



Original Investigation | Infectious Diseases

Ten-Year Cost Projections for Medicare Beneficiaries 65 Years or Older With HIV

Emily P. Hyle, MD, MSc; Luke Ang, BS; Grace Luu, BA; Parastu Kasaie, PhD; Dannie Dai, BS; Florence Ebem, BA; Jessica Phelan, MSc; Satoshi Koiso, MDP, BVSc; Ciara Duggan, BA; Elizabeth Humes, MPH; Dori Molozanov, JD; Paul E. Sax, MD; Lucas Gerace, BA; John Giardina, PhD; E. John Orav, PhD; Tim Horn, MS; Anne M. Neilan, MD, MPH; Ankur Pandya, PhD; Jose F. Figueroa, MD, MPH; Keri N. Althoff, PhD, MPH; Kenneth A. Freedberg, MD, MSc

Abstract

IMPORTANCE As the population of older people with HIV (PWH) in the US is growing, costs to Medicare are expected to rise substantially.

OBJECTIVES To project the number of Medicare beneficiaries aged 65 years or older receiving care for HIV in the US from 2026 to 2035 and the budget impact on Medicare.

DESIGN, SETTING, AND PARTICIPANTS This economic evaluation used the Cardiovascular, HIV, Aging, Hearing Loss, Mental Health, and Dementia (CHARMED) simulation model to project the number of Medicare beneficiaries aged 65 years or older receiving care for HIV and associated costs from 2026 to 2035. The model was populated with age- and sex-stratified clinical data and costs derived from 2023 traditional Medicare claims and accounted for enrollment in Medicare Advantage, as well as health care inflation. Data analysis was conducted from September 2023 to May 2026.

MAIN OUTCOMES AND MEASURES Number of Medicare beneficiaries aged 65 years or older receiving care for HIV and undiscounted costs to Medicare from 2026 to 2035.

RESULTS The simulated cohort was informed by 111 600 PWH enrolled in Medicare at the start of 2026 (mean [SD] age, 70.9 [5.0] years; 77% male). The analysis found that 121 890 PWH would be enrolled in Medicare and in care by the end of 2026, including 60 390 PWH aged 65 to 69 years, 36 340 aged 70 to 74 years, 17 200 aged 75 to 79 years, and 7970 aged 80 years or older. By the end of 2035, this number would increase to 193 560, with increases in each age category (65-69 years: 70 490; 70-74 years: 62 820; 75-79 years: 38 290; 80 years and older: 21 960). Annual costs to Medicare for PWH aged 65 years or older and receiving care for HIV would increase from \$10.9 billion by the end of 2026 to \$27.3 billion by the end of 2035. Cumulative costs over 10 years were projected to be \$187.2 billion, with 63% of cumulative costs due to antiretroviral therapy (ART). If ART costs are reduced by 60%, Medicare would save \$70.3 billion over the next decade; projected savings due to the Inflation Reduction Act and generic ART would be \$19.4 billion, accounting for the timing of onset and estimated reductions. Based on uncertainties in the number of Medicare beneficiaries and costs of care, sensitivity analyses found that cumulative costs would range from \$103.3 billion to \$267.5 billion over the next decade.

CONCLUSIONS AND RELEVANCE In this economic evaluation using microsimulation modeling, the number of Medicare beneficiaries aged 65 years or older receiving care for HIV was projected to increase substantially over the next decade, resulting in \$187.2 billion in 10-year cumulative costs to Medicare. Reducing ART costs by 60% could lead to 38% lower overall Medicare spending for older Medicare beneficiaries with HIV.

Key Points

Question Over the next decade, what will be the costs associated with Medicare beneficiaries aged 65 years or older with HIV, including antiretroviral therapy (ART) costs?

Findings In this economic evaluation using microsimulation modeling with 111 600 Medicare beneficiaries with HIV at model start, the number of beneficiaries aged 65 years or older receiving care for HIV is projected to increase from 121 890 at the end of 2026 to 193 560 at the end of 2035. Given current ART costs and health care-associated inflation, 10-year cumulative costs to Medicare would be \$187.2 billion; however, reducing ART costs by 60% could lower Medicare spending by 38%.

Meaning These findings suggest that nearly 200 000 people aged 65 years or older with HIV would be enrolled in Medicare by 2035; reducing ART costs while maintaining access to high-quality ART is critical.

+ Supplemental content

Author affiliations and article information are listed at the end of this article.

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Introduction

With contemporary antiretroviral therapy (ART), people with HIV (PWH) in the US are aging due to improved survival among individuals linked to care and ART initiation soon after infection.¹⁻³ Most PWH aged 65 years or older are enrolled in Medicare, qualifying with eligible conditions before age 65 years or through age eligibility at 65 years.⁴⁻⁶ This population is expected to grow substantially over the next decade, and medical complexity and care costs will rise with a high burden incurred by Medicare.⁷⁻⁹ However, the extent of that increase remains uncertain.

Moreover, ART costs continue to rise, and their overall contribution to Medicare costs for PWH are unknown. The Inflation Reduction Act (IRA), passed in 2022, offers new opportunities for the federal government to negotiate the price of drugs for Medicare.¹⁰ One of the selected drugs for price negotiation, bictegravir/emtricitabine/tenofovir alafenamide (Biktarvy), is an ART regimen estimated to have cost Medicare more than \$3.1 billion in 2023 alone and is the most frequently prescribed ART regimen in the US.¹¹⁻¹³ Additionally, a highly effective, well-tolerated, generic ART regimen is expected to become available in 2031 (eg, dolutegravir and tenofovir disoproxil/lamivudine).^{14,15} Reducing ART costs among PWH in Medicare offers an opportunity to decrease costs of the growing population of PWH in Medicare without compromising clinical care. Our goal was to project the number of PWH 65 years or older on Medicare in the US over the next decade and the costs of their care, using 2 complementary microsimulation models.

Methods

Analytic Overview

In this economic evaluation, we first used the Cost-Effectiveness of Preventing AIDS Complications (CEPAC) model, a previously validated microsimulation model of HIV disease, to project the total number and age distributions of PWH in the US from 2026 to 2035, assuming current trends in the care continuum.¹⁶⁻¹⁹ We then developed the Cardiovascular, HIV, Aging, Hearing Loss, Mental Health, and Dementia (CHARMED) model, a novel multimorbidity simulation model of clinical and economic outcomes among PWH. We populated the newly developed CHARMED model with CEPAC projections of the age distribution and population size of PWH aged 65 years or older at the beginning of January 2026, as well as the monthly number of PWH turning 65 years from 2026 to 2035. Using the CHARMED model, we limited the simulated population to Medicare beneficiaries aged 65 years or older receiving care for HIV and then projected the annual population size and age distribution from 2026 to 2035, as well as annual, undiscounted costs incurred over 10 years by Medicare, accounting for inflation. We performed sensitivity analyses to examine uncertainty in parameter estimates and their effects on outcomes.

This analysis was approved by Mass General Brigham's Human Research Committee, who waived the need for informed consent, as no individual-level data were used in the models. We used the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) reporting guidelines.²⁰

The CEPAC Model

We populated the CEPAC model for US adults aged 20 years or older with Centers for Disease Control and Prevention (CDC) surveillance data from 2014 (eTable 1 in [Supplement 1](#)). We then calibrated projected transmissions to CDC HIV incidence data from 2014 to 2022, reflecting the impact of rising preexposure prophylaxis use from 2014 to 2022 and validated model outcomes (eMethods and eTable 2 in [Supplement 1](#)).^{19,21,22} We validated CEPAC model projections to CDC surveillance data for 4 distinct outcomes (eTables 7 and 8 in [Supplement 1](#)).²²

The CHARMED Model

The CHARMED model is a novel multimorbidity microsimulation model that simulates clinical care for people aged 65 years or older taking ART and projects clinical and cost outcomes. At model start,

simulated individuals are in care and taking ART per US guidelines; we assumed that people remain in care throughout their lifetime.²³ Each individual draws from prespecified distributions for clinical characteristics, as well as likelihood of attaining virologic suppression with ART and experiencing virologic nonsuppression due to resistance or intermittent adherence. People are at risk for death monthly due to HIV-related mortality (eg, cryptococcal meningitis) and non-HIV-related mortality (eg, stroke), which is age- and sex-stratified and reflects the increased risks of noncommunicable diseases among PWH.²⁴ We validated the CHARMED model projections of PWH aged 65 years or older living with diagnosed HIV and receiving care to 2021 to 2023 CDC data (eTable 9 in [Supplement 1](#)).²²

CHARMED Model Cohorts

To project the number of PWH aged 65 years or older taking ART enrolled in traditional Medicare or Medicare Advantage from 2026 to 2035, we constructed 3 cohorts in the CHARMED model: Medicare beneficiaries aged 65 years or older receiving care in 2026, PWH turning age 65 years each month after 2026 who are Medicare-enrolled and in care, and Medicare-enrolled people aged 65 years or older initiating ART after a new HIV diagnosis (eMethods in [Supplement 1](#)). We weighted these 3 cohorts to create the population of all Medicare beneficiaries with HIV aged 65 years or older receiving care and then projected their clinical outcomes and costs (eMethods in [Supplement 1](#)).

Statistical Analysis

CHARMED Model Inputs

Using enrollment data from the Centers for Medicare & Medicaid Services (CMS) and CDC data, we estimated that 74% of PWH aged 65 years or older receiving care are enrolled in traditional Medicare with Part D or Medicare Advantage coverage (eMethods in [Supplement 1](#)).^{5,25} The remaining 26% are unable to acquire and maintain Medicare coverage, including Part D (eg, due to permanent residency requirements, prohibitive costs, or work credit requirements) or do not apply for Medicare (eg, they have employer-sponsored insurance).²⁶⁻²⁹

Using the CEPAC-projected number of PWH aged 65 years or older at the end of 2025, we estimated 111 600 Medicare beneficiaries with HIV at CHARMED model start in January 2026; the mean (SD) age was 70.9 (5.0) years and 77% of beneficiaries were male. We estimated the number of beneficiaries in 4 age categories: 65 to 69 years ($n = 57\,370$), 70 to 74 years ($n = 32\,940$), 75 to 79 years ($n = 14\,670$) and 80 years and older ($n = 6610$) ([Table 1](#)).

The mean (SD) CD4 count was 576 (267) cells/mm³ for PWH in care and 363 (203) cells/mm³ for people newly diagnosed with HIV initiating care.³⁰⁻³² Throughout the simulation, Medicare beneficiaries with HIV enter the cohort monthly: Medicare-enrolled PWH turning 65 years (321-1354 people per month) and newly diagnosed PWH entering care and enrolled in Medicare aged 65 years or older (37 people per month) ([Table 1](#)).³³ We incorporated virologic suppression, HIV-related mortality, and non-HIV-related mortality (eMethods in [Supplement 1](#)).^{24,34-38}

Costs

To estimate annual age- and sex-stratified clinical costs for beneficiaries enrolled in traditional Medicare, we used 2023 traditional Medicare claims data for PWH enrolled in Part D and who had any ART use in the calendar year. We separately estimated costs in each year of life and in the 12 months before death because costs are usually substantially higher in the year before death (eTables 3 and 4 in [Supplement 1](#)). The amount paid by Medicare for people enrolled in Medicare Advantage is uncertain but is estimated to be 22% more than their traditional Medicare counterparts.³⁹ We therefore weighted clinical care costs by the proportion of beneficiaries with an HIV diagnosis or any ART prescriptions filled who were enrolled in traditional Medicare (38.5%) or Medicare Advantage (61.5%) based on January 2022 enrollment ([Table 1](#)).⁵ To account for increasing health care costs over time, we applied a 6% annual increase to ART costs based on historical trends,^{11,40} and increased clinical care costs as per CMS projections of the Personal Health Care index (2026-2035) (eTable 5 in [Supplement 1](#)).^{41,42}

Sensitivity Analyses

We performed 1-way sensitivity analyses to evaluate parameter uncertainty on outcomes, varying parameters individually within plausible ranges while holding other parameters at baseline values (eTable 6 in Supplement 1). We then simultaneously varied parameters in multiway sensitivity analyses, including combinations of the most influential parameters from 1-way sensitivity analyses. We examined the effects of parameter variation on 2 outcomes: number of Medicare beneficiaries

Table 1. Selected Base Case Input Parameters for Medicare Beneficiaries Aged 65 Years or Older Receiving Care in the CHARMED Model

Parameter	Base case input	Reference	
Baseline cohort characteristics			
Male at birth, %	77	Centers for Disease Control and Prevention ³⁰	
Initial CD4 count, mean (SD), cells/mm ^{3a}			
PWH in care aged ≥65 y	576 (267)	Buchacz K et al ³¹	
PWH in care turning 65 y	576 (267)	Buchacz K et al ³¹	
Newly diagnosed with HIV aged ≥65 y	363 (203)	Lee JS et al ³²	
Total No. of PWH in care in January 2026 by age			
65-69 y	57 370	CEPAC model projections	
70-74 y	32 940		
75-79 y	14 670		
≥80 y	6610		
No. of PWH in care turning 65 y who are enrolled in Medicare, per mo	321-1354		
No. of PWH aged ≥65 y newly diagnosed with HIV entering care and enrolled in Medicare, per mo	37	Centers for Medicare & Medicaid Services, ⁵ Centers for Disease Control and Prevention ^{25,33}	
PWH aged ≥65 y in care who are enrolled in Medicare, %	74	Centers for Medicare & Medicaid Services, ⁵ Centers for Disease Control and Prevention ²⁵	
ART efficacy			
% Suppressed at 12 mo after ART initiation	85.5	Derived from Raffi F, ³⁴ Walmsley SL, ³⁵ Sax PE, ³⁶ Gallant J ³⁷	
Age- and sex-stratified costs, \$			
Each 12 mo of survival			
Male			
65-69 y	76 336	Centers for Medicare & Medicaid Services ⁵	
70-74 y	78 007		
75-79 y	79 089		
≥80 y	81 813		
Female			
65-69 y	76 616		
70-74 y	77 486		
75-79 y	76 628		
≥80 y	75 761		
12 mo before death			
Male			
65-69 y	165 660	Centers for Medicare & Medicaid Services ⁵	
70-74 y	165 522		
75-79 y	165 803		
≥80 y	143 132		
Female			
65-69 y	178 811		
70-74 y	169 382		
75-79 y	136 353		
≥80 y	162 159		

Abbreviations: CEPAC, Cost-Effectiveness of Preventing AIDS Complications; CHARMED, HIV, Aging, Hearing Loss, Mental Health, and Dementia microsimulation model; PWH, people with HIV.

^a To convert CD4 count to cells ×10⁹ per liter, multiply by 0.001.

taking ART aged 65 years or older and costs incurred to Medicare by this population. Projected costs will be sensitive to both the total number of projected Medicare beneficiaries on ART and cost inputs.

Scenario Analyses

We investigated the potential impact on ART costs from Medicare price negotiations under the IRA and generic dolutegravir, which would likely affect 68% of Medicare beneficiaries 65 years or older with HIV (eMethods in Supplement 1). We also performed scenario analyses with costs not adjusted for Medicare Advantage or inflation. All analyses were performed from September 2023 to May 2026. Microsimulation modeling was performed using C++98 standard (ISO/IEC JTC 1) and GCC 4.8.5-44 (Red Hat). R, version 4.4.3 (R Foundation) and RStudio software, version 2024.12.1 + 563 (Posit PBC) were used to summarize microsimulation outcomes and generate figures.

Results

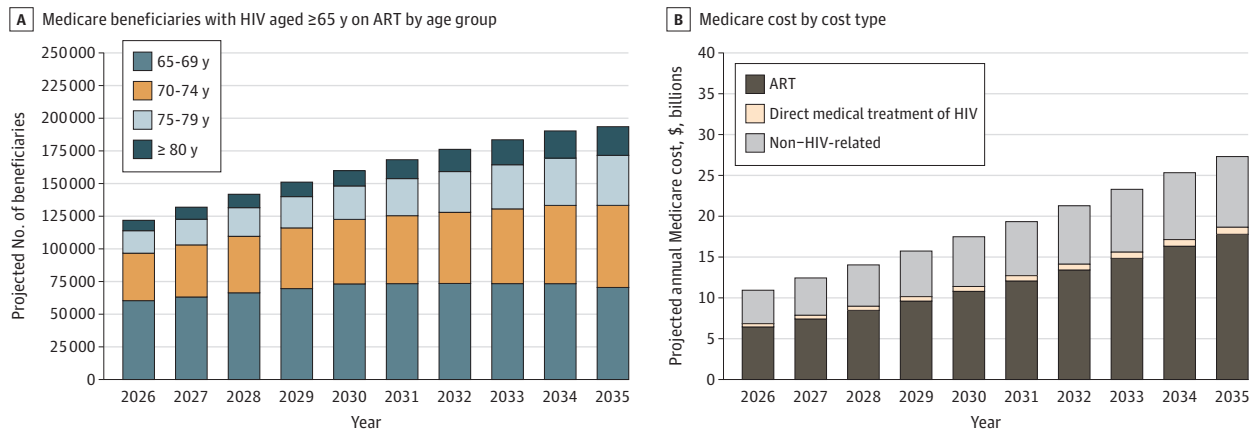
Model Validations

Compared with CDC data from 2017 to 2022, the CEPAC model projected similar numbers of people living with diagnosed HIV, percentage of people receiving care with virologic suppression, and deaths (eTable 7 and 8 in Supplement 1).²² Compared with 2021 to 2023 CDC data, the CHARMED model projected similar numbers of PWH aged 65 years or older living with diagnosed HIV and receiving care (eTable 9 in Supplement 1).²²

Base Case

We projected that Medicare beneficiaries with HIV aged 65 years or older taking ART would increase from 121 890 to 193 560 between 2026 and 2035, with increases in every age category over the decade: 60 390 to 70 490 (65-69 years); 36 340 to 62 820 (70-74 years); 17 200 to 38 290 (75-79 years); and 7970 to 21 960 (80 years and older) (Figure 1A). The magnitude of increases in Medicare beneficiaries with HIV in each age category rises at older ages; by 2035, the number of Medicare beneficiaries with HIV aged 65 to 69 years taking ART would increase 1.2-fold, compared with 1.7-fold (70-74 years), 2.2-fold (75-79 years), and 2.8-fold (80 years or older) (Table 2). Deaths among Medicare beneficiaries with HIV aged 65 years or older would also increase, from 5500 in 2026 to 9640 in 2035 (eTable 10 in Supplement 1). Medicare spending for Medicare beneficiaries with HIV would increase from \$10.9 billion in 2026 to \$27.3 billion in 2035, including ART costs (\$6.4 billion in 2026 to \$17.8 billion in 2035), direct HIV-related care (\$0.4 billion in 2026 to \$0.9 billion in 2035),

Figure 1. Bar Graphs of Model-Projected Numbers and Costs of Medicare Beneficiaries Aged 65 Years or Older Receiving Care for HIV (2026-2035)



The age-stratified number of Medicare beneficiaries with HIV taking ART by age (A) and the costs to Medicare for this population (B) are projected over the next decade. ART indicates antiretroviral therapy.

and other non-HIV-related costs (\$4.1 billion in 2026 to \$8.7 billion in 2035) (Figure 1B). Adjusted for inflation and Medicare Advantage, projected costs for Medicare beneficiaries with HIV 65 years or older would be \$187.2 billion over the next 10 years, with 63% of cumulative costs due to ART.

Sensitivity Analyses

The most influential parameter in projecting the number of Medicare beneficiaries with HIV aged 65 years or older in care by 2035 is the percentage enrolled in Medicare (Figure 2A). If 68% are in Medicare, there would be 177 860 Medicare beneficiaries with HIV aged 65 years or older in care in 2035; however, this number would increase to 245 340 if 94% are enrolled in Medicare. Non-HIV-related mortality rates are also influential; if those rates among PWH are no higher than among people without HIV, there would be 215 340 Medicare beneficiaries with HIV aged 65 years or older in 2035, compared with 174 750 if non-HIV-related relative mortality rates are 2.2 times higher than people without HIV. Other parameters would have a smaller impact (from 160 580 to 273 540 beneficiaries in 2035).

When projecting Medicare costs, the most influential parameters are ART costs and percentage of PWH aged 65 years or older taking ART enrolled in Medicare (Figure 2B). Reducing per-person ART costs by 40% would reduce Medicare spending to 10-year cumulative costs of \$116.9 billion; a 20% increase in ART costs would result in 10-year cumulative costs increasing to \$210.6 billion (eFigure 1 in Supplement 1). Costs to Medicare would range from \$25.1 billion to \$34.7 billion in 2035, if 68% to 94% of PWH aged 65 years or older taking ART are enrolled in Medicare. Varying the numbers of Medicare beneficiaries turning 65 years each year, non-HIV-related mortality, and the number of Medicare beneficiaries aged 65 years or older receiving care at model start have less cost impact.

In multiway sensitivity analyses, we varied population parameters and non-HIV-related mortality to project the number of Medicare beneficiaries aged 65 years or older taking ART in 2035 (eFigure 2 in Supplement 1). Varying the percentage of PWH aged 65 years or older enrolled in Medicare and non-HIV-related mortality has the most substantial impact, resulting in 160 580 to 273 540 projected Medicare beneficiaries with HIV in 2035. When varying cost and population parameters across plausible ranges, we found that 10-year costs to Medicare would range from \$103.3 billion to \$267.5 billion (eFigure 3 in Supplement 1).

Scenario Analyses

Medicare price negotiations for Biktarvy via minimum IRA-proposed discounts would save Medicare a cumulative \$12.7 billion relative to the base case (Figure 3A); generic dolutegravir in 2031 is

Table 2. Model-Projected Base Case Age-Stratified Numbers of Medicare Beneficiaries Aged 65 Years or Older Receiving Care and Alive at Year End and Annual Age-Stratified Costs

Year	No. of Medicare beneficiaries aged ≥65 y in care and alive at year end					Cost, \$, billions ^a			
	65-69 y	70-74 y	75-79 y	≥80 y	All ≥65 y	ART	Direct HIV-related	Other Non-HIV-related	Cumulative costs
2025	57 370	32 940	14 670	6610	111 600	NA	NA	NA	NA
2026	60 390	36 340	17 200	7970	121 890	6.4	0.4	4.1	10.9
2027	63 190	39 870	19 650	9230	131 930	7.4	0.4	4.6	12.4
2028	66 400	43 240	21 910	10 280	141 830	8.5	0.5	5.1	14.0
2029	69 610	46 460	23 930	11 120	151 120	9.6	0.5	5.6	15.7
2030	73 200	49 380	25 590	11 680	159 850	10.8	0.6	6.1	17.5
2031	73 400	52 020	28 380	14 470	168 270	12.1	0.6	6.6	19.3
2032	73 540	54 450	31 180	17 030	176 200	13.4	0.7	7.2	21.3
2033	73 420	57 200	33 790	19 130	183 540	14.8	0.8	7.7	23.3
2034	73 380	59 900	36 220	20 800	190 300	16.3	0.8	8.2	25.3
2035	70 490	62 820	38 290	21 960	193 560	17.8	0.9	8.7	27.3
2026-2035	NA	NA	NA	NA	NA	117.2	6.3	63.8	187.2

Abbreviation: NA, not applicable.

^a Results are rounded. Values across subcategories and years may not add up to cumulative costs due to rounding.

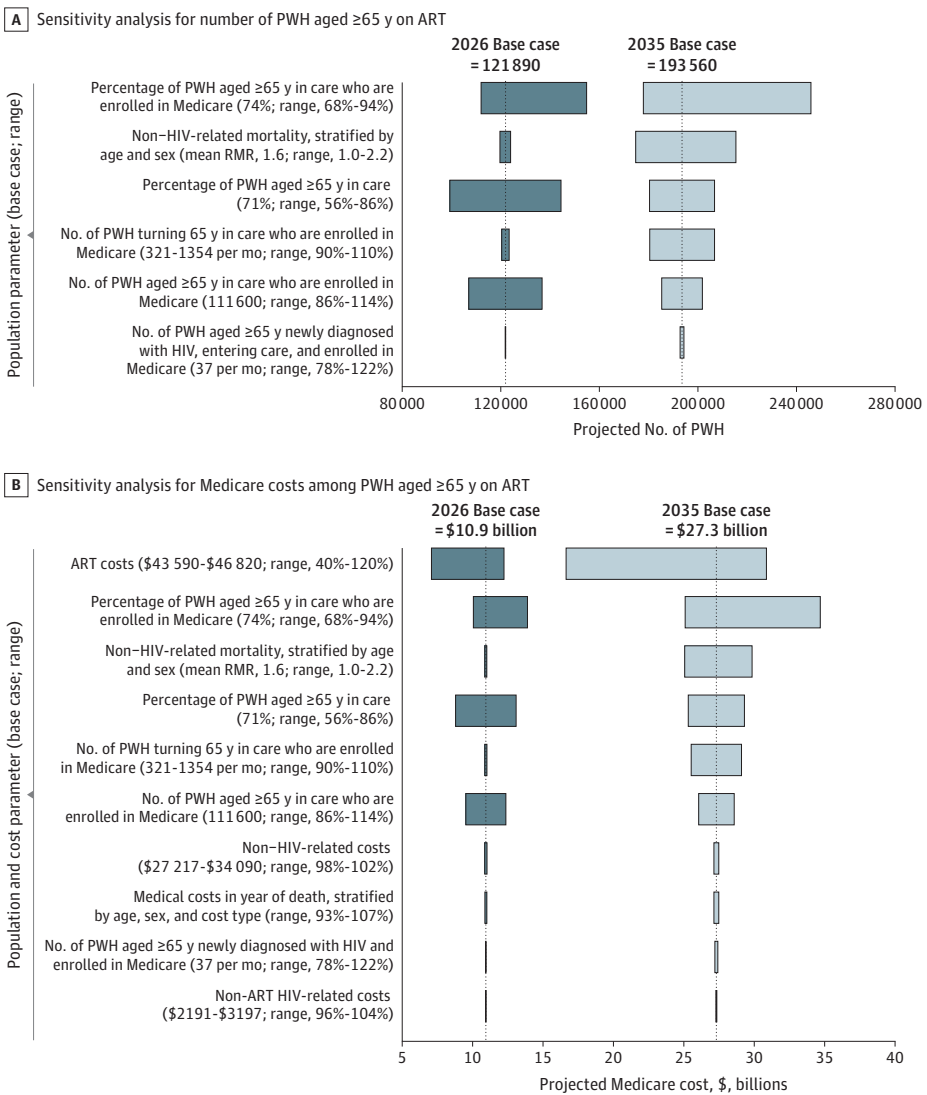
projected to save \$5.2 billion to \$15.5 billion (Figure 3B; eTable 11 in Supplement 1). The impact of both policies together is expected to be \$19.4 billion (range, \$17.9 billion-\$28.2 billion) over the next 10 years (Figure 3C and D).

We also examined adjusting for increased costs paid for Medicare Advantage patients or health care-associated inflation (eTable 12 in Supplement 1). Without the 22% cost increase for Medicare Advantage, 10-year cumulative costs would be \$22.2 billion less than the base case. Cumulative costs over 10 years would be \$58.0 billion lower if health care-associated inflation was not included in the model. Additional details are available in the eResults in Supplement 1.

Discussion

In this economic evaluation using microsimulation modeling, we projected that the number of Medicare beneficiaries with HIV aged 65 or older in the US and engaged in care over the next decade would increase 1.6-fold, reaching nearly 200 000 by 2035. The financial burden on Medicare would increase substantially, with annual costs for Medicare beneficiaries aged 65 years or older increasing

Figure 2. Tornado Plots of 1-Way Sensitivity Analyses on Model-Projected Numbers and Costs of Medicare Beneficiaries Aged 65 Years or Older Receiving Care for HIV



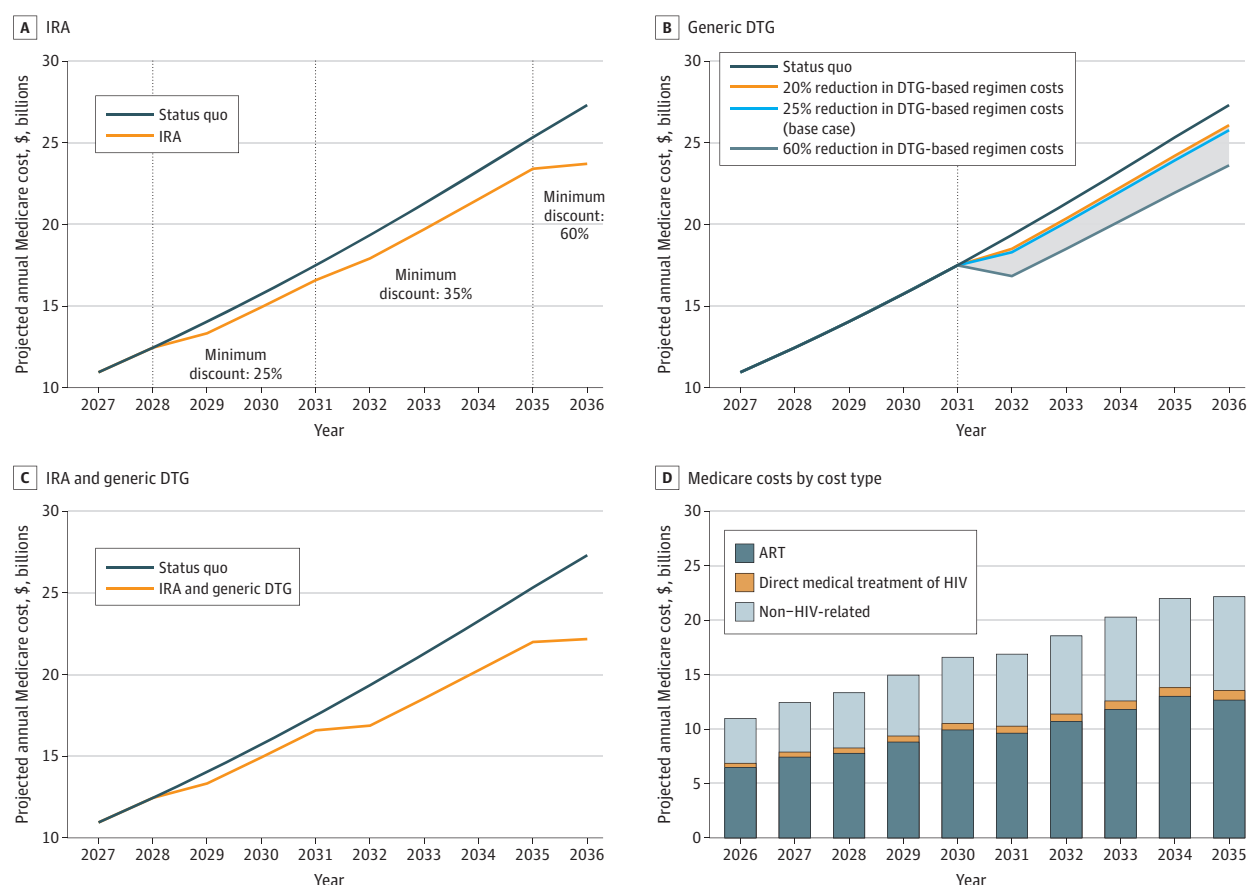
The age-stratified number of Medicare beneficiaries in care aged 65 years or older (A) and the costs to Medicare of this population (B) are projected for 2026 (left) and 2035 (right). Input parameters are displayed along the y-axis in descending order from most to least influential. Each parameter is represented by a horizontal bar intersected by a vertical line representing the base case value. The upper bound forms the side of the horizontal bar to the right of the vertical line, and the lower bound forms the side to the left of the vertical line. The one exception is non-HIV-related mortality; when non-HIV-related mortality is higher than the base case, costs are higher in 2026 but lower in 2035 due to fewer Medicare beneficiaries with HIV aged 65 years or older being alive in 2035. Medical costs in the year of death vary depending on cost category, age, and sex at birth (eTables 3 and 4 in Supplement 1). ART indicates antiretroviral therapy; PWH, people with HIV; RMR, relative mortality ratio.

from \$10.9 billion in 2026 to \$27.3 billion in 2035. Cumulative costs over 10 years would be \$187.2 billion, with 63% of that due to ART. A 60% reduction in ART costs would result in savings of \$70.3 billion over 10 years compared with base case projections; drug price negotiations in the IRA or a switch to generic regimens when generic dolutegravir becomes available in the US could lead to \$19.4 billion in savings.^{43,44}

The growing number of Medicare-enrolled PWH is anticipated to affect Medicare substantially, with 1.6-fold the number of PWH aged 65 years or older enrolled in Medicare by 2035 compared with 2026; between 160 580 and 273 540 Medicare beneficiaries are likely to be aged 65 years or older in 2035. Additionally, more Medicare beneficiaries taking ART will reach their 70s and 80s, with a 2.8-fold increase in people older than 80 years by 2035 compared with 2026. Improvements in virologic suppression and fewer ART-related toxic effects support the likelihood that the number of PWH surviving to older ages will increase.^{3,45,46} Clinicians must better understand the care needs of people aging with HIV given the increased risk of comorbidities and benefits of considering multimorbidity and polypharmacy.⁴⁷⁻⁴⁹ Health care systems will need to offer comprehensive, person-centered care to address the rising burden of comorbidities and health care use.⁴⁸⁻⁵⁰

This analysis highlights that cumulative Medicare costs for PWH could reach \$187 billion over the next 10 years, reflecting a more rapid increase in per-person costs than population size. This

Figure 3. Scenario Analysis in Line and Bar Graphs of Projected Costs of Medicare Beneficiaries Aged 65 Years or Older Receiving Care for HIV Given Potential Antiretroviral Therapy (ART) Cost Reductions



Model-projected costs to Medicare are displayed given potential changes to Biktary costs due to negotiated pricing under the IRA (A) or to dolutegravir (DTG)-based regimen costs due to generic DTG availability (B), in which the shaded region shows the range of projected costs depending on whether Medicare beneficiaries are using generic DTG in branded regimens (top line) or all generic regimens (bottom line). Model-projected costs

that include the impact of changes to both Biktary and DTG-based regimen costs, assuming a mean reduction in DTG-based regimen costs (C). Subcategories of costs for Medicare beneficiaries aged 65 years or older receiving care for HIV, including ART costs, HIV-related costs, and non-HIV-related costs (D). DTG indicates dolutegravir; IRA, Inflation Reduction Act.

increase could be due to more people reaching their 70s and 80s as well as health care inflation. These per-capita Medicare spending estimates are similar to those among people with cancer in the year of diagnosis or death but are much higher annually because of ART being needed over the lifetime.⁵¹

Rising Medicare costs over the next decade must be addressed without decreasing quality of care for PWH. Annual per-person ART costs to Medicare (\$43 590-\$46 820) represent the majority of spending for Medicare beneficiaries with HIV. Because lifetime ART is recommended for all PWH, it is critical to reduce Medicare ART costs without transferring costs to beneficiaries not eligible for patient assistance programs that are available to people who are insured commercially.^{23,52} Opportunities for ART cost reductions are on the horizon, including the IRA and an all-generic, well-tolerated ART regimen due in 2031, when generic dolutegravir becomes available.^{14,43,44} These model-projected reductions in ART costs are conservative if the IRA negotiation program remains in place; CMS has historically negotiated below the statutory minimum discounts,^{53,54} and more PWH could switch to less costly, well tolerated, and effective regimens when available.

Although this analysis details how reduced ART costs would lead to savings to Medicare, policymakers should consider the interactions between ART cost reductions and the 340B program.^{55,56} The 340B program allows disproportionate share hospitals, nonprofit organizations, and others to purchase medications at substantially discounted prices, enabling them to retain revenue to provide care for underserved populations.⁵⁶⁻⁵⁸ Current estimates suggest that 340B revenue from ART cost reductions may decrease by 45% to 50% through reduced reimbursement due to the IRA⁵⁵; similar reductions would likely occur with a switch to generic ART. Although there is mixed evidence on the impact of the 340B program in increasing care access,⁵⁹⁻⁶³ ART cost reductions would lead to substantially lower reimbursement, which could necessitate alternative funding, such as increased federal grants, to ensure that PWH continue to receive the care they need.⁵⁶

Limitations

This analysis has several limitations. First, we limited model projections to Medicare beneficiaries aged 65 years or older receiving care to eliminate the heterogeneity introduced by younger PWH enrolled in Medicare, given their wide range in health conditions, or costs of care for people disengaged from HIV care.⁴ Ten-year costs to Medicare would be even higher if additional Medicare beneficiaries with HIV were included; whether PWH disengaged from care would incur higher costs than PWH in care due to more ER visits and opportunistic infections or whether they would incur lower costs without ART prescribed is unknown. Proposed and enacted cuts to programs such as the Ending the HIV Epidemic initiative, the Ryan White HIV/AIDS Program, and CDC prevention activities would also affect these estimates, as such policy changes could result in fewer people surviving to 65 years or more people living with HIV given increased HIV incidence.⁶⁴⁻⁶⁷ We used traditional Medicare data for spending and accounted for likely higher costs associated with Medicare Advantage plans with capitated payments made to private insurers; costs to insurers for clinical care are not public.^{39,68} Cumulative costs could be lower than projected if Medicare Advantage plans are less costly than current estimates, if inflation is lower than anticipated, or if there is decreasing enrollment in Medicare Advantage. To capture the effect of ART costs, we limited the analysis to Medicare beneficiaries with Part D in care. Because of our focus on Medicare spending, additional costs to the patient, Medicaid, commercial insurance, or the uninsured are not included (eg, long-term care costs), although costs to Medicare of dual-eligible PWH are included in full.

Conclusions

In this economic evaluation using microsimulation modeling, we projected that the number of Medicare beneficiaries aged 65 years or older receiving care for HIV in the US could increase 1.6-fold over the next decade. Medicare could insure nearly 200 000 older individuals by 2035, resulting in

\$187.2 billion in cumulative costs to Medicare over the decade. Reductions in ART costs, based on recent legislation and near-term generic availability, have the potential to lead to substantial decreases in Medicare spending for older beneficiaries with HIV.

ARTICLE INFORMATION

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Corresponding Author: Emily P. Hyle, MD, MSc, Division of Infectious Diseases, Massachusetts General Hospital, 100 Cambridge St, 16th Floor, Boston, MA 02114 (ehyle@mgh.harvard.edu).

Author Affiliations: Medical Practice Evaluation Center, Massachusetts General Hospital, Boston, Massachusetts (Hyle, Ang, Luu, Ebem, Koiso, Giardina, Neilan, Freedberg); Division of Infectious Diseases, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts (Hyle, Neilan, Freedberg); Harvard Medical School, Boston, Massachusetts (Hyle, Sax, Giardina, Orav, Neilan, Figueroa, Freedberg); Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland (Kasaie, Humes, Gerace, Althoff); Department of Health Policy & Management, Harvard T.H. Chan School of Public Health, Boston, Massachusetts (Dai, Phelan, Duggan, Pandya, Figueroa); National Alliance of State and Territorial AIDS Directors, Washington, DC (Molozanov, Horn); Division of Infectious Diseases, Brigham and Women's Hospital, Boston, Massachusetts (Sax); Department of General Internal Medicine and Primary Care, Brigham and Women's Hospital, Boston, Massachusetts (Orav, Figueroa); Department of Biostatistics, Harvard T. H. Chan School of Public Health, Boston, Massachusetts (Orav); Division of General Academic Pediatrics, Department of Pediatrics, Massachusetts General Hospital, Boston, Massachusetts (Neilan); Division of General Internal Medicine, Massachusetts General Hospital, Boston, Massachusetts (Freedberg).

Author Contributions: Drs Hyle and Freedberg had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: Hyle, Ebem, Sax, Pandya.

Acquisition, analysis, or interpretation of data: Hyle, Ang, Luu, Kasaie, Dai, Ebem, Phelan, Koiso, Duggan, Humes, Molozanov, Sax, Gerace, Giardina, Orav, Horn, Neilan, Figueroa, Althoff, Freedberg.

Drafting of the manuscript: Hyle, Ang, Luu, Ebem, Sax, Gerace.

Critical review of the manuscript for important intellectual content: Hyle, Ang, Luu, Kasaie, Dai, Ebem, Phelan, Koiso, Duggan, Humes, Molozanov, Sax, Giardina, Orav, Horn, Neilan, Pandya, Figueroa, Althoff, Freedberg.

Statistical analysis: Ang, Luu, Dai, Ebem, Phelan, Koiso, Giardina, Orav, Pandya.

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SUPPLEMENT 1.

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SUPPLEMENT 2.

Data Sharing Statement