HIV NURSING MATTERS

A publication of the Southern African HIV Clinicians Society

Dolutegravir and viral load

Improving viral load monitoring in South Africa: lessons from the ITREMA project

Dolutegravir and weight gain

The role of primary healthcare nurses in cryptococcal antigen screening in South Africa

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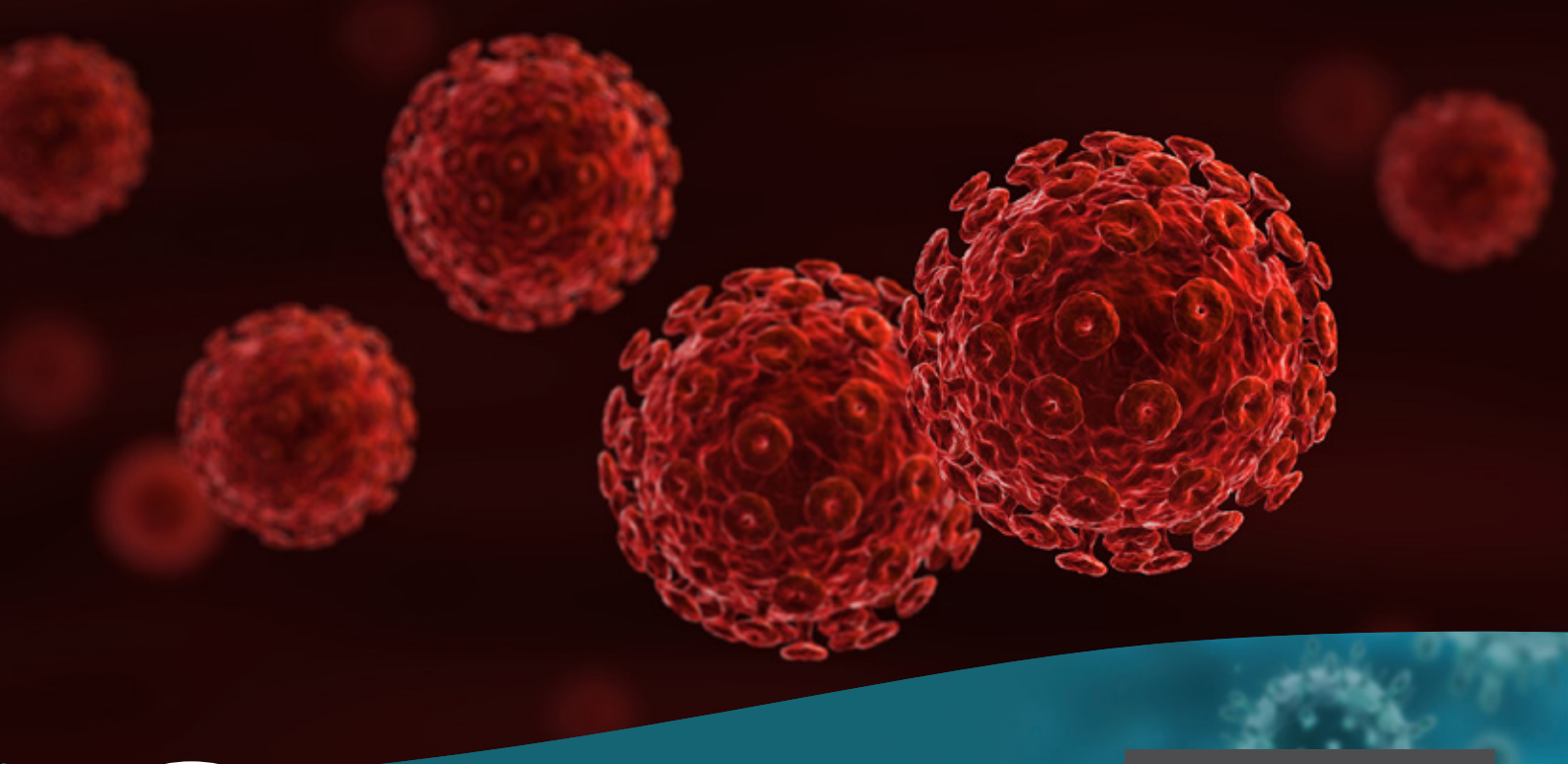

inside

HIV Nursing Matters focuses on viral load

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Message from the president

Prof. Yunus Moosa
President: Southern African HIV Clinicians Society

Since the commencement of efforts towards Universal Access to Antiretrovirals in South Africa starting in 2004, the definition of virological suppression has been subject to some debate. This is not surprising. Advances in drugs, public health interventions, policy evolution, political dynamics and behavioral shifts in the community and patient populations, all contribute to new and emerging ideas on treatment effectiveness.

This edition of HIV Nursing Matters provides some fascinating insights into the evolving thinking on viral load and virological suppression. More specifically, this edition supports emerging findings on the value of utilising viral load results more effectively and supporting healthcare workers to pursue treatment strategies that accelerate virological suppression. See Nel's summary of the Southern African HIV Clinicians Society (SAHCS) Adult Anti-retroviral Therapy (ART) 2020 guidelines recommendations on viral load and resistance on pg. 28.

This edition is timely as we advocate for South Africa's adoption of the Undetectable=Untransmissible (U=U) global campaign. Read Dukashe's article on U=U on pg. 23.

The ITREMA study has angled the spotlight on the risk of virological failure when low-level viraemia persists. Only recently has the South African National Department of Health revised its definition of viral suppression from <1000 copies/mL to <50 copies/mL. This has meant that in many cases drug level factors have been overlooked and persistent low-level viraemia has eventually translated into virological failure. The ITREMA study advocates for drug testing early on and more frequent viral load testing to accelerate cases that qualify for second line treatment. This will assist HCWs to more effectively isolate behavioural factors for focused adherence support. See de Vries et al.'s article on pg. 8. Special thanks go to the Utrecht Medical school, under Prof Anne Marie Wensing's leadership, for including SAHCS in the ITREMA grant and allowing us to educate HCWs on low-level viraemia.

Bosch and Baskar (pg. 4) advocate for accelerating the use of dolutegravir (DTG) in first line treatment for its high barrier to resistance and muted side effects. The recent shift to DTG-containing combinations will ensure that the value of an early viral load test in newly initiated patients will be realised.

Furthermore, in a second article, Bosch & Baskar (pg. 12) interrogate the commonly held belief that DTG may increase metabolic risks by the proxy indicator of weight gain. They argue that metabolic side effects are far less reported than is believed and that the benefits of DTG may outweigh any risks of weight gain unless a patient actually presents with a new metabolic condition post-switching. It goes without saying, the notion of weight is culturally complex and must also be considered with the patient in mind, including both achieving timely virological suppression

as well as patient autonomy. Also take note of the SAHCS statement on the use of DTG during pregnancy and in women of childbearing potential (below). This statement has prompted our National Department of Health to consider this latest evidence and undertake a guideline review process.

Manqoba et al. (pg. 15) remind us of the importance of early CrAg screening for patients with advanced HIV disease (ADH). The recent change in the CrAg screening guidelines highlights the importance of not losing sight of a patient's quality of life and the human rights aspects of treatment effectiveness.

It would be remiss to talk about achieving treatment targets or virological suppression without considering the small but growing population of treatment-experienced HIV-positive patients being initiated on third-line treatment regimens, otherwise known as third-line ART (TLART). Lancaster (page 18) provides an easily digestible presentation of TLART implementation. She emphasizes the critical role played by nurses as anchors of the multi-disciplinary team when managing a TLART programme in a primary healthcare setting.

This edition is filled with technical and informational resources to support HCWs to practice with a conscious focus on virological suppression; including techniques, strategies and resources that amplify the invaluable contribution made by nurses in managing the HIV epidemic on the frontline.

Finally, a special word of thanks goes to the Anglo American Chairman's Fund (AACF) who have kindly contributed towards SAHCS' publishing costs of HIV Nursing Matters over the past several years. We couldn't have continued without this support, and we are saddened that this edition represents the final grant the AACF is able to make.

STATEMENT ON DOLUTEGRAVIR (DTG) USE IN PREGNANCY & FOR WOMEN OF CHILDBEARING POTENTIAL (WOCP) - 19 May 2021

Problem Statement

As more data has been added to the Tsepamo cohort, the difference in DTG vs non-DTG regimens regarding neural tube defect (NTD) risk is now no longer statistically significant.[1] In addition, other cohorts, albeit smaller ones, have not found any increase in NTDs when dolutegravir was being taken at conception.[2,3] Therefore, there is no longer any clear signal of harm.

In contrast, there are benefits to DTG over EFV with respect to virological suppression rates, virological barrier to resistance, tolerability, and side-effects, and many of these may well also translate to better overall maternal and fetal outcomes.[4-6]

Recommendations

The Southern African HIV Clinicians Society (SAHCS), therefore, recommends DTG-containing regimens as the preferred first-line antiretroviral therapy due to superior efficacy, tolerability and higher threshold for resistance when compared to EFV-containing regimens. All ART-naive individuals testing HIV serum positive must be initiated onto a DTG-containing regimen and SAHCS recommends TLD as first line treatment for all, whether the individual is male or female; pregnant or of childbearing potential or not.

In addition, virologically suppressed women of childbearing potential on non-DTG first- and second-line regimens can be safely switched to DTG-based regimens if appropriate. *Always confirm viral suppression prior to switching regimens.*

As any medication use during conception and pregnancy carries some risk, counselling is still advised.

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Dolutegravir and the viral load

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Introduction

South Africa, home to the largest HIV epidemic in the world, has an estimated population of 7.5 million people living with HIV (PLWH).[1] Of this population, 70% are currently receiving antiretroviral therapy (ART) ensuring the world's largest ART programme with ongoing efforts to improve accessibility and tolerability of treatments available.[1] The recent introduction of dolutegravir (DTG) into public healthcare programmes in South Africa in 2019 has brought with it hope for better tolerated, less brittle ARV regimens.

Dolutegravir

Dolutegravir (DTG) belongs to an antiretroviral (ARV) drug class known as the integrase strand inhibitors (InSTI), which prevent viral replication by blocking the viral enzyme integrase, which in turn prevents HIV viral material from merging with the DNA of the patient's cells.[2,3] Other drugs in this class include cabotegravir, bictegravir, elvitegravir and raltegravir (RAL). Of these, only DTG and RAL are available in public healthcare programmes in South Africa and DTG is preferred for several reasons. These include a higher barrier to developing drug resistance, the option for once daily dosing and widespread availability in a fixed dose combination.

As a drug class, the side effects associated with InSTI use are mild, largely self-limiting and rarely lead to treatment discontinuation. Side effects commonly include neuropsychiatric symptoms such as insomnia, headaches and dizziness; and occasionally gastrointestinal disturbances.[4] Two adverse events of concern include InSTI-related weight gain and the potential for neural tube defects

(NTDs) with DTG use in early pregnancy. Whilst the most recent data shows no statistically significant difference in the prevalence of NTDs in infants of women on DTG compared with those on non-DTG regimens,[5] weight gain with DTG use remains a concern. InSTI-related weight gain was first noted in mid-2018 and thought to be a drug class side effect. As evidence emerged, it became clear that certain drugs were more likely to result in weight gain than others. DTG, it appears, is the main culprit, followed closely by RAL. Available data shows women, particularly those of African descent, are at increased risk of weight gain, as well as those with lower CD4 cell counts and higher viral loads at ART initiation. In addition, concomitant tenofovir alafenamide fumarate (TAF) use (a kidney friendly alternative to TDF) appears to further amplify weight gained.[6,7]

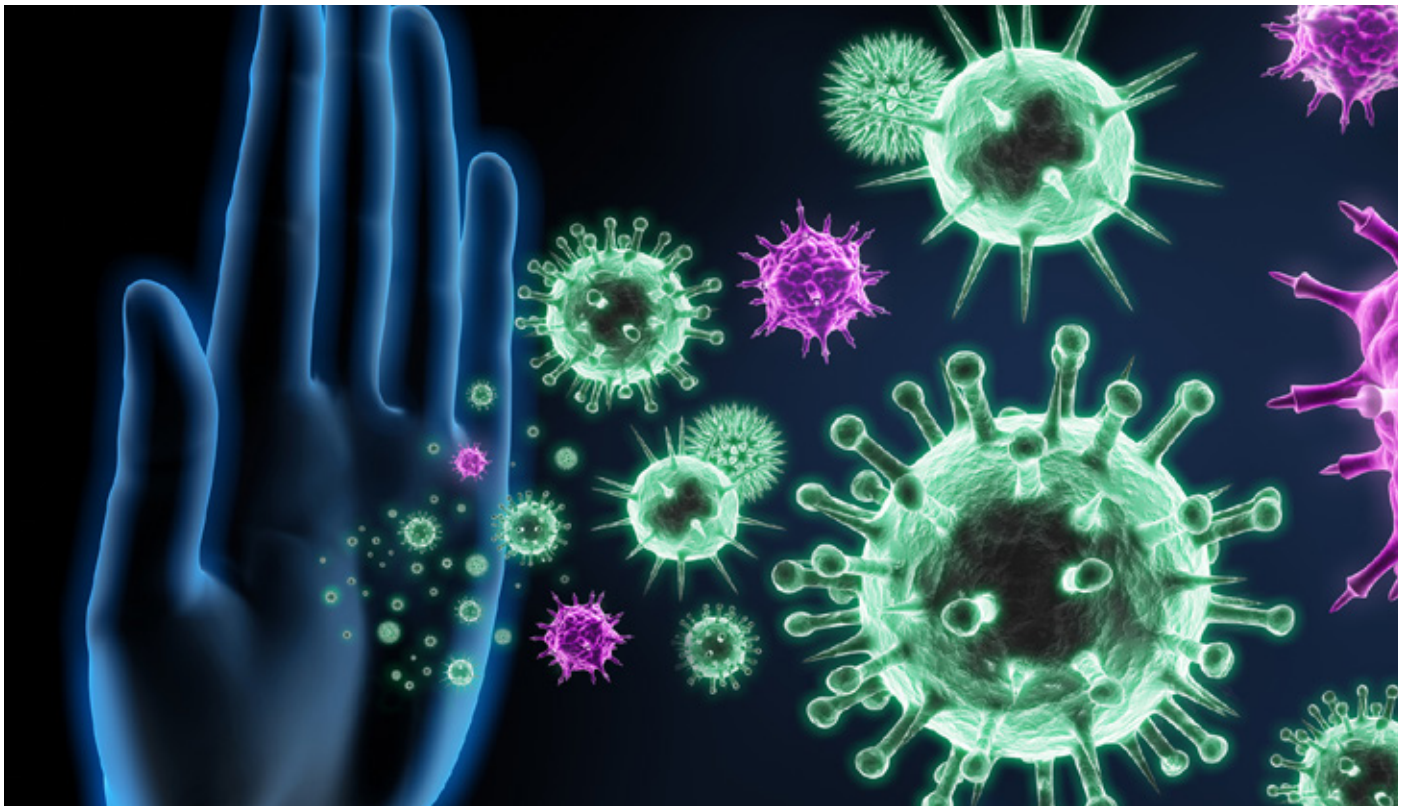
Dolutegravir has proven beneficial in multiple randomised control trials, justifying its use in PLWH who are both ART naïve and experienced. These include trials comparing DTG to efavirenz (EFV),[7,8] RAL,[9] darunavir[10] and ritonavir-boosted atazanavir,[11] as well as several treatment-switch studies in patients failing first-line ART.[12–14] Additionally, clinical trials are underway using DTG in a two-drug treatment regimen in efforts to decrease long-term drug exposure and toxicity.[15]

In 2019, the South African Department of Health published updated ART clinical guidelines, which included DTG as an option for first, second and third-line ARV regimens. The primary goals of ART continue to place emphasis on the reduction of HIV-related conditions (including opportunistic infections such as tuberculosis), minimisation of the development of resistance to ARVs, and improvement in patients' quality of life.[16] These goals align with the UNAIDS 90-90-90 targets that aim to have the majority of PLWH test to confirm their status, be effectively linked to care and readily initiate ART to achieve viral suppression. DTG has proven crucial in attempting to achieve and maintain viral suppression, and in doing so reduce HIV-related mortality.[17] In addition, DTG has proven more tolerable than EFV, a drug dominating first-line ART in South Africa for many years, allowing for better adherence with its use.

What is a viral load (VL)?

Viral load is a well-recognised marker of HIV control and a vital part of monitoring a patient's response to ART. The lower the viral load result, the better a patient's HIV control with resultant relief offered to the immune system.

Undetectable viral loads imply that ART has reduced the number of HIV particles in a patient's bloodstream to such a low level that it can no longer be detected by standard blood tests.[18] Whilst important to emphasise that this does not imply cure from HIV, it does indicate that viral levels in the body are low enough to prevent transmission through sex and HIV is unlikely to be transmitted from a pregnant mother to her unborn child. This suppression, however, is not permanent, and should patients stop or interrupt ART, the viral load will once again increase, making HIV transmittable.[18]



As per the South African National Department of Health updated 2019 ART guidelines,[16] viral loads should first be performed at 6 months following ART initiation. Importantly, viral load is not required at time of ART initiation, since it can be expected to be high in the absence of ARVs to suppress it.

Further management of the patient is dependent on this initial result:

- VL < 50 cp/mL - this implies that the virus is suppressed, and the patient can continue with their ARV treatment as prescribed, with a repeat VL only required annually thereafter if continuously suppressed.
- VL ≥ 50 cp/mL - this is considered a medical emergency and must therefore be evaluated as soon as possible. This includes assessment of adherence, presence of concurrent infections, ensuring correct ART dosing, monitoring for drug-drug interactions, and considering the presence of ARV resistance mutations.[16] Once adherence counselling has been done, a repeat VL done 3 months thereafter is indicated and the patient managed accordingly.

DTG and the VL

HIV, if uncontrolled, is able to mutate or adapt itself each time a new viral copy is made. If this is done in the presence of ARVs, mutations to these drugs develop and accumulate. A genetic barrier to resistance, simply put, is the number of mutations required to develop resistance to a specific ARV. A high barrier to resistance allows for the accumulation of many mutations before a drug can no longer be used due to resistance and subsequent decreased efficacy.[19] HIV drug resistance is able to severely impact the effectiveness of ART regimens and programmes, allowing for increased mortality, limited options for future regimens and increased cost implications.

DTG is one such drug with a high barrier to resistance. Not only does DTG not become ineffective easily, it also manages to suppress HIV rapidly, allowing the patient's immune system time to recuperate. This was seen in the ADVANCE clinical trial which compared two DTG-based regimens to South Africa's previous standard of care, an EFV-based regimen.[7] Whilst DTG and EFV were noted to both be effective in managing HIV infection, patients on DTG-regimens achieved viral suppression sooner than those on EFV. This is particularly important in reducing disease progression and aid in preventing HIV transmission.

Guidelines on managing virological failure continue to evolve as we learn more about ARVs and the likelihood of developing resistance mutations. Because of its high genetic barrier, resistance to DTG develops very slowly, and elevated VLs in a patient on a DTG-based regimen is likely to be related to poor adherence. As a result, patients should be on a DTG-based regimen for at least 2 years, with at least 3 VL ≥ 1000 cp/mL before considering a switch to second-line ART.[16] This is in comparison to EFV-based first-line ART, which requires only 2 consecutive VL ≥ 1000 cp/mL before considering a regimen switch because of EFV's lower barrier to resistance mutations.

Conclusion

Dolutegravir, despite recent concerns around weight gain, is an excellent addition to the South African ART programme. Not only is it well tolerated, its high genetic barrier allows it to largely evade resistance and remain active against HIV. The importance of this cannot be emphasised enough in ensuring patients remain susceptible to first-line ART regimens, allowing for ease of use, and in doing so encouraging treatment adherence, preservation of future ART options, and preventing the use of more costly second- and third-line ARVs. Concurrently, the timeous use of viral load testing to monitor therapeutic response remains vital in identifying patients with adherence issues and addressing these concerns early on.

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- Using new ARVs in pregnancy: *Prof Linda-Gail Bekker, Dr Coceka Mnyani;* plus Update on new paediatric ARV formulations -present and future: *Dr. Leon Levin*
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- Cryptococcal Meningitis: 4-hour stand-alone course: *Dr. Nelesh Govender, Prof. Yunus Moosa & Dr. Richard Lessells* (see below for more information).
- TB & other respiratory opportunistic infections: *Prof. Gary Maartens, Prof. Yunus Moosa & Dr. Richard Lessells*
- HIV/TB & Covid-19: *Dr. Mary-Ann Davies, Prof Graeme Meintjes*

Advanced HIV Disease (AHD) is defined as the presence of a CD4 cell count <100 (SAHIVCS Cryptococcal Meningitis update 2019) - 200cells/ mm^3 or a WHO clinical stage 3 or 4 event, for adults, adolescents, and children ≥5 years old. This results in a high risk of mortality and morbidity, which is worse, the lower the CD4 count. On initiating ART, there is less robust CD4 recovery. Finally, there is a high risk of opportunistic infections (OIs). All children < 5 years old with HIV infection are considered as having advanced HIV disease.

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Improving viral load monitoring in South Africa: lessons from the ITREMA project

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By whom was the ITREMA project performed?

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To propagate the ITREMA key messages, several trainings are being organised by the Southern African HIV Clinicians' Society. In these trainings, the ITREMA messages are often combined with an update on other relevant subjects in HIV care, such as CMEs. If you would like to join one of the trainings, please visit the website: https://sahivsoc.org/

For further information about ITREMA, please visit the website: https://www.itrema.org/

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Over the past few decades, great steps have been taken to bring the HIV epidemic in South Africa to a halt. The rollout of antiretroviral therapy (ART) has helped to contain the spread of the virus.[1] It is now time to evaluate these approaches.

ITREMA is a scientific project evaluating the current clinical practice of ART monitoring in South Africa. The project consists of several observational research analyses and a clinical trial.[2,3,4,5] The observational studies have assessed the impact of low-level viraemia during ART, the delay in clinical follow-up of patients after viral rebound, and the value of drug level testing in viral rebound. The clinical trial is still ongoing and compares standard-of-care viral load monitoring during ART with an intensified monitoring strategy in which the viral load is measured more frequently, and additional testing measures including drug level and drug resistance testing are used in the case of an elevated viral load. The ITREMA team regularly engages with clinicians and policymakers on the project and specific study findings.

The ITREMA team has developed three key messages in order to summarise and disseminate study findings to healthcare workers such as nurses, lay counsellors, and doctors.

These key messages are:
1. Low-level viraemia does not equal virological suppression
2. Delayed response to viral rebound puts individuals and society at risk
3. Use tools to generate insight in virological failure

This article highlights important aspects of these key messages in a Q&A session with nursing care professionals.

What has the ITREMA study found regarding the importance of low-level viraemia in clinical practice?

Firstly, we have shown that low-level viraemia occurs frequently. Approximately 25% of patients on first-line ART experience an episode of low-level viraemia during the first two years of follow-up. We found that these patients have an increased risk of virological failure. This risk is especially increased in patients with a VL between 400 and 1000 copies/mL - they have a five-times increased risk of virological failure when compared to patients with a suppressed VL.[3] These findings suggest that any VL above 50 copies/mL should be flagged and action taken. Furthermore, this has prompted a discussion regarding the VL threshold at which a patient is considered to have virological failure, which is currently 1000 copies/mL.

What is low level viraemia?

Low level viraemia means that the virus is not optimally suppressed, a low amount of virus is still detectable. Low level viraemia is defined as a viral load (VL) between 50-1000 copies/mL during ART.

Given the importance of low-level viraemia, how should we approach it as clinicians?

Based on the findings of ITREMA, as well as other studies, guidelines have redefined the threshold for virological failure. The Southern African HIV Clinicians' Society now defines virological failure as a VL greater than 50 copies/mL, which is in line with most guidelines in high-income countries. Recently, the South African Department of Health guidelines changed the definition of successful viral suppression from <1000 copies/mL to <50 copies/mL. The WHO currently still maintains a VL threshold of 1000 copies/mL[3].

ITREMA's second key message suggests that response to viral rebound is delayed. How are patients with viral rebound followed-up in clinical practice in South Africa?

We found that in South African HIV treatment facilities, patients on first-line ART with viral rebound did not always receive a confirmatory VL within the recommended timeframe. Those patients who did receive a VL confirming virological failure were not always switched to second-line ART. Additionally, the patients that were switched to second-line ART were, on average, only switched after one year following an elevated VL (Fig. 1).[2] Patients with an unsuppressed VL are able to transmit HIV to others and to develop resistance therefore, it is crucial to minimise this delay as much as possible.

What were the reasons for the difference between the guideline recommendations and the observed real-life situation?

Healthcare workers often reported not switching to second-line ART that because of uncertainty about adherence to ART. Patients in general tend to underreport non-adherence.[6,7] Therefore, healthcare workers often assume that patients are non-adherent, give intensified adherence counselling and defer the switch to second-line ART. This may lead to resuppression of the VL in some cases. However, it is unlikely to have an effect in patients who have drug resistant HIV. To address this problem, healthcare workers need to know whether the patient has an adherence problem and if the patient has drug resistant HIV.

How can we enable healthcare workers to assess adherence and viral drug resistance?

Resistance of the HIV virus to ART can be detected using drug resistance testing, which is available to South African public sector healthcare facilities. However, drug resistance testing is expensive and is therefore reserved for use in second-line treatment failure. It is of questionable value in first-line treatment failures. New and less expensive methods for drug resistance testing are in development but unfortunately are not currently available in clinical practice.

Patient adherence to treatment can also be examined in the laboratory using tests that measure the level of ARV drugs in patient samples. Such tests, referred to as drug level testing, can be performed in a variety of ways. As part of the ITREMA project, novel methods have been evaluated for drug level testing for efavirenz, lopinavir, and dolutegravir. These methods are affordable and relatively easy to implement in the laboratory. In ITREMA, the tests were used as point-of-care tests and turn-around times of 30 minutes were achieved.[8] Currently, availability of these tests in South Africa is still limited to academic and research settings.

Could these novel drug level testing methods be used as a tool to determine patient treatment adherence?

In one of ITREMA's projects, efavirenz, lopinavir, and dolutegravir drug level testing was implemented as a qualitative test. The test result can inform the clinician whether there is a detectable drug level

Clinical management of viral rebound, observed versus recommended practice

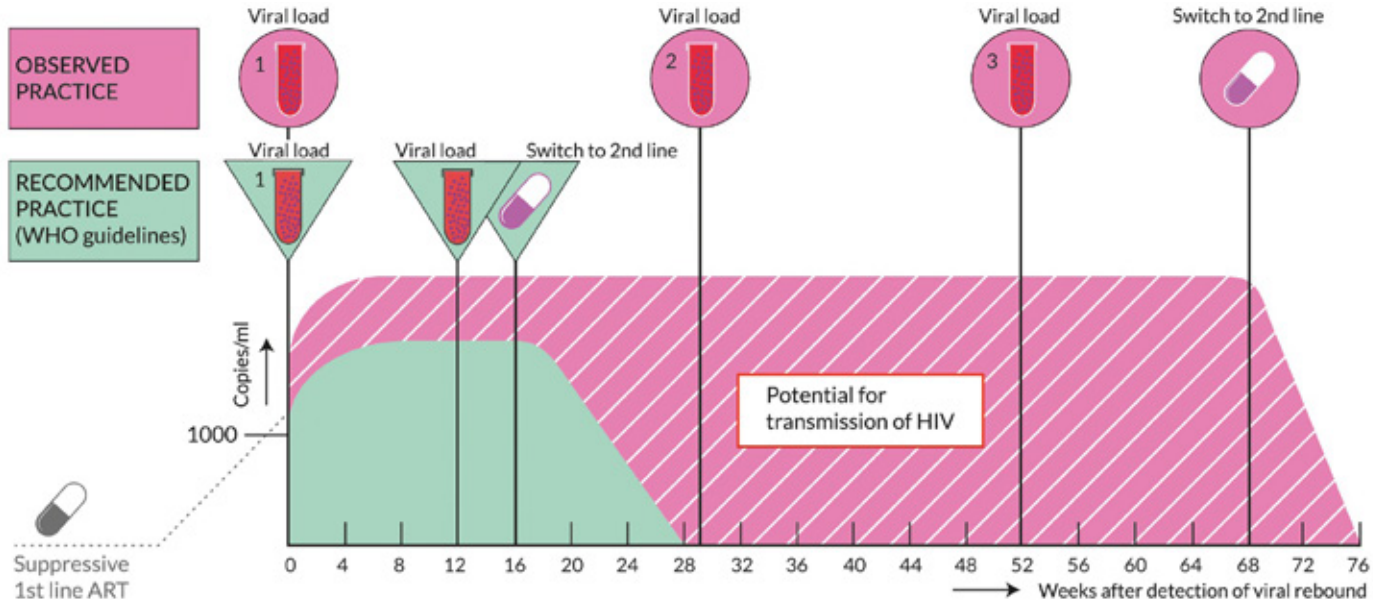

Figure 1: The difference between the recommended practice according to the WHO guidelines and the average observed practice in the study. Green: what WHO guidelines recommend. Pink: what happens in the real-life situation. Figure from Hermans et al., PLOS medicine 2020.

or no detectable drug level. In the case of no detectable drug level, the clinician can assume that the medication has not been taken for at least one day, and in most cases for longer.[8]

This test was then implemented in patients with a VL >1000 copies/mL during second-line (lopinavir-based) ART. In these patients, a negative drug level test predicted the absence of resistance with 95% certainty. In other words, if a patient has a high viral load and their drug level test reports that the patient has no detectable lopinavir level, the chance of drug resistance to lopinavir is very low, and an adherence problem is far more likely. In patients where a lopinavir level is detected, the chance of drug resistance to lopinavir is far higher.[4] This shows us that drug level testing can provide easy-to-interpret information on patient adherence, and can enable healthcare workers to decide which patients require drug resistance testing and which would benefit from intensified adherence counselling.

Key messages: How can nurses improve the standard of care based on these lessons?

Key message 1: Low level viraemia does not equal treatment success.
Patients with low-level viraemia (a viral load between 50 and 1000 copies/mL) should be followed up closely as they have an increased risk of virological failure. Adherence counselling should be performed in these patients. If the low-level viraemia persists or if virological failure develops, the patient should be switched to second-line ART in accordance with guidelines. If you do not have authorisation to switch therapy, discuss the case with someone who does.

Key message 2: There is a delayed clinical response to viral rebound.
Patients with viral loads above 1000 copies/mL need to be flagged. The viral load should be repeated within three months after the initial viral load, and adherence counselling should be performed in the meantime. If the second viral load remains above 1000 copies/mL, a switch to second-line ART should be performed without delay.

Key message 3: Diagnostic tools can be used to generate insight in virological failure.
When in doubt about patient adherence, a drug level test could be a useful and cost effective screening option prior to doing a resistance test. If the drug level test is negative, it shows that the patient has suboptimal adherence and a resistance test is redundant.

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Dolutegravir and weight gain

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Introduction

South Africa, home to one of the largest populations of people living with HIV (PLWH) is also no stranger to continuously rising obesity figures – two seemingly unrelated health concerns now closely intertwined.[1] The introduction of newer antiretroviral (ARV) agents over the last decade has brought with it significant concerns around associated weight gain and the long-term consequences thereof, particularly since PLWH are living longer and experiencing a higher burden of non-communicable diseases (NCDs) than ever before.[2] In South Africa, the rollout of dolutegravir (DTG) into state programmes and ongoing data from recent clinical trials has highlighted this, raising fears around the suitability of DTG in our population.

Dolutegravir and weight gain

Dolutegravir is part of an ARV drug class known as integrase strand inhibitors (InSTI), which prevent viral replication through blocking of the viral enzyme integrase which in turn prevents HIV viral material from being merged with the DNA of the patient's cells.[3,4] Other drugs in this class include cabotegravir, bictegravir, elvitegravir and raltegravir (RAL). Of these, only DTG and RAL are available in public healthcare programmes in South Africa and DTG is preferred for several reasons including a higher barrier to developing drug resistance, the option for once daily dosing and widespread availability in a fixed dose combination.

Dolutegravir has proven beneficial in multiple randomised control trials, justifying its use in PLWH who are both antiretroviral therapy (ART) naïve and experienced. These include trials comparing DTG to efavirenz (EFV)[5,6], RAL[7], darunavir[8] and ritonavir-boosted atazanavir[9], as well as several treatment switch-studies in patients failing first-line ART.[10-12] Additionally, clinical trials are underway using DTG in a two-drug treatment regimen in efforts to decrease long-term drug exposure and toxicity.[13]

In 2019, the South African National Department of Health published updated ART clinical guidelines, including DTG as an option for first, second and third-line ARV regimens. The primary goals of ART continue to place emphasis on the reduction of HIV-related conditions (this including opportunistic infections such as tuberculosis (TB), minimise the development of resistance to ARVs and improve patients' quality of life.[14] DTG, in many ways, satisfies the above criteria, offering rapid viral suppression, a high genetic barrier to the development of resistance and proving more tolerable than EFV, a drug dominating first-line ART in South Africa for many years.

As a drug class, the side effects associated with InSTI use are mild, largely self-limiting and rarely lead to treatment discontinuation. These commonly include neuropsychiatric symptoms such as insomnia, abnormal dreams, headaches and dizziness.[15] InSTI-related weight gain, however, was first noted in mid-2018 and thought to be a drug class side effect. As evidence

emerged, it became clear that certain drugs were more likely to result in weight gain than others. DTG, it appears, is the main culprit, followed closely by RAL. From the data available, women, particularly those of African descent, are at an increased risk of weight gain, as well as those with lower CD4 cell counts and higher viral loads at ART initiation. In addition, concomitant tenofovir alafenamide fumarate (TAF) use (a kidney friendly alternative to TDF) appears to further amplify this weight gained.[6,16]

Obesity, denoted by a BMI of greater than 30 kg/m^2, is not a health concern isolated to South Africa. In 2016 the World Health Organization (WHO) estimated that 13% of adults (± 650 million people) globally were obese, with a further 40% overweight according to BMI classifications.[17] It is estimated than an increase of 5 kg/m^2 in BMI increases a person's risk of death by about 30%.17 Whilst limited data exists in PLWH, the risk of death is suspected to be the same as that for the general population, and confers multiple additional health complications including hypertension, diabetes mellitus, obstructive sleep apnea and pregnancy-related complications.[18]

Several theories around why PLWH gain weight on ART exist, with no definitive answer nor a "one-size-fits-all" solution available. One such theory suggests a return to health phenomenon where weight gain is the result of slowed or eliminated viral replication and alleviation of HIV-associated inflammation, with improved appetite and nutrient absorption.[18] Another suggests that weight gain is inhibited by older ARVs such as TDF and EFV through unclear mechanisms. This was seen in the ADVANCE clinical trial where patients who were slow to metabolise EFV and had higher circulating blood EFV levels, tended to have slower weight gain as compared to those who metabolised EFV more quickly.[19]

Diet and lifestyle interventions

As per a WHO global action plan for obesity released in 2016, there exist two fundamental strategies to aid weight loss: an increase in physical activity and a reduction in energy intake.[17] Empowering patients to understand good nutrition in attempts to prevent non-communicable diseases starts with understanding what's on their plate. This includes identification of the basics of a balanced diet, an understanding of the different food groups (macronutrients and micronutrients) and how to balance energy intake and deficit by counting calories. As a result, patients are encouraged to take control of their own health and hopefully pass healthy practices on to family and friends.

Whilst clinic visits are often time restricted, healthcare workers are encouraged to dedicate time to health promotion where possible. This could include, but is not limited to, the following:

1. Encourage patients to eat naturally occurring foods and avoid those that are overly processed, which are often high in sugar and fats.
2. If packaged foods are bought, teach patients to read nutrition labels in order to choose the healthier option.
3. Encourage consumption of a variety of foods with a bigger portion (about half a plate) comprising of fresh fruit and vegetables.[20]
4. South Africa is one of the largest consumers of Coca-Cola (Coke) in Africa – a crucial aspect of counselling includes limiting the consumption of fizzy drinks which are high in sugar and calories.[21]
5. Preparation methods influence the nutritional value of food and are oftentimes easy measures to adjust. For example, eating pap (mealie meal) once it has cooled

reduces the glycaemic index of this carbohydrate dense food, preventing an insulin spike which reduces its fat storing function.[22]

6. Patients should be encouraged to practice moderation in their diets so as to make long term improvements in eating patterns.
7. Understanding the importance of choosing foods with a low glycaemic index (the measure of which glucose is released into the blood stream after it is digested) can help patients consume foods that are higher in fibre, micronutrients and antioxidants as well as choosing foods lower in calories.[22]
8. Patients should incorporate exercise into their weekly routines in a way that is safe but effective. This may include walking instead of catching public transport, joining community exercise programmes, or committing to at-home guided training. Research continues to support the conclusion that physical activity accumulated in bouts of at least 10 minutes can improve a variety of health-related outcomes.[23,24]

In addition, healthcare practitioners are encouraged to perform the following at each visit to aid in assessment of patients' cardiovascular risk:

- Anthropometric measurements: weight, height, BMI, waist circumference
- Body composition measurements: waist-to-hip ratios, skinfold measurements
- Biochemical markers: fasting blood glucose, HbA1c, lipogram
- Food history: 24-hour recall, food diaries.

Governments have a central role in creating a healthy food environment that enables people to adopt and maintain healthy dietary practices. Where available, access to local or on-site dietetic services can aid in improving adherence to a healthy lifestyle through a patient tailored approach.

Additionally, the use of technology such as smartphone applications can assist in learning about foods and their components, especially when engaging the youth.[24]

Conclusion

So, what are our options? EFV, despite poor tolerability when compared to newer ARVs, has typically been associated with equal effectivity and does not have associated weight gain. Newer agents such as doravirine, islatravir and cabotegravir which although not yet registered for use, may offer future alternatives.

At present there is no evidence to support the reversal of weight gain after ART switching and as such defining clear guidelines for switching ARVs is difficult and should largely be patient tailored until more concrete evidence exists. Our recommendations would be to consider a switch from DTG should patients develop new metabolic consequences (such as diabetes mellitus, hypertension and dyslipidaemia) along with a significant increase in weight. Cultural sensitivity and allowing patients autonomy when considering approaches to weight gain is vital – not only does being underweight often attract stigma of HIV and TB infection, but the reverse denotes wealth and status in many cultures. Whilst clinical discretion is advised where clear harm over benefit for the patient exists (e.g. weight gain with resultant development of metabolic consequences), patients should be allowed the opportunity to make informed decisions around their health with a holistic approach adopted.

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The role of primary healthcare nurses in cryptococcal antigen screening in South Africa

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Background

HIV attacks the very cells that help the body fight infection and thus being HIV-infected weakens a person's defence against a range of opportunistic infections and diseases[1]. If undiagnosed and untreated, HIV infection can progress to advanced HIV disease (AHD).[1] This progression can also occur if a person living with HIV interrupts their antiretroviral therapy (ART) for whatever reason. Among adults living with HIV, AHD is defined as having a CD4+ T-cell count of <200 cells/µl or having been diagnosed with a World Health Organization (WHO) clinical stage 3 or 4 event.[2] This term can be used interchangeably with AIDS. In 2019, 38 million people were estimated to be living with HIV globally, with 25.4 million people accessing ART.[3] South Africa has the largest HIV epidemic in the world, with nearly 7 700 000 people living with HIV, and 240 000 new infections reported annually.[4] Although progress has been made in reducing AIDS-related deaths from 140 000 in 2010 to 71 000 in 2018, the number of AIDS-related deaths is still unacceptably high.[4] South Africa aims to reach the UNAIDS 90-90-90 targets by 2035, currently having achieved 85% of HIV infected people being aware of their status, 71% on ART and 86% virally suppressed.[5]

People with AHD are at increased risk of an opportunistic fungal disease called cryptococcosis caused by fungi in the genus, Cryptococcus.[6] Cryptococcus is the most common cause of meningitis in adults living with AHD in sub-Saharan Africa.[6] Cryptococcal meningitis (CM) is a major cause of morbidity and mortality.[7] CM has been estimated to affect 223 100 people annually, resulting in 181 100 AIDS-related deaths. Sub-Saharan Africa has the highest

burden of CM, estimated at 162 500 cases (73% of total), resulting in 135 900 deaths.[8] Although the incidence of CM has declined in resource-rich countries with close-to-universal ART access, CM is still a problem in many sub-Saharan African countries where the HIV prevalence is very high, access to healthcare is limited, a large number of people are still unaware of their HIV status and interruption of ART is a common occurrence.[7] In South Africa, over 30% of people entering into HIV care are diagnosed with AHD and over 15% have very advanced disease (i.e. a CD4 count of <100 cells/μL).[9]

Cryptococcal antigen (CrAg) screening

In March 2011, the WHO first recommended screening of HIV-infected people with a CD4 count of <100 cells/μL using a rapid cryptococcal antigen (CrAg) test. CrAg, which is a component of the cryptococcal polysaccharide capsule, can be detected in the blood of infected people weeks, or even months, before the onset of symptomatic CM. Therefore, a CrAg test can serve as a valuable biomarker for early detection of cryptococcal disease in asymptomatic patients.[9] A positive blood CrAg test must be immediately followed by a lumbar puncture to exclude subclinical or asymptomatic CM. If the patient has no evidence of CM (i.e. cerebrospinal fluid [CSF] CrAg-negative) soon after screening blood CrAg-positive, pre-emptive anti-fungal therapy can prevent progression to CM.[10]

South Africa's CrAg screening programme is important for the early diagnosis of cryptococcal disease and prevention of progression to CM.

The evolution of CrAg tests and birth of a national CrAg screening programme in South Africa

In the past, a cryptococcal latex agglutination test (CLAT) was used to detect CrAg in the blood and CSF.[11,12] While the CLAT was previously considered the gold standard for CrAg testing, this is a labour-intensive and expensive test requiring specialised laboratory infrastructure.[11,12] A lateral flow assay (LFA) was developed and became commercially available in 2011. This test format was found to have >99% sensitivity and specificity for CrAg detection in the context of CM.[13] An LFA is a rapid dipstick test which is inexpensive and ideal for use for CrAg screening in resource-limited settings. An LFA meets all of the WHO's A.S.S.U.R.E.D. criteria (i.e. affordable, sensitive, specific, user friendly, rapid or robust, equipment-free and delivered).[14] In 2011, the WHO recommended routine blood CrAg screening in populations with a high prevalence of cryptococcal antigenaemia using either the CLAT or LFA.[9,10] The recommendation was later updated in 2018 to use an LFA for screening. In 2012, a pilot programme for reflex laboratory-based CrAg screening was launched in South Africa. The pilot was expanded into a national screening programme in 2016, so that all blood samples with a CD4 count of <100 cells/μL now automatically receive a CrAg test. Between February 2017 and September 2020, over 990 000 reflex CrAg tests were performed, with a 6% of those having a positive result. (Unpublished data, National Institute for Communicable Diseases, 2020)

The role of the primary healthcare nurse in CrAg screening

Decentralisation of the ART services, together with the nurse-initiated management of ART (NIMART) programme, has been integral in relieving pressure on already-overburdened referral hospitals in South Africa.[15] As a result of this task shifting, primary healthcare (PHC) nurses have become primarily responsible for large numbers of HIV-infected patients, and therefore play a pivotal role in the CrAg screening process.[15]

Important updates to the CrAg screening process are included in the South African National Department of Health's (NDoH) consolidated guideline for the management of HIV updated in February 2020.[16] According to this guideline, all patients with a first positive CrAg test on blood now require a lumbar puncture (LP) to exclude CM.[16] PHC nurses who manage many of these patients need to vigilantly check all screening blood CrAg results in their facilities, and timeously refer those patients needing LPs, in order to ensure early diagnosis and treatment of CM.[16] Reflex CrAg screening results can easily be missed as they are not ordered by clinicians. Results for Action (RfA) is an electronic result delivery portal which enables South African clinicians to access positive blood CrAg results at facility, subdistrict, and district levels as soon as these results are available. Clinicians can register for the RfA by going to nicd.ac.za, clicking on M&E Dashboard and selecting self-service registration.

The NDoH guideline further recommends that following referral for an LP, patients with a CrAg-negative test on CSF should receive oral pre-emptive fluconazole. Many patients are referred back to PHC facilities for their pre-emptive therapy, necessitating a good level of knowledge on fluconazole prescribing among PHC nurses. Among adults, the pre-emptive fluconazole regimen includes an induction phase of 1200 mg daily for 14 days, followed by a consolidation phase of 800 mg daily for 8 weeks. The maintenance dose of 200 mg daily should follow these phases and continue for at least a year. Fluconazole can be discontinued when patients have a CD4 count of >200 cells/μL on ART and viral suppression is achieved.

The updated algorithm for screening of cryptococcal disease aims to lower CM-related mortality, by reducing late presentation and delayed diagnosis of CM, and relies heavily on PHC nurses for its successful implementation.

The role of the National Institute for Communicable Diseases in CrAg screening

The National Institute for Communicable Diseases (NICD) has, for the past seven years, led the scaling up of CrAg screening in South Africa. Through the CrAg screening and treatment national evaluation (CAST-NET) project, the NICD is currently evaluating the effectiveness of this national screening programme in order to improve HIV care and survival of persons living with AHD. While the programme has achieved a 99% coverage of CrAg screening, data are still being collected through the CAST-NET study on the proportion of CrAg-positive patients who are referred for LP, the proportion who are prescribed pre-emptive anti-fungal therapy, and the proportion who are still in HIV care at 6 months.

Conclusions

South Africa's CrAg screening programme is important for the early diagnosis of cryptococcal disease and prevention of progression to CM. At the PHC level, nurses play an essential role in ensuring that persons with antigenaemia are followed-up and adequate treatment is given to reduce CM-related disease and mortality.

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The importance of nurses in the third-line antiretroviral treatment programme

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South Africa has the largest antiretroviral treatment (ART) programme in the world with 7.5 million people infected with HIV, of which 6.9 million are accessing ART through the public healthcare sector's HIV programmes. Of these, less than 1% are currently on third-line ART (TLART); however, there are likely to be more patients who require TLART but that have not yet been identified. Most patients access their ART through primary healthcare (PHC) facilities.

With this large population of patients requiring ART, and with less than one doctor per 1000 population[1], Nurse Initiation Management of ART (NIMART) was started in 2010 to alleviate the strain on medical doctors, who initially were the only cadre of healthcare workers able to initiate patients on ART. NIMART nurses have been trained to deliver a comprehensive package of HIV care, including diagnosis of HIV, prescribing treatment and monitoring progress on ART. Thanks to the high number of NIMART nurses trained, and the vital role they play, this task shifting has improved access to ART and allowed for early initiation, reduced mortality and improved

retention in care.[2] NIMART has also been shown to reduce patient waiting times, offer more affordable healthcare and improve health-related quality of life in patients.[2]

As NIMART nurses are now managing the majority of our country's HIV positive population, they are well positioned to identify patients that are struggling with their ART, and those that may be failing second-line regimens. This is key to the identification of patients requiring TLART.

Antiretroviral regimens

Medicine access in the South African public healthcare sector is guided by the Standard Treatment Guidelines (STGs) and Essential Medicines List (EML). The PHC STGs and EML assist healthcare workers at PHC facilities in selecting appropriate treatment regimens and includes medicines that can be prescribed and dispensed by nurses for various conditions. The latest edition, 2020, provides guidance for the initiation of patients on first- and second-line ART.[3] As TLART involves complicated resistance mechanisms, specialist review of the patient and recommendation of an appropriate regimen on a case-by-case basis, is needed. This is performed by a National TLART Expert Review Committee. Nurses can manage the patients and liase with the committee to provide TLART for their patients in PHC facilities so that patients do not have to travel long distances to hospitals.

What role can nurses play to support patients who require TLART?

1. Identifying patients who are failing second-line (protease inhibitor-based) treatment

The first step is to identify those patients that may be potential candidates for TLART and to bring them to the attention of the medical doctor. These are patients who have been on a protease inhibitor (PI), such as lopinavir/ritonavir or atazanavir/ritonavir, for more than two years and who have also been counselled on adherence, but still present with a viral load (VL) > 1000 copies/mL. In adults, these PI-based regimens are generally the patient's second-line regimen. In children, however, the situation is more complicated as a PI-based regimen can be their first-line regimen. Patients who fulfil the above criteria are eligible for a drug resistance test (DRT) through the National Health Laboratory Services, and if the drug resistance test indicates that there is PI resistance, these patients are then candidates for TLART.

This short synopsis on the TLART programme demonstrates how vital the nurse's role is within the multidisciplinary team when addressing the complicated needs of treatment-experienced HIV-positive patients.

Patients who have had tuberculosis (TB) treatment with a PI-based ART regimen are also more likely to develop resistance to ART. This is why it is vital for nurses to remember to double the dose of lopinavir/ritonavir in adults on rifampicin, and to give ritonavir super-boosting to children on rifampicin. If a nurse finds a patient with a high VL on a PI-based regimen this should prompt them to check whether the patient has been on TB treatment at the same time, and if the ART was managed correctly during this time. If not, the nurse should call an expert to discuss the case, as the patient may require resistance testing sooner.

Role of the nurse: to identify patients that would be candidates for TLART.

2. Improve patient adherence and simplify the ART regimen

Patients who have a high VL while taking a PI-based regimen require extra attention to find out if they are struggling with adherence, whether it is patient, provider, medicine or health system-related factors. It is important to address psychosocial issues and involve social workers, counsellors, psychologists, and psychiatrists when necessary. It may also be beneficial to simplify the ART regimen to reduce the pill burden, side effects, drug interactions or make the regimen once a day instead of twice a day. An expert or ART helpline can be contacted to assist with this (see Table 1).

3. Preparing the patient for a drug resistance test (DRT)

In some cases, it is possible that the patient appears to be failing their ART because they may not be taking their medicine correctly, or not taking their medicine at all. Doing a DRT is expensive and is only beneficial to the patient if the patient is adherent to their treatment. It is therefore important that the patient is counselled before this test is done, and are advised to take their treatment appropriately for at least one month before the DRT is taken.

Table 1: ART Helplines

Institution	Contact Number
National HIV & TB Care Worker Hotline:	0800 212 506 or 021 406 6782
KZN Paediatric Hotline	0800 006 603
The following can also be contacted via SMS/Please Call Me/WhatsApp:	
National HIV & TB Care Worker Hotline:	071 840 1572
Right to Care Adult HIV Helpline	082 957 6698
Right to Care Paediatric and Adolescent HIV Helpline	082 352 6642

Role of the nurse: to prepare the patient for the DRT by ensuring the patient is adherent for at least one month prior to the test being done. The nurse can do the resistance test, discuss with an expert to confirm that the patient is eligible, fill in the forms and take the blood (two purple tubes).

4. Application for third-line treatment

TLART is accessed through the national Adult or Paediatric Peer Review Expert Committees, which consist of experts in HIV. An application is required, consisting of the patient's, medical doctor's, and facility's details (see *Fig 1 below*). Of special importance is the inclusion of an email address as the TLART secretary needs this for communication of the final recommendation to the nurse. If possible, it is also recommended that the pharmacy's email address is also included as they will have to procure the specialist medicines.

Figure 1: Initial details required in the TLART application form

APPLICATION - THIRD LINE ANTIRETROVIRAL THERAPY						
PLEASE ENSURE ALL FIELDS ARE COMPLETED BEFORE SUBMITTING						
Patient First Name						
Patient Surname						
Date of Birth day/month/year		**Patient number**				
Identity number		**Age**		**Gender**		
Weight		**BMI** (kg/m^2)		***Height (child)***		
FACILITY DETAILS						
Facility Name						
Province						
Doctor In Charge Of Patient/ Authorised Prescriber						
Doctor's Contact Number						
Doctor and Pharmacist Email Addresses						
				Date day/month/year		

The application form also requests the patient's treatment history (including any history of TB treatment), adherence and adverse effects history, as well as clinical aspects of the patient, such as the past 3 viral load and CD4 count results, and other laboratory results (such as creatinine and creatinine clearance, hepatitis B surface antigen, haemoglobin) (see *Fig* 2). The TLART Committee uses the information from the application form and DRT test, together with an algorithm, to design an appropriate regimen for the patient.

The last section of the form requests information about any other medicines the patient may be taking, as the Committee must also take into consideration possible drug-drug interactions that may occur with TLART and adjust the recommended regimen accordingly (see *Table* 2).

Role of the nurse: to ensure the TLART application is completed in full with the most up-to-date results, as well as to ensure a list of all the medicines the patient is taking is included.

Figure 2: Laboratory results required in the TLART application form

CD 4 COUNT				VIRAL LOAD		
DATE day/month/year		**RESULT**	***Children CD4 %***	**DATE** day/month/year		**RESULT**
Date:				Date:		
Date:				Date:		
Date:				Date:		

Most recent available tests		**Date**
Hb (g/dL)		
ALT (U/L)		
Creatinine (µmol/L)		
Creatinine Clearance (mL/min/1.73 m^2)		
White cell count (x 10^9/L)		
Hepatitis B status (HbsAg pos/neg)		

Results of Viral Resistance Test - submit together with application to:
TLART@HEALTH.GOV.ZA

Table 2: Important drug-drug interactions with ART

Antiretroviral	Concomitant medicine	Comment
Protease inhibitors (lopinavir, atazanavir, darunavir)	Rifampicin	Rifampicin, which is a main component of anti-tuberculosis (TB) treatment, interacts strongly with PIs. Only lopinavir and rifampicin can be administered together, and only if the lopinavir dose is increased. If the patient is on atazanavir or darunavir, and needs anti-TB medicine, the rifampicin component must be changed to rifabutin. This drug-drug interaction is so strong that if not resolved, it can result in resistance forming to ART, resulting in the patient needing third-line ART or losing their last line of ART. More detailed information can be found in the PHC STGs and EML.
Dolutegravir	Metformin	While on dolutegravir, a patient must not take more than 1g of metformin a day to decrease the risk of lactic acidosis.
Darunavir	Atorvastatin	While the patient is on darunavir, a patient must not take more than 20mg of atorvastatin a day to decrease the risk of myopathies.
For more drug-drug interactions, see the 2019 ART Clinical Guidelines for the Management of HIV in Adults, Pregnancy, Adolescents, Children, Infants and Neonates.[4]		

5. Third-line ART recommendation

Once the Committee has agreed upon a recommended regimen for the patient, the TLART secretary sends an email with this recommendation to the email address/es supplied in the application form. It is important that the facility's pharmacy is notified of this as they will have to procure this medication specifically for the patient.

Role of the nurse: to ensure that the pharmacy has received the patient's regimen and is procuring the medicines. To follow-up with the clinician and patient on the date for the patient to fetch their medicine.

6. Patient monitoring and continued adherence counselling

Routine monitoring should be continued in those patients on TLART, according to the ART guidelines.[4] It is desirable that patients that are initiated on TLART have their VL repeated after 3 months, to check if the treatment is working appropriately and their VL is decreasing. As the patient is taking new medicines, they should also be asked whether they are experiencing any new adverse effects, which should be reported to the doctor. These patients also need continued counselling and adherence support, as they may be on the last effective line of treatment for HIV, making it important that this regimen remains effective for as long as possible.

Role of the nurse: to continue monitoring the patient's response to treatment, provide adherence counselling, and ensure they have access to treatment support.

Conclusion

The management of patients with HIV has, for the most part, been delegated to nurses in the PHC setting. This has been shown to improve outcomes for patients, as well as improving access to these life-saving medicines. The nurse is a fundamental part of these successes, and their role can be extended into assisting doctors in identifying patients that are eligible for TLART, gathering important information from the patient especially with regards to treatment history and concomitant medicine use, completing the TLART application form and preparing the patient for a DRT. Delays can be avoided when complete application forms, together with the DRT, are submitted to the TLART Committee, and the pharmacy is informed regarding the ordering of the patient's medication.

This short synopsis on the TLART programme demonstrates how vital the nurse's role is within the multidisciplinary team when addressing the complicated needs of treatment-experienced HIV-positive patients.

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South Africa needs to embrace the Undetectable = Untransmittable (U=U) campaign

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It is more than 5 years since science has shown that viral suppression could stop the transmission of HIV. Four large studies (HPTN052, PARTERS, PARTNER2 and Opposites Attract) were conducted from 2007 to 2016 and included thousands of serodiscordant couples in which there was not a single case of sexual (vaginal or anal) HIV transmission from a virally suppressed partner.[1] These couples were engaging in condomless sex and not using pre-exposure prophylaxis (PrEP).[1] These clinical trials prove that HIV treatment works as prevention against HIV transmission but translating these findings into population-level benefits has proven more difficult.

Based on earlier studies, the World Health Organization (WHO) recommended early treatment and national guidelines globally began to reflect the growing scientific consensus that HIV could not be sexually transmitted when the virus is undetectable.[2] Despite research bodies understanding that this knowledge may relieve people living with HIV (PLHIV) of stigma associated with their HIV status, too many patients are unaware that viral suppression can stop the transmission of HIV.

UNAIDS' 2015 incremental treatment scale-up targets, and the even bolder 90-90-90 targets by 2020[3] were both met with collective failure and a minority of countries did reached their targets. Instead, the world is now on the fast track to epidemic control by 2030,

by expanding these testing, linkage to care and viral suppression targets to 95-95-95.[4] To help realise this, the Prevention Action Campaign launched the Undetectable = Untransmittable (U=U) campaign in 2016 to increase awareness of the relationship between viral suppression and the prevention of HIV transmission.[5] This revolutionary finding can relieve those living with HIV of stigma and the need for consistent condom use, while also encouraging individuals to attain and maintain viral suppression. The result is both individual well-being and lower population-level HIV transmission.[5] The shortfalls in viral load (VL) monitoring, and the concern that U=U does not protect against STIs and unwanted pregnancy, may be affecting U=U uptake in the region. These concerns could be addressed with comprehensive and clear messaging that the benefits of U=U are not undermined by the increase of other unintended consequences of reduced condom use.

South Africa's mixed progress on the 90-90-90 UNAIDS targets

The Thembisa model estimates show that, in South Africa in 2019, 92% of PLHIV knew their status.[6] University of Cape Town-based Dr Leigh Johnson stated "[this] is good and means we've met the first of the UNAIDS targets [...] We are unfortunately not doing well on the second target with only 71% of people diagnosed with HIV on treatment". This gap is despite South Africa being home to the largest HIV treatment programme in the world. "We exceeded the third target" said Johnson, noting that 91% of people on treatment were virally suppressed.[6]

Will the status quo get South Africa to the end of the epidemic in 2030?

Even though, according to Johnson, the viral suppression rate among those on ART has exceeded the 90 percent target,[6] it is important that this indicator is interpreted in the context of low reported ART coverage. If the country accounts for all PLHIV in South Africa (those diagnosed, on treatment and not on treatment), more than 30% of them are not virally suppressed and are therefore potentially infectious.

Between 2010 and 2019 there has been a 57% reduction in the rate of new HIV infections in South Africa. As much as there is noticeable progress, this falls short of the UNAIDS interim target of a 75% reduction in new infections by

Despite U=U having proven to improve personal health, sexual safety, intimacy and self-image; reduce social stigma; and promote adherence and viral suppression,[13] the U=U message has not been formally endorsed in South Africa and the U=U message has not been spread sufficiently to those who need to hear it the most.

2020.[6] South Africa needs to better address the second target of 95 percent by increasing linkage to care, given that only 71% have been reached to date. This is the country's weak link and deserves the necessary resources and programming.

Potential challenges to sustained viral load suppression

There are several challenges to viral load (VL) suppression, including ignorance of HIV status, stigma and discrimination, poor adherence to ART, and drug resistance. Pre-treatment drug resistance, also termed acquired drug resistance, is caused by ARV naïve people having aquiring HIV from someone with a resistant viral strain. Bessong et al.[7] maintain that the level of drug resistance in the pre-treated population in South Africa has increased over the years, although it is heterogeneous across and within provinces. The authors state that "At least one study has documented a pre-treated population with moderate (> 5%) or high (> 15%) levels of drug resistance in eight of the nine Provinces". Bessong et al. further mention that optimal management of the drivers of drug resistance in the pre-treated population will be beneficial in ensuring sustained viral suppression in at least 90% of those on ART, a key component of the 90-90-90 strategy.

As Bessong et al state, there is a need for implementation of optimal measures to promote adherence and enhance viral suppression in order for the country to curb the spread of the pre-treatment drug resistant virus. This translates to a need for South Africa to embrace the U=U messaging. One of the aims of this campaign is to decrease the number of people who transmit drug resistant HIV, in the context of costly second-line ART. According to the current South African ART guidelines, these patients will not be tested for drug resistance prior to first-line treatment initiation.[8] They will be initiated on a first-line regimen thus limiting viral suppression success and negatively affecting the third UNAIDS 90 target and potentially spreading the virus while under monitoring.

The U=U global movement

The U=U movement has engaged more than 1000 organisations from 100 countries with key populations on every continent. The consensus statement from researchers, health providers and advocates includes the scientific background for U=U and identifies gaps in scaling up the message.

Vietnam officially endorsed the U=U campaign via its national guidelines, with the Vietnam Authority for HIV/AIDS Control (VAAC) mobilising a movement to advocate for access to HIV services and to reduce HIV-related stigma and discrimination in men who have sex with men (MSM), transgender, and other key populations most affected by HIV.[9] Bach Mai, one of Vietnam's hospitals, was used as a pilot site for the U=U campaign. This site has provided HIV services for over 10 years, and is a centre of excellence in HIV treatment, with 98.4% of HIV patients achieving an undetectable viral load. Vietnam is also the first PEPFAR country to achieve viral suppression in over 95% of people on ART.[9]

Vietnam's success on the third UNAIDS 90-90-90 target shows us that U=U is working which has a positive effect in combating HIV stigma and shame, and barriers to ART initiation. It has also played a role in motivating people to remain on treatment, thus enabling sustained VL suppression. If South Africa is to follow Vietnam's lead, it can end the HIV epidemic by 2030.

U=U footprints in Africa?

The U=U campaign is already present in some African nations. In 2019, Ethiopia began a viral load movement in which a delegate stated "Mindful of the fact that HIV treatment with sustained viral suppression is the most effective, scientifically proven HIV prevention, as Undetectable equals Untransmittable".[10] In addition, Nigeria and Uganda launched a U=U campaign in 2019.[10]

Thomford et al.[11] state that short of a cure for HIV, U=U can substantially reduce the HIV burden and change the landscape of HIV epidemiology on the continent. From a public health perspective, the U=U concept will reduce stigma in PLHIV in sub-Saharan Africa and strengthen public opinion to accept that HIV infection is not a death sentence. This will also promote ART adherence by motivating PLHIV to achieve viral suppression within the shortest possible timeframe.

Even though ART coverage is not where it is expected to be in the African region, according to the UNAIDS report published in 2019, an estimated 67% of PLHIV were on treatment (up from 53% in 2015), representing 70% of the 21.7 million people accessing ARVs globally.[12] This is the first step toward achieving regional viral suppression but robust adoption of the U=U campaign by country states is lacking.

Can we bring the U=U messaging to South Africa?

Despite U=U having proven to improve personal health, sexual safety, intimacy and self-image; reduce social stigma; and promote adherence and viral suppression,[13] the U=U message has not been formally endorsed in South Africa and the U=U message has not been spread sufficiently to those who need to hear it the most - PLHIV, especially those newly diagnosed and those struggling with adherence. South African ARV guidelines[8] do not incorporate the U=U messaging, clinicians are not trained in it, and the message is not shared in the media. Currently the message is only shared by individual advocates and a few organisations on social media.

Organisations facilitating adherence clubs and support groups, with discussion topics centred around ARV adherence do not have adequate knowledge about U=U and it would be beneficial if group facilitators could be empowered to share the U=U message thus promoting ARV adherence and viral suppression. Clinicians conducting Provider Initiated Counselling and Testing (PICT) at health facilities and Community Health Workers conducting HIV testing (HTS) in the community should be enabled to confidently share the U=U message to newly diagnosed clients before linking them to treatment. This would allow for retention to start at recruitment.

U=U awareness campaign is a solution to ending the epidemic!

An organisation led by South African Women Living with HIV has implemented the Positives Leading Prevention Initiative, a project that has successfully proven that a peer led U=U based project can succeed in decreasing a community viral load (VL) and could help the country in ending the HIV epidemic. With the start of the COVID-19 pandemic, the organisation began a virtual support group which now has over 200 members across the country. When the group first started, members knew nothing about U=U nor the role of ARVs in preventing viral transmission, less than 60% of the members knew their VL, and 45% of members had a detectable VL. Since joining this virtual support group, more than 90% of members have a suppressed VL, all of them know what VL means and the importance of treatment adherence in preventing HIV transmission.[14]

The question is, does South Africa have the political will to scale up such U=U programs? Only then will the scientific knowledge that viral load suppression prevents HIV transmission translate in to reality.

U=U in action

The founder of this U=U project has been in a serodiscordant relationship for eighteen years and the couple spent thousands of rands on wanting to safely conceive their first-born daughter in 2009. In 2013, when wanting to conceive their second-born, the husband came across U=U studies and the couple decided to conceive naturally with no condom and no pre-exposure prophylaxis (PreP), which they successfully did.

Their two daughters are both HIV-free and healthy, the husband remains HIV negative and the couple has since been relying on U=U completely. This shows us that U=U can give women living with HIV an opportunity to practise their sexual and reproductive health rights freely, with no fear of infecting their partner/s. Many serodiscordant couples are unaware of how to plan a healthy pregnancy, but the U=U message can help in reducing this anxiety and providing couples with the confidence to conceive safely.

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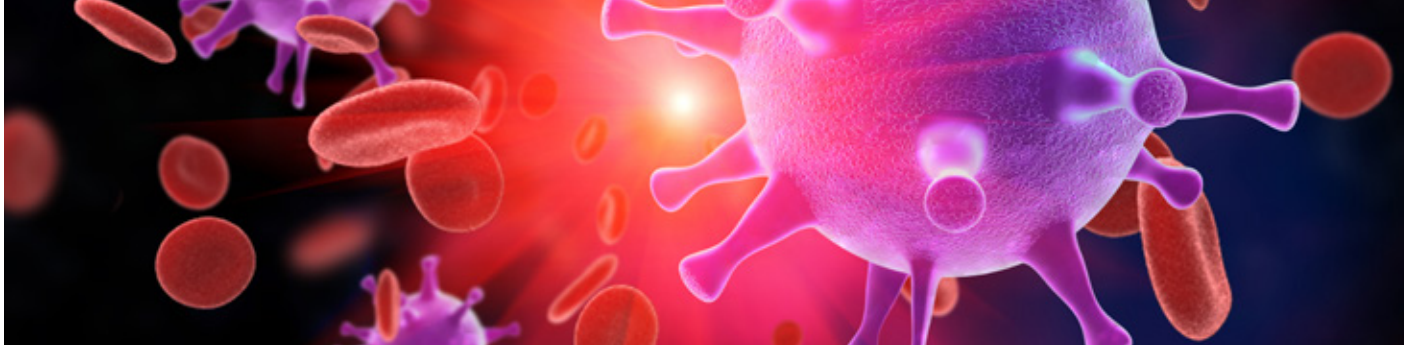

Viral load and resistance: updates from the Southern African HIV Clinicians' Society Adult ART 2020 Guidelines

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The viral load remains the best way of monitoring patients who are on antiretroviral therapy (ART) and outperforms both the CD4 count and a clinical assessment when it comes to determining early treatment failure.[1] The following questions reflect the latest advice from the Southern African HIV Clinicians' Society (SAHCS) Adult ART 2020 guidelines.

What is the role of a baseline viral load?

The Southern African HIV Clinicians' Society still recommends a baseline viral load for patients newly initiated on ART. The reasons for this are three-fold. Firstly, this allows for clinicians to interpret a repeat viral load done 3 months later, at which time point the viral load should be 1/100th (at least a 2 log drop) or less of the baseline viral load. Secondly, it is important because rilpivirine is relatively contraindicated if the baseline viral load is more than 100,000 copies/mL, as at these high levels rilpivirine has been associated with decreased efficacy.[2] Lastly, a viral load can also act as a confirmatory test for HIV itself.

When should subsequent viral loads be checked?

Assuming the patient's viral load remains suppressed, repeat viral load testing is recommended at months 3, 6, and 12 on ART, then every 6-12 months thereafter. Patients whose viral loads remain suppressed up until 12 months, and who demonstrate that they have been taking their medication regularly and reliably, can probably be followed up with an annual viral load thereafter (Figure 1).

What is the definition of virological failure?

The SA HIV Clinicians' Society Adult ART 2020 guidelines have made an important change to the definition of virological failure (VF). Whereas previous guidelines had used a threshold of 1000 copies/mL to define VF, there is now good evidence that sustained viral loads at levels of anything more than 50 copies/mL cause the accumulation of resistance mutations, and ultimately lead to virological failure.[3] The Adult guidelines committee therefore recommended that 2 consecutive viral loads >50 copies/mL, taken 2-3 months apart, is a more appropriate definition of virological failure.[4] However, guidelines from the South African National Department of Health and the World Health Organization still recommend a viral load threshold of 1000 copies/mL.

What is a viral blip?

A viral blip is a low level (<1000 copies/mL) episode of HIV viraemia that is not sustained – i.e. the viral load measurement following the blip returns to a level <50 copies/mL. The causes of viral blips are not completely known, but probably include a recent episode of immune activation (such as following an acute infection), and recent non-adherence.

What are the possible reasons for virological failure?

In theory, virological failure can occur for only one of three reasons:

1. The patient isn't taking their medication (non-adherence)
2. There is significant drug resistance

to the ART regimen that the patient is taking
3. The drug levels in the patient are too low, as a result of something like being prescribed an incorrect dose, or a drug-drug interaction (such as rifampicin's effect on dolutegravir).

In practice though, it can be very difficult to tease these possibilities apart. They are also not mutually exclusive, since non-adherence or low drug levels can lead to the development of drug resistance.

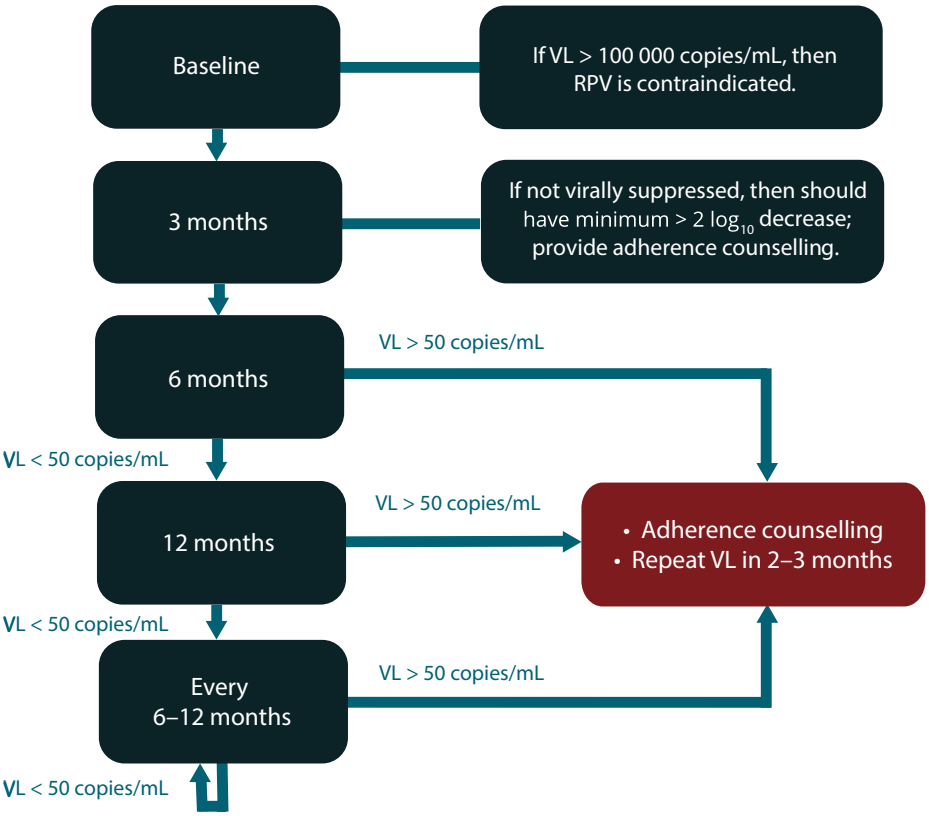
How do you interpret a high viral load?

It is important to realise that the interpretation of a high viral load depends on the regimen the patient is on. Non-nuclear reverse transcriptase inhibitors (NNRTIs) are notoriously brittle, and early resistance is common on these regimens. By contrast, protease inhibitors (PIs) tend to have a far higher barrier to resistance, and are far more forgiving of episodes of non-adherence. Thus, a patient should generally not be assumed to have significant resistance to PIs unless they have been on a PI-based regimen for more than 1-2 years.

A high viral load in a patient on dolutegravir (DTG) requires yet another paradigm to interpret. Because DTG has shown itself to be so robust in first and second-line regimens, patients on a DTG-based regimen who have a high viral load should generally not be assumed to have resistance. Rather, non-adherence is almost always the cause. Importantly though, a number of other factors need to be checked for this assumption to hold, namely:

- The patient's regimen must contain at least one other fully active nucleoside/nucleotide (NRTI) drug as part of its backbone.
- There must not be any concerns for suboptimal DTG levels as a result of drug-drug interactions (e.g. rifampicin has been given but the DTG was accidentally not given 12-hourly to compensate for this)

Figure 1 – Suggested timing of viral load testing for patients on ART.



- There must not be any pre-existing DTG resistance mutations (e.g. from having previously virological failure on a raltegravir-based regimen).

Provided that none of the above are met, it is not recommended to perform resistance testing for patients on a DTG-based regimen within 2 years of commencing it. Furthermore, patients should not be switched off a DTG containing regime without a resistance test documenting DTG resistance.

When should a resistance test be ordered?

A critical limitation of resistance testing is that they are generally only successful when the patient's viral load is >500 copies/mL. Beyond this, knowing when to order a resistance test also depends on the particular ART regimen the patient is on. For patients on a DTG- or PI-based regimen, resistance testing is only recommended when the viral load is elevated for more than 2 years after the regimen has been commenced. This applies for both first- and second-line regimens (again, this assumes the criteria in the previous section have been fulfilled).

By contrast, since NNRTI-based regimens are so much less robust, resistance testing is in theory more useful at an earlier stage. However, a resistance test at the point of failure of first line therapy is not routinely recommended, since an effective second-line regimen can generally be constructed without the need for resistance testing.

References

1. Tucker JD, Bien CH, Easterbrook PJ, Doherty MC, Penazzato M, Vitoria M, et al. Optimal strategies for monitoring response to antiretroviral therapy in HIV-infected adults, adolescents, children and pregnant women: a systematic review. AIDS. 2014;28 Suppl 2:S151-60.
2. Cohen CJ, Molina JM, Cassetti I, Chetchotisakd P, Lazzarin A, Orkin C, et al. Week 96 efficacy and safety of rilpivirine in treatment-naive, HIV-1 patients in two Phase III randomized trials. AIDS. 2013;27(6):939-50.
3. Hermans LE, Carmona S, Nijhuis M, Tempelman HA, Richman DD, Moorhouse M, et al. Virological suppression and clinical management in response to viremia in South African HIV treatment program: A multicenter cohort study. PLoS Med. 2020;17(2):e1003037.
4. Nel J, Dlamini S, Meintjes G, Burton R, Black JM, Davies N, et al. Southern African HIV Clinicians Society guidelines for antiretroviral therapy in adults: 2020 update. South Afr J HIV Med. 2020;21(1):1115.

WHEN WE CONNECT THINGS GET MUCH BETTER QUICKLY – ACCESSING HIV CARE IN PHARMACIES

Our vision is to increase HIV prevention, testing, treatment, and care options in pharmacies. Pharmacists, Nurses and GPs have come together to reinforce your support network – there is no question you cannot ask them.

7.7 million South Africans are living with HIV and every day another 657 are infected. Each year 71,000 people die from complications linked to HIV – this may be your mother, sister, boyfriend, or best friend. The good thing is that 90% of people living with HIV know their status, 62% have gotten on treatment, and 54% have undetectable viral loads. If we connect, we can improve these numbers by making services available in more locations with longer opening hours.

The Southern African HIV Clinicians Society (SAHCS) is leading EPIC - Expanding PrEP/ART Innovation Consortium to expand HIV care at pharmacies. SAHCS has been supporting and strengthening the HIV knowledge and capacity of its 10 000+ members since 1998.

EPIC aims to increase access to HIV services by working with independent retail pharmacies. Everyone can come in for confidential support for HIV testing, emergency contraception, family planning, or sexual health questions. Pharmacies are open late and on weekends, waiting times are often shorter than at clinics or hospitals, and all HIV services can be found under one roof.

The EPIC Consortium developed PIMART – the first ever course for Pharmacy-Initiated Management of Anti-retroviral Treatment. Pharmacists who complete the course will be permitted to start patients on ART, including PEP and PrEP (pre- and post-exposure prophylaxis). Anyone with more complicated conditions or concerns will be referred to the EPIC HIV Expert GP referral network. These are GPs with years of experience supporting HIV care.

Working together, using our networks, sharing the latest information, and supporting each other helps us clearly see that we are here 4 Each Other.

USAID FROM THE AMERICAN PEOPLE

PEPFAR U.S. President's Emergency Plan for AIDS Relief

EPIC EXPANDING ACCESS TO PrEP AND ARVs INNOVATION CONSORTIUM
PIMART PHARMACY INITIATED MANAGEMENT OF ANTI-RETROVIRAL THERAPY

Clinical tips

1. Counselling on the risks and benefits is essential when initiating dolutegravir (DTG) in women wanting to conceive now or in the near future.
2. HIV positive women who are not currently on antiretroviral therapy (ART) but are ART exposed should initiate a DTG-containing regimen.
3. Initiate all newly diagnosed HIV+ patients on TLD and switch those already on TEE (if virally suppressed).
4. Prioritise switch from TEE to TLD; prescribe multi-month ART and decant eligible patients to external pick-up sites to limit facility visits during COVID-19.
5. Inform patients of potential drug interactions and new side effects when switching to DTG.
6. DTG often causes a mild rise in serum creatinine but this is of no consequence and does not represent a decline in renal function.
7. Family planning and HIV services should always be provided together; therefore, offer HIV testing services at every family planning visit.
8. Initiating TLD or DTG in pregnant women beyond 6 weeks of pregnancy carries no increased risk of neural tube defects. Counsel the patient about this safety information and allow her to make an informed choice.
9. The benefits of cotrimoxazole outweigh the risks in pregnancy in patients with CD4 counts of less than 200; or with WHO clinical stage II, III or IV disease.
10. Preventing, diagnosing and treating women for TB must receive greater emphasis if maternal and child outcomes are to be improved.
11. Any infant with a positive birth HIV PCR should be referred or discussed telephonically urgently for ART initiation.
12. Do an age-appropriate HIV test at six weeks post cessation of breastfeeding, even if breastfeeding continues for longer than 18 months.
13. Universal HIV testing is recommended at 18 months of age for ALL infants regardless of HIV exposure except those who are already on ART.
14. A HIV PCR test should be performed at 6 months for all HIV exposed infants.
15. HIV exposed but uninfected (HEU) infants may experience poorer outcomes despite being uninfected and should be monitored regularly.
16. Pregnant adolescents are at a higher risk for poor adherence and poor viral suppression and require more intensive support.
17. Because the sensitivity of the TB symptom screening is reduced in pregnancy, all pregnant women with HIV should be referred for a sputum TB GeneXpert test, regardless of symptoms.
18. Ensure that any woman diagnosed with TB is adherent to TB treatment and aware that their newborn may

Abbreviations: ART – antiretroviral therapy; ARV – antiretroviral; CD4 – cluster of differentiation 4; IPT – isoniazid preventive therapy; PrEP – pre-exposure prophylaxis; TB – tuberculosis; U=U – undetectable = untransmissible; UTT – universal test and treat; VL – viral load.

require TB prophylaxis.

19. Pregnancy does not preclude screening for cervical cancer, and it can be performed up to 20 weeks gestation.
20. Link pregnant women back to care post-delivery to ensure treatment adherence. Additional support includes referral to a community health worker, or support group such as a postnatal club.
21. At discharge post-delivery, provide women with 2 months of ART.
22. A tuberculin skin test (TST) is not required prior to starting TPT. DTG increases metformin levels, therefore the maximum metformin dose in patients on DTG should be 500mg 12-hourly.
23. If a patient is on rifampicin, DTG needs to be given 12-hourly rather than daily. If a patient is on a TLD fixed dose combination, add DTG 50mg 12 hours To this.
24. Adult patients who are not yet on ART when TB treatment is initiated should initiate on efavirenz (EFV) containing regimen.
25. Switch a stable pregnant woman on ART from EFV to DTG if her VL is <50 copies/mL and she is no longer in the first 6 weeks of pregnancy.
26. Patients switched to TLD do not need to return for review after 1 month, unless they are a new patient. Those who switched from TEE to TLD and have been decanted to an external ART pick-up site, can stay decanted.
27. Patients with persistent low-grade viraemia (VL 50-999 copies/mL) should be discussed with a HIV expert before switching from TEE to TLD.
28. There is no longer a need for the SAHPRA Risk Acknowledgment Form to be completed before switching patients from TEE to TLD.
29. To reduce the risk of COVID-19 transmission, introduce outdoor clinic service points and community- based distribution points for ARVs.
30. To reduce the the risk of COVID-19 transmission, patients in community-based adherence clubs or support groups should be seen individually for support and ART distribution, rather than in groups.
31. To reduce the risk of COVID-19 transmission, implement 2 monthly dispensing for all ART and TB patients across all facilities.
32. To reduce the risk of COVID-19 transmission, accelerate decanting of patients to external ART pick-up points based on the revised eligibility criteria.
33. Fast-track people living with HIV (PLHIV) with comorbidities and a higher risk for severe COVID-19 patients as well as those presenting to facilities with symptoms.
34. All newly diagnosed HIV positive patients should initiate ART on the same day unless there are medical reasons to defer.
35. Before initiating ART, screen for TB and cryptococcal meningitis (CM) symptoms. Patients with TB or CM symptoms should defer same-day ART initiation and be referred to a clinic for additional tests.
36. To reduce the risk of COVID-19 transmission, strengthen facility-level Infection Control Practices; including physical distancing, washing/sanitising hands and the correct use of masks and other personal protective equipment (PPE).
37. Support ART adherence and ensure missed appointment lists are actively managed in facilities to bring patients back to care.
38. If you have any concerns about the stock levels of TEE or TLD, please contact your district pharmacist immediately.
39. If a couple encounters difficulty in achieving pregnancy, it is important to involve both partners and refer them for infertility interventions.
40. Rilpivirine should not be used as the third agent in first-line regimens when the VL is >100,000 copies/mL.
41. Pregnant women with a CD4 <350 cells/uL and without contraindications should be given TB preventative therapy (TPT) for 12 months.
42. TB preventative therapy (TPT)should be deferred in pregnant women with a CD4 >350 cells/uL until 6 weeks post-delivery.
43. The code **C#PMTCT** should be on the lab form of every viral load request in a pregnant or breastfeeding woman, to ensure electronic gatekeeping rules do not lead to sample rejection.
44. DTG and TAF use may be associated with weight gain. Counsel and manage patients appropriately, especially pregnant women in order to reduce pregnancy associated adverse outcomes.
45. In recurrent treatment defaulters, consider re-initiating ART with a DTG or PI-based regimen, provided there are no contraindications.
46. Avoid resistance tests before 2 years on ART in patients who are not virally suppressed on a DTG- or PI-based regimen.
47. The dose of lopinavir/ritonavir (LPV/r) must be doubled if the patient is on rifampicin-based TB treatment.
48. Neither atazanavir nor darunavir can be prescribed if the patient is on rifampicin-based TB treatment.

Abbreviations: ART – antiretroviral therapy; ARV – antiretroviral; CD4 – cluster of differentiation 4; IPT – isoniazid preventive therapy; PrEP – pre-exposure prophylaxis; TB – tuberculosis; U=U – undetectable = untransmissible; UTT – universal test and treat; VL – viral load.

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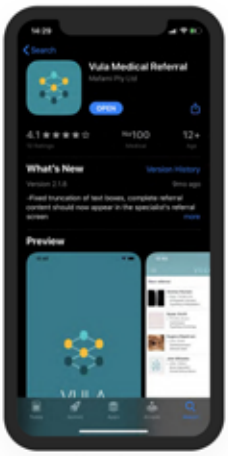
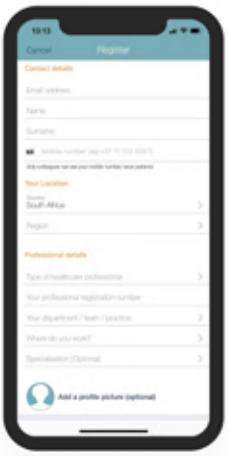


2 Tap 'New to Vula'

3 Fill in your info



4

Look out for an email from us with your password.

We verify all registrations so this may take up to 24hours. If you have not received a password after that please reach out to us on:

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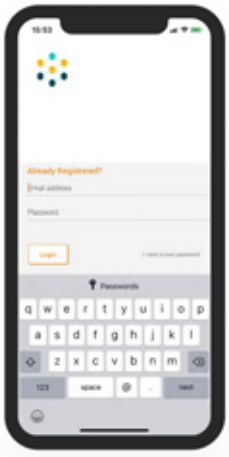
5 Login using your email & password



6 Start sending & receiving referrals

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Secure medical
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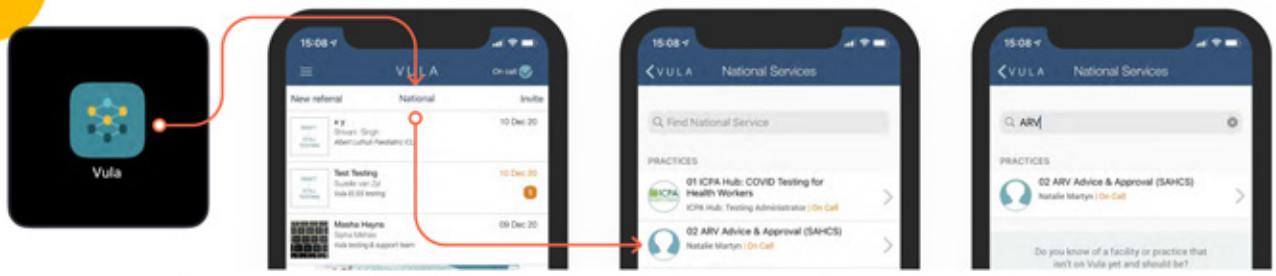
PIMART on Vula

1 Start a new referral to refer a patient



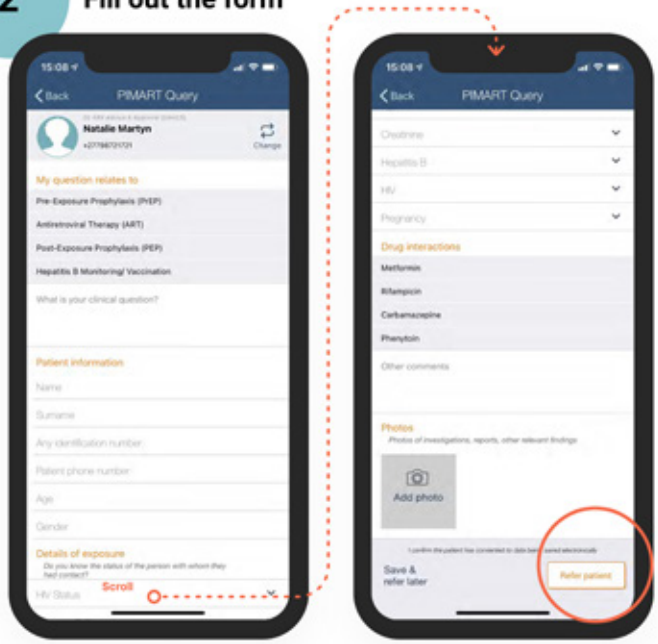
Open the Vula Medical Referral App

Click "National"

Choose "ARV Advice & Approval"

Or use the search bar to search for "ARV" and select "ARV Advice & Approval"

2 Fill out the form



3 Tap 'Refer'

Your referral will be sent and you will be able to recieve advice.

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Division of Clinical Pharmacology, University of Cape Town

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Contact us - we will gladly assist you! This service is free

What questions can you ask?

The National HIV & TB Health Care Worker Hotline provides information on queries relating to:

- Pre-exposure prophylaxis (PrEP)
- Post exposure prophylaxis (PEP)
- HIV testing
- Management of HIV in pregnancy & PMTCT
- Drug interactions
- Treatment/prophylaxis of opportunistic infections
- Drug availability
- Adherence support
- Management of tuberculosis
- Antiretroviral Therapy (ART)
  - ~ When to initiate
  - ~ Treatment selection
  - ~ Recommendations for laboratory and clinical monitoring
  - ~ How to interpret and respond to laboratory results
  - ~ Management of adverse events

Who answers the questions?

The centre is staffed by specially-trained pharmacists. They have direct access to the latest information databases, reference sources and a team of clinical consultants.

When is this service available?

The hotline operates from Mondays to Fridays 8:30am - 4:30pm.

UNIVERSITY OF CAPE TOWN MIC CLINICAL PHARMACOLOGY

MEDICINES INFORMATION CENTRE

NATIONAL HIV & TB HEALTH CARE WORKER HOTLINE 0800 212 506

2022 MEMBERSHIP APPLICATION FORM

PROFESSIONAL INFORMATION

Title: ☐ Prof ☐ Dr ☐ Mr ☐ Mrs ☐ Ms **Initials:** _____ **First Name(s):** _____

Surname: _____ **Institution/Organisation:** _____

Profession (check one):

☐ Doctor Generalist ☐ Doctor Specialist ☐ Pharmacist ☐ Professional Nurse ☐ Other: _____

If Doctor Specialist, select speciality:

☐ Cardiology ☐ Clinical Pharmacology ☐ Dermatology ☐ Family Physician ☐ Infectious Diseases ☐ OB GYN ☐ Paediatrics

☐ Physician / Internal Medicine ☐ Psychiatry ☐ Other: _____

Council number (e.g. HPCSA, SANC): _____ **Practice number** (if applicable): _____

Primary Employment affiliation (please chose one):

☐ Clinic ☐ Government (non-clinical) ☐ Hospital ☐ Industry ☐ Non-governmental Organisation (NGO) ☐ Private Practice

☐ Student ☐ University ☐ Other

Professional Activities (write '1' for primary and '2' for secondary):

☐ Administration ☐ Advocacy ☐ Patient care ☐ Programme Management ☐ Research ☐ Sales/Marketing

☐ Teaching/Education ☐ Other

Please enter the year you began treating HIV patients: _____

Please indicate if you have passed a postgraduate diploma on the clinical management of HIV from one of the following institutions:

☐ Colleges of Medicine of South Africa ☐ University of KwaZulu Natal ☐ Other: _____

Year completed: _____ Year completed: _____ Year completed: _____

Professional Associations: ☐ SAMA ☐ IAS ☐ FIDSSA ☐ Other: _____

CONTACT INFORMATION

Postal Address: _____

_____ **Suburb/Town:** _____ **Postal Code:** _____

Province: _____ **Country:** _____

Telephone: _____ **Mobile:** _____

Fax: _____ **Email:** _____

DEMOGRAPHIC INFORMATION

Race/ethnicity: ☐ Black ☐ Coloured ☐ Indian ☐ White ☐ Other: _____

Gender: ☐ Female ☐ Male ☐ Intersex/Transgender **Date of Birth:** ☐☐/☐☐/☐☐☐☐

MEMBERSHIP PREFERENCES

Would you like to receive a posted copy of the Society's magazine for nurses, *HIV Nursing Matters?* (Copies are available free on the Society's website: www.sahivsoc.org) ☐ Yes ☐ No

Would you like to participate in the Society's online membership directory? (Your contact information will be available only to other Society members through the members portal on the Society's website) ☐ Yes ☐ No

How would you like to receive communications from the Society (check all that apply): ☐ SMS ☐ Email

- **Doctors** **R400 per annum**
- **Nurses & Allied Health Professionals** **R300 per annum**
- **Pharma Package** **R14000 per annum**
  includes 10 pharma rep memberships, 2 mailers and 1 social media event / article
- **Organisation (NGO) Package** **R3500 per annum**
  for 10 staff memberships or R6000 per annum for 20 staff memberships

Signed: _____

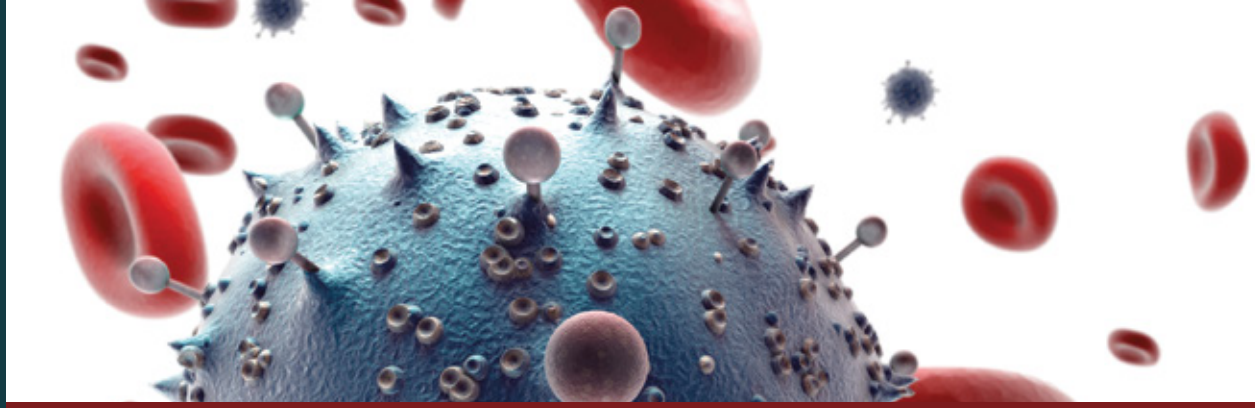
Date: _____

☐ I hereby agree to support the values and mission of the Society; and agree to the membership code of conduct

Method of payment: ☐ Electronic Transfer ☐ Direct Deposit ☐ Post/Cheque ☐ Cash Payment Date: ☐☐/☐☐/☐☐☐☐

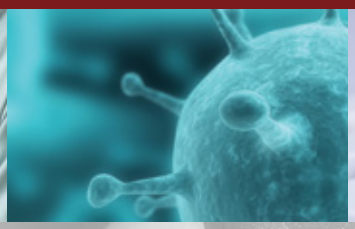
Fees are now charged for a calendar year or pro rata according to the date of application. Payments may be made by cheque or electronic transfer payable to: Southern African HIV Clinicians Society, Nedbank Campus Square, Branch Code 158-105, Account No: 1581 048 033. For alternative online payment please go to **http://sahivsoc.org/about/membership-application** and click the "**Pay Now**" button. Please reference your surname and/or membership number on the payment. Please fax or email proof of payment to 011 728 1251 or sahivcs@sahivcs.org or post to: Suite 233, Post Net Killarney, Private Bag x2600, Houghton 2041.

HAVE QUESTIONS? Please contact us: 011 728 7365 / sahivcs@sahivcs.org / www.sahivsoc.org



UNITING NURSES IN HIV CLINICAL EXCELLENCE, BECOME A MEMBER.






Who are we?

SAHCS is a member-based society that promotes quality, comprehensive, evidence-based HIV healthcare, by:

1. **LEADING • PIONEERING**
   We are a powerful, independent voice within Southern Africa with key representation from the most experienced and respected professionals working in the fight against HIV.

2. **CONNECTING • CONVENING • ENGAGING**
   Through our network of HIV practitioners, we provide a platform for engagement and facilitate learning, camaraderie and clinical consensus.

3. **ADVOCATING • INFLUENCING • SHAPING**
   With our wealth and depth of clinical expertise, we can help healthcare workers take their practice to a new level. We are constantly improving and expanding our knowledge, and advocating for clinical and scientific best practice.

Member benefits

Join today and gain instant support from a credible organisation. SAHCS helps connect you with the best minds in HIV healthcare. Build your knowledge, advance your profession and make a difference by getting involved now!

- Free online subscription to the *Southern African Journal of HIV Medicine*
- E-learning through CPD-accredited clinical case studies and online discussion group forums
- Free tri-annual subscription to *HIV Nursing Matters*
- Weekly SMS clinical tips for nurse members
- Free CPD-accredited continuing education sessions
- Listing in the Society's online HIV provider referral network

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