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Effects of Pitavastatin on COVID-19 Incidence and Seriousness among People with HIV

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BACKGROUND

- Among people with HIV (PWH), COVID-19 is common and potentially severe.
- We leveraged REPRIEVE (Randomized Trial to Prevent Vascular Events in HIV) to assess effects of antecedent pitavastatin on COVID-19 in a global cohort of PWH.
- Statin therapy was a priori hypothesized to reduce serious COVID-19 by 35%, with 80% power to detect such effect with 200 anticipated events.

METHODS

- COVID-19 data collection was implemented in REPRIEVE in April 2020 to capture all events from the start of 2020.
- Outcome measures were:
  - COVID-19 (positive test or clinical diagnosis),
  - Serious COVID-19 (primary) per ICH definition (life-threatening, hospitalization or death).
- Analysis population: REPRIEVE participants who remained in follow-up on January 1, 2020.
- Pitavastatin effect was estimated using Cox proportional hazards modeling, stratified by Global Burden of Disease region.
  - Primary analysis according to participants' randomized treatment (intention-to-treat, ITT).
  - Supporting analysis censored at the last dose of study treatment (while-on-treatment, WOT).

Table 1. Participant Characteristics

Characteristic	Pitavastatin (N=3451)	Placebo (N=3455)
Age (years), median	53	52
Female sex, %	32%	32%
Black or African American, %	40%	42%
10-yr ASCVD risk score (%), median	4.4	4.5
HIV-1 viremia suppressed, %	86%	87%
CD4<500 cells/mm^3, %	30%	30%
BMI≥30 kg/m^2, %	24%	22%
Hypertension, %	44%	46%
Diabetes, %	3%	2%

In a global cohort of PWH, statin therapy had no effect on COVID-19 but showed potential to reduce the risk of serious COVID-19 prior to COVID-19 vaccination.

Figure 1. Pitavastatin Effect on COVID-19

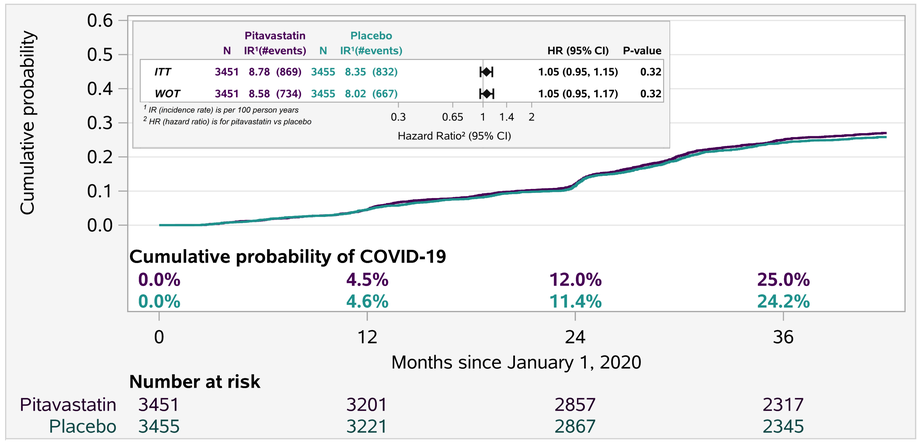
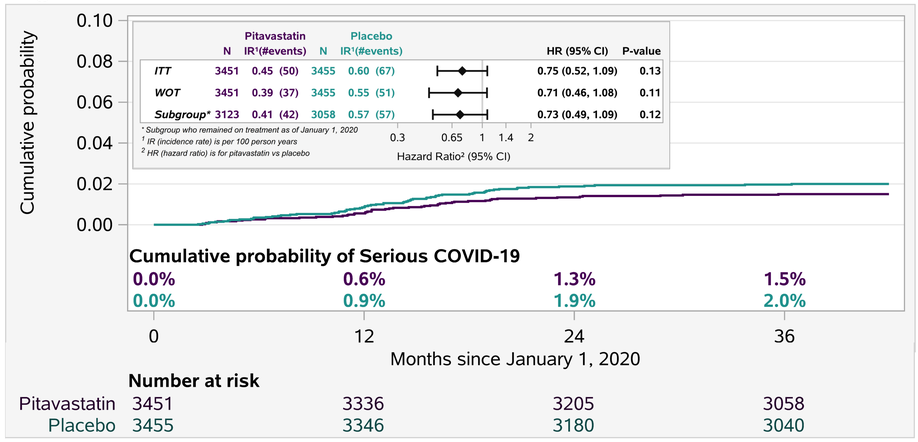


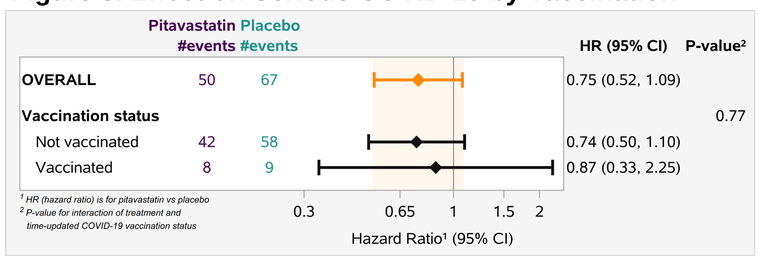
Figure 2. Pitavastatin Effect on Serious COVID-19



RESULTS

- COVID-19 reported in 1701 participants, 117 serious cases.
- Statin therapy did not prevent COVID-19 **(Figure 1)** but appeared to reduce serious COVID-19 events **(Figure 2)**.
- Among the 1701 participants with COVID-19, the relative risk (pitavastatin vs. placebo) for serious COVID-19 was 0.73 (0.52-1.03);
  - Use of COVID-19 treatments was similar between the treatment groups (24% of the 1701).
- Observed treatment effect size for serious COVID-19 fell within the hypothesized range, but CI crossed 1 given fewer than anticipated cases (117 vs. 200).
- 83% reported COVID-19 vaccination by end of study, with a strong protective effect on serious COVID-19 (HR 0.28, p<0.0001).
  - Protective statin effect was observed prior to vaccination (HR 0.74, 0.50-1.10); only 17 cases were observed following vaccination (**Figure 3**).

Figure 3. Effect on Serious COVID-19 by Vaccination



CONCLUSIONS

- In a global cohort of PWH, statin therapy had no effect on COVID-19 incidence but showed potential to reduce the risk of serious COVID-19 prior to COVID-19 vaccination.
- Vaccination was protective for serious COVID-19.
- Additional research is needed to understand and harness potential mechanisms of protective statin effects on serious COVID-19.

Funding: REPRIEVE is supported through NIH grants U01HL123336, 1UG3HL164285, U01HL123339, and 1U24HL164284, the ACTG, Kowa Pharmaceuticals, Gilead Sciences, and ViiV Healthcare.