Mortality and causes of death among people with HIV in Brighton and Hove 2017-2020

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Contributorship statement

G.D and D.C devised the project concept.

S.Cr contributed to the methodology.

S.Cr, R.M, F.Po, and A.S coded and reviewed the data.

F.Pa, S.Ca, D.C and G.D contributed to the data collection.

F.Pa wrote the original manuscript.

All authors contributed to data analysis and formulation of the final manuscript.

The London HIV Mortality Review Group has been conducting annual reviews of deaths among people with HIV since 2013 [1]. In 2020, the National HIV Mortality Review was introduced, formed of a collaboration between the UK Health Security Agency (UKHSA) and the British HIV Association (BHIVA), to extend the review to the whole of the UK. In 2017, Brighton and Hove became the first Fast Track City in the UK, committing to reaching zero HIV-related deaths by 2030 [2]. We thus set out to measure how many deaths in people with HIV were potentially preventable in the city.

We included all patients who resided in *and* received their routine care in Brighton and Hove between 2017 and 2020. Data were collected from clinical records, laboratory results and coroner reports, and were entered into the UKHSA/BHIVA National HIV Mortality Review online tool [3]. Cause of death was classified following an independent review of each death by an HIV epidemiologist and two HIV clinicians (as previously described [1, 4]).

Deaths were described as potentially preventable, based on most recent consensus recommendations [5]. Potentially preventable, directly HIV-related deaths included: those due to AIDS-defining illnesses; those that were HIV-related *and* occurred within one year of diagnosis; and those where the patient was not virally suppressed at death. Potentially preventable, but not directly HIV-related, deaths included those due to: lifestyle risk factors, suicide, a vaccine-preventable disease; or those that may have benefitted from earlier HCV treatment.

A total of 75 deaths among people with HIV were included; a cause was determined for 74 of these. Five deaths were considered to be directly HIV-related *and* potentially preventable, four of which were from AIDS causes. One patient died from

progressive multifocal leukoencephalopathy with poor adherence to antiretroviral therapy (ART); one presented with advanced HIV disease and severe pneumocystis pneumonia, and died within 24 hours despite prompt treatment; two died from complications of HIV-related lymphomas despite good adherence to ART; and one patient died from pneumonia having declined ART. The reasons for poor adherence and declining ART were complex and included specific health beliefs about ART and mental ill-health.

An additional 23 deaths were considered not directly HIV-related but potentially preventable. Of these, 20 were likely to be attributable to lifestyle risk factors. Eight died from smoking-related diseases (four from lung cancer and four from COPD) and were smokers in the year before death, though a causative relationship cannot be confirmed. A further eight were related to alcohol (seven had chronic alcoholic liver disease, and one had acute alcohol poisoning). Four deaths were due to accidental drug overdoses. Two people died due to suicide. One person died from hepatitis C-related liver cirrhosis.

Another significant group of deaths we identified were those due to cardiovascular disease, which accounted for eight deaths. This is in keeping with previous findings that those living with HIV are at increased risk of cardiovascular disease both as a direct result of HIV infection [6] and a higher prevalence of risk factors. In the year before death, smoking was the highest reported risk factor, reported in 52% of the cohort. Regarding other risk factors, alcohol excess was reported among 27% of people and non-intravenous drug use was reported by 24%, of which 27% also used drugs intravenously.

There are potential limitations regarding how deaths were classified. In this study, deaths from cardiovascular disease were not classed as preventable, despite many of the risk factors and comorbidities being modifiable (namely smoking, dyslipidaemia, and hypertension). A further limitation of describing *all* the deaths in Brighton and Hove residents with HIV is that not all access their care locally. As we only looked at people who attended the HIV clinic in Brighton and Hove, there will be an unknown number of people with HIV who died elsewhere and were not included, and we may also have missed deaths in the community that we were not aware of.

Our study highlights the importance of monitoring lifestyle risk factors and comorbidities including cardiovascular risk, mental ill health, smoking, and alcohol and drug use in routine HIV management. It is encouraging that only five deaths among people with HIV over four years were directly attributable to HIV. However, the high number of potentially preventable deaths that were not directly related to HIV highlights the importance of addressing holistic health promotion in routine HIV care.

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