Cost-effectiveness of switching antiretroviral therapy to British HIV Association recommended regimens

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Introduction

Optimal antiretroviral therapy (ART) for people living with human immunodeficiency virus (HIV) is complex, and balances individual preferences with factors including clinical suitability, medication availability and cost.

The British HIV Association (BHIVA) has recently published new guidance on ART for adults living with HIV-1, (1) with suggested regimens based on efficacy, tolerability, and convenience. Due to limited data and varying costs between regions and over time, cost-effectiveness was not included as an outcome in these recommendations.

We modelled the potential cost implications of switching ART to BHIVA-recommended regimens using currently accessible data from a cohort of people living with HIV in England.

Method

ART prescriptions data from a large tertiary NHS centre were matched to HIV and AIDS reporting section (HARS) form data, completed at every HIV clinic visit, and anonymised for further analysis. In the case of ART switches during this period, the most recent regimen was used.

ART regimens were divided into:

- those recommended as first-line choices for ART by BHIVA
- those recommended as potentially suitable for suppressed switch or maintenance by BHIVA
- those no longer routinely commissioned by the National Health Service (NHS).

Current patient ART regimens were costed and compared with suitable alternative regimens based on HARS data (including CD4 count, HIV viral load, current pregnancy, treatment for tuberculosis, concurrent psychiatric care, FRAX and QRISK3 scores when available) on a per-patient basis.

HLA-B*5701 and renal function data was not available for this simulation. To mitigate this, current regimens not containing abacavir were not switched to abacavir, and current regimens containing tenofovir alafenamide were not switched to tenofovir disoproxil. Viral resistance data was also not included in this analysis.

Simulated switches were performed either if a suitable alternative was more cost-effective that the current regimen, or if the current regimen was on the list of those no longer routinely commissioned by the NHS, regardless of cost implications.

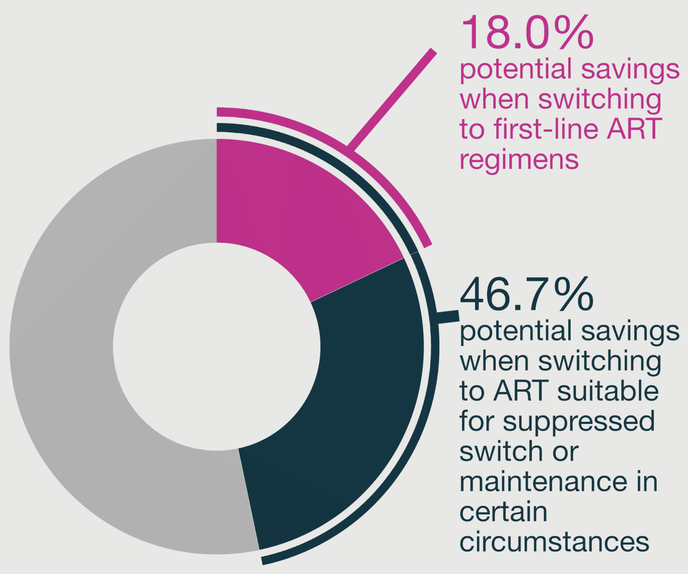

Figure 1. Based on simulated ART switches on a per-patient basis if cost-effective, to either a regimen recommended by BHIVA as first-line, or potentially suitable for suppressed switch or maintenance.

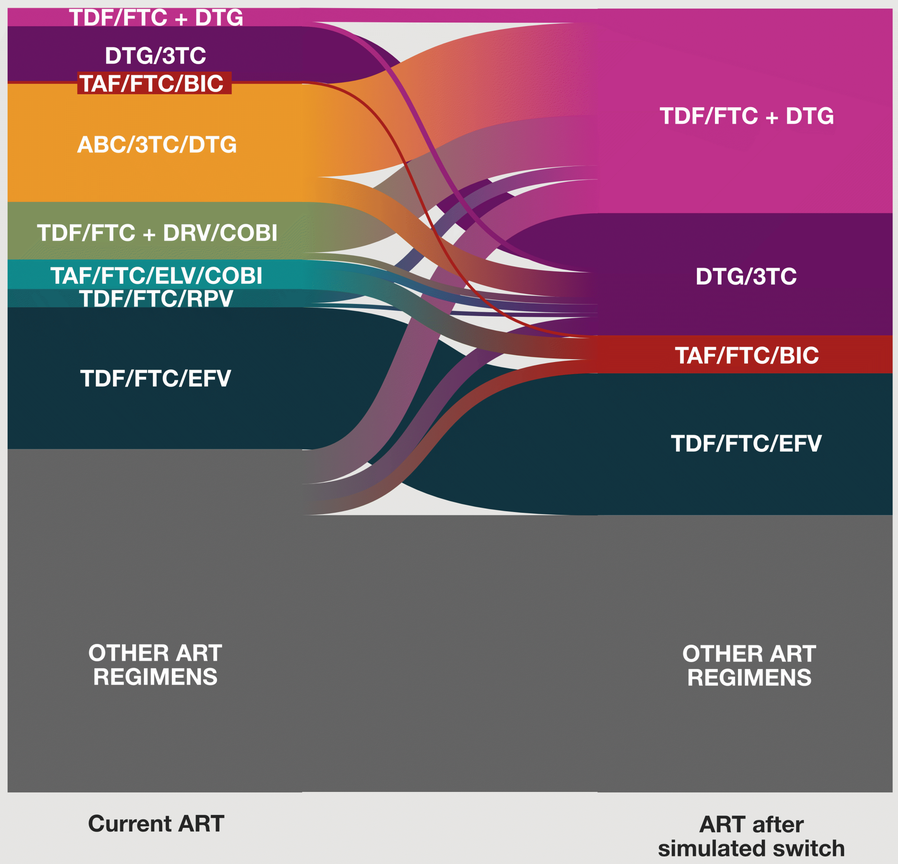

Figure 2. Representative proportions of current ART regimens, and ART regimens after a simulated switch to a BHIVA first-line recommended regimen. 3TC = lamivudine; ABC = abacavir; BIC = bictegravir; COBI = cobicistat; DRV = darunavir; DTG = dolutegravir; EFV = efavirenz; EVG = elvitegravir; FTC = emtricitabine; RPV = rilpivirine; TAF = tenofovir alafenamide; TDF = tenofovir disoproxil fumarate.

Results

2,557 prescriptions from 1st December 2021 to 30th November 2022 were analysed, corresponding to 557 unique patients, and ART regimens extracted. The combined cost of these ART regimens was calculated at £101,896.10 per month. 74/557 (13.3%) were currently receiving ART regimens no longer routinely commissioned by the NHS.

When all ART regimens were compared on a per-patient basis to suitable alternatives from the list of BHIVA recommended first-line regimens, 209/557 (37.5%) regimens were switched with potential savings of £18,321.39 per month (18.0% of current cost) calculated (Figure 1). This was driven by switches to tenofovir disoproxil/emtricitabine + dolutegravir, and dolutegravir/lamivudine regimens (Figure 2).

When compared to alternatives from the list of those potentially suitable for suppressed switch or maintenance by BHIVA, 305/557 (54.8%) regimens were switched with potential savings of £47,584.89 per month (46.7% of current cost) calculated, largely driven by switches to either raltegravir- or doravirine -based regimens.

Finally, when all regimens were switched regardless of cost-effectiveness, potential increased costs of £38,314.57 (37.6%) were found switching to first-line ART, while potential decreased costs of £19,817.94 per month (19.4%) were calculated when switching to ART suitable for suppressed switch or maintenance therapy.

Conclusions

Updated guidelines recommend ART regimens for people living with HIV based on efficacy and tolerability, but there may be concerns around implementing these recommendations as cost-effectiveness analysis was not included. Our analysis of current prescription data demonstrates that switching ART to BHIVA-recommended regimens where this is cost-effective and suitable on an individual basis may in fact generate significant cost savings.

While potential switches are unlikely to be universally advisable, decision aids which increase shared decision making between patients and clinicians, and incorporate cost-effectiveness as a factor, may be able to realise some of these cost savings while potentially improving the care of people living with HIV.

Reference

1. Waters, L. et al. BHIVA guidelines on antiretroviral treatment for adults living with HIV-1 2022. HIV Med 23 Suppl 5, 3–115 (2022).