HIV-ASSIST: revolutionising HIV treatment decisions with evidence-based precision

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Dear Editor,

One of the major issues impacting the health of the public globally is HIV. Healthcare practitioners are allowed to provide antiretroviral therapy (ART) regimens at optimal levels by HIV Antiretroviral Selection and Sequence Tool (HIV-ASSIST) through the integration of the most recent research, treatment recommendations and information that are patient-specific. By assessing resistance patterns and anticipating the efficacy of different drugs, HIV-ASSIST assists in identifying ART options that are likely to be effective. Moreover, by providing information on common and severe side effects found in association with certain drugs individually or in combined form, healthcare practitioners are assisted by HIV-ASSIST in selecting alternatives that are compatible with the overall status of health of the patient (Fig. 1). The programme also supports the healthcare practitioners to build a comprehensive monitoring plan tailored to the clinical state and treatment regimen of each patient particularly. However, on a large-scale basis, prospective studies are needed to be conducted to assess the impact of the implementation of provider knowledge and the patient outcome.

HIV is one of the major issues concerning the health of the public globally. It has claimed 33.6–48.6 million lives till now, with transmission ongoing in all the nations of the world. Certain nations have reported an increasing trend in newer infections. It has been found that two-thirds of the people living with the infection belong to the World Health Organization (WHO) African Region[1]. In the battle against HIV, selecting the most effective ART for persons infected with the virus is a critical decision that healthcare providers must make. With so many treatment choices accessible, it is vital to make evidence-based judgements that are tailored to each patient's unique circumstances. HIV-ASSIST is a cutting-edge computer-based decision-assistance system that aims to revolutionise HIV treatment options[2]. By integrating the latest research, treatment recommendations, and patient-specific information, HIV-ASSIST allows healthcare practitioners to provide customised and optimal ART regimens.

More than one antiretroviral (ARV) regimen is found to be efficacious at achieving suppression of HIV, but there is a difference in pill burden, adverse effects, barriers to resistance and effect on comorbidities. An individualised approach is advocated by the guidelines available currently to a selection of ARV regimens. However, the synthesis of these modifying factors is a complex process and consumes time. In this context, a decision support tool for the selection of ARV and education concerning HIV known as HIV-ASSIST, which is free and available online, has been described. It ranks ARV options potentially for any particular scenario. It uses a composite objective to achieve suppression of the virus while augmenting adherence as well as tolerability[2]. The ability to manage and analyse large amounts of data lies at the core of HIV-ASSIST. By including the most recent treatment guidelines from recognised sources such as the WHO and the United States Department of Health and Human Services (DHHS), HIV-ASSIST ensures that healthcare practitioners have access to the most recent evidence-based recommendations.

HIV-ASSIST examines a number of patient-specific parameters, including viral load, CD4 cell count, resistance testing results, prior treatment history, comorbidities, and more. These objectives are achieved by HIV-ASSIST by the use of a series of utility (multi-attribute) functions in which attributes that are favourable (e.g. lesser burden of pill) are given priority mathematically. Side by side the attributes that are unfavourable (e.g. resistance to drug; interaction of drugs) for a regimen associated with ART are incorporated as penalties mathematically. Calibration of the scores is done in such a way that ARV regimens recommended by guidelines for patients who are ARV-naive are provided with a score of 1.0. For the composite objectives, greater scores represent less preferred regimens. Subsequently, a rank list (ordered) is displayed by HIV-ASSIST of every ARV regimen. From this, the prescribing options for ARV can be reviewed by the clinician, along with educational content that is tailored. Such educational content includes evidence of clinical trials, information regarding the dosing, interactions between drug and comorbidity, and a transparent rationale step-by-step in association with each of the algorithm rules[3].

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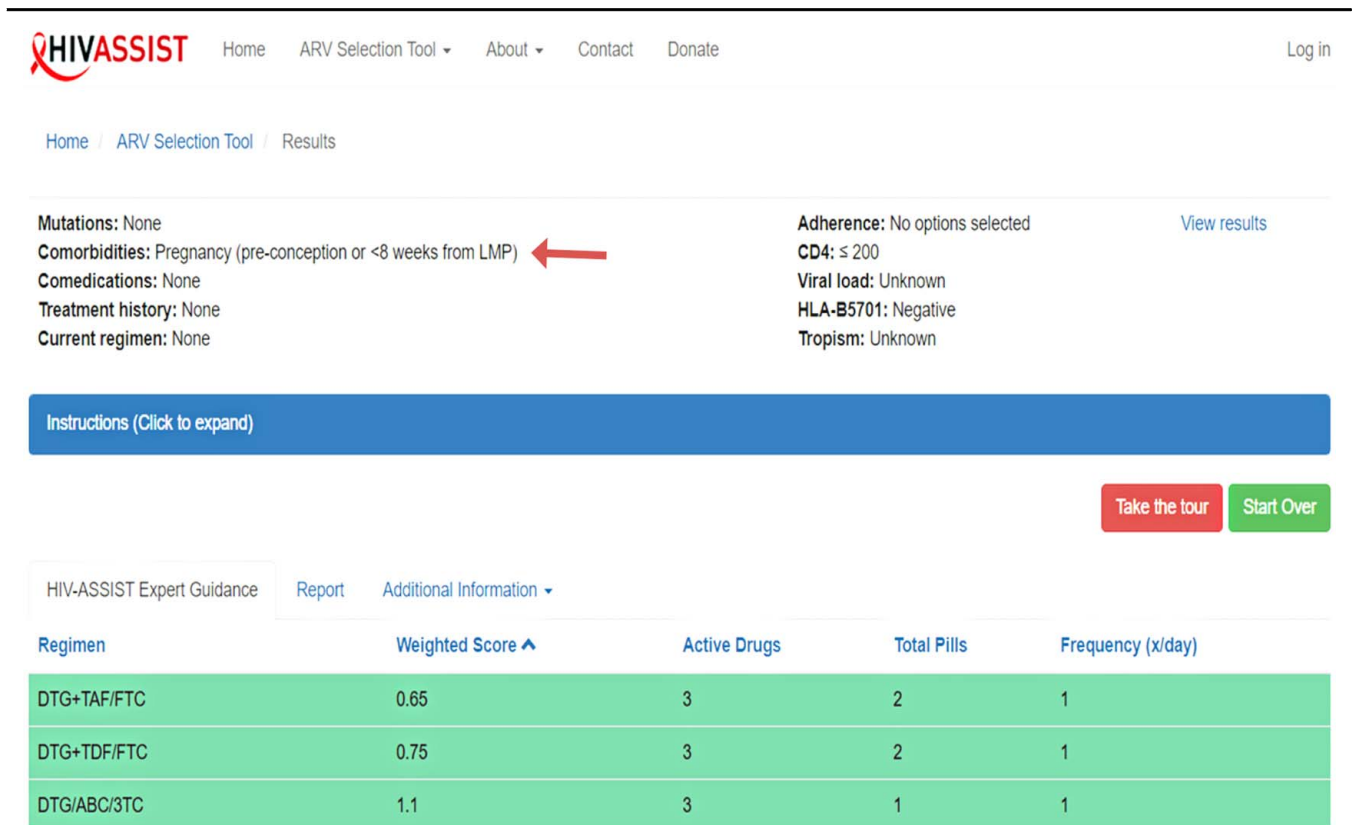
Figure 1. HIV-ASSIST input result – making evidence-based ART decision based on Pregnancy. ART, antiretroviral therapy; ARV, antiretroviral; HIV-ASSIST, HIV Antiretroviral Selection and Sequence Tool.

This wealth of data allows the programme to provide personalised therapeutic recommendations based on each individual's unique needs and characteristics[3]. HIV-ASSIST supports healthcare practitioners in establishing the optimum ART regimen for their patients by considering a number of factors, such as resistance trends, potential drug interactions, and tolerability.

Managing drug interactions is a major challenge in HIV treatment. HIV-ASSIST evaluates potential interactions between ART and other drugs the patient may be taking and gives warnings and recommendations to assist healthcare practitioners in properly managing these interactions[4]. Additionally, if accessible, the tool incorporates resistance testing data to examine the patient's resistance profile. By assessing resistance patterns and anticipating the efficacy of different drugs, HIV-ASSIST assists in identifying ART options that are likely to be effective.

Each patient's tolerance to ART is unique, and HIV-ASSIST understands the need to tailor medication to individual characteristics. The tool evaluates comorbidities, renal and hepatic function, and potential drug–drug interactions to assess the tolerance of different ART regimens. HIV-ASSIST assists healthcare practitioners in selecting alternatives that are compatible with the patient's overall health status by providing information on common and severe side effects associated with certain drugs or combinations.

In addition to drug selection, HIV-ASSIST provides recommendations for ongoing treatment monitoring. By advising the frequency of viral load testing, CD4 cell count monitoring, and other relevant indicators, the programme supports healthcare practitioners in building a comprehensive monitoring plan tailored to each patient's particular clinical state and treatment regimen[2].

HIV-ASSIST is a major advancement in HIV therapeutic decision-making. Using the power of data, evidence-based suggestions, and patient-specific information, this computer-based decision support system improves the way healthcare providers approach ART choices[5]. Because of its capacity to create customised treatment recommendations, optimise medication interactions and resistance analyses, assess tolerance and adverse effects, and enable treatment monitoring, HIV-ASSIST is a crucial tool in the battle against HIV. It is suggested by descriptive analysis that application for the use of HIV-ASSIST can be made not only for decision support but also for assuring quality for identifying situations in which provider ARV selection can be beneficial. However, it is required to conduct prospective studies on a large scale to assess the impact of implementing provider knowledge and patient outcomes.

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There are no conflicts of interest.

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Data availability statement

The data in this article is not sensitive in nature and is accessible in the public domain. The data is, therefore, available and not of a confidential nature.

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