POLYPHARMACY TRAJECTORIES AMONG OLDER PEOPLE IN THE SHCS: A LONGITUDINAL ANALYSIS FROM 2016 TO 2024

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BACKGROUND

- Polypharmacy, commonly defined as the concurrent use of ≥ 5 non-HIV medications, is frequent in older people with HIV (PWH).
- Polypharmacy has been evaluated mostly in cross-sectional studies which do not inform on patterns of medications use over time.
- Aim: to determine polypharmacy trajectories and identify associated predictors among older PWH in the Swiss HIV Cohort Study (SHCS).

METHODS

Study population: all PWH in SHCS aged ≥ 50 years in 2016 on antiretroviral treatment with longitudinal record of medications up to December 2024.

Medications: number of non-HIV medications, categorized by the Anatomical Therapeutic Chemical (ATC) classification system, calculated at baseline and for each semiannual follow-up SHCS visits.

Statistical analysis: Latent class growth models used to identify individuals who follow similar patterns of polypharmacy over time as follows:

- Modelling log (1+medication) with linear + quadratic time, allowing class-specific trajectory shapes.
- Inclusion of random intercept to account for repeated measures within individuals.
- Number of clusters determined based on Akaike information criterion/ Bayesian information criterion.
- Participants assigned to cluster using highest posterior class probability.

Multinomial logistic regression used to assess associations between baseline characteristics and trajectory membership and to identify predictors of polypharmacy trajectories.

A longitudinal analysis of medication use in SHCS participants aged ≥50 years showed that only 46% remained on fewer than five non-HIV medications over time (2016–2024), with four distinct patterns of increase in the number and types of medications.

Infrequent physical activity, heavy smoking and non-adherence were linked to faster increase in medication use over time. These modifiable factors together with regular medication reviews could help to slow or reduce medication burden.

RESULTS

Baseline characteristics of Study Population		N = 3353
Age (years), median (IQR)		54 (52-61)
Male sex, n (%)		2581 (77)
BMI, (kg/m²), median (IQR)		24.6 (22.3-27.6)
Mode HIV acquisition, n (%):	MSM heterosexual PWID	1581 (48) 1125 (38) 459 (14)
Exercising (>2x/week), n (%)		1638 (49)
Alcohol (>7 drinks/setting), n (%)		27 (0.9)
Cigarette smoking (current), n (%)		1126 (34)
Cancer, n (%)		556 (17)
Cardiovascular event, n (%)		341 (10)
Chronic kidney disease (eGFR <60), n (%)		374 (11)
Years living with HIV, median (IQR)		27.4 (19.7-34.7)
HIV viral load (< 50 copies/mL), n (%)		3169 (95)
CD4 count (cells/uL), median (IQR)		623 (459-821)
On antiretroviral treatment, n (%)		3212 (97.2)
On unboosted INSTI regimen, n (%)		1830 (55)
Polypharmacy (≥ 5 non-HIV drugs), n (%)		1031 (31)
Missed ARV (>1x/month), n (%)		97 (2.9)

RESULTS

Study population, N = 3353

Baseline characteristics of the population are in a summarized table. Medication values are reported as rounded mean values.

Polypharmacy trajectories (2016–2024)

Latent class growth models identified **four trajectories** (Figure 1)**:**

- **1) Stable non-polypharmacy** (17.6%): ~3 medications, mainly vitamins/minerals, statins, ACE inhibitors
- **2) Rapidly increasing polypharmacy** (46.5%): 5.5 → 8.5 medications, predominantly cardiovascular, CNS drugs and analgesics
- **3) Slowly increasing polypharmacy** (28.7%): 1 → 2.5 medications, mainly vitamins/minerals, statins, ACE inhibitors
- **4) Rapid progression to polypharmacy** (7.2%): 1 → 6 medications, marked increase in cardiovascular and respiratory drugs

Predictors of trajectory membership

- **Rapid increase** (trajectory 2) vs stable trajectory (trajectory 1) was associated with PWID, lower education, infrequent physical activity, heavy smoking (>20 cigarettes/day), and comorbidities
- **Rapid progression** (trajectory 4) vs stable trajectory (trajectory 1) was associated with cancer, and missed antiretroviral treatment (>1×/month)

DISCUSSION & CONCLUSION

- **Only 46%** of people with HIV aged ≥ 50 years remained on **<5 non-HIV medications** over 8 years.
- **Distinct, non-random trajectories** were observed.
- **Stable non-polypharmacy** trajectory 1 had a lower proportion of individuals with obesity, history of smoking, high alcohol consumption or illicit drug use and a lower prevalence of comorbidities compared to the rapid progression polypharmacy trajectory 4.
- **Rapid progression to polypharmacy** trajectory 4 had the highest proportion of heavy smokers, heavy alcohol drinkers, highest prevalence of cancer or cardiovascular event and highest proportion of individuals that missed antiretroviral treatment >1x/month compared to all other trajectories.
- **Modifiable factors** (physical activity, smoking, adherence) as well as medication review/deprescribing) represent actionable interventions **to slow or prevent progression of polypharmacy.**

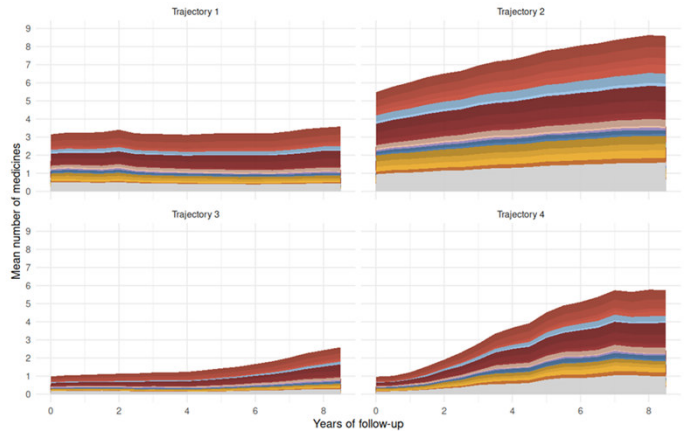
ADDITIONAL INFORMATION

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RESULTS

Figure 1: Non-HIV medicines classified per therapeutic classes within each polypharmacy trajectory group



Legend: therapeutic classes (ATC code) within each color group light brown (vitamins (A11); mineral supplements (A12); drugs for acid related disorders (A02); antidiabetics (A10)); light blue (antithrombotics (B01); antianemics (B03)); dark brown (lipid modifying agents (C10); ACE inhibitors (C09); beta blockers (C07); calcium channel inhibitors (C08); beige (urological agents (G04); dark blue (anti-inflammatory and antirheumatic products (M01); drugs for treatment of bone diseases (M05)); dark yellow (psycholeptics (N05); psychoanaleptics (N06); analgesics (N02), other CNS drugs (N07)); orange (drugs for obstructive airway diseases (R03); grey (other drugs).