High probability of survival in patients who maintain viral loads <200 copies/mL

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BACKGROUND

It is unclear whether low, detectable viral load (VL) impacts short-term risk of death.

OBJECTIVE: To estimate mortality risk after initial suppression in patients who maintained all VLs <200 copies/mL.

METHODS

STUDY DESIGN. Observational study at NA-ACCORD clinical sites

STUDY POPULATION. Adult participants newly initiating antiretroviral therapy (ART) 2007–2016

- Followed from initial suppression until death or loss to follow-up (no VL for 1.25 years), or at 6 years
- Initial suppression: first VL under any assay limit of detection (LOD); LOD range: 20 to 500 copies/mL

STUDY PERIOD. 1 Jan 2007 to 31 Dec 2016

EXPOSURE. HIV viral load

OUTCOME. Time to death from any cause

ANALYSIS. Used nonparametric multiple imputation for all VLs below assay LODs (~80% of VLs after ART initiation). Estimated cumulative incidence (risk) of 2-year mortality starting at 3 time points:

- At initial suppression
- 2 years after initial suppression
- 4 years after initial suppression

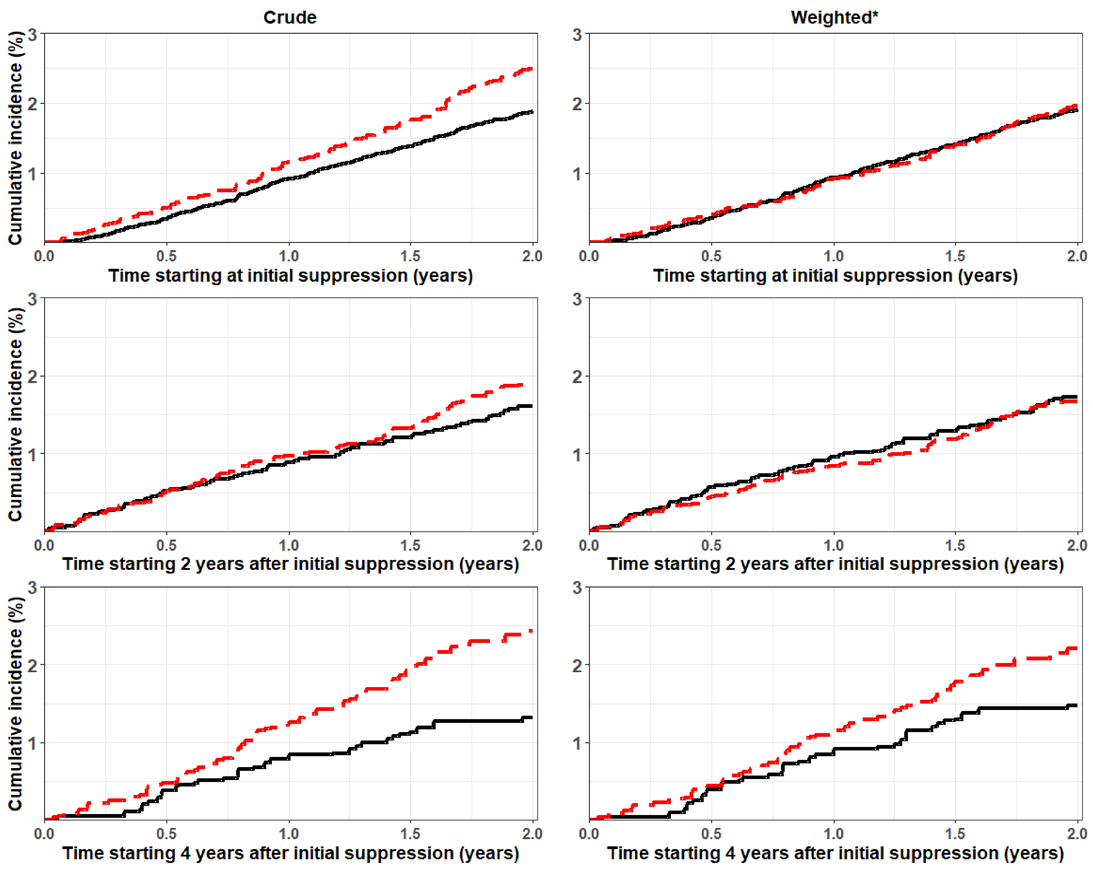
At each time point, analysis was restricted to patients who remained in care and maintained **all VLs <200 copies/mL since initial suppression**. Patients categorized by viral load history up to each time point:

- All VLs <20 copies/mL
- At least one VL 20–199 copies/mL

Used inverse probability of exposure weights to account for confounding (see figure footnote; variables also used in imputation model).

Patients who remained in care after initiating ART and maintained all VLs <200 copies/mL experienced a 2-year survival probability of >97% up to 4 years after initial suppression

Two-year risk of all-cause mortality starting 0, 2, and 4 years after initial suppression, stratified by viral load history. Solid black line, all viral loads <20 copies/mL; dashed red line, at least one viral load 20-199 copies/mL.



* **Inverse probability of exposure weights included age, sex, race/ethnicity, HIV risk group, CD4 count, pre-ART viral load, ART regimen, year of ART initiation, time on ART, time to initial suppression, AIDS diagnosis, hepatitis B coinfection, hepatitis C coinfection, BMI, statin use, and study site.**

RESULTS

At initial suppression: 19469 patients under observation → 19465 with VL <200 copies/mL

- 18472 patients with VL <20 copies/mL had 2-year weighted mortality risk of 1.9%
- 993 patients with VL 20–199 copies/mL had 2-year weighted mortality risk of 2.0%

2 years after initial suppression: 11444 patients under observation → 8786 with all VLs <200 copies/mL

- 4874 patients with all VLs <20 copies/mL had 2-year weighted mortality risk of 1.7%
- 3912 patients with at least one VL 20–199 copies/mL had 2-year weighted mortality risk of 1.7%

4 years after initial suppression: 6100 patients under observation → 4231 with all VLs <200 copies/mL

- 1715 patients with all VLs <20 copies/mL had 2-year weighted mortality risk of 1.5%
- 2516 patients with at least one VL 20–199 copies/mL had 2-year weighted mortality risk of 2.2%

CONCLUSIONS

After accounting for confounders, patients with at least one VL 20–199 copies/mL after initial suppression had similar 2-year risk of death as patients who maintained all VLs <20 copies/mL. Findings suggest estimated VLs between 20–199 copies/mL did not notably impact short-term risk of death.

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