A retrospective, multicenter study on the efficacy, durability, and tolerability of bictegravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF) for the treatment of HIV in a real-world setting in Belgium

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Background
- Several RCTs have demonstrated BIC/FTC/TAF to be a first-line option for treatment-naïve and experienced patients.
- Real-world studies provide complementary information to RCTs and ensure that those results can be generalised to broader populations seen in daily practice.
- The aim of this study was to describe the Belgian HIV population treated with BIC/FTC/TAF and to evaluate its efficacy, durability, and tolerability in a real-world setting.

Study Design
- This was a retrospective, multicenter study. Data were gathered from routine practice at 11 participating HIV reference centers in Belgium which work in concert as members of the Belgium Research on AIDS and HIV Consortium (BREACH).
- Inclusion criteria were treatment-naïve and experienced adults (aged ≥18 years) on ART that received at least 1 dose of BIC/FTC/TAF between January 1, 2015, which corresponds to the date that BIC/FTC/TAF was approved for use in Belgium, and September 30, 2020.
- The primary outcome of this study was effectiveness of BIC/FTC/TAF, measured by the proportion of participants with a plasma HIV-1 VL ≤50 copies/ml at weeks 24 and 48 using an on-treatment analysis (on treatment, in follow-up, and with available data).
- Secondary endpoints included:
  1. Proportion of patients that experienced protocol-defined loss of virologic suppression by week 48 (defined as 2 consecutive HIV-1 VL measurements ≥200 copies/ml in patients who had initially achieved virologic suppression) along with an analysis of NRTIs at the time of loss of virologic control.
  2. Safety and tolerability of BIC/FTC/TAF as assessed by the rate, incidence, reasons, and time to discontinuation of treatment over the 48-week study period.
  3. Overall change in weight along with the proportion of patients reporting a ≥5% and ≥10% weight gain at week 48.
  4. Proportion of patients that experienced a viral blip at any time up to week 24 and at week 48 (defined as one HIV-1 VL measurement between 50 - 200 copies/ml, after having initially achieved virologic suppression).
  5. Change in CD4 cell count and CD4/CD8 ratio at weeks 24 and 48.
  6. Change in lipid and glycemic parameters at weeks 24 and 48.

Results

Study population
- A total of 2012 patients met the criteria for inclusion in this study with a median (IQI) follow-up time of 8.3 (6.6 – 11.0) weeks.

Virologic suppression
- At week 48, 95.3% of the overall cohort maintained virologic suppression (on-treatment analysis).

Study population characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
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<tbody>
<tr>
<td>Gender (M/F)</td>
<td>1086/1014</td>
</tr>
<tr>
<td>Age (years)</td>
<td>Median (IQR) 55 (41-67)</td>
</tr>
<tr>
<td>Sex (M/F)</td>
<td>984/1076</td>
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<tr>
<td>Total CD4 cells (cells/µL)</td>
<td>Median (IQR) 550 (290-920)</td>
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<tr>
<td>Total cholesterol (mg/dL)</td>
<td>Median (IQR) 177 (150-223)</td>
</tr>
<tr>
<td>LDL (mg/dL)</td>
<td>Median (IQR) 47 (26-75)</td>
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<tr>
<td>HDL (mg/dL)</td>
<td>Median (IQR) 47 (32-63)</td>
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<tr>
<td>FPG (mg/dL)</td>
<td>Median (IQR) 94 (79-107)</td>
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</tbody>
</table>

Change in weight
- At week 48, the median (IQI) on-treatment weight gain was 2 kg (1.2 – 5.1) for the overall study population, which corresponds to a median percent change from baseline of 7.6%.
- Logistic regression analysis using baseline variables described in Table 1 showed that being on a TDF-based regimen prior to BIC/FTC/TAF initiation (OR 2.52; 95% confidence interval [1.41 – 4.50]) and having a baseline CD4 cell count ≥500 cells/µL (OR 1.49; 95% confidence interval [1.02 – 2.17]) were independently associated with a 10% weight gain.

Viral blips and loss of virologic suppression
- Viroblips were detected in 29 (1.4%) patients over the 48-week study period.
- Fourteen (0.7%) participants met the protocol-defined criteria for loss of virologic suppression and the occurrence of a viral blip prior to loss of virologic control was observed in 5/47 patients overall.
- At the time of loss of virologic suppression, one patient (with HIV subtype CRF08_cpx) had mutations associated with resistance to NRTIs (D41Y) and NNRTIs (T267K), both of which were not present on resistance testing prior to baseline.

Treatment discontinuation
- Overall, 10% of patients discontinued their treatment over the 48-week study period corresponding to an incidence of 7.4 discontinuations per 100 patient-years.
- Multivariable logistic regression analysis using baseline variables described in Table 1 showed that on-treatment toxicity resulting in the discontinuation of a previous cART regimen was significantly associated with discontinuation of BIC/FTC/TAF due to CNL psychiatric toxicity (odds ratio (OR) 4.94; 95% confidence interval [CI] 1.41 – 17.38, p = 0.003).

Change in laboratory parameters
- Small (≤10%) changes from baseline in absolute CD4 cell count and CD4/CD8 ratio were 50 (50 – 172) cells/µL and 0.10 (0.10 – 0.20) respectively.

Conclusion

The data presented in this real world study show that BIC/FTC/TAF is highly effective at achieving and maintaining virologic suppression in various patient populations, including women, SSA patients, patients aged ≥50 years, treatment naive patients, and those switching from a previous regimen.

In addition, BIC/FTC/TAF was shown to have a high genetic barrier to resistance with rare occurrence of emergent drug resistance.

Treatment was well tolerated with infrequent discontinuations due to AEs and a minimal on-treatment weight gain was observed.

These data support the use of BIC/FTC/TAF in clinical practice in a wide variety of patient populations.

References