Frailty and Falls Have a High Cost for People With HIV

Falls can lead to fractures, disability and death, as well as substantial financial costs, but exercise and other interventions could reduce the risk.

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The lifetime health, mortality and economic toll of frailty and falls is likely to be substantial as the HIV population ages, according to an analysis published in JAMA Network Open. The modeling study estimated that falls could lead to more than 180,000 lost life-years and over $3 billion in lifetime costs, while the cost of frailty could approach $9 billion.

“These findings highlight the potential clinical and economic benefits that could result from interventions to identify, prevent and treat frailty and falls among people with HIV,” the study authors concluded.

Regardless of HIV status, frailty is a common syndrome among older adults that comes with an increased risk for poor health outcomes, including falls, cognitive impairment, hospitalization and death. According to the authors, “Frailty refers to a state of decreased physiologic reserve in which an individual has increased vulnerability to adverse events and stressors.” Signs of frailty include fatigue, weakness, reduced physical activity, decreased strength and unintentional weight loss. Falls can cause bone fractures and lead to chronic pain and long-term disability, and fall-related mortality has been climbing sharply in recent years. According to the Centers for Disease Control and Prevention, more than 41,000 Americans over age 65 died from falls in 2023.

Compared with their HIV-negative peers, people living with HIV are more prone to health problems as they age. Chronic inflammation, immune dysfunction, metabolic and body composition changes (including bone loss), the side effects of specific antiretroviral drugs and lifestyle factors, such as smoking, can increase susceptibility to frailty and falls. One study found that loneliness is a risk factor for frailty among people with HIV.

What’s more, falls may be linked to use of medications that cause drowsiness, decreased mental alertness or poor coordination. People with HIV often take multiple medications to manage comorbidities; one study found that HIV-positive people over 50 were prescribed an average of 12 drugs in addition to their antiretrovirals. Research published last year showed that older people with HIV who take many medications are more likely to experience frailty and are at higher risk for falls.

In the new analysis, Karen Smith, PhD, of Brigham and Women's Hospital and Harvard Medical School, and colleagues estimated the anticipated lifetime health losses and costs attributable to prefrailty, frailty and falls among people living with HIV in the United States. They projected total life-years lost, quality-adjusted life years (QALYs) lost—a measure that combines length and quality of life—and economic costs.

This modeling study used the Frailty Policy Model to project lifetime health and cost outcomes. Based on data from the Multicenter AIDS Cohort Study/Women's Interagency HIV Study Combined Cohort Study and other research, the model assumed a representative population of more than 500,000 HIV-positive people ages 40 and older with viral suppression—that is, it excluded untreated people with advanced immune damage. Three-quarters were men, and the average age was 56 years; 41% had prefrailty, and 7% had frailty. The model projected that this population would have a remaining life expectancy of 20.3 years, with an average of 12 years spent with prefrailty or frailty and an average of 10 falls per person.

At the individual level, the model estimated that prefrailty would result in 0.1 life-years lost, 0.4 QALYs lost and $9,600 in additional spending per person. Frailty itself would cause 2.6 life-years lost, 2.1 QALYs lost and $16,900 in extra spending. Falls would lead to 0.4 life-years lost, 0.3 QALYs lost and $6,500 in spending per person.

Scaling up to the population level, the model projected that there would be a total of 31,000 life-years lost, 214,000 QALYs lost and $5.0 billion in lifetime costs attributable to prefrailty. Frailty would lead to 1,352,000 life-years lost, 1,091,000 QALYs lost and $8.8 billion in lifetime costs. Falls would be responsible for 183,000 life-years lost, 141,000 QALYs lost and $3.4 billion in lifetime costs.

In simulations that looked at frailty and fall prevention interventions, the researchers projected that decreasing the risk of prefrailty and frailty by 37% could prevent 444,000 QALYs lost and save $4.1 billion in lifetime costs. Reducing the risk of falls by 8% could prevent 16,000 QALYs lost and save $365 million.

"These findings, which combine epidemiologic data on frailty and falls with quality-of-life and cost data, highlight the clinical and economic impact of these important comorbidities," the researchers wrote. "While no policy or intervention will eliminate frailty or falls, our results can be interpreted as an upper bound on preventable health losses and costs from these conditions. The estimates of disease burden highlight the substantial harms associated with frailty and falls and may contribute to making the severity of these conditions salient to patients, clinicians and policymakers. The estimates may also motivate future work regarding the value of interventions to prevent and treat frailty and falls among people with HIV."

In terms of prevention, exercise is "one of the most effective frailty interventions," they noted. Although research on people with HIV are limited, one small study found that 24 weeks of moderate- or high-intensity exercise decreased the prevalence of prefrailty from 75% at baseline to 44%.

“Interventions such as exercise programs could improve outcomes, and future work should aim to identify high-value interventions to prevent and treat frailty and falls among people with HIV,” the study authors concluded.

Medical therapies may also play a role. The ACTG recently announced a new Phase II clinical trial, IPACE-HIV, that will evaluate the safety and effectiveness of dasatinib (Sprycel) and quercetin—two senolytic drugs that target cells involved in biological aging—for improving physical function outcomes in people with HIV who are frail or at risk for frailty.

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