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Multimorbidity burden in an HIV population aged over 50 in South-East England

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Background

- The success of antiretroviral therapy (ART) is a driver of ageing in people living with HIV (PLWH).
- PLWH face significant co-morbidities as they age and have higher multimorbidity (MM) prevalence rates compared to the general population [1,2]. This raises concerns over polypharmacy and drug-drug interactions, increased use of healthcare resources and negative impact on quality of life.
- Different hypotheses exist for why greater MM occurs in PLWH, notably chronic inflammation, premature immunosenescence and ART toxicity alongside a greater burden of behavioural risk factors [3,4]. Many associations with MM are reported including both HIV factors and traditional risk factors.
- This study aimed to determine the comorbidities present, MM prevalence and associations with MM amongst PLWH age >50 in South East England.

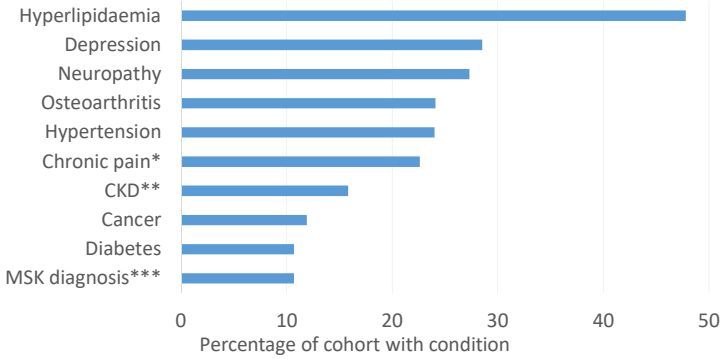
Methods

- 253 PLWH age >50 were recruited from HIV clinics across Sussex between October 2014-2015.
- Multimorbidity was defined as the presence of ≥2 non-HIV defining conditions.
- Participants self-reported comorbidities via a comprehensive questionnaire (checked against medication/laboratory results).
- Electronic laboratory records were used to obtain relevant HIV and ART history.
- Frailty status was assessed using modified Fried's frailty phenotype [5]. This includes five parameters: weight loss, exhaustion, low physical activity, slow walk speed and weak grip strength. Sum >= 3 were deemed frail, <3 non-frail.

Results

- **Population**: Median age 59.6 years, 90.9% male, 91.3% Caucasian. Mean duration of HIV infection was 14.9 years (SD ±8.1), 97.6% were on ART and current CD4 count was 656 (SD± 281).
- **Co-morbidities**: Many chronic conditions were present, the most commonly occurring comorbidities (frequency >10%) are shown in figure 1. In addition, 30% of the cohort had non-ART polypharmacy (≥5 drugs/day).

Figure 1: Prevalence of selected comorbidities

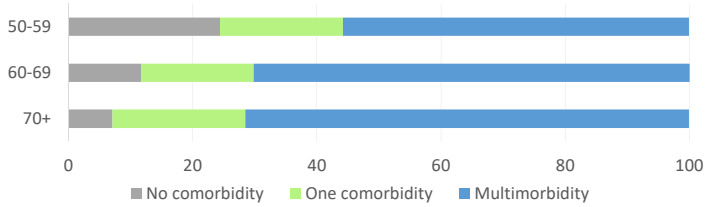


*Chronic pain = patients reported daily pain due to a range of painful conditions **CKD = chronic kidney disease.. ***MSK (musculoskeletal) diagnosis = diseases such as gout, plantar fasciitis, spinal pathologies and fibromyalgia.

Results (continued)

- **Multimorbidity**: Present in 62.9% and rose with age (figure 2). Those with MM were older than those without (median age 60.5 vs 58.6, p=0.023).

Figure 2: Percentage comorbidity burden by age strata



- **Associations**: MM was associated with non-HIV factors including gender, frailty and current symptoms of mood disorder; furthermore MM was associated with greater markers of immunosuppression (but not current CD4 count). (See table 1 and 2).

Table 1: Non-HIV associations with MM

Category	No MM (n=94)	Multimorbidity (n=159)	P-value
Male gender	81 (86.2%)	149 (93.7%)	**P=0.044**
Frailty present	5 (5.3%)	43 (27.0%)	**P<0.001**
History of depression	12 (12.8%)	60 (37.7%)	**P<0.001**
Non-ART polypharmacy present	2 (2.1%)	74 (46.5%)	**P<0.001**
Current statin use	16 (17.0%)	92 (57.9%)	**P<0.001**
Current smoker	19 (20.2%)	34 (21.4%)	P=0.390
Further education	57 (60.6%)	89 (56.0%)	P=0.468

Table 2: HIV associations with MM

Category	No MM (n=94)	Multimorbidity (n=159)	P-value
HIV duration (mean years)	12.5 (±8.1)	16.3 (±7.8)	**P<0.001**[a]
Current CD4 ≥350 (cells/mm^3)	88 (93.6%)	137 (86.2%)	P=0.183
Nadir CD4 <350 (cells/mm^3)	78 (83.9%)	143 (92.3%)	**P=0.040**
AIDS diagnosis	22 (23.4%)	56 (35.2%)	**P=0.049**

[a] P value generated by Mann-Whitney U-test, rest of statistical analysis used Chi squared test.

Conclusions

- In this ART experienced cohort, there were high levels of multimorbidity with age, gender, frailty status and HIV-factors associated with MM.
- The study results support previous findings of high MM prevalence and is towards the upper end of reported MM in PLWH (10.8-73.7%); but is similar to other older cohorts studied [2, 6-7].
- The results suggest clinicians will need to adopt a patient centred approach towards PLWH, rather than single organ management. Both preventative approaches and education alongside proactive management to identify comorbidities should be adopted in order to improve patient outcomes.
- Studies of MM in PLWH highlight the importance of developing clear guidance for managing multiple comorbidities/polypharmacy for PLWH. Ongoing research to explore the pathophysiological mechanisms underlying MM development may allow improved patient management in the future.

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1. Guaraldi G et al. Premature age-related comorbidities among HIV-infected persons compared with the general population. Clin Infect Dis. 2011;53(11):1120–6.
2. Schouten J et al. Cross-sectional comparison of the prevalence of age-associated comorbidities and their risk factors between HIV-infected and uninfected individuals: the AGEhIV cohort study. Clin Infect Dis. 2014;59(12):1787–97.
3. Appay V et al. Immune activation and immune aging in HIV infection. Curr Opin HIV AIDS. 2016; 11:242–249
4. Wing EJ. HIV and aging. Int J Infect Dis. 2016;53:61-68.
5. Fried LP et al. Frailty in older adults. J Gerontol A Biol Sci Med Sci. 2001;56(3):146-56.
6. Guaraldi G et al. The increasing burden and complexity of multi-morbidity and polypharmacy in geriatric HIV patients. BMC Geriatr. 2018;18(1):99.
7. Maciel RA et al. Comorbidity is more common and occurs earlier in persons living with HIV than in HIV-uninfected matched controls, aged 50 years and older. Int J Infect Dis. 2018;70:30-35.