# Prescription Medication Use, Comorbidity Burden, and Drug-Drug Interaction Potential Among People with HIV in a Large US Claims Database (2024)

P240

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## Key Takeaways

- A population of approximately 40,000 people with HIV was identified in this study, with notable demographic concentration among individuals age ≥50 years (71%) and males (76%).
- An overall high comorbidity burden was found, with hypertension (50%), diabetes (37%), and depression (22%) as the most prevalent comorbidities.
- More than half of people with HIV had claims for non-HIV anti-infectives, CNS, cardiovascular, immunologic, and metabolic agents.
- Drug interaction liabilities were common among the top 100 prescription medications. CYP enzymes are the most common route, with CYP3A as the most common isoform.
- Contemporary comedication and comorbidity profiles in people with HIV should inform DDI evaluation and clinical study design for new HIV therapies.

## Plain Language Summary

- We reviewed 2024 US insurance claims database to learn what medicines people with HIV received and what other health conditions they had.
- The study included nearly 40,000 people, most aged 50 or older. More than half had claims in each of five broad medicine groups beyond HIV treatment: medicines for infections and medicines affecting the brain or spinal cord (e.g. pain), heart, immune system, or metabolism.
- These findings can help clinicians choose HIV treatments and researchers developing new HIV treatment options to assess and minimize potential for possible drug interactions.

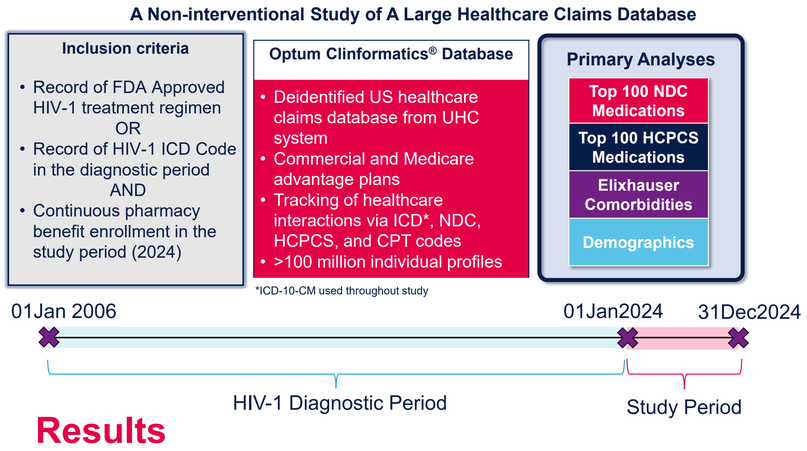
## Introduction

- People with HIV are an increasingly aging population with associated comorbidities and comedications that influence treatment selection, drug–drug interaction (DDI) risk, and tolerability[1].
- A recent analysis by Fleming et al. reported a high comorbidity and polypharmacy burden among people with HIV in US claims data compared with matched people without HIV[2]. The present work extends those findings at the specific medications and therapeutic-class level and mapping their potential DDI liabilities to inform prescribing and development of HIV therapies.
- To aid in designing new HIV medicines, including long-acting regimens, and support healthcare professional use of these therapies, an analysis of current prescription usage and comorbidity burden in a US-based healthcare claims database was performed.

## Methods

- A cross-sectional analysis of Optum Clinformatics® de-identified claims was conducted where people with HIV were identified via HIV diagnosis codes or by use of an FDA-approved HIV-1 treatment regimen, along with continuous pharmacy benefit enrollment during the 2024 study period.
- Population demographics, prevalence of the top 100 National Drug Code (NDC) medications, Elixhauser comorbidities[3], selected comedications, and comorbidities of special interest were summarized.
- The top 100 medications overall and by age (< or ≥ 50 years old) were cross-referenced with the Certara Drug Interaction Database (DIDB®) to further understand the mechanisms of potential interactions via individual enzymes and transporters routinely considered under regulatory (ICH M12) guidance.

### Figure 1. Study Design




## Results

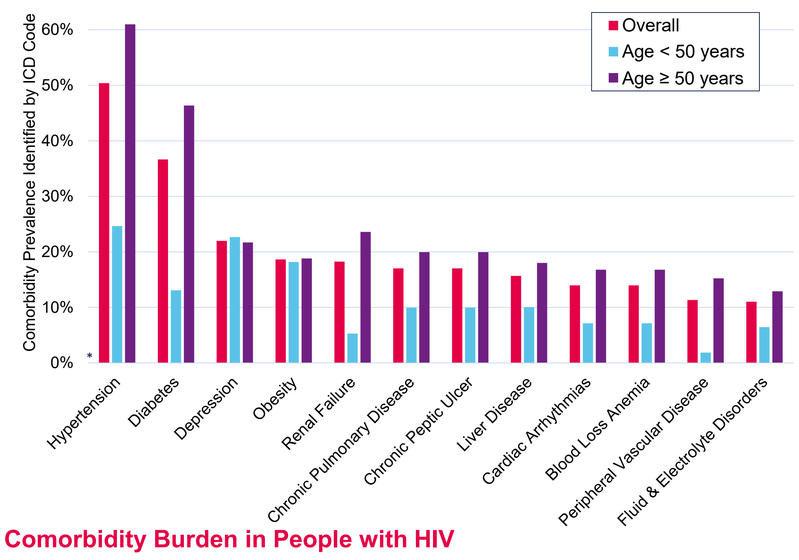
### Demographics of people with HIV identified in study

- 39,871 people with HIV were identified in the 2024 study period (Table 1).
- A majority were male (76%) and ≥50 years old (71%). Medicare was the majority payor (57%), exceeding the ≥65 proportion and consistent with disability-related coverage among people with HIV <65 years. Race was most often Caucasian (37%) or Black (30%).

### Table 1. Demographics of people with HIV identified in study

| Demographic | Category | People with HIV n = 39,871 | | Optum Database n = 15,140,911 | |
|---|---|---|---|---|---|
| Age Groups (Narrow Bands) | Age 00-17 | 113 | (<1%) | 1,665,038 | (11%) |
| | Age 18-29 | 1,768 | (4%) | 1,383,282 | (9%) |
| | Age 30-49 | 9,745 | (24%) | 2,886,624 | (19%) |
| | Age 50-64 | 13,777 | (35%) | 2,346,873 | (16%) |
| | Age 65-plus | 14,468 | (36%) | 6,859,086 | (45%) |
| Age Groups (Wide Bands) | Age <50 | 11,626 | (29%) | 5,934,944 | (39%) |
| | Age ≥ 50 | 28,245 | (71%) | 9,205,959 | (61%) |
| Sex | Female | 9,352 | (23%) | 7,919,033 | (52%) |
| | Male | 30,501 | (76%) | 7,214,942 | (48%) |
| | Missing | 18 | (<1%) | 6,936 | (<1%) |
| Race | Asian | 2,145 | (5%) | 504,470 | (3%) |
| | Black | 11,853 | (30%) | 1,248,583 | (8%) |
| | Caucasian | 14,604 | (37%) | 7,931,038 | (52%) |
| | Unknown/Missing | 11,269 | (28%) | 5,456,820 | (36%) |
| Ethnicity | Hispanic | 5,159 | (13%) | 1,435,771 | (9%) |
| | Non-Hispanic | 23,821 | (60%) | 8,920,724 | (59%) |
| | Unknown/Missing | 10,891 | (27%) | 4,784,416 | (32%) |

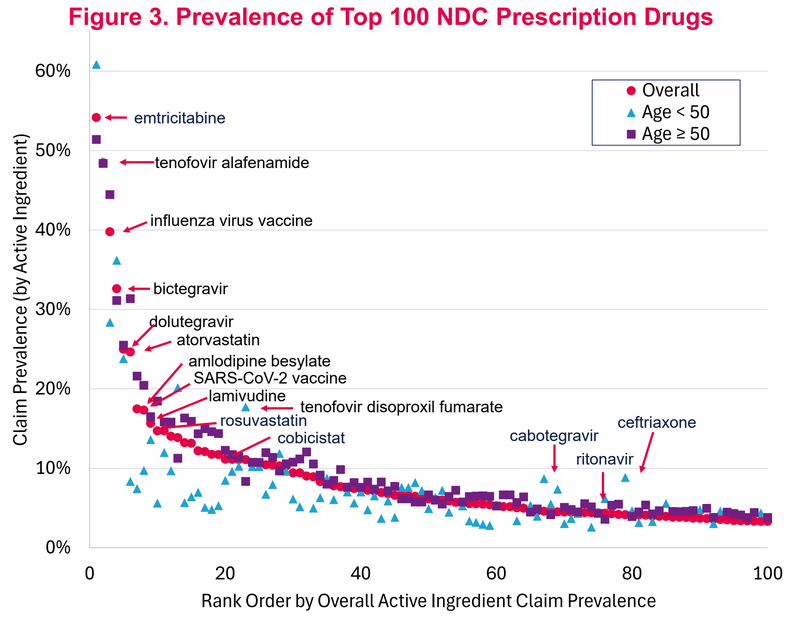
### Figure 2. Most Prevalent (>10%) Elixhauser Comorbidities




### Comorbidity Burden in People with HIV

- Comorbidity burden beyond HIV was substantial (Figure 2) with notable rates of hypertension (50%) and diabetes (37%), and higher among the older segments of the population.
- Rates of depression and obesity were approximately 20% and similar among both younger and older segments.

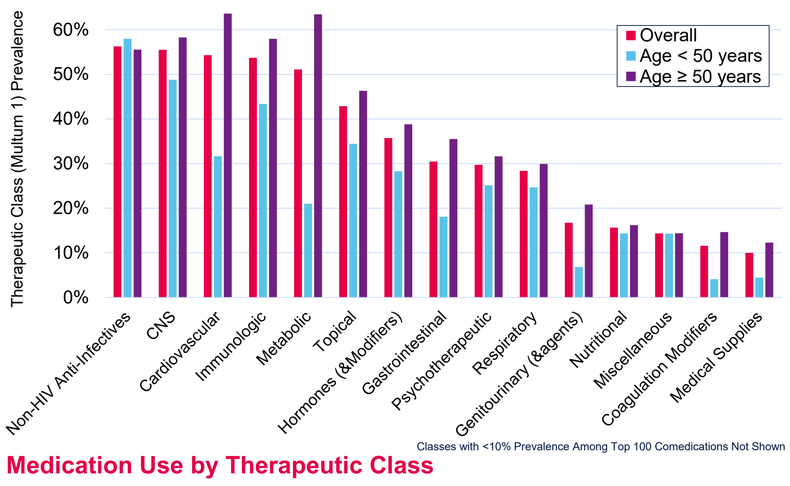
### Figure 3. Prevalence of Top 100 NDC Prescription Drugs




### Prescription Medication Use in People with HIV

- Antiretroviral therapies were prominent among the most prevalent active ingredients, alongside vaccines and therapies for chronic cardiometabolic and other age-associated conditions (Figure 3).
- The most common HIV treatment medications included emtricitabine (54%), TAF (49%), BIC (33%), DTG (25%), and 3TC (16%).
- Consistent with the older age distribution, cardiovascular and metabolic therapies were more represented in older age bands than in younger people with HIV.
- Procedure-administered (HCPCS) medications were uncommon; dexamethasone (5%) was the only agent with ≥5% prevalence.

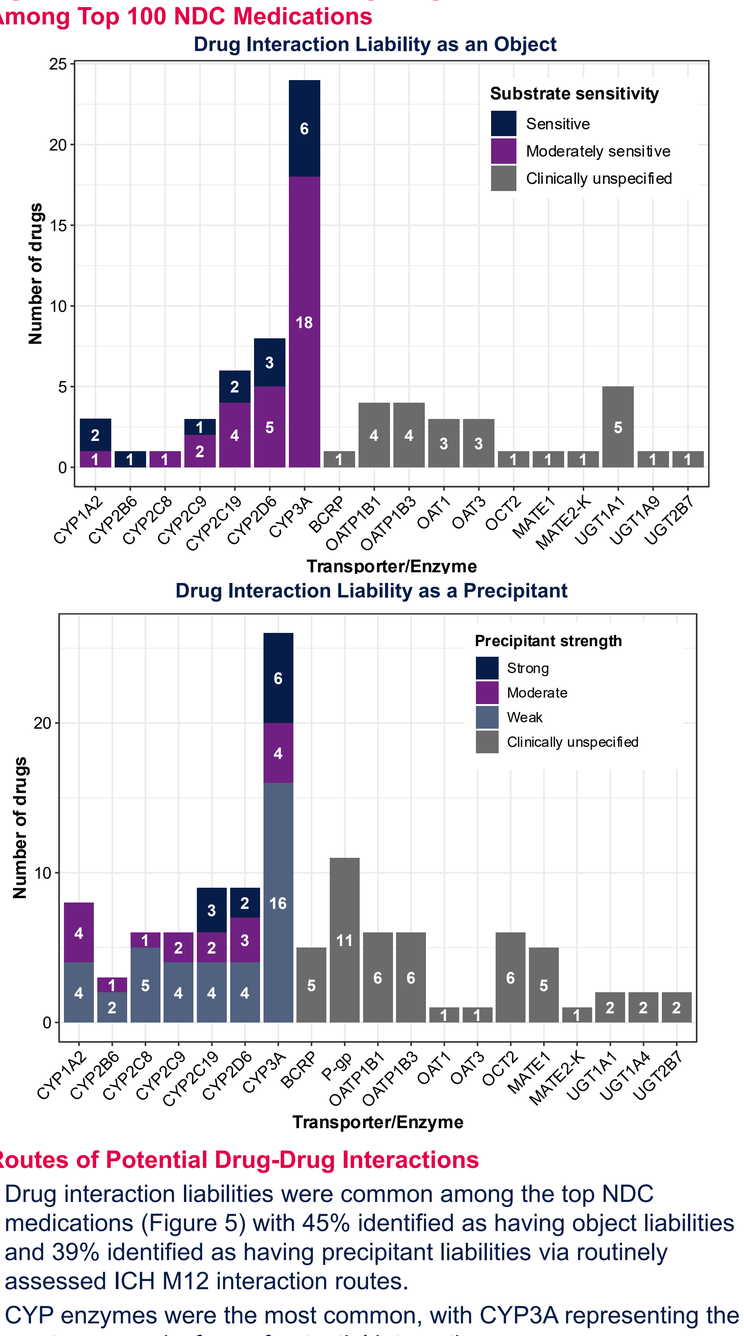
### Figure 4. Therapeutic Classes of Top 100 NDC Medications




### Medication Use by Therapeutic Class

- More than half of people with HIV had claims in each of the five leading Multum classes (Figure 4), reflecting multi-system care in addition to antiretroviral therapy.
- Sub-classes of interest included systemic corticosteroids (20%), CYP3A-metabolized analgesics (18%), inhaled/nasal corticosteroids (15%), GLP-1 agonists (9%), direct-acting oral anticoagulants (6%), and PDE-5 inhibitors (4%).
- While hormonal contraceptive use is low in the overall population (2%), usage among female members of the cohort (9%) highlights this as an important consideration.
- The use of injectable GLP-1 agonists is an important consideration for the development of HIV-1 injectables, highlighting the need for further study regarding the impact on concurrent routes of administration.

### Figure 5. Routes of Potential Drug-Drug Interaction Liabilities Among Top 100 NDC Medications




### Routes of Potential Drug-Drug Interactions

- Drug interaction liabilities were common among the top NDC medications (Figure 5) with 45% identified as having object liabilities and 39% identified as having precipitant liabilities via routinely assessed ICH M12 interaction routes.
- CYP enzymes were the most common, with CYP3A representing the most common isoform of potential interaction.
- Transporters were the second most common route of interactions, with UGT enzymes as the least common.
- No potential interactions were identified via the UGT1A3, 1A6, 2B10, 2B15, or 2B17 route among the top 100 prescription medications in people with HIV.
- Object and precipitant liabilities by route were generally consistent; however, P-gp precipitants were notably more common than substrates.
- For any individual drug interaction, the clinical relevance must be considered including the anticipated magnitude of interaction as well as the therapeutic index.
- This analysis only captures liabilities among prescription medications via routine ICH M12 routes. It likely represents a lower bound of potential interactions due to the potential for over the counter, nutritional supplement, and other substance usage.

### Conclusions

- People with HIV in this US claims population are an aging cohort with a high burden of cardiometabolic, renal, hepatic, and psychiatric comorbidities alongside HIV.
- Medication usage beyond HIV-1 treatment was common, with notable use of vaccines, cardiometabolic medications, corticosteroids, CYP3A-metabolized analgesics, and GLP-1 agonists. These findings are consistent with prior studies reporting high rates of polypharmacy, with more than 60% of people with HIV using ≥5 non-ART medications.[2]
- These comedication patterns define the drug–drug interaction space new HIV medicines must consider, including lead optimization, DDI prioritization under ICH M12, and clinical study inclusion/exclusion criteria.
- Claims capture only insurance-billed medications in a US private healthcare database. Integration with studies of non-US cohorts, US public coverage (e.g. Medicaid), and non-prescription medication and substance usage is needed to develop a broader understanding of the overall comedication, comorbidity, and drug interaction liability profile of people with HIV.

### *References*

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**Glossary: 3TC**, lamivudine; **BIC**, bictegravir; **CNS**, central nervous system; **CPT**, Current Procedural Terminology; **CYP**, cytochrome P450; **DDI**, drug–drug interaction; **DIDB**, Drug Interaction Database; **DMPK**, drug metabolism and pharmacokinetics; **DTG**, dolutegravir; **FDA**, US Food and Drug Administration; **GLP-1**, glucagon-like peptide-1; **HCPCS**, Healthcare Common Procedure Coding System; **HIV**, human immunodeficiency virus; **ICD**, International Classification of Diseases, Tenth Revision, Clinical Modification; **ICH**, International Council for Harmonisation; **NDC**, National Drug Code; **PDE-5**, phosphodiesterase type 5; **P-gp**, P-glycoprotein; **TAF**, tenofovir alafenamide; **UGT**, uridine 5′-diphospho-glucuronosyltransferase.



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