Impact of Smoking On Life Expectancy Among HIV-Infected Individuals: The ART Cohort Collaboration
Marie Helleberg1, Margaret T. May2, Jonathan A. C. Sterne2, Niels Obel1, for the ART-CC
1Department of Infectious Diseases, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark, 2School of Social and Community Medicine, University of Bristol, Bristol, United Kingdom

Background: Since the introduction ART non-AIDS related mortality rates (MR) in treated HIV positive people have exceeded AIDS-related MR, and the impact of smoking on life expectancy may have become substantial.

Methodology: We estimated associations of smoking with mortality among treated HIV-infected patients, whose presumed transmission was not via IDU, enrolled in 8 cohorts in Europe and North America (ART Cohort Collaboration). Start of follow up (baseline) was the later of date of ascertainment of smoking status and 1 year after ART initiation. Procedures for standardized coding of deaths were adapted from the CoDe protocol. We used abridged life tables to estimate life expectancy (average years remaining to be lived). Life years lost to HIV were estimated by comparing life expectancies of HIV-infected individuals with the French background population, adjusting for smoking frequency. Excess MRs were estimated by subtracting MRs of ever from never smokers and of HIV-infected individuals from the French background population, adjusting for smoking frequency. Numbers of life years lost were estimated by similar subtraction of life expectancies.

Results: Of 17,995 individuals followed for 79,760 person-years (PY) 10,767 (60%) were ever smokers MR ratios (MRR) were 1.80 (95%CI 1.47-2.21) comparing ever with never smokers and 1.67 (1.04-2.63) comparing previous with current smokers. Rates of death from cardiovascular disease and non-AIDS related malignancies were substantially higher among ever compared with never smokers (MRR 6.28 (2.19-18.02) and 2.67 (1.60-4.46) respectively). The loss of life years associated with smoking and HIV among 35 year old HIV-infected men were 7.9 (95%CI 7.1-8.7) and 5.9 (4.9-6.9) years respectively. The life expectancy of 35-year old never smoking HIV-infected men with baseline viral load <400 copies/mL was 43.5 years (95%CI 41.7-45.3), compared with 44.4 years among 35-year old men in the background population. Excess MRs/1000 PY associated with smoking in HIV-infected individuals increased from 0.6 (95%CI -1.3-2.6) at age 35 to 43.6 (95% CI 37.4-49.3) at age ≥65 years (figure 1). Excess mortality associated with smoking increases markedly with age, therefore increases in the impact of smoking on mortality can be expected as the population ages. Interventions for smoking cessation should be prioritized.

Conclusions: Among treated HIV-infected individuals more life years may be lost through smoking than through HIV. Excess mortality associated with smoking increases markedly with age, thereby increases in the impact of smoking on mortality can be expected as the population ages. Interventions for smoking cessation should be prioritized.

Figure 1: Impact of smoking and HIV on excess mortality rates (bars) and numbers of life years lost (lines) among HIV-infected men.