Section 2: What do rehabilitation providers need to know about HIV in SSA?

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2.1 – What do rehabilitation professionals need to know about the stages of HIV infection?

Rehabilitation providers have a role in caring for people living with HIV throughout the course of their illness. In this section we introduce the stages of HIV infection. To learn more about the role of rehabilitation in HIV disease please see *Section 1.7*.

2.1.1 Acute Infection

When a person first becomes infected it is called viremia, a term used for all viral infections. During this initial phase, the virus replicates rapidly and people commonly experience flu-like symptoms (e.g. fever, fatigue, aching muscles, headache, and rash). Many of these symptoms can go unrecognized.

A person is most infectious during this phase.

Within the first 2 to 6 weeks, the CD4 count decreases rapidly as the virus attacks these cells.

After 6 to 8 weeks, antibodies are developed as part of the immune response (seroconversion) and the viral load (amount of HIV in the blood) drops.

HIV tests are designed to detect if these antibodies are present so a person will have a positive HIV test ***after*** seroconversion.

The antibodies for HIV are measurable within 3 months of initial infection for most people. During this time, people may not show any signs of being infected.

2.1.2 Clinical latency

During the clinical latency phase, an HIV-infected person may be symptom free and unaware of his or her HIV status. This phase varies in length and depends on many factors including pre-existing health status, genetic factors, social determinants of health, and stress.

When the CD4 count drops below 200 cells/mm^3, the immune system struggles to fight off the virus, the viral load increases and the body is susceptible to opportunistic infections and HIV-related illnesses.

If the person is not treated with HIV medications at this point (i.e., once the CD4 count has dropped below 200 cells/mm^3), the natural history of HIV has shown high mortality levels within 2 to 3 years.

It is important to note, however, that most individuals with HIV can now have a life expectancy that is close to normal if they can access and adhere to lifelong antiretroviral therapy.[1]

2.1.3 AIDS (Acquired Immunodeficiency Syndrome)

In advanced stages of HIV, a person may be diagnosed with Acquired Immunodeficiency Syndrome (AIDS).

AIDS is not a disease. AIDS is a category developed in 1993 by the U.S. Centre for Disease Control as a way of identifying advanced HIV progression (CDC 1993). A person is said to have AIDS if:

- they are HIV-positive, **and**
- their CD4 count is less than 200 cells/mm^3, **or**
- they have one of the 26 clinical conditions that are considered to be AIDS-defining illnesses.

Given advances in HIV care, the AIDS classification system is used less often.

For rehabilitation providers, the focus is on diagnosing and addressing the challenges (i.e., impairments, activity limitations, participation restrictions) resulting from HIV and/or HIV-related illnesses (which may or may not constitute “AIDS”). See Section 1.3 for further details.

2.2 – What do rehabilitation providers need to know about CD4 count and viral load?

CD4 count and viral load are two of the surrogate markers (clues) used to understand disease progression in HIV. These measures will help a rehabilitation provider understand a patient's immune system at a single point in time as well as changes in immune status over time.

2.2.1 CD4 count

Cells in a person's body with CD4 receptors on their surface are the primary targets destroyed by HIV.

CD4 count is the most important surrogate marker for health status and strongest predictor of disease progression.

How to interpret CD4 count:

- A normal CD4 count level is between 500 to 1500 cells/mm^3.
- CD4 count in a healthy individual varies over time.
- In a person living with HIV, the CD4 count will become lower as her/his HIV disease worsens.
- Most opportunistic infections occur when a CD4 count is less than 200 cells/mm^3.

The CD4 count is influenced by a number of factors (e.g., stress, illness, time at which it was measured) and therefore, the **trend** in CD4 counts is more important versus one test at a single point in time.

2.2.2 Viral load

Viral load reflects the amount of virus (HIV) within the body. Viral load is used to predict the rate of progression of HIV disease and to initiate, monitor, and change antiretroviral therapy.

How to interpret viral load levels:

- The HIV viral load test measures the amount of HIV virus, in each ml or cubic centimeter of blood (e.g., from 50 to 500,000).
- The higher the viral load, the more viral reproduction (HIV copying itself) is taking place, and the more active (worse) the disease.
- Viral load tests struggle to measure fewer than 50 HIV viruses in each ml of blood and so the test may say that the viral load is "undetectable."
    - This does not mean that a person is cured of HIV.
    - An undetectable viral load means that a person's HIV disease is well controlled (but not gone).
    - It is also important to note that it is still possible to transmit the virus when the viral load is 'undetectable'.
    - It also does not mean that the patient should discontinue taking their treatment, unless advised by the health care team.

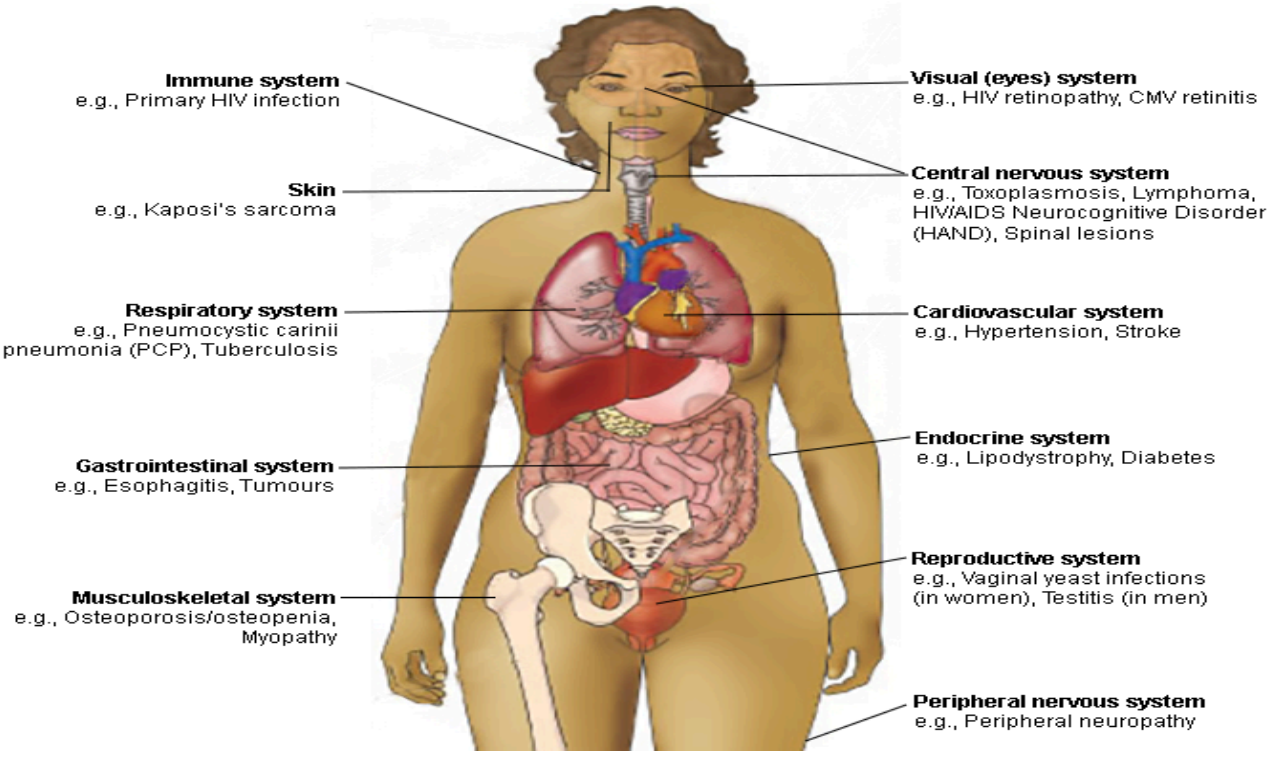
The goal of ART is to reduce viral load to the lowest possible level for the longest possible time.

2.3 – What is the impact of HIV on body systems and why does this matter for rehabilitation providers?

HIV is a complex and multi-system disease that causes a range of conditions that can affect almost every body system. However, antiretroviral therapy has contributed to HIV-positive people living longer and having better quality of life.

Despite these improvements, Van As et al.[2] found that physical impairments, activity limitations and participation restrictions have had a negative effect on people living with HIV. They highlighted the need for rehabilitation providers to have detailed knowledge of the effects of HIV on the patient so that appropriate interventions can be made. They recommend the International Classification of Functioning, Disability and Health (ICF),[3] developed by the World Health Organization, as a useful framework for evaluating impairments and life-related challenges resulting from HIV and HIV-related conditions (see Section 3 to learn more about HIV-related disability).

Examples of diagnoses affecting different body systems in people living with HIV



2.4 – Who might rehabilitation providers treat in SSA?

Sub-Saharan Africa (SSA) has the highest HIV infection rate in the world and is home to more than 2/3 of all people worldwide living with HIV.[4] Gender inequality and economic disparity are the leading root causes of high HIV prevalence in SSA.

HIV is a generalized epidemic in many countries in SSA: it can be present in anyone and across all ages.

However, there are some populations that are at higher risk for HIV infection including young adults, truck drivers, migrants, people with disabilities, commercial sex workers, men who have sex with men, prison inmates and injection drug users.

Table 2.4: Estimated prevalence and incidence of HIV infection and mortality in Sub-Saharan Africa and globally, 2016[4]

	Sub-Saharan Africa 2016 Estimates	Global 2016 Estimates
Number of People Living with HIV (all ages)	25 500 000	36 700 000
New HIV Infections (all ages)	1 160 000	1 800 000
AIDS Deaths	730 000	1 000 000

2.4.1 Encouraging trends

Despite these alarming figures, progress has been made in Sub-Saharan Africa in recent years, including:[5]

- a decrease in the number of new infections
- a decrease in AIDS-related deaths
- a decrease in children newly infected
- increases in the prevention of mother-to-child transmission (PMTCT)
- increases in HIV testing rates
- increased uptake of HIV treatment among eligible HIV-positive people

2.4.2 Persistent gender inequities

Women are more likely to be infected than men. They account for approximately 57% of people living with HIV in Sub-Saharan Africa.[6] This increased risk is due to both physiologic differences and socio-economic factors including poverty, marginalization, gender power inequalities, and violence.[7]

2.4.3 HIV and aging

There are limited data available on older people living with HIV in Sub-Saharan Africa. However, it has been projected that the number of people living with HIV who are 50 years or older in SSA will climb

from approximately 1 in 7 in 2011 to 1 in 4 in 2040.[8] While people with HIV are living longer, many are challenged by comorbidities related to aging.

2.5 – What do rehabilitation providers need to know about ARTs in SSA?

Although rehabilitation providers do not prescribe drugs, the effects of pharmacological treatments (both good and bad) experienced by people living with HIV can impact rehabilitation goals.

The goals of HIV drug therapy are:

- maximal and sustained suppression of viral load
- reduction of morbidity (illness) and mortality (death)
- improvement of quality of life

In 2015, the World Health Organization (WHO) recommended that all people living with HIV receive ART. In the Africa WHO Region in 2016, 54% of people living with HIV were receiving treatment.[9]

2.5.1 Benefits of Antiretroviral Therapy (ART)

Advances in the treatment of HIV with effective, more convenient and more tolerable ART have dramatically changed the course of HIV infection. This has led to a sharp reduction in morbidity and mortality among patients who have access to treatment.[10]

Antiretroviral drugs are **not a cure** for HIV. However, with lifelong adherence most individuals can achieve close to normal life expectancy.[11]

Benefits of Antiretroviral Therapy[12]

Saves lives. Antiretroviral therapy averted 7.6 million AIDS-related deaths globally from the peak in 1995 until 2013. Sub-Saharan Africa accounted for 63% of those lives saved.[13]

Prevents new HIV infections. Antiretroviral therapy reduces the risk of HIV transmission by up to 96%.[14]

Prevents illness. Antiretroviral therapy reduces the risk of tuberculosis infection among people living with HIV by 65%.[15]

Saves money and promotes development. HIV treatment can generate economic savings within five years.[16] Spending on antiretroviral therapy also generates economic returns of double or more than the initial investment.[17]

Keeps people productive. Working-age adults living with HIV can return to work earlier when they receive treatment, boosting labour productivity and reducing hardship among affected households.

2.5.2 Treatment Guidelines

The World Health Organization (WHO) publishes recommendations on the diagnosis of HIV, the care of people living with HIV and the use of antiretroviral drugs for treating and preventing HIV infection from a global perspective.

These treatment guidelines address specific populations and provide guidance on how best to use ART to maximize success of drug therapy. **The 2016 WHO Consolidated Guidelines on the use of Antiretroviral Drugs for Treating and Preventing HIV Infection** are available at http://www.who.int/hiv/pub/arv/arv-2016/en/

2.5.3 ART Adherence

For best results, individuals with HIV need to take their medications every single day, in the proper way and at the same time for the rest of their lives.

When there is only partial adherence, suppression of HIV may not be achieved and there is increased risk of developing drug resistance.

Table 2.5: Examples of facilitators and barriers to adherence

Facilitators to Adherence	Barriers to Adherence
• Social support • Reminders • Dosing frequency and pill burden (e.g. one pill per day) • Experiences with health improvement on treatment • Decreased HIV-related stigma and discrimination	• Unreliable drug supply • Transportation cost • Access to food and water • Polypharmacy (taking multiple treatments at the same time) • Homelessness or unstable housing • Long clinic queues • Stigma/fear of disclosure • Depression • Fatigue • Other co-morbidities • Side effects

2.5.4 Side Effects of ART

As with other medications, antiretroviral medications have both short and long term side effects. These side effects can affect many different body systems, and can range from bothersome to fatal.

Rehabilitation providers can assist patients with impairments that are the result of side effects of HIV medication. For example, several drugs can cause a condition called **distal symmetrical polyneuropathy**, which presents as bilateral pain, tingling and numbness in both lower legs and feet.

Other drugs can cause a condition called **lipodystrophy**, which causes metabolic changes as well as changes in body composition. The body changes can present as reduced fat in arms and legs, and added fat around the waist or back of neck.

There are many drugs used to treat HIV, and therefore many different types of side effects. For side effects associated with specific drugs, see up-to-date websites such as:

- https://aidsinfo.nih.gov/understanding-hiv-aids/fact-sheets/22/63/hiv-medicines-and-side-effects
- https://aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-arv/31/adverse-effects-of-arv

2.5.5 ART for Prevention

Emerging pharmacologic advances include the use of ART for prevention.[18] This includes testing of pre-exposure prophylaxis (PREP) with oral or mucosally delivered antiretroviral medications to reduce an individual's risk of acquiring HIV infection.[19]

Microbicides are products that may reduce HIV risk when applied vaginally. Although there seems to be an overall acceptance by women of microbicides, they are not yet available on the market.[20]

While significant research has been completed on HIV vaccines, the development of a safe and effective vaccine remains a medium to long-term prospect.[21]

2.6 – What are the precautions that all rehabilitation providers should take regarding HIV and other related co-infections?

When working with people living with HIV, **standard precautions** (often called **universal precautions)** should be used.

- Standard precautions require **frequent hand washing** between all client interactions.
- Standard precautions also include using a barrier device (e.g. **gloves**) whenever contact with blood or body fluids is anticipated.
- When handling clients whose skin is intact, gloves are not needed. However, if there are open lesions or breaks in the skin and/or contact with bodily fluids is likely, gloves and long-sleeved gowns are appropriate.
- Use needles and other sharps safely, and dispose of them safely in biological waste (without any attempt to recap them)
- For more detailed information see the World Health Organization's standard precautions in health care http://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf

These are the *same* precautions that should be used with *all* patients, regardless of whether or not they are HIV-positive. This is because HIV is a blood borne disease.

Table 2.6: Which body fluids are infectious for HIV?

Body Fluids Potentially Infectious for HIV	Body Fluids Not Infectious for HIV
• Blood • Cerebrospinal • Amniotic • Pericardial • Peritoneal • Pleural • Synovial • Seminal • Vaginal • Penile secretions • Breast milk • Inflammatory exudate • Human tissue • Any other body fluids which contain visible blood	• Stool • Urine • Tears • Saliva However, if these non-infectious body fluids contain blood, they may be infectious.

While universal precautions are appropriate for protecting oneself from HIV, a person living with HIV may also have **other diseases that require a higher level of precaution**, such as:

- Pulmonary TB – precautions would include wearing an appropriate mask

- Hepatitis B – precautions would include vaccination

Health care workers in developing countries, including those in Sub-Saharan Africa, are at increased risk of occupational exposure to blood borne diseases for a number of reasons, which make **adherence to universal precautions** even more important. Reasons for increased risk of occupational exposure include:[22]

- Increased disease prevalence in the population
- Greater disease severity of patients seeking care
- Higher number of needle stick injuries
- Culture of using injections versus other methods
- Use of hazardous equipment and procedures (e.g. glass capillary tubes, non-retracting finger stick lancets)
- Number of informal workers
- Lack of vaccination coverage against hepatitis B
- Lack of availability of post-exposure prophylaxis (PEP)
- Lack of adherence to standard precautions

Post-exposure prophylaxis (PEP)

In the case of a significant occupational exposure (e.g., exposure to blood or bloody body fluids through a hollow bore needle which has been in an artery or vein of a person known to be infected with HIV), individuals should immediately wash the area with warm soapy water and directly seek medical care (e.g., at an emergency department).

Significant exposure may require post-exposure prophylaxis (PEP), which is a form of antiretroviral treatment that is most effective when taken within 72 hours of exposure. Although reasonably successful, PEP is not a guaranteed prophylaxis and should only be used in extreme cases.[23]

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