Comorbidities, Comedication, and Polypharmacy Burden in Patients With HIV: Retrospective Claims Data in Germany

P151

Sara Lopes,[1] Kellie Meyer,[2] Sebastian Braun,[3] Yogesh Punekar,[1] Matthew Radford,[1] Jennifer Scarlet Haas[3]

[1]ViiV Healthcare, London, UK; [2]Xcenda LLC, Boston, MA, USA; [3]Xcenda GmbH, Hannover, Germany

Introduction

- Antiretroviral therapy (ART) has increased the life expectancies of people living with HIV (PLHIV), thus transforming HIV management into long-term care with lifelong ART exposure[1]
- As PLHIV age, they may experience increased age-related comorbidities, which typically occur earlier in PLHIV than in the general population[2,3]
- Additionally, lifelong exposure to ART increases the risk of developing ART-related long-term toxicities such as bone, renal, or cardiovascular disorders[2]
- Higher prevalence of comorbidities leads to polypharmacy, which can increase the risk of drug–drug interactions (DDIs) and severe complications[4-6]
  - Polypharmacy is the strongest predictor of serious adverse drug reactions and DDIs[4,7,8]
- Information is limited regarding the non-ART prescription patterns in PLHIV
- The prevalence of comorbidities, related prescription patterns of comedication, and the burden of polypharmacy in PLHIV may be relevant when selecting the optimal ART regimen

Objective

- Characterize the demographics, comorbidities, polypharmacy, and prescription patterns of non-ART comedications among German PLHIV who were taking ART in 2016

Methods

- The study was retrospective with a cross-sectional, cohort design conducted in a health insurance claims database in Germany (Institut für angewandte Gesundheitsforschung [InGef])
- Adults were selected based on the following cumulative criteria during 2016
  - Age ≥18 years in 2016
  - Having an *International Classification of Diseases, 10th Revision* (ICD-10), diagnosis code for HIV infection
  - Taking any ART
- Demographics, comorbidities, and prescription patterns of non-ART comedications were retrieved from the German InGef database during 2016
  - Comorbidities were defined by codes from the ICD-10-GM 3-digit groups, OPS codes, or Anatomical Therapeutic Chemical (ATC) codes indicating a specific comorbidity
  - Non-ART comedications were identified by ATC classification (level 3), and available in a well-established DDI database (www.hiv-druginteractions.org; accessed Feb 2018)
- Subgroup analysis was conducted based on gender, number of comorbidities, age (18-34, 35-49, and ≥50 years), time on ART (≤1, >1 to <5, and ≥5 years), and specific comorbidities of interest

Results

Population Characteristics

- A total of 2680 PLHIV were included in the analysis
- Mean age of PLHIV receiving ART in 2016 was 45.6 years (range, 18-86); more than one-third (34.0%) of patients were aged ≥50 years (Table 1)
- Most patients (86.1%) were male, and most had been taking ART for >1 but <5 years (52.1%)

Table 1. Population Characteristics of Patients With HIV Infection Taking ART

Parameter	Overall population (N=2680)		Overall population (N=2680)
Male, %	86.1	Specific comorbidities, n (%)	
Mean age, years	45.6	CNS disorder	721 (26.9)
Age subgroups, n (%), years		Hypertension	719 (26.8)
18-34	452 (16.9)	Renal Impairment	203 (7.57)
35-49	1318 (49.2)	Dyslipidemia	517 (19.3)
≥50	910 (34.0)	Osteoporosis	373 (13.9)
Mean duration of ART, n (%)		Diabetes	179 (6.7)
≤1 years	494 (18.4)	HCV infection	274 (10.2)
>1 to <5 years	1397 (52.1)	HBV infection	144 (5.4)
≥5 years	789 (29.4)	History of fractures due to osteoporosis	11 (0.4)
		History of CVD	566 (21.1)
		Smoking	279 (10.4)
		BMI ≥ 30 kg/m²	127 (4.7)

ART, antiretroviral therapy; BMI, body mass index; CNS, central nervous system; CVD, cardiovascular disease; HBV, hepatitis B virus; HCV, hepatitis C virus.

Non-ART Prescriptions

- The mean (standard deviation) number of non-ART prescribed comedications per patient was 7.0 (10.1) in the overall population and tended to increase with age and time on ART (Figure 1); 489 (18.3%) patients were not prescribed any non-ART comedication

Figure 1. Mean (SD) Number of Prescribed Non-ART Comedications in the Overall Population during 2016, Stratified by Patient Age and ART Duration
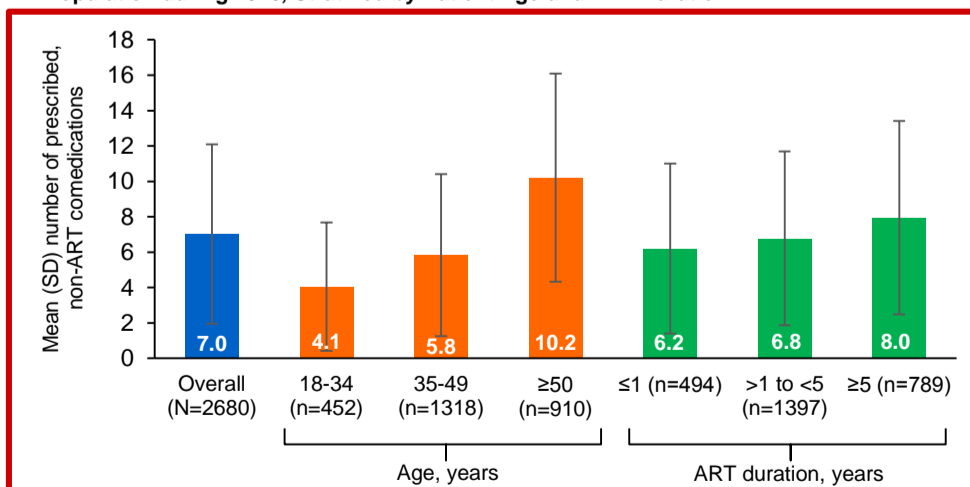
ART, antiretroviral therapy; SD, standard deviation.

- 43.5% in the overall group were prescribed ≥5 non-ART drugs, and the percent of patients taking ≥5 non-ART prescriptions increased with age (Figure 2) and exposure time to ART
- Table 2 shows the most commonly prescribed drugs (not limited to those included in www.hiv-druginteractions.org) among the overall study population, patients aged ≥50 years, and those receiving ART for ≥5 years

Figure 2. Distribution of Patients by Number of Non-ART Medication, Stratified by Age and ART Duration
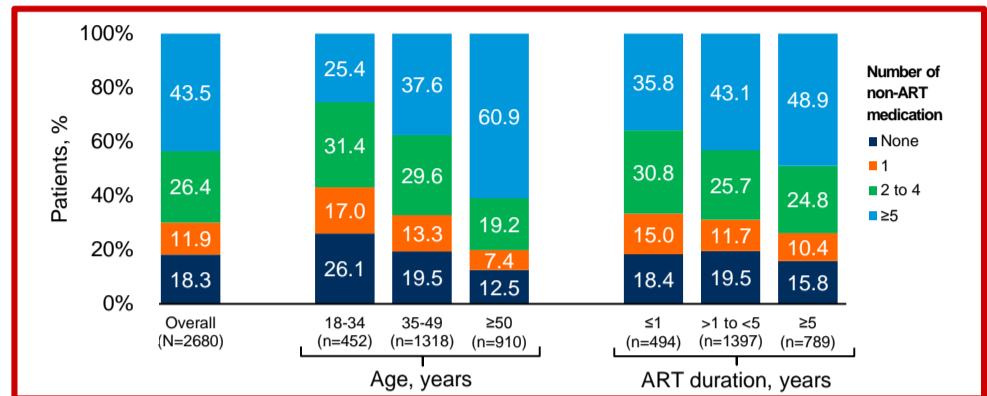
ART, antiretroviral therapy.

**Table 2. Most Prevalent Non-ART Comedications and Comorbidities**

Overall (N=2680)		Age ≥50 years (n=910)		Receiving ART ≥5 years (n=789)	
Top 5 non-ART comedications					
Comedication	n (%)	Comedication	n (%)	Comedication	n (%)
Antibacterials for systemic use	2272 (84.8)	Antibacterials for systemic use	674 (74.1)	Antibacterials for systemic use	565 (71.6)
Anti-inflammatory and antirheumatic products	888 (33.1)	Agents acting on the renin-angiotensin system	330 (36.3)	Anti-inflammatory and antirheumatic products	279 (35.4)
Analgesics	667 (24.9)	Anti-inflammatory and antirheumatic products	328 (36.0)	Drugs for acid-related disorders	209 (26.5)
Drugs for acid-related disorders	641 (23.9)	Drugs for acid-related disorders	295 (32.4)	Agents acting on the renin-angiotensin system	207 (26.2)
Psychoanaleptics	518 (19.3)	Psychoanaleptics	288 (31.7)	Analgesics	189 (24.0)
Top 5 non–HIV-related comorbidities					
Comorbidity	n (%)	Comorbidity	n (%)	Comorbidity	n (%)
Acute upper respiratory infections	873 (32.6)	Hypertensive diseases	373 (41.0)	Mood disorders	252 (31.9)
Anxiety/Other nonpsychotic mental disorders	826 (30.8)	Metabolic disorders	367 (40.3)	Metabolic disorders	250 (31.7)
Mood disorders	784 (29.3)	Other dorsopathies	318 (35.0)	Hypertensive diseases	237 (30.0)
Other dorsopathies	765 (28.5)	Mood disorders	289 (31.8)	Acute upper respiratory infections	237 (30.0)
Metabolic disorders	655 (24.4)	Anxiety/Other nonpsychotic mental disorders	278 (30.6)	Anxiety and other nonpsychotic mental disorders	233 (29.5)

ART, antiretroviral therapy.

Comorbid Conditions

- The prevalence of conditions diagnosed in 2016 was high, but highly variable, and increased with age (Figure 3)
- Median numbers of existing chronic and acute conditions with diagnosis code throughout 2016 were 5 (range, 0-15) for the overall population and 6 (range, 0-15) for patients aged ≥50 years, but no difference was observed in patients taking ART for ≥5 years
- Acute respiratory infections and mood and anxiety disorders were the most prevalent conditions in the overall population, but hypertensive diseases were more prevalent in older PLHIV

Figure 3. Distribution of Patients by Number of comorbidities, Stratified by Age and ART Duration
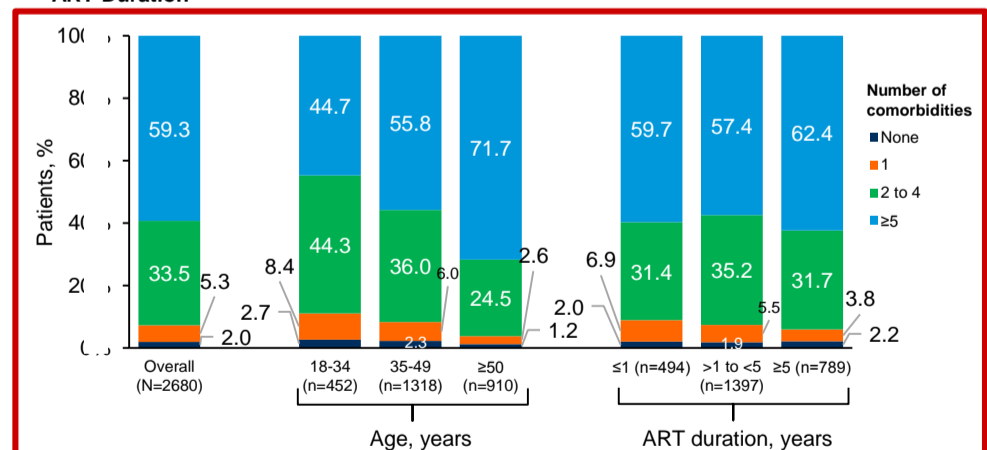
ART, antiretroviral therapy.

Conclusions

- Comorbidities and rates of polypharmacy in PLHIV are highly prevalent and increase with age
- With such high rates of prevalence, selection of ART regimen is critical to reduce risks of DDIs
- Polypharmacy and comorbidities are increasingly relevant factors for current HIV management, appropriate ART selection, and for achieving continuous improvement in the health status and health outcomes of PLHIV

References: 1. Marcus et al. *J Acquir Immune Defic Syndr.* 2016;73:39-46. 2. Guaraldi et al. *Clin Infect Dis.* 2011;53:1120-1126. 3. Schouten et al. AIDS 2012; Washington, DC. Abstract B53. 4. Edelman et al. *Drugs Aging.* 2013;30:613-628. 5. Katlama et al. *AIDS.* 2017;31:1065-1071. 6. Tseng et al. *Ann Pharmacother.* 2013;47:1429-1439. 7. Hovstadius et al. *Clin Geriatr Med.* 2012;28:159-172. 8. Shah et al. *Clin Geriatr Med.* 2012;28:173-186.