Conclusion. These data suggest that WLWH having prolonged amenorrhea of ≥1 year's duration are at increased risk for hip bone loss, a finding influenced by comorbid, HIV-associated conditions. Screening WLWH for menstrual history will allow early discovery of osteoporosis risk, and stimulate preventative measures to mitigate bone loss.

Disclosures. **All authors:** No reported disclosures.

323. Fragility Fracture Risk in HIV: Awareness Among Primary Care Providers

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Session: 42. HIV Complications: Bone Complications
Thursday, October 3, 2019: 12:15 PM

Background. Recommendations on screening HIV-infected (+) patients for bone disease exist. We sought to characterize awareness of and adherence to HIV-specific recommendations and assess risk factors for fracture in this population.

Methods. Primary care provider (PCP) and ID specialist awareness of screening recommendations was assessed using an anonymous electronic survey. We conducted interviews of 45 HIV+ patients and chart review. We calculated risk using the fracture risk assessment tool (FRAX). Email notifications were sent if an indication dual-energy x-ray absorptiometry (DXA) scans was identified. Chart review was repeated 12 months later to assess response. Statistical methods included chi-square and Fisher's exact test for categorical data, and *t*-tests or Wilcoxon rank-sum tests for continuous data. A multivariate logistic regression examined the relationship between adult fragility fractures and covariates.

Results. No immunologic or virologic factors or exposure to specific antiretroviral therapies (ART) were associated with FFX (Table 1). FRAX score (hip, major osteoporotic fracture) successfully predicted FFX history (P = 0.002, P = 0.001, respectively). Overall, 35 (78%) patients qualified for DXA; 23 (66%) were men, only 8 (23%) had a previous DXA. Following provider notification, an additional 5 patients had DXA ordered. DXA was recommended for all patients with FFX, compared with 68% without a fracture (P = 0.02). In logistic regression modeling, increasing age, male sex, and months of ART therapy were associated with FFX (Table 2). Twenty-seven providers responded to the pre-intervention survey, of whom only 35% were aware of screening recommendations for HIV+ patients. Of the 18 providers who responded post-intervention, 63% were aware of these recommendations (Table 3).

Conclusion. A brief educational intervention resulted in increased awareness of HIV-specific screening recommendations, but this translated into adherence to a lesser extent. HIV+ men were more likely to have a history of fragility fracture compared with females. No specific ART or immunologic marker predicted fracture risk or history. Fostering a greater understanding of unique characteristics and risks in this population is crucial to ensure appropriate preventive care.

Table 1: Patient characteristics

Variable	Adult Fragility Fracture (n=31)	No Adult Fragility Fracture (n=14)	p-value
Age (years), mean (SD)	58.7 (12.1)	51.3 (13.3)	0.08
Male Gender, n (%)	11 (78.6)	17 (54.8)	0.19
Race/Ethnicity, n (%)			0.36
Black	5 (35.7)	12 (40)	
White	8 (57.1)	10 (33.3)	
Hispanic	1 (7.1)	7 (23.3)	
Other	0	1 (3.3)	
Smoking, n (%)	8 (57.1)	20 (64.5)	0.64
ETOH abuse, n (%)	3 (23.1)	5 (18.5)	1.0
IV drug use, n (%)	2 (14.3)	6 (19.4)	1.0
Diabetes history, n (%)	1 (7.1)	4 (12.9)	1.0
Hepatitis C coinfection, n (%)	8 (57.1)	10 (32.3)	0.11
CD4 nadir, median (IQR)	472 (375 - 725)	449 (311 - 678)	0.45
Virologic suppression >2 years, n (%)	11 (78.6)	21 (72.4)	1.0
Years infected, median (IQR)	12 (10 - 18)	15 (6 - 26)	0.62
AIDS defined, n (%)	4 (28.6)	4 (12.9)	0.23
Months on ART, median (IQR)	39 (29 - 77)	76 (49 - 90)	0.05
Protease inhibitor exposure, n (%)	6 (46.2)%	6 (21.4)	0.11
Tenofovir (DF or AF) exposure, n (%)	11 (84.6)	26 (89.7)	0.64
DEXA Scan Recommended, n (%)	14 (100)	21 (67.7)	0.02
FRAX Score (major osteoporotic fracture), mean (SD)	11.2 (5.8)	5.3 (5.0)	<0.01
FRAX Score (hip fracture), mean (SD)	1.9 (1.3)	0.6 (0.7)	<0.01

Table 2: Logistic Regression analysis

	Odds Ratio (95% Confidence Interval)	p-value
Age	1.2 (1.0, 1.4)	0.05
Gender (Female vs Male)	0.10 (0.01, 1.1)	0.06
Months of ART therapy	0.94 (0.89, 0.99)	0.03
Protease inhibitor exposure	12.63 (0.76, 210.04)	0.08

Table 3: Pre and post-intervention results of faculty survey to evaluate knowledge of bone health screening recommendations in HIV care.

Knowledge area	Pre-intervention	Post-intervention	Fisher's Exact Test
	n=27	n=18	p-value
Diagnosis of HIV is associated with an elevated risk for fracture	20 (74%)	16 (89%)	0.28
There are unique guidelines to screen for fracture risk in HIV infected individuals	7 (26%)	10 (63%)	0.06
Knowledge of appropriate screening recommendations for:			
Premenopausal women >40	4 (15%)	6 (33%)	0.17
Postmenopausal women	6 (22%)	9 (50%)	0.11
Women receiving chronic glucocorticoid therapy	5 (19%)	8 (44%)	0.09
Women with history of fragility fracture	5 (19%)	9 (50%)	**<0.05**
Women at high risk for falls	2 (7%)	7 (39%)	**0.02**
Men 40-49	1 (4%)	4 (22%)	0.14
Men >50 years old	2 (7%)	8 (44%)	**<.01**
Men receiving chronic glucocorticoid therapy	5 (19%)	8 (44%)	0.09
Men with history of fragility fracture	5 (19%)	10 (56%)	**0.02**
Men at high risk for falls	2 (7%)	7 (39%)	**0.02**

Disclosures. **All authors:** No reported disclosures.

324. Outcomes of Immunomodulatory and Biologic Therapy in People Living with HIV: A Report from Two Academic Hospitals

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Session: 43. HIV Complications: Cancer
Thursday, October 3, 2019: 12:15 PM

Background. The use of immunomodulatory drugs (IMDs) is increasingly common. However, data on outcomes of IMD use in people living with HIV (PLWH) are limited and may be biased due to selective reporting of certain outcomes. Institution-level data reflecting patient-time at risk have not been described.

Methods. We systematically identified all PLWH prescribed non-steroidal IMDs from 2012 to 2019 at two centers. We defined a treatment episode (TE) as an uninterrupted period on a particular IMD regimen. Patients contributed multiple TEs if interrupting or switching therapy. We excluded those with lymphoproliferative disorders or transplants. We quantified infections and blips, defined as a detectable viral load following an undetectable result.

Results. 35 patients contributed 55 TEs comprising 24,020 patient-days at risk. 29/35 (83%) were male, median age was 53 (IQR 39–59), median CD4 nadir was 197 (IQR 100–314), and 12/35 (34%) had a prior opportunistic infection. TEs utilized TNF inhibitors (19/55, 35%), PD-1 inhibitors (11/55, 20%), antimetabolites (7/55, 13%), interleukin inhibitors (7/55, 13%), and other agents (7/55, 13%). 4/55 (7%) involved in dual therapy. 32/35 (94%) patients were on antiretroviral therapy (ART) at IMD initiation; one was off therapy, one already on IMDs-acquired HIV, and one was an elite controller. Median CD4 count was 472 (IQR 337–807); CD4 was < 500 in 28/55 TEs (51%). Preceding plasma HIV RNA was undetectable in 36/55 (65%) TEs. Of these, 18 (50%) were associated with a viral blip within 1 year; one blip was >200 copies and none resulted in sustained viremia. Compared with other agents, PD-1 inhibitors were associated with a higher blip rate (incidence rate ratio 4.3, 1.3–12.3). 17/55 (32%) TEs were initiated with detectable plasma HIV RNA, which declined on ART in 13/15 (87%) TEs with follow-up testing; one patient stopped ART and one later suppressed. 9/55 (16%) TEs involved an infectious complication (7 soft-tissue infections, 2 pneumonias), although none was clearly attributed to IMDs. 36/55 (65%) TEs had good therapeutic response.

Conclusion. IMDs can be used without major complications in PLWH on ART, including those not yet suppressed or with CD4 counts < 500. PD-1 inhibitors may be associated with a higher rate of viral blips, although the clinical significance is unclear.

Disclosures. **All authors:** No reported disclosures.