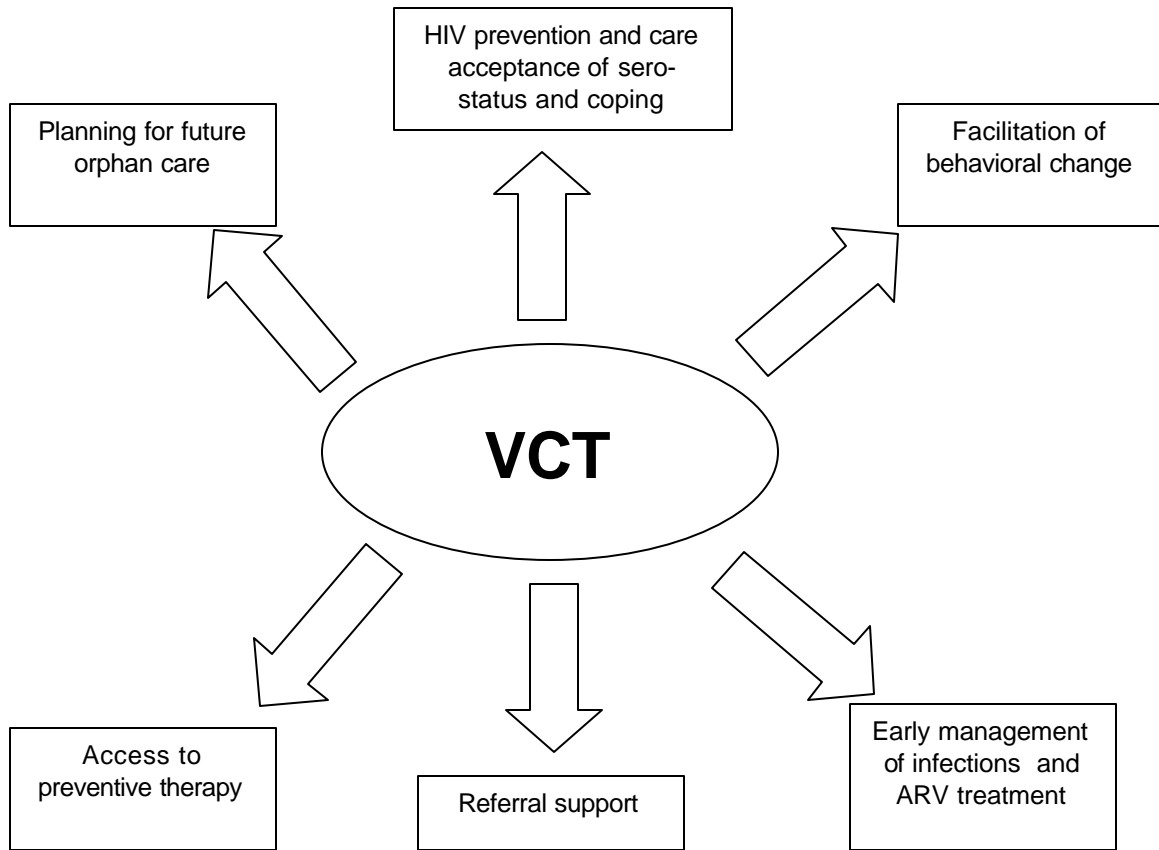


Figure 3.1
Service offered by VCT

Source: Swaziland National VCT Guidelines 2003:23.

The under-utilisation of ARVs may be caused by many factors, such as poor perception of the drugs resulting in misconceptions, unfounded knowledge, prejudice, myths and

negative societal attitudes. In Swaziland, these misconceptions were evidenced at a meeting for all HIV/AIDS people where those present unanimously rejected the drugs, arguing that the pills were dangerous and not necessarily good for humans. This kind of action undermines the government's efforts to have ARVs made freely available to all HIV-infected people. Nurses need to come to grips with this lack of understanding. Nurses themselves need to be knowledgeable about the drugs and have a positive attitude towards them in order to educate people about their use.

According to the American Bill of Rights (in Davis & Aroskar 1991:79), clients have the right to accurate information on their health. This includes information on ARVs. This education will empower clients and enable them to make the right choices. Education will prevent misconceptions, and change attitudes and beliefs about ARVs.

3.5 ARV TREATMENT

Since HIV was identified as the virus causing AIDS, much research has been done on identifying and developing compounds to suppress its replication. In 1987, Zidovudine (ZDV) was approved for the treatment of people living with AIDS (PLWAS) in the USA. This was used as mono-therapy.

Large clinical trials using double therapy (using two of these drugs) showed an advantage over mono therapy. A new class of agents, protease inhibitors, became available in 1996.

ARVs are also used in the PMTCT and in post-exposure, prophylaxis. Presently there are 13 licensed antiretroviral drugs available.

3.5.1 Classes of ARVs

There are three major groups of ARVs:

- Nucleoside reverse transcriptase inhibitors (NRTI)
- Non-nucleoside reverse transcriptase inhibitors (NNRTI)
- Protease inhibitors

Integrase inhibitors (under development)

There are thirteen licensed anti-HIV drugs available. Examples of drugs under each group:

Nucleoside reverse transcriptase inhibitors (NRTI)

- Zidovudine (Retrovir) (ZDV/AZT)
- Didasine (Videx) (ddi)
- Zalcitabine (Hivid) (ddc)
- Lamivudine (Epivir) (3TC)
- Stavudine (Zerit) (D4t)
- Abacavir (Ziagen)

Non-nucleoside reverse transcriptase inhibitors (NNRTI)

- Evirapine (Viramune) (NVP)
- Delavirdine (Rescriptor) (DLV)
- Efavirenz (Sastiva) (EFV)

Protease Inhibitors (P/s)

- Saquinavir (Invirase) (SQNV)
- Ritonavir (Norvir) (RTV)
- Indinavir (Sixivan) (IDU)
- Nelfinavir (Viracept) (NFV)

3.5.2 Mechanism of action of ARVs

It should be noted and stressed that these drugs are not a cure for HIV/AIDS. The primary goal of ARVs is to reduce the ability of HIV to replicate (reproduce) itself, thereby allowing repair of the immune system damage associated with HIV infection and significantly dropping the viral load and increasing CD4 cell count (Dybul & Fauci 2002:3).

When the virus is unable to replicate, the symptoms experienced by a person infected with HIV are reduced. Individuals receiving ARVs are less susceptible to opportunistic infections because the immune system retains some of its ability to protect the body. Many patients live longer as a consequence of ARVs. ARVs are also used to prevent PMTCT of HIV and post-exposure prophylaxis. The benefits of these drugs include reduced hospitalisation cost as evidenced by studies conducted in Canada, Australia, Europe, South Africa, New York, France and Ireland. Other benefits of ARVs include increased productivity, potential reduction of new infections due to low viral loads, and increased stability and longevity of families.

Each group of drugs takes effect at a different point in the life of the virus within the cell. They target enzymes essential for ribonucleic acid (RNA) replication and viral functioning.

Nucleoside Reverse Transcriptase Inhibitors (NRTIs) work by blocking an HIV protein called reverse transcriptase, thus preventing HIV/RNA from changing into DNA. This is a critical point in the life cycle of HIV (Dybul & Fauci 2002:2). Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs) also work by blocking the HIV protein. Protease Inhibitors (P/s) prevent the protease enzyme from cleaving HIV proteins into smaller functional units, a process that causes suppression of viral production. P/s are very powerful, but when taken alone the virus quickly becomes resistant to their anti-HIV effects and the benefit of therapy is short lived. P/s are always combined with other ARVs.

3.5.3 When to initiate ARV therapy

ARV therapy is not necessarily started when a patient is first infected with HIV because of long and sometimes complicated schedule combined with the side effects and also cost. Up to 30% of people with HIV will not develop an AIDS-defining illness even after ten years, so many people may not need treatment for a long time (O'Connor 1997:36). About 65% will probably need to start treatment four to five years after they were infected. About 5% of people with HIV can become ill very quickly and need to start treatment much earlier. Recommendations are based on virological criteria. It is generally recommended to start treatment before the CD4 count falls below 300 and viral load greater than 30 000 to 10 000

copies per mill plasma (recommendations based on 13 cohort of studies from Europe and North America. Sometimes it is recommended in acute phase of illness and on availability of resources. A patient should not be put on ARVs:

- Without confirming his/her HIV status
- When long-term provision of ARVs is not guaranteed
- When patient is not motivated to follow treatment
- Without providing adequate information
- Without capacity to treat, diagnose or prevent opportunistic infections
- Without ability to meet patients' other needs, like nutrition
- Continuously despite serious side effects

Opinions differ about when to start antiretroviral therapy in the HIV-infected child. An HIV-infected child's clinical, virological and immunological status should be evaluated at the time of diagnosis. Children who are experiencing growth failure or neurodevelopment regression or are failing to achieve developmental milestones normally should receive ARVs (WHO 2002:7).

When preventing mother-to-child transmission of HIV, a short-tem prophylactic is effective and feasible. Two main drugs are used, namely Nevirapine or Zidovine. Nevirapine is administered in one dose to the mother at delivery and in one dose to the child within 72 hours of birth. Zidovudine regimen is administered daily to the mother from the 36th week of pregnancy up to and during delivery. For post-exposure prophylaxis, Zidovudine, Lamivudine and Indivavir are given within one to two hours after exposure.

3.5.4 What therapy to begin with

Three drug regimens are the standard treatment for HIV infection in adults and children (WHO 2002:23).

The first line three drug regimens comprise two NRTIs and one PI or two NRTIs and one NNRTI. The combination of these drugs is known as the "triple combination therapy". Studies on triple combination therapy have shown that viral loads can be reduced by 99%

(Vilas 1998:23), and mortality can be reduced by up to 50% (Vilas 1998:44). One study showed that between 65% and 81% of those on triple combination therapy had reduced their levels of virus to undetectable levels after six months of treatment (WHO1997:34). In Swaziland, the main determinants of adherence are pill burden and availability of meals.

3.5.5 When to change treatment

Dybul and Fauci (2002:5) state that there are two main reasons for changing ARV treatment, namely treatment failure and the side effects. Treatment failure may be clinical, virological and immunological. Evaluation of treatment failure includes a continued rise in the viral load and continued drop in CD4 cell count (Dybul & Fauci 2002:5). Some people only experience mild side effects and find them easily manageable, but for some the side effects are so severe that they have to consider alternative drugs. If the drug causing the side effects can be identified, it may be possible to replace it with another drug that does not have the same side effects. For example replacing ZDV with d4T or replacing EFZ with NVP. When changing treatment it should be borne in mind that there are limited choices available and this can reduce future treatment options for the patient. Health professionals should be conservative when considering change.

3.5.6 Treatment breaks

Stopping treatment for even a short period is not recommended. A short break of a week, for instance, is likely to be long enough for the viral load to rebound to over 5 000 copies and in a few weeks to pretreatment levels (Dybul & Fauci 2002:6). Treatment breaks, also called drug holidays and structured treatment interruptions, are not recommended.

3.5.7 Side effects associated with ARVs

Many different side effects are associated with the use of ARVs. The occurrence of side effects plays a big role in adherence to a drug regime. This, in turn, can impact on the development of drug resistance.

A recent study by the University of San Francisco Center for AIDS Prevention Studies found that concern about short-term and long-term side effects was one of the primary factors deterring people with HIV/AIDS from starting combination ARVs (Dybul & Fauci 2002:10). Side effects are often more frequent and more severe in people with advanced HIV disease who are more immuno-compromised.

Side effects affect all systems of the body and include serious toxicities that necessitate stopping a drug completely. Some side effects are not dangerous but may be uncomfortable, annoying and interfere with daily life. Some of the common side effects associated with ARVs are described below.

Gastrointestinal. The most common side effects associated with anti-HIV drugs are those that affect the stomach and intestines. Abdominal cramps, nausea, vomiting and diarrhea often occur when taking certain drugs. Some people also experience constipation, heartburn (acid reflux) and intestinal gas.

Skin-related. Rashes, a more severe rash may lead to exfoliation (shedding of the outer layers of skin and mucous membranes), ulcer formation and/or necrosis (localised tissue death). Some drugs have been associated with dry skin, while others can cause pruritis (itchiness).

Adverse events affecting the liver, pancreas and kidneys. The liver processes drugs in the body and can become overwhelmed if drug levels are high. Liver toxicity may be indicated by increased blood levels of the liver enzymes ALT and AST (measured as liver function tests) and/or by elevated alkaline phosphates or bilirubin levels. Elevated bilirubin levels may lead to jaundice, a yellowing of the skin and whites of the eyes. More serious manifestations of liver toxicity include clinical hepatitis and long-term liver damage. Side effects involving the liver may appear immediately after starting a new drug or up to six months later.

Some anti-HIV drugs have been associated with pancreatitis, an inflammation of the pancreas. Symptoms of pancreatitis include abdominal pain, nausea, vomiting, constipation and jaundice.

Regarding the kidney, some drugs could cause kidney stones (nephrolithiasis), Symptoms include severe pain in the back or groin and in some cases, blood in the urine. Some people taking protease inhibitors may experience kidney damage.

Neurological and mental: A variety of side effects involve the nervous system – the body's system of sensory and motor nerves, the spinal cord and the brain. Peripheral neuropathy is damage to the peripheral nerves, most often in the feet and hands. Such nerve damage may lead to tingling, burning sensations, pain, numbness or weakness. The condition typically subsides within a couple of months after the drugs are stopped, but in some cases it may be permanent. Other neurological side effects may include headache, dizziness, confusion, and difficulties with speech or movement, confusion, anxiety, paranoia and depression.

Bone marrow suppression: Some drugs (including AZT and several anti-cancer drugs) can cause bone marrow toxicity. Damage to the bone marrow may lead to the loss of the ability to produce new blood cells. This can result in anaemia (low red blood cell level), leucopenia (low leukocyte, or white blood cell level), neutropenia (low level of neutrophils, a type of immune cell) and thrombocytopenia (low level of platelets, which may lead to poor blood clotting).

Other side effects. Various anti-HIV drugs have been associated with other adverse events including fevers, chills, fatigue (unusual, prolonged tiredness) and insomnia (inability to sleep). Malaise is a general ill feeling often described as “flu-like”). Certain side effects such as anorexia (loss of appetite), altered taste sensation and oral ulcers can affect the ability to eat. Myopathy is muscle weakness or degeneration, most often associated with AZT. Myalgia is pain in the muscles and arthralgia is pain in the joints. Cardiac side effects may include heart palpitations and loss of normal heart rhythm (arrhythmia).

Some people are unable to tolerate certain drugs and develop allergic or hypersensitivity reaction; such reactions seem to be more common in people with AIDS than among the population as a whole. Some of these reactions are a skin rash, swelling to life-threatening anaphylaxis characterised by difficulty breathing and a sharp decrease in blood pressure.

- **Side effects associated with specific anti-HIV drugs**

AZT (Retrovir): Headache, abdominal cramps, nausea, diarrhoea, malaise, fever, chills, arthralgia, myalgia, anorexia, rash, anaemia, leucopenia, neutropenia, elevated liver enzymes, altered taste sensation, dizziness, fatigue, insomnia, vomiting. Special concerns: bone marrow suppression, myopathy.

ddc (Hivid): Peripheral neuropathy (22-35%), headache, fever, fatigue, mouth ulcers, neutropenia, abdominal pain, nausea, diarrhoea, vomiting, rash, myalgia, anemia, leucopenia, elevated amylase, elevated liver enzymes. Special concerns: Pancreatitis (about 1%).

ddi (videx): Diarrhoea (16-29%), peripheral, neuropathy (16-22%), altered taste sensation, leucopenia, elevated amylase, elevated liver enzymes, elevated triglycerides, oral ulcers, abdominal pain, nausea, vomiting, fever, chills, fatigue, headache, mylgia, rash, neutropenia, elevated creatinine. Special concerns: pancreatitis (7-13%), lesions of the retina in children.

d4T (Zerit): Peripheral neuropathy (15-21%), abdominal pain, nausea, vomiting, diarrhoea, dry skin, headache, chills, fever, malaise, arthralgia, insomnia, rash, elevated liver enzymes, anorexia, constipation, depression, dizziness, fatigue, anaemia, neutropenia, elevated amylase.

3TC (Epivir): Diarrhoea, nausea, fatigue, headache, malaise, abdominal pain, vomiting, anorexia, chills, fever, athralgia, myalgia, depression, dizziness, insomnia, hair loss, peripheral neuropathy, rash, neutropenia, and anaemia. Special concerns: pancreatitis in children.

Abacavir (Ziagen) [experimental; also known as 1592]: Nausea, vomiting, headache, fatigue, diarrhoea, rash, fever, insomnia. Special concerns: hypersensitivity reaction (2-5%) characterised by flu-like symptoms possibly followed by a measles-like rash; do not re-start the drug.

Adefovir dipvoxil (preveon) [experimental, also known as bis-POM-PMEA]: Nausea, diarrhoea, elevated liver enzymes. Special concerns: kidney toxicity, reduced L-carnitine levels.

- **Non-nucleoside reverse transcriptase inhibitors**

Delavirdine (rescriptor): Rash (18%), nausea (7%), headache (6%), elevated liver enzymes (6%), diarrhoea (4%), fatigue (4%). Special concerns: Stevens-Johnson syndrome.

Nevirapine (viramune): Rash (24 %+), fever, headache, nausea, neutropenia, elevated liver enzymes. Special concerns: Stevens-Johnson syndrome.

Efavirenz (Sustiva) [experimental; also known as DMP-266]: headache, fatigue, rash, insomnia, dizziness, diarrhoea, nausea, malaise, sinusitis, anxiety, elevated liver enzymes. Special concerns: may cause birth defects if taken while pregnant (on the basis of recent animal studies).

- **Protease inhibitors**

Amprenavir [experimental; also known as 141]: Diarrhoea, nausea, vomiting, intestinal gas, headache, rash, dizziness, paresthesias around the mouth.

Indinavir (Crixivan): Nausea (12%), elevated bilirubin (10%), elevated liver enzymes (>10%), abdominal pain (9%), headache (6%), diarrhoea (5%), vomiting (4%), fatigue (4%), insomnia (3%), acid reflux (heartburn), dry skin, dehydration, altered taste sensations, rash; elevated triglycerides, elevated blood sugar and body fat redistribution appear to be

associated with indinavir. Special concerns: kidney stones (4-12%) indicated by back/groin pain, haemolytic anaemia.

Nelfinavir (Viracept): Diarrhoea (16-32%), nausea (7%), intestinal gas (3%), fatigue, abdominal pain, elevated liver enzymes, elevated creatinine; elevated triglycerides, elevated blood sugar and body fat redistribution appear to be associated with Nelfinavir.

Ritonavir (Norvir): Nausea, diarrhoea, vomiting, altered taste sensation, paresthesias (especially around the mouth), fatigue, weakness, elevated liver enzymes, elevated creatinine, abdominal pain, anorexia, dizziness, flushing, headache, myalgia, numbness, rash, increased skin sensitivity; elevated triglycerides, elevated blood sugar and body fat redistribution appear to be associated with ritonavir. Special concerns: hypersensitivity reaction, Stevens-Johnson syndrome (rare).

Saquinavir (Invirase/Fortovase): Nausea, diarrhea, abdominal pain, acid reflux (heartburn), intestinal gas, fatigue, elevated creatinine levels, rash, elevated liver enzymes; elevated triglycerides, elevated blood sugar and body fat redistribution appear to be associated with saquinavir. Note: The new soft-gel formulation of Saquinavir (Fortovase) is more bioavailable than the old hard-gel formulation (Invirase), and is expected to cause more side effects.

In addition to the more typical adverse effects, a variety of unusual side effects have begun to appear in people taking combination anti-HIV therapy that includes protease inhibitors. Most of the unusual side effects have to do with metabolic changes, such as diabetes, high blood levels of triglycerides (fats) and cholesterol, and body fat redistribution.

3.6 ADHERENCE

Adherence refers to the “five rights of medication”, namely taking the right drug, at the right time, using the right route, taking the right dose and right dietary restrictions(Walsh 2002:23).

3.6.1 Factors that decrease adherence

Treatment success is highly dependent on the patient's ability to adhere to the medication schedule. Many factors, related to patients, health care providers, illness and/or medication, prevent or decrease adherence.

◆ **The patient**

- Patient disbelief and/or misunderstanding about medication effectiveness and importance of adherence.
- Mental health issues (psychological distress, depression, personality disorders and cognitive disturbance).
- Regimen reminds patient of illness
 - . isolation, resistance to asking for help from others
 - . not wanting others to know of HIV status
 - . being asymptomatic and feeling healthy
 - . feeling sick due to side effects
 - . alcohol and drug use leading to chaotic lifestyle
 - . busy active life
 - . variations in schedule
 - . poor communication with health care providers
- **Health care providers**
 - . disbelief in efficacy of treatment
 - . negative attitudes towards treatment
 - . poor perceptions of treatment
 - . provider not having adequate knowledge of treatment
 - . poor communication skills
 - . provider maintaining control of medication plan (not allowing for patient empowerment)
 - . provider not expressing concern about patient
 - . lack of follow up appointments
 - . disparities in race, social class and ethnicity (may result in gaps in communication)
 - . provider depressed at patient's failure on medications

- **Illness and/or medication**
 - . chronic asymptomatic illness
 - . non-curative treatment
 - . increased complexity of regimen (dietary restrictions measured frequency of doses, increased number of medications)
 - . increased frequency and severity of side effects
 - . routes of administration and medication characteristics (large pills or pill with bad taste)

- **The health care context**
 - . distance to clinic too far from home/work
 - . poor clinic management (long waiting periods, poor privacy, unsympathetic and inconsiderate staff)
 - . health access issues (poor access to drugs, high cost of drugs)
 - . lack of necessary social services and clinic programmes (child care, drug rehabilitation)

3.7 RESISTANCE

Resistance occurs when some of the virus in the body changes slightly (mutates) so that the drugs no longer work at all (Wash 2002:38). Resistance results from improper use of the drugs.

3.8 CONCLUSION

This chapter discussed the literature review, which covered the epidemiology of HIV/AIDS, VCT information and general information on ARVs. Chapter 4 presents the findings.