

# Women, Aging, and HIV: Clinical Issues and Management Strategies

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## ABSTRACT

Women are living longer with human immunodeficiency virus (HIV) infection. The best way to manage the multiple comorbidities and polypharmacy that are a hallmark of HIV-infected individuals has not been studied. We explore incorporating principles of gerontology, particularly multimorbidity and polypharmacy, to optimize the health of HIV-infected women. Multimorbidity and polypharmacy are important issues for HIV-infected women. Incorporating a gerontological approach may optimize outcomes until research provides more definitive answers as to how best to collaborate with HIV-infected women to provide them with optimal care. A case study is used to guide the discussion.

**Keywords:** aging, gerontology, human immunodeficiency virus, multimorbidity, polypharmacy

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Mary is a 58-year-old woman diagnosed with human immunodeficiency virus (HIV) at the age of 40. In addition to HIV, Mary has a number of comorbid conditions, including chronic obstructive pulmonary disease (COPD), anemia, gastroesophageal reflux disease (GERD), osteoporosis, osteoarthritis, and constipation (Table). She takes several prescription medications, including lopinavir/ritonavir (Kaletra; Abbott Laboratories, Chicago, IL) plus tenofovir/emtricitabine (Truvada; Gilead Sciences, Foster City, CA), budesonide/formoterol (Symbicort; AstraZeneca, Wilmington, DE), ipatropium, albuterol, a bisphosphonate, vitamin D, a proton pump inhibitor (PPI), a nonsteroidal anti-inflammatory drug (NSAID), morphine, docusate (Colace; Purdue Pharma L.P., Stamford, CT), and senna. She has a fully suppressed HIV viral load ( $< 20$  copies/ $\text{mm}^3$ ) and a CD4 count of  $450$  cells/ $\text{mm}^3$  (36%). Her most recent hemoglobin was  $10.5$  g/dL. Her dual-energy

X-ray absorptiometry T scores were  $-2.7$  for the lumbar spine and  $-2.5$  for the femoral neck. Mary's body mass index is normal ( $21$  kg/ $\text{m}^2$ ). Movement is painful, and Mary reported a pain score of 8 of 10. She requires a cane and has help with the housework and shopping. She is cognitively intact. She presents today as a new patient, having recently moved to your area to be closer to her son. She has no complaints at today's visit.

## THE CLINICAL PROBLEM

HIV-infected individuals in the United States are aging; 50% will be over the age of 50 by 2015. However, there is evidence to suggest that even with antiretroviral therapy (ART), these individuals may not have a "normal" life span<sup>1</sup> because of issues associated with HIV infection as well as conditions commonly found in the elderly, including multimorbidity and polypharmacy. In the general population, 20-year-old men can expect to live to be 76 years old. Women of the same age can expect to live to be 80 years old. Among 35-year-olds, men can expect to live to be 77 years old and women 81.<sup>2</sup>

In contrast, life expectancy estimates for HIV-infected individuals project that a man who initiates

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**Table. Mary's Comorbid Conditions, Medications, and Associated Laboratory Values at Her Initial Visit, With Corresponding Benefits and Harms of the Current Treatment Plan**

Health Care Condition	Associated Medications <sup>a</sup>	Associated Laboratory/Radiology/ Physical Examination Values	Benefits	Harms
HIV	Lopinavir/ritonavir (Kaletra) tenofovir/emtricitabine (Truvada)	CD4: 450/cells/mm <sup>3</sup> CD4 percent: 36% HIV RNA < 20 copies/mm <sup>3</sup> VACS index: 40 (5-year mortality risk 19%)	Excellent viral control	Ritonavir may interact with budesonide to increase the risk for osteoporosis. BID dosing may increase risk of nonadherence.
COPD	Budesonide/formoterol (Symbicort), ipatropium, albuterol	Does not require O <sub>2</sub> ; most recent FEV <sub>1</sub> % predicted: 65% Medical Research Council dyspnea score: 2	Good symptom control	See above.
Anemia	—	Hemoglobin: 10.5 g/dL	—	—
GERD	Proton pump inhibitor	—	Reasonable control of GERD	GERD may be caused/aggravated by bisphosphonate. PPI may significantly increase risk of fractures.
Osteoporosis	Vitamin D, bisphosphonate	DXA T scores Lumbar spine: -2.7 Femoral neck: -2.5 Serum 25-hydroxyvitamin D: 29 ng/mL	Adequate vitamin D levels are important for a number of reasons.	Osteoporosis may be related to combination of ART and COPD medications (see notes for HIV). Bisphosphonates may contribute to GERD.
Osteoarthritis/ chronic pain	Morphine, NSAID	BMI = 21 kg/m <sup>2</sup> Pain score: 8/10	Minimal	Morphine increases risk of falls, likelihood of constipation. NSAID may contribute to anemia.
Constipation	Senna, Colace	—	Minimal	Additional, ineffective medications.

ART = antiretroviral therapy; BMI = body mass index; COPD = chronic obstructive pulmonary disease; DXA = dual-energy X-ray absorptiometry; FEV<sub>1</sub> = forced expiratory volume in 1 second; GERD = gastroesophageal reflux disease; HIV = human immunodeficiency virus; NSAID = nonsteroidal anti-inflammatory drug; VACS = Veterans Aging Cohort Study.

<sup>a</sup> Trade names: Colace (Purdue Pharma L.P., Stamford, CT); Kaletra (Abbott Laboratories, Chicago, IL); Symbicort (AstraZeneca, Wilmington, DE); Truvada (Gilead Sciences, Foster City, CA).

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