



Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents Living with HIV

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Cost Considerations and Antiretroviral Therapy (Last updated July 14, 2016; last reviewed July 14, 2016)

Although antiretroviral therapy (ART) is expensive (see Table 16 below), the cost-effectiveness of ART has been demonstrated in analyses of older¹ and newer regimens,^{2,3} as well as for treatment-experienced patients with drug-resistant HIV.⁴ Given the recommendations for immediate initiation of lifelong treatment and the increasing number of patients taking ART, the Panel now introduces cost-related issues pertaining to medication adherence and cost-containment strategies, as discussed below.

Costs as They Relate to Adherence from a Patient Perspective

Cost sharing: Cost sharing is where the patient is responsible for some of the medication cost burden (usually accomplished via copayments, coinsurance, or deductibles); these costs are often higher for branded medications than for generic medications. In one comprehensive review, increased patient cost sharing resulted in decreased medical adherence and more frequent drug discontinuation; for patients with chronic diseases, increased cost sharing was also associated with increased use of the medical system.⁵ Conversely, copayment reductions, such as those that might be used to incentivize prescribing of generic drugs, have been associated with improved adherence in patients with chronic diseases.⁶ Whereas cost sharing disproportionately affects low-income patients, resources (e.g., the Ryan White AIDS Drug Assistance Program [ADAP]) are available to assist eligible patients with copays and deductibles. Given the clear association between out-of-pocket costs for patients with chronic diseases and the ability of those patients to pay for and adhere to medications, clinicians should minimize patients' out-of-pocket drug-related expenses whenever possible.

Prior authorizations: As a cost-containment strategy, some programs require that clinicians obtain prior authorizations or permission before prescribing newer or more costly treatments rather than older or less expensive drugs. Although there are data demonstrating that prior authorizations do reduce spending, several studies have also shown that prior authorizations result in fewer prescriptions filled and increased nonadherence.⁷⁻⁹ Prior authorizations in HIV care specifically have been reported to cost over \$40 each in provider personnel time (a hidden cost) and have substantially reduced timely access to medications.¹⁰

Generic ART: The impact of the availability of generic antiretroviral (ARV) drugs on selection of ART in the United States is unknown. Because U.S. patent laws currently limit the coformulation of some generic alternatives to branded drugs, generic options may result in increased pill burden. To the extent that pill burden, rather than drug frequency, results in reduced adherence, generic ART could lead to decreased costs but at the potential expense of worsening virologic suppression rates and poorer clinical outcomes.^{11,12} Furthermore, prescribing the individual, less-expensive generic components of a branded coformulated product rather than the branded product itself could, under some insurance plans, lead to higher copays—an out-of-pocket cost increase that may reduce medication adherence.

Potential Cost Containment Strategies from a Societal Perspective

Given resource constraints, it is important to maximize the use of resources without sacrificing clinical outcomes. Evidence-based revisions to these guidelines recommend tailored laboratory monitoring for patients with long-term virologic suppression on ART as one possible way to provide overall cost savings. Data suggest that continued CD4 monitoring yields no clinical benefit for patients whose viral loads are suppressed and whose CD4 counts exceed 200 cells/mm³ after 48 weeks of therapy.¹³ A reduction in laboratory use from biannual to annual CD4 monitoring could save ~\$10 million per year in the United States¹⁴ (see [Laboratory Monitoring](#)). Although this is a small proportion of the overall costs associated with HIV care, such a strategy could reduce patients' personal expenses if they have deductibles for laboratory tests. The present and future availability of generic formulations of certain ARV drugs, despite the potential caveats of increased pill burden and reduced adherence, offers other money-saving possibilities on a much

greater scale. One analysis suggests the possibility of saving approximately \$900 million nationally in the first year of switching from a branded fixed-dose combination product to a three-pill regimen containing generic efavirenz.³

In summary, understanding HIV and ART related-costs in the United States is complicated because of the wide variability in medical coverage, accessibility, and expenses across regions, insurance plans, and pharmacies. In an effort to retain excellent clinical outcomes in an environment of cost-containment strategies, providers should remain informed of current insurance and payment structures, ART costs (see Table 16 below for estimates of drugs' average wholesale prices), discounts among preferred pharmacies, and available generic ART options. Providers should work with patients and their case managers and social workers to understand their patients' particular pharmacy benefit plans and potential financial barriers to filling their prescriptions. Additionally, providers should familiarize themselves with ARV affordability resources (such as ADAP and pharmaceutical company patient assistance programs for patients who qualify) and refer patients to such assistance if needed.

Table 17. Monthly Average Prices of Commonly Used Antiretroviral Drugs (Last updated November 26, 2018; last reviewed October 25, 2018) (page 1 of 5)

Prescription drug pricing in the United States involves complex systems of negotiations, rebates, discounts, and reimbursement rates. Much of the information used to determine drug prices is confidential, and prices can vary depending on the purchaser, the type of public or private insurance coverage in use, and the number of generic competitors. In addition, price increases that exceed rates of inflation can trigger additional rebates for Medicaid and 340B Drug Discount Program entities. Table 17 includes three benchmark prices, rounded to the nearest dollar, for commonly used antiretroviral (ARV) drugs^a as a general reference for health care providers when considering the cost of HIV treatment. Health care providers should contact patients' pharmacies or payors regarding actual prices, comparative cost savings, and related formulary restrictions.

Wholesale acquisition cost (WAC) is the list price published by manufacturers for prescription drugs or biologics sold to wholesalers. The WAC price approximates what retail pharmacies pay wholesalers for single-source (e.g., brand-name) drugs. There is a range of WAC prices for generic ARVs, as these are multiple-source products with variable list prices. With increasing competition, actual transactional prices of generic drugs among wholesalers and pharmacies decrease substantially. **Average wholesale price (AWP)** has historically been used as the basis for setting public (e.g., Medicaid) and private (e.g., commercial insurer) reimbursement rates for pharmacies. Neither WAC nor AWP include variable price concessions along supply and payment chains, including discounts and rebates to wholesalers, pharmacies, federal purchasers (e.g., the Veterans' Administration), pharmacy benefit managers, commercial insurers, Medicaid, 340B pharmacies, and AIDS Drug Assistance Programs. The availability of these discounts and rebates depends on product demand, market competition, and WAC price increases set by manufacturers.

Maximum prices are assigned to generic products with three or more therapeutically and pharmaceutically equivalent products, as determined by the Food and Drug Administration. This federally established price is the **federal upper limit (FUL)**. Federal Medicaid will reimburse state Medicaid programs up to this limit for multiple-source drugs (plus the dispensing fee); commercial insurers set their own reimbursement upper limits with pharmacies. Whereas WACs and AWP are generally set annually, FULs are adjusted monthly, particularly for multiple-source drugs with fluctuating pharmacy acquisition costs. In the table below, the FUL for a drug is described as "pending" if a generic drug currently lacks the competition required to trigger a FUL.

ARV Drug (Generic and Brand Names)	Strength, Formulation	Tablets, Capsules, or mLs per Month	WAC (Monthly) ^b	AWP (Monthly) ^b	FUL (As of 9/1/2018) ^c
Nucleoside Reverse Transcriptase Inhibitors (NRTIs)					
Abacavir					
• Generic	300 mg tablet	60 tablets	\$150 to \$482	\$579 to \$603	\$44
• Ziagen	300 mg tablet	60 tablets	\$559	\$670	
Emtricitabine					
• Emtriva	200 mg capsules	30 capsules	\$537	\$644	N/A
Lamivudine					
• Generic	300 mg tablet	30 tablets	\$75 to \$343	\$429 to \$430	\$83
• Epivir	300 mg tablet	30 tablets	\$416	\$499	

Table 17. Monthly Average Prices of Commonly Used Antiretroviral Drugs (Last updated November 26, 2018; last reviewed October 25, 2018)
(page 2 of 5)

ARV Drug (Generic and Brand Names)	Strength, Formulation	Tablets, Capsules, or mLs per Month	WAC (Monthly) ^b	AWP (Monthly) ^b	FUL (As of 9/1/2018) ^c
Nucleoside Reverse Transcriptase Inhibitors (NRTIs), continued					
Tenofovir Disoproxil Fumarate					
• Generic	300 mg tablet	30 tablets	\$58 to \$922	\$110 to \$1,216	Pending
• Viread	300 mg tablet	30 tablets	\$1,140	\$1,368	
Zidovudine					
• Generic	300 mg tablet	60 tablets	\$36 to \$54	\$54 to \$365	\$13
NRTI Combination Products					
Abacavir/Lamivudine					
• Generic	600 mg/300 mg tablets	30 tablets	\$185 to \$1,116	\$1,395	\$356
• Epzicom	600 mg/300 mg tablets	30 tablets	\$1,292	\$1,550	
Tenofovir Alafenamide/Emtricitabine					
• Descovy	25 mg/200 mg tablet	30 tablets	\$1,676	\$2,011	N/A
Tenofovir Disoproxil Fumarate/Emtricitabine					
• Truvada	300 mg/200 mg tablet	30 tablets	\$1,676	\$2,011	N/A
Tenofovir Disoproxil Fumarate/Lamivudine					
• Cimduo	300 mg/300 mg tablet	30 tablets	\$1,005	\$1,207	N/A
Zidovudine/Lamivudine					
• Generic	300 mg/150 mg tablet	60 tablets	\$134 to \$578	\$878 to \$932	\$47
• Combivir	300 mg/150 mg tablet	60 tablets	\$901	\$1,082	
Abacavir Sulfate/Zidovudine/Lamivudine					
• Generic	300 mg/300 mg/150 mg tablet	60 tablets	\$1,391	\$1,738	Pending
• Trizivir	300 mg/300 mg/150 mg tablet	60 tablets	\$1,610	\$1,932	
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)					
Efavirenz					
• Generic	600 mg tablet	30 tablets	\$894	\$1,118	Pending
• Sustiva	600 mg tablet	30 tablets	\$981	\$1,177	
Doravirine					
• Pifeltro	100 mg tablet	30 tablets	\$1,380	\$1,656	N/A

Table 17. Monthly Average Prices of Commonly Used Antiretroviral Drugs (Last updated November 26, 2018; last reviewed October 25, 2018)
(page 3 of 5)

ARV Drug (Generic and Brand Names)	Strength, Formulation	Tablets, Capsules, or mLs per Month	WAC (Monthly) ^b	AWP (Monthly) ^b	FUL (As of 9/1/2018) ^c
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs), continued					
Etravirine • Intence	200 mg tablet	60 tablets	\$1,296	\$1,523	N/A
Nevirapine • Generic	200 mg tablet	60 tablets	\$10 to \$45	\$648 to \$651	\$37
• Viramune	200 mg tablet	60 tablets	\$855	\$1,026	
• Generic XR	400 mg tablet	30 tablets	\$246 to \$565	\$678 to \$706	\$231
• Viramune XR	400 mg tablet	30 tablets	\$793	\$951	
Rilpivirine • Edurant	25 mg tablet	30 tablets	\$1043	\$1,252	N/A
Protease Inhibitors (PIs)					
Atazanavir • Generic	200 mg capsule	60 capsules	\$878 to \$1,264	\$1,580 to \$1,668	Pending
• Reyataz	200 mg capsule	60 capsules	\$1,463	\$1,756	
• Generic	300 mg capsule	30 capsules	\$870 to \$1,252	\$1,565 to \$1,652	Pending
• Reyataz	300 mg capsule	30 capsules	\$1,449	\$1,739	
Atazanavir/Cobicistat • Evotaz	300/150 mg tablet	30 tablets	\$1,605	\$1,927	N/A
Darunavir • Prezista	600 mg tablet	60 tablets	\$1,581	\$1,897	N/A
• Prezista	800 mg tablet	30 tablets	\$1,581	\$1,897	N/A
• Prezista	100 mg/mL suspension	200 mL	\$878	\$1,054	N/A
Darunavir/Cobicistat • Prezcobix	800 mg/150 mg tablet	30 tablets	\$1,806	\$2,168	N/A
Lopinavir/Ritonavir • Kaletra	200 mg/50 mg tablet	120 tablets	\$1,024	\$1,229	N/A
Tipranavir • Aptivus	250 mg capsule	120 capsules	\$1,578	\$1,894	N/A

Table 17. Monthly Average Prices of Commonly Used Antiretroviral Drugs (Last updated November 26, 2018; last reviewed October 25, 2018)
(page 4 of 5)

ARV Drug (Generic and Brand Names)	Strength, Formulation	Tablets, Capsules, or mLs per Month	WAC (Monthly) ^b	AWP (Monthly) ^b	FUL (As of 9/1/2018) ^c
Integrase Strand Transfer Inhibitors (INSTIs)					
Dolutegravir					
• Tivicay	50 mg tablet	30 tablets	\$1,658	\$1,989	N/A
• Tivicay	50 mg tablet	60 tablets	\$3,315	\$3,978	N/A
Raltegravir					
• Isentress	400 mg tablet	60 tablets	\$1,500	\$1,800	N/A
• Isentress HD	600 mg tablet	60 tablets	\$1,500	\$1,800	N/A
Fusion Inhibitor					
Enfuvirtide					
• Fuzeon	90 mg injection kit	60 doses (1 kit)	\$3,586	\$4,303	N/A
CCR5 Antagonist					
Maraviroc					
• Selzentry	150 mg tablet	60 tablets	\$1,511	\$1,813	N/A
• Selzentry	300 mg tablet	60 tablets	\$1,511	\$1,813	N/A
• Selzentry	300 mg tablet	120 tablets	\$3,022	\$3,626	N/A
CD4-Directed Post-Attachment Inhibitor					
Ibalizumab-uiyk					
• Trogarzo	200 mg vials	8 vials	\$9,080	\$10,896	N/A
Coformulated Combination Products as Single Tablet Regimens					
Bictegravir/Tenofovir Alafenamide/Emtricitabine					
• Biktarvy	50 mg/25 mg/200 mg	30 tablets	\$2,946	\$3,535	N/A
Darunavir/Cobicistat/Tenofovir Alafenamide/Emtricitabine					
• Symtuza	600 mg/150 mg/10 mg/200 mg	30 tablets	\$3,482	\$4,178	N/A
Dolutegravir/Abacavir/Lamivudine					
• Triumeq	50 mg/600 mg/300 mg tablet	30 tablets	\$2,805	\$3,366	N/A
Dolutegravir/Rilpivirine					
• Juluca	50 mg/25 mg	30 tablets	\$2,579	\$3,095	N/A
Doravirine/Tenofovir Disoproxil Fumarate/Lamivudine					
• Delstrigo	100 mg/300 mg/300 mg	30 tablets	\$2,100	\$2,520	N/A

Table 17. Monthly Average Prices of Commonly Used Antiretroviral Drugs (Last updated November 26, 2018; last reviewed October 25, 2018)
(page 5 of 5)

ARV Drug (Generic and Brand Names)	Strength, Formulation	Tablets, Capsules, or mLs per Month	WAC (Monthly) ^b	AWP (Monthly) ^b	FUL (As of 9/1/2018) ^c
Coformulated Combination Products as Single Tablet Regimens, continued					
Efavirenz/Tenofovir Disoproxil Fumarate/Emtricitabine • Atripla	600 mg/300 mg/200 mg tablet	30 tablets	\$2,724	\$3,269	N/A
Efavirenz/Tenofovir Disoproxil Fumarate/Lamivudine • Symfi	600 mg/300 mg/300 mg tablet	30 tablets	\$1,634	\$1,961	N/A
• Symfi Lo	400 mg/300 mg/300 mg tablet	30 tablets	\$1,634	\$1,961	N/A
Elvitegravir/Cobicistat/Tenofovir Alafenamide/Emtricitabine • Genvoya	150 mg/150 mg/10 mg/200 mg tablet	30 tablets	\$2,946	\$3,535	N/A
Elvitegravir/Cobicistat/Tenofovir Disoproxil Fumarate/Emtricitabine • Stribild	150 mg/150 mg/300 mg/200 mg tablet	30 tablets	\$3,090	\$3,708	N/A
Rilpivirine/Tenofovir Alafenamide/Emtricitabine • Odefsey	25 mg/25 mg/200 mg tablet	30 tablets	\$2,681	\$3,217	N/A
Rilpivirine/Tenofovir Disoproxil Fumarate/Emtricitabine • Complera	25 mg/300 mg/200 mg tablet	30 tablets	\$2,681	\$3,217	N/A
Pharmacokinetic Enhancers (Boosters)					
Cobicistat • Tybost	150 mg tablet	30 tablets	\$219	\$264	N/A
Ritonavir • Generic	100 mg tablet	30 tablets	\$222	\$278	Pending
• Norvir	100 mg tablet	30 tablets	\$257	\$309	

^a The following less commonly used ARV drugs are not included in this table: delavirdine, didanosine, fosamprenavir, indinavir, nelfinavir, saquinavir, and stavudine.

^b Source: IBM Watson Health. Micromedex Red Book [database]. 2018. Available at: <https://www.micromedexsolutions.com>

^c Source: Medicare & Medicaid Services. Federal Upper Limits—September 2018 [database]. 2018 September 1. Available at: <https://www.medicare.gov/medicaid/prescription-drugs/pharmacy-pricing/index.html>.

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