Methods: Enrollment criteria permitted prior treatment failure, except on an INSTI-containing regimen, and allowed documented resistance to NNRTIs, PIs and/or NRTIs, except for K65R/E/N, ≥ 3 thymidine analog mutations (TAMs), or T69-insertions; primary INSTI resistance (-R) was excluded. Preexisting drug resistance was assessed with historical genotypes and proviral DNA genotyping. B/F/TAF outcomes were determined by last on-treatment HIV-1 RNA through W48.

Results: Altogether, 495 participants enrolled (B/F/TAF n=330, SBR n=165). Preexisting primary NRTI-R, NNRTI-R, and PI-R substitutions were observed in 14% (70/495), 21% (102/495), and 13% (62/495), respectively. M184V/I and TAMs were detected in 10% (51/495) and 7% (34/495), respectively. Primary INSTI-R was detected post-randomization in 2% (11/495); all continued on study and were included in efficacy analyses. At W24, 163 in the SBR group switched to B/F/TAF (SBR to B/F/TAF). W48 outcomes were determined for 489 participants who had ≥ 1 post-switch HIV-1 RNA measurement: 99% (324/327) in the B/F/TAF and 100% (162/162) in the SBR to B/F/TAF groups had HIV-1 RNA < 50 copies/mL at their last study visit, including 100% (68/68) with NRTI-R (50 of whom had archived M184V/I and post-switch data), and 100% (11/11) with INSTI-R (Table). No participant had treatment emergent resistance to study drugs.

Table. BRAAVE 2020 Preexisting Resistance and Virologic Suppression at Week 48 (Last On-treatment Observation Carried Forward Analysis)

	B/F/TAF		SBR to B/F/TAF	
% (n/N)	Total	HIV-1 RNA < 50 copies/mL	Total	HIV-1 RNA < 50 copies/mL
≥1 HIV-1 RNA measurement post switch	N=327	99% (324/327)	N=162	100% (162/162)
No primary resistance (PR, RT, IN)	66% (217/327)	99% (215/217)	65% (105/162)	100% (105/105)
Any primary resistance (PR, RT, IN)	34% (110/327)	99% (109/110)	35% (57/162)	100% (57/57)
NRTI-R	13% (43/327)	100% (43/43)	15% (25/162)	100% (25/25)
M184V/I	9% (30/327)	100% (30/30)	12% (20/162)	100% (20/20)
TAMs	6% (20/327)	100% (20/20)	8% (13/162)	100% (13/13)
NNRTI-R	21% (69/327)	99% (68/69)	20% (32/162)	100% (32/32)
RPV-R[1]	9% (28/327)	100% (28/28)	7% (12/162)	100% (12/12)
PI-R	11% (35/327)	100% (35/35)	16% (26/162)	100% (26/26)
INSTI-R[2]	2% (8/327)	100% (8/8)	2% (3/162)	100% (3/3)

1. Rilpivirine associated resistance (RPV-R) defined as having ≥1 of the following substitutions in RT: L100I, K101E/P, E138A/G/K/Q/R, V179L, Y181C/I/V, Y188L, H221Y, F227C, or M230I/L
2. INSTI-R substitutions observed: E92G (n=3), T66A (n=1), Y143C/H (n=4), Q148H/K/R (n=3)

IN = integrase; INSTI = IN strand transfer inhibitor; NNRTI = nonnucleoside RT inhibitor; NRTI = nucleos(t)ide RT inhibitor; PI = PR inhibitor; PR = protease; -R = resistance; RT = reverse transcriptase; TAMs = thymidine analog mutations

Conclusion: Preexisting resistance was common among virologically suppressed Black adults in BRAAVE 2020, notably M184V/I, TAMs, and NNRTI-R. High rates of virologic suppression were maintained through 48 weeks of B/F/TAF treatment and there were no failures with de novo resistance, indicating that B/F/TAF is an effective treatment option for virologically suppressed people with HIV with or without preexisting resistance to NNRTIs, PIs, or non-tenofovir NRTIs.

Disclosures: Kristen Andreatta, MSc, Gilead Sciences (Employee, Shareholder) Michelle L. D'Antoni, PhD, Gilead Sciences (Employee, Shareholder) Silvia Chang, Masters, Gilead Sciences (Employee, Shareholder) Aiyappa Parvangada, MS Computational Biology, Gilead Sciences (Employee) Christiana Blair, MS, Gilead Sciences (Employee, Shareholder) Sean E. Collins, MD, MS, Gilead Sciences (Employee) Kirsten L. White, PhD, Gilead Sciences, Inc. (Employee, Shareholder)

110. Bone Mineral Density Screening in Veterans Living with HIV

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Session: O-21. HIV Treatment and Complications

Background: Low bone mineral density (BMD) is more prevalent in people living with HIV (PLWH) than in the general population. Although no consensus exists regarding when to start screening for BMD loss in PLWH, the Infectious Diseases Society of America (IDSA) recommends dual x-ray absorptiometry (DXA) for men aged ≥50 years, postmenopausal women, and patients with a history of fragility fracture, chronic glucocorticoid treatment, or at high fall risk. The objective of this study is to evaluate how well this guideline is being carried out in a population of veterans living with HIV (VLWH).

Methods: We retrospectively identified VLWH seen at the Veterans Affairs Medical Center (VAMC) in Houston, TX, between 2014–2018 via the VAMC HIV Registry. We extracted demographic, laboratory, and clinical variables, as well as DXA results via this registry database and subsequent chart review.

Results: We identified 1,306 VLWH who received care between 2014–2018; 197 turned 50 years old during this time period. Of those, only 32 (16.2%) underwent DXA (2 women, 30 men). DXA revealed normal BMD in 17 (53.1%), osteopenia in 12 (37.5%), and osteoporosis in 3 (9.4%), as defined by traditional DXA T-score cutoffs. Average CD4 count at time of DXA was 698 cells/mm^3 (n=30) (average CD4 for those with normal DXA was 654 [n=16] and for those with osteopenia/osteoporosis it was 749 [n=14]; t-test p = 0.47). Thirty had HIV viral load (VL) < 100 copies/mL; the remaining 2 had VLs of 11,200 and 2,980, both with normal DXAs. Vitamin D (VD) levels were available for 1,005 (77%) VLWH in the study cohort. Of those, 278 (27.7%) were VD deficient (25-hydroxy VD level of < 20 ng/mL). VD levels were available for 31 of the 32 VLWH who had DXA after turning 50 years old; the average VD level was 22.76 (24.61 [n=16] for those with normal BMD and 20.78 [n=15] for those with osteoporosis/osteopenia; t-test p = 0.30).

Conclusion: Our results indicate that adherence to IDSA BMD screening guidelines in VLWH can be improved. Given that nearly half of the screened patients showed evidence of BMD loss on their initial DXA, efforts should be made to increase awareness and screening in this vulnerable population. Prevention, earlier diagnosis, and treatment of BMD loss in VLWH would likely lead to decreased morbidity associated with fractures due to low BMD in this population.

Disclosures: **All Authors**: No reported disclosures

111. Outcomes Related to COVID-19 Among People Living with HIV: Cohort from a Large Academic Center

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Session: O-22. HIV in Special Populations

Background: The COVID-19 pandemic has resulted in nearly 8 million cases and close to 500,000 deaths globally. Little is known about risk factors for favorable or adverse outcomes from COVID-19 among people living with HIV (PWH). Small case series have described outcomes for hospitalized PWH with COVID19.

Methods: This is a retrospective chart review of PWH with confirmed diagnosis of COVID-19 from 2 HIV ambulatory clinics from March 1 to May 31, 2020 in a large urban academic center that serves a substantial proportion of underserved minorities. Data on demographics, clinical characteristics, and outcomes were abstracted using a standardized data collection tool. Bivariate analysis was performed to identify correlates of hospitalization.

Results: Among the clinic cohort of 1469 PWH, 94 (6.4%) were tested for SARS-CoV-2 and 40 (42.5%) were positive. Fifty-percent were women, 65% were 50 years and older, 65% were black, 65% were former or active smokers, and 40% were active alcohol or substance users. The majority (90%) were on ART and 87.5% had HIV viral suppression (< 50 copies/ml). Among comorbidities, 50% had hypertension, 42.5% chronic lung disease, 42.5% cardiovascular disease (CVD), 40% obesity, 27.5% diabetes (DM), and 20% chronic kidney disease (CKD). Hospitalization occurred in 19 patients (47.5%) and of those, 4 (21%) required escalation of care. The median length of stay was 12 days (IQR5.5–15.5) and there was no inpatient mortality. Among the 12 PWH who had HIV viral load test during hospitalization, 11 (91.7%) maintained viral suppression and none of the 19 patients had ART interruption. Those who were hospitalized were more likely to be >50 years old (p=0.02); have CVD (p=0.003), DM (p=0.01), and CKD (p=0.02); or have multiple comorbidities (p=0.007) compared to those managed as outpatients. Furthermore, incremental numbers of comorbidities were associated with hospitalization (p=0.009). A history of AIDS, black race, obesity, smoking, and substance use disorders were not associated with hospitalization or adverse outcome.

Conclusion: In this initial and to our knowledge largest cohort in an urban academic center, PWH with COVID-19 had favorable short-term outcomes. The risk factors associated with hospitalization were older age and multiple non-HIV related comorbidities.

Disclosures: **All Authors**: No reported disclosures

112. A Quality Management Project of a Midwestern Academic HIV Clinic Operation During COVID-19: Implementation Strategy and Preliminary Outcomes

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Session: O-22. HIV in Special Populations

Background: During the COVID-19 pandemic, HIV clinics had to transform care delivery in order to ensure retention in care (RIC) for people with HIV (PWH). The objective of this quality management project is to maintain high rates of RIC and viral load suppression (VLS) during the pandemic for PWH receiving services at an academic HIV clinic in the Midwest.

Methods: We developed a multifaceted implementation strategy for clinic operation using a combination of telehealth and in-person visits. The strategy included: 1) assess for readiness and identify barriers and facilitators, 2) identify and prepare champions, 3) organize clinician implementation meetings, and 4) staff training. As a result, we developed an implementation blue print with criteria for telehealth vs. office visits, criteria for rescheduling patients, conducted staff training on telehealth and personal protective equipment, and changed the clinic structure to accommodate in-person visits for patients who did not meet telehealth criteria and walk-ins. We monitored VLS (defined as HIV RNA < 200 copies per mL) and RIC as measured by medical visit frequency (MVF, defined as percentage of patients who had one visit in each 6 months of the preceding 24 months with at least 60 days between visits); and gap in care (GiC, defined as no visit in the preceding 6 months).

Results: As of June 14, 2020, there were 1140 active PWH receiving care at the clinic. By February 29, 2020 there were 34 patients lost to care as (defined as no visit within the preceding 12 months). Between March 1 and June 14, 2020 we conducted a

total 943 visits, out of which 642 (68%) were in person and 301 (32%) were telephone visits. By end of May 2020, there were 47 patients lost to care. MVF decreased to 40% compared to 69% for FY2020, and GiC increased to 25% compared to 14% for FY2020. VLS rate remained unchanged at 91%.

Conclusion: The COVID-19 pandemic resulted in a decrease in MVF and an increase in GiC for PWH. However, VLS remained high at 91%. Our implementation strategy facilitated quick adoption of telemedicine, which helped us provide clinical care to a third of PWH during the pandemic. Telemedicine provided a great tool for ensuring patients remain VLS. Evaluation of implementation outcomes including fidelity and reach remains ongoing.

Disclosures: **All Authors**: No reported disclosures

113. Advanced HIV Disease Among Adults in the African Cohort Study (AFRICOS)

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AFRICOS Study Group

Session: O-22. HIV in Special Populations

Background: In the "test and treat" era, early ART may decrease the prevalence of advanced HIV disease (AHD), defined as having a CD4 cell count < 200 cells/μL or World Health Organization (WHO) clinical stage III or IV disease. We assessed trends in AHD and ART coverage and describe factors associated with AHD among adults living with HIV (LWH) across four countries before and during the "test and treat" era.

Methods: The African Cohort Study (AFRICOS) is a prospective cohort enrolling adults at risk for HIV or LWH from 12 facilities in Uganda, Kenya, Tanzania and Nigeria. Clinical history review and laboratory testing were performed at enrollment and every 6 months. Serum cryptococcal antigen screening (CrAg) was performed in a subset with CD4 < 200 at enrollment. Logistic regression was used to estimate odds ratios for factors associated with CD4 < 200.

Results: From January 2013–December 2019, 2934 adults LWH were enrolled (median age 38 years [interquartile range, 31–46 years], 41.5% men). Of 2903 with CD4 results at enrollment, 567 (19.5%) had CD4 < 200. Despite consistent increases in ART coverage since 2016, across all countries the prevalence of AHD did not decline below levels observed in 2013 until 2019. The prevalence of CD4 < 200 did not significantly decline from 11.9% (range 9.1–25.0%) in 2013 to 10.3% (range 0–16%) in 2019, p=0.7, while ART coverage increased from 74.7% (range 68.3–93.8%) in 2013 to 97.5% (range 86–100%) in 2019, p= < 0.01 (Figure 1). Factors associated with a higher risk of CD4 < 200 at enrollment were being enrolled in Tanzania, male sex, age >29 years, having a primary or some secondary education or above, and WHO stage II disease or higher. Factors associated with a lower risk of CD4 < 200 were >1 year since HIV diagnosis and being on ART for at least 6 months (Table 1). Among those with CD4 < 200 at enrollment, the most commonly reported comorbidities included HIV wasting syndrome (9.3%) and tuberculosis (TB) (2.3%); 19 (3.4%) of 564 adults screened were CrAg positive.

Figure 1: Trends in Percentage of Participants with CD4 <200 and ART coverage at Study Enrollment by Country and Year

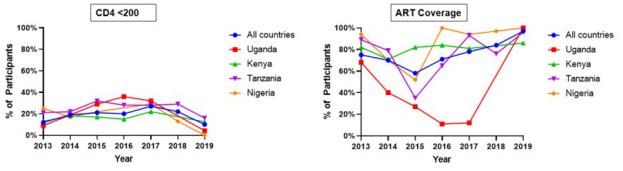

Table 1: Factors associated with CD4 <200 cells/mm3 at Study Enrollment

	Unadjusted OR[2]	95% CI	Adjusted OR[3,4]	95% CI
Enrollment year				
2013	**0.54**	**0.35–0.82**		
2014	0.94	0.72–1.22		
2015	1.04	0.80–1.35		
2016	Ref			
2017	1.48	1.03–2.10		
2018	1.12	0.62–2.01		
2019	**0.46**	**0.21–0.97**		
Country				
Uganda	Ref	–	-	
Kenya	0.86	0.66–1.10	1.11	0.83–1.49
Tanzania	**1.54**	**1.16–2.05**	**1.48****	**1.06–2.07**
Nigeria	1.06	0.74–1.52	1.25	0.81–1.92
Sex				
Male	**1.45**	**1.21–1.75**	**1.33*****	**1.08–1.62**
Female	Ref	–	–	–
Age				
18–29	Ref	–	–	–
30–39	**1.41**	**1.07–1.87**	**1.50*****	**1.11–2.02**
40–49	**1.34**	**1.00–1.78**	**1.61*****	**1.18–2.20**
50+	**1.37**	**0.99–1.90**	**1.91*****	**1.33–2.75**
Education				
None or some primary	Ref	–	–	–
Primary or some secondary	**1.52**	**1.21–1.89**	**1.57*****	**1.23–2.02**
Secondary and above	**1.31**	**1.03–1.68**	**1.48*****	**1.10–1.99**
WHO Stage				
I	Ref	–	–	–
II	**1.33**	**1.03–1.71**	**2.17*****	**1.65–2.84**
III	**1.59**	**1.25–2.02**	**3.30*****	**2.50–4.35**
IV	1.27	0.84–1.92	**2.63*****	**1.64–4.21**
Time since HIV diagnosis				
<1 year	Ref	–	–	–
1–5 years	0.39	**0.31–0.49**	**0.46*****	**0.33–0.64**
>5 years	0.27	**0.21–0.34**	**0.30*****	**0.19–0.45**
Duration on ART[1]				
ART naïve	Ref	–	–	–
<6 months	0.99	0.76–1.28	0.77*	0.58–1.02
6 months–<2 years	**0.53**	**0.39–0.71**	**0.60*****	**0.42–0.85**
2– <4 years	**0.32**	**0.22–0.47**	**0.40*****	**0.25–0.65**
>=4 years	**0.30**	**0.23–0.39**	**0.42*****	**0.27–0.67**

OR Odds ratio; CI, confidence interval, ART Antiretroviral therapy
[1] Duration on ART was ascertained prior to CD4 measurement at enrollment. Participants enrolled were either ART naïve or already on ART.
[2]Bolded variables in the unadjusted models have p<0.05
[3]Variables included in the adjusted model were enrollment country, sex, age, education, WHO stage, time since HIV diagnosis, and duration on ART
[4]*** p<0.01, ** p<0.05, * p<0.1

Conclusion: Despite the scale-up of ART in the era of "test and treat", AHD prevalence has only recently trended downward. Continued efforts towards early HIV diagnosis and timely ART initiation are needed to reduce the risk for CD4< 200. Strategies to increase TB screening, prophylaxis, and treatment are essential to reduce morbidity.

Disclosures: **All Authors**: No reported disclosures

114. HIV Prevalence and Associated Factors Among Persons Experiencing Homelessness (PEH) During a Multi-shelter Tuberculosis (TB) Outbreak in Atlanta, Georgia (2008 – 2018)

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Session: O-22. HIV in Special Populations

Background: Jointly and independently, HIV and homelessness are strong risk factors for acquiring tuberculosis (TB) in the United States (US). However, public health programs geared towards addressing TB among persons experiencing homelessness (PEH) are often not used as prime opportunities to also actively address HIV among PEH. Here, we describe the prevalence and risk factors associated with HIV among PEH who were screened during a city-wide TB screening program among PEH initiated in response to a multi-shelter TB outbreak in Atlanta, Georgia.

Methods: Retrospective analysis of data on 18,605 PEH screened for TB between 2008 and 2018 was done. HIV status was either self-reported (SR) or laboratory-confirmed (LC). Modified Poisson regression models with robust error variances were used to assess associations between socio-demographic characteristics and being HIV-positive.

Results: Of 18,605 PEH screened for TB, 9,308 (53%) had a known HIV status. Of these, 38% (n=3,559) received a HIV test while 62% (n=5,749) were only SR HIV status. The prevalence of HIV positivity among all PEH who SR a HIV status (n=7,404)