P054

Weight and Body Mass Index Changes in Women Receiving Cabotegravir + Rilpivirine Long-Acting or Bictegravir in the SOLAR Study

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Key Takeaways

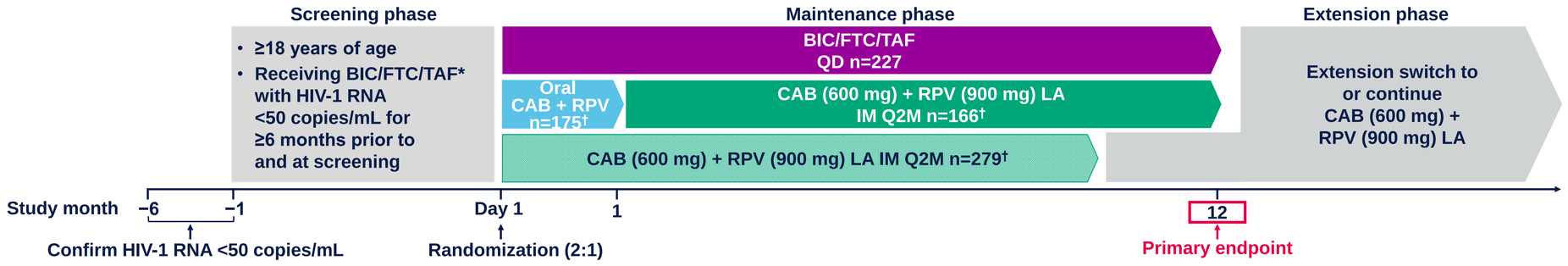
- **SOLAR is the first randomized study to compare metabolic, weight, and anthropometric changes in a standardized manner among people living with HIV-1 switching to cabotegravir (CAB) + rilpivirine (RPV) long-acting (LA) every 2 months (Q2M) or continuing daily oral bictegravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF).**
- **Median changes in weight and BMI were modest and comparable through Month (M) 12 for female (sex at birth) participants.**
- **In this study, switching to CAB + RPV LA Q2M vs. remaining on an established BIC/FTC/TAF regimen resulted in an overall neutral metabolic impact among female (sex at birth) participants through 12 months.**

Background

- Weight gain and metabolic alterations have been reported with integrase strand transfer inhibitors (INSTIs) and tenofovir alafenamide–based regimens.[1–3]
- Multiple associations with weight gain have been described, including being female (sex at birth) and being a person of colour.[1]
- CAB, an INSTI, plus RPV, a non-nucleoside reverse transcriptase inhibitor (NNRTI), administered monthly (Q1M) or Q2M is the first complete LA regimen recommended by treatment guidelines for the maintenance of HIV-1 virologic suppression in patients who are virally suppressed.[4–6]
- SOLAR (NCT04542070) is a Phase 3b, randomized controlled, study that demonstrated the noninferiority of switching to CAB + RPV LA Q2M vs. continuing daily oral BIC/FTC/TAF over 12 months.[7]
- Here we report weight and metabolic changes for female (sex at birth) participants switching to CAB + RPV LA Q2M vs. continuing daily oral BIC/FTC/TAF.

Methods

Figure 1. SOLAR Study Design



- Among 687 participants randomized (2:1; n=6 not dosed), 454 switched to CAB + RPV LA Q2M (starting with injections [SWI] or oral lead-in [OLI]) and 227 continued on BIC/FTC/TAF (**Figure 1**). Of these participants, 120 were female (sex at birth) (LA arm, n=79; BIC/FTC/TAF arm, n=41).
- Metabolic objectives: Changes in body weight, BMI, waist and hip circumferences,‡ and the proportion of participants with insulin resistance or metabolic syndrome§ were assessed from baseline (Day 1) to M11 (SWI)/12 (OLI and BIC/FTC/TAF) (hereafter referred to as M12).

*A single prior INI regimen was allowed if BIC/FTC/TAF was a second-line regimen 6 months prior to screening. Any prior change in regimen, defined as a change of a single drug or multiple drugs simultaneously, must have occurred due to tolerability/safety, access to medications, or convenience/simplification, and must not have been done for treatment failure (HIV-1 RNA ≥400 copies/mL). †Participants randomized to the LA arm were offered an optional OLI, with participant decision following discussion with the investigator. ‡Standardized weight and anthropometric measurements were performed using Tanita scales and circumference tapes, respectively. Participant data were excluded from these analyses for baseline use or initiation of lipid-modifying therapy on study, or for a history of, or initiation of, cosmetic surgery (including procedures of the torso/thighs [excludes face/neck], specifically liposuction/liposculpture/implants). §As defined by standard clinical criteria, per the joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; and the International Association for the Study of Obesity. BIC/FTC/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB, cabotegravir; IM, intramuscular; INI, integrase inhibitor; LA, long-acting; QD, once daily; OLI, oral lead-in; Q2M, every 2 months; RPV, rilpivirine.

Results

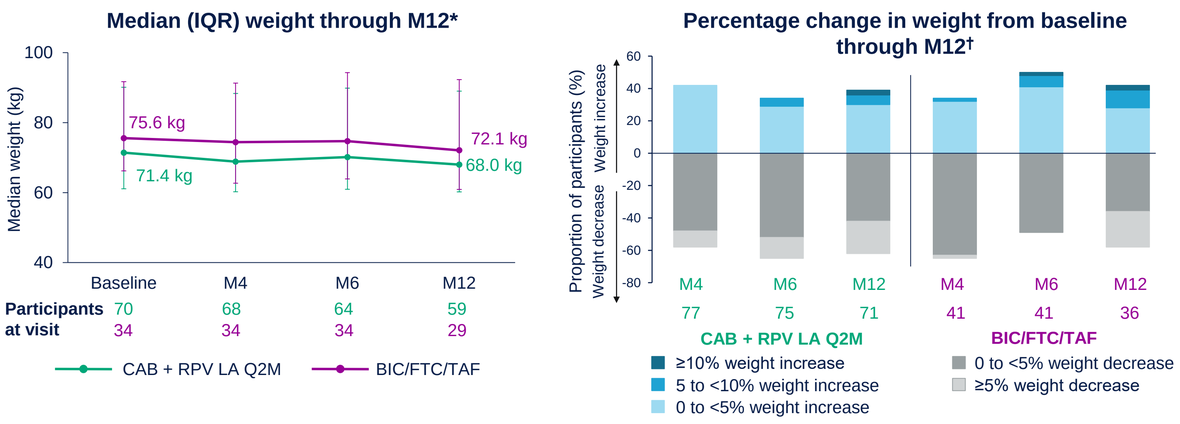
Table 1. Baseline Characteristics of Female Participants (Sex at Birth)

ITT-E population	CAB + RPV LA Q2M (n=79)	BIC/FTC/TAF (n=41)
Median age (range), years	44 (21–74)	43 (18–66)
≥50 years, n (%)	30 (38)	11 (27)
Race, n (%)		
Black or African American	24 (30)	19 (46)
White	47 (59)	21 (51)
Asian	4 (5)	1 (2)
Other races*	4 (5)*	0
Hispanic/Latina	11 (14)	5 (12)
Weight (kg), median (IQR)	71.4 (61.4–88.4)	75.6 (66.2–91.7)
BMI (kg/m^2), median (IQR)	26.52 (23.03–34.09)	28.42 (24.09–32.63)
≥30 kg/m^2, n (%)	28 (35)	17 (41)

*Other races category includes American Indian or Alaska Native, n=1; multiple, n=3. †Analysis based on the modified ITT-E population (Black or African American, n=23. [excludes one participant from the ITT-E population]; BMI ≥30 kg/m^2, n=13; BMI <30 kg/m^2, n=10).
BIC/FTC/TAF, bictegravir/emtricitabine/tenofovir alafenamide; BMI, body mass index; CAB, cabotegravir; IQR, interquartile range; ITT-E, intention-to-treat exposed; LA, long-acting; Q2M, every 2 months; RPV, rilpivirine.

- Overall, 120/681 (18%) female (sex at birth) participants were randomized to either switch to CAB + RPV LA (n=79) or to continue daily oral BIC/FTC/TAF (n=41).
- At baseline, median BMI was 27.02 kg/m^2, median age was 44 years, and 36% were Black or African American (**Table 1**).
- Of the participants with a baseline BMI ≥30 kg/m^2 (n=45/120), the majority were of Black or African American heritage (LA arm, 46% [n=13/28];† BIC/FTC/TAF arm, 59% [n=10/17]).

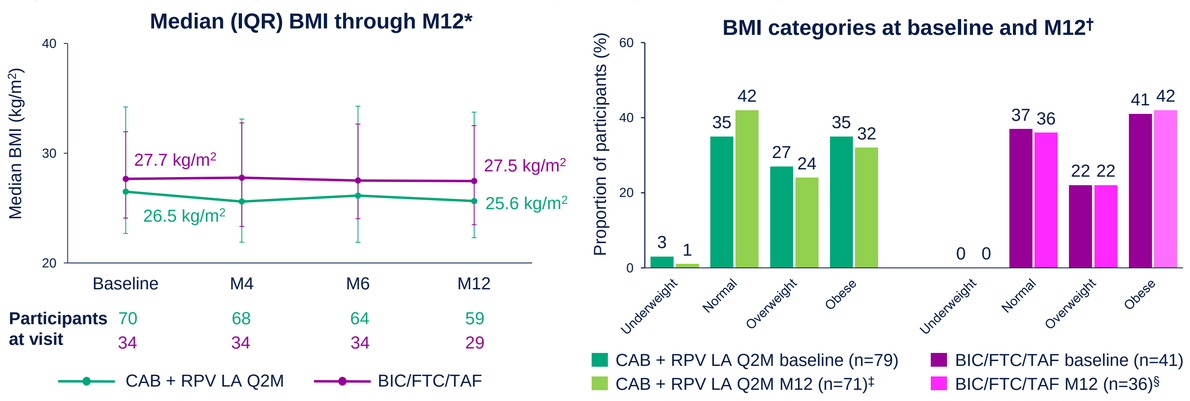
Figure 2. Weight Through M12 in Female Participants (Sex at Birth)



*Excludes participants who started using lipid-modifying agents or received cosmetic procedures during the study. †Includes participants who started using lipid-modifying agents or who received cosmetic procedures during the study. BIC/FTC/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB, cabotegravir; IQR, interquartile range; LA, long-acting; M, month; Q2M, every 2 months; RPV, rilpivirine.

- By M12, a weight increase of ≥10% occurred in 3% of participants in both the LA and BIC/FTC/TAF arms (**Figure 2**).

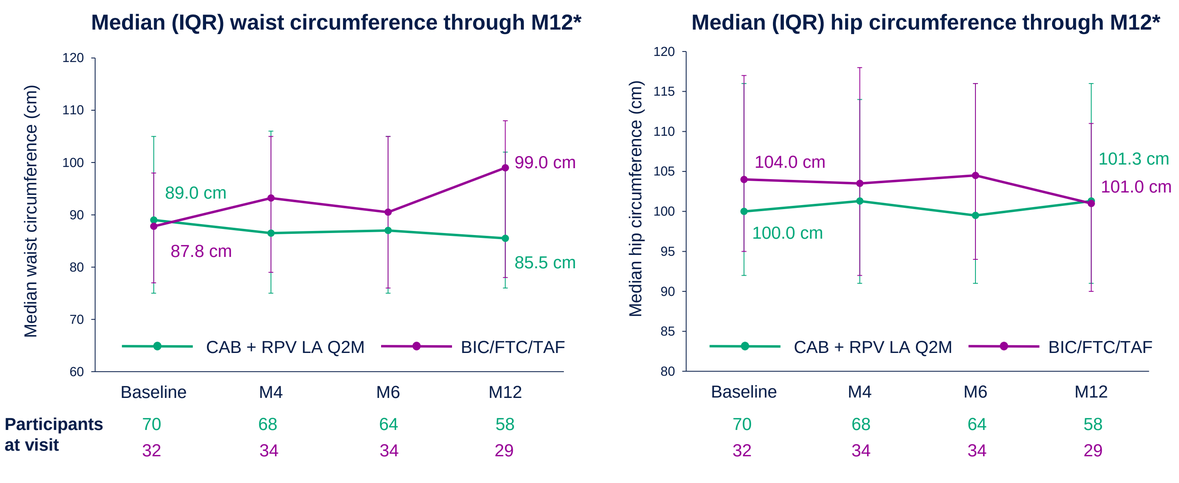
Figure 3. BMI Through M12 in Female Participants (Sex at Birth)



*Excludes participants who started using lipid-modifying agents or received cosmetic procedures during the study. †Includes participants who started using lipid-modifying agents or who received cosmetic procedures during the study. ‡Eight participants had missing data at M12 (baseline BMI categories: normal, n=3; overweight, n=3; obesity, n=2). §Five participants had missing data at M12 (baseline BMI categories: normal, n=3; obesity, n=2). BIC/FTC/TAF, bictegravir/emtricitabine/tenofovir alafenamide; BMI, body mass index; CAB, cabotegravir; IQR, interquartile range; LA, long-acting; M, Month; Q2M, every 2 months; RPV, rilpivirine.

- Median BMI remained stable in both arms through M12 (**Figure 3**).
- No participant in the LA arm had an upward shift in BMI category leading to a classification of overweight or obesity; one participant in the LA arm shifted from underweight to normal BMI category.
- Two participants in the BIC/FTC/TAF arm shifted BMI category from overweight at baseline to obesity at M12.

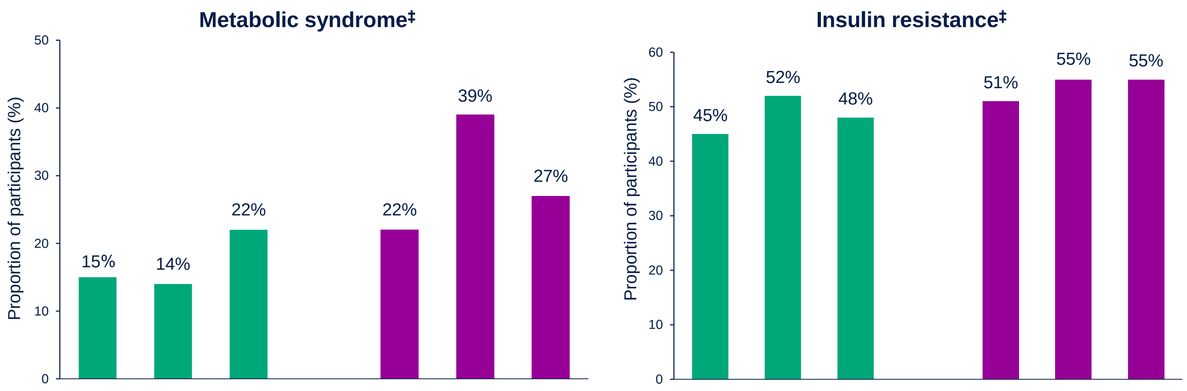
Figure 4. Waist and Hip Circumference Through M12 in Female Participants (Sex at Birth)



*Excludes participants who started using lipid-modifying agents or received cosmetic procedures during the study. BIC/FTC/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB, cabotegravir; LA, long-acting; M, Month; Q2M, every 2 months; RPV, rilpivirine.

- Median waist circumference increased by 11.2 cm (4.4 inches) in the BIC/FTC/TAF arm compared with a 3.5 cm (1.4 inches) decrease in the LA arm at M12 (**Figure 4**).
- Changes in median hip circumference were generally similar between treatment arms through M12 (**Figure 4**).

Figure 5. Metabolic Syndrome* and Insulin Resistance† Through M12 in Female Participants (Sex at Birth)



*Three abnormal findings out of the following five qualify a person for metabolic syndrome: elevated waist circumference (females: ≥88 cm [≥35 in]), elevated triglycerides (≥150 mg/dL [≥1.7 mmol/L]), reduced HDL-C (females: <50 mg/dL [<1.3 mmol/L]), elevated blood pressure (meeting either or both criteria; systolic ≥130 and/or diastolic ≥85 mmHg), and elevated fasting glucose level (≥100 mg/dL). †HOMA-IR score ≥2. ‡Includes participants who started using lipid-modifying agents or who got cosmetic procedures during the study; therefore, treatment may have been given to participants with metabolic syndrome parameters during the study.
BIC/FTC/TAF, bictegravir/emtricitabine/tenofovir alafenamide; CAB, cabotegravir; HDL-C, high-density lipoprotein cholesterol; HOMA-IR, homeostasis model of assessment-insulin resistance; LA, long-acting; M, month; Q2M, every 2 months; RPV, rilpivirine.

- The change in the proportion of female participants with metabolic syndrome and insulin resistance was similar between arms at M12 (**Figure 5**).

Conclusions

- This is the first randomized controlled study to evaluate weight and anthropometrics using standardized measurements and metabolic changes among female (sex at birth) participants living with HIV-1 switching to CAB + RPV LA Q2M or continuing daily oral BIC/FTC/TAF.
- Median changes in weight and BMI from baseline were modest and comparable at M12 between treatment arms. The proportion of participants experiencing ≥10% weight increase from baseline was similar and low between treatments arms.
- A modest increase in the proportion of participants with metabolic syndrome and insulin resistance at M12 in both treatment arms was observed.
- In this study, switching to CAB + RPV LA Q2M vs. remaining on an established BIC/FTC/TAF regimen resulted in an overall neutral metabolic impact among female (sex at birth) participants through 12 months.

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