

# **Risk of cancer in people with HIV with poor immune recovery despite sustained virological suppression for more than two years on effective antiretroviral treatment**

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## **Background**

Cancer is a leading cause of death in people with HIV. The impact of long-term virological suppression and CD4 count recovery on non-AIDS related cancers (NADC) is unclear. We determined whether poor immune recovery was an independent predictor of incident cancer risk in people with HIV with virologic suppression (VS).

## **Methods**

Participants from the D:A:D and RESPOND cohorts who achieved two years or more of VS on ART were included. Follow-up was from date of VS for two years until the earliest of a first cancer event, confirmed virological failure (>200 copies/mL), final follow-up, or administrative censoring date (31.12.21). Multivariable Poisson regression was used to assess associations between cancer incidence (overall, AIDS-defining cancer (ADC), NADC, infection-, smoking- and obesity-related cancers) and time-updated CD4 count (<350, 350-499, 500-749 and >750 cells/μL) stratified by pre-ART nadir CD4 counts.

## **Results**

Overall, 51,622 people with VS were included, (median age 44 years, CD4 count 536 cells/μL, nadir CD4 count 238 cells/μL, 72% male, 36% current smokers). There were 2152 incident cancers during a total of 321,126 person-years of follow-up (PYFU), (incidence rate (IR)/1000 PYFU 6.70 [95% confidence interval 6.42, 6.99]).

This included 276 ADC (0.86/1000 PYFU), and 1876 NADC (5.84/1000 PYFU). There were 721 infection-, 927 smoking- and 491 obesity-related cancers. There was a significant reduction in risk of all cancers by higher time-updated CD4 count regardless of nadir CD4 count (<200, 200-350 or >350 cells/ $\mu$ L) ( $p < 0.0001$  for all cancers overall, ADC, NADC and cancer subgroups).

## **Conclusions**

Despite being virologically suppressed on ART for more than two years, participants with poorer immune recovery continue to experience a significantly higher incidence of cancer. This underscores the importance of earliest possible diagnosis of HIV and prompt ART initiation to ensure optimal sustained risk reduction of both ADC and NADC.

## **Disclosure of interests**

J Hoy's institution has received reimbursement for her participation in Advisory Boards for Gilead Sciences and ViiV Healthcare. W Min Han and K Petoumenos report no Conflicts of Interest.

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